

# Design Management in an Era of Disruption



## Proceedings of the 19th DMI: Academic Design Management Conference

**Erik Bohemia, Alison Rieple, Jeanne Liedtka, Rachel Cooper**

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# Editorial: Design Management in an Era of Disruption

Jeanne LIEDTKA, Alison RIEPLE, Rachel COOPER and Erik BOHEMIA

We are delighted to present the Proceedings of the 19<sup>th</sup> DMI International Design Management Research Conference held in London, United Kingdom.

The theme of the conference was *Design Management in an Era of Disruption*. The management of design has arguably never played such an important role as it does today, as changes to the business and social environment call design to the forefront. The quantity of practitioner writing on the topic of has grown voluminously over the past five years, both in terms of popular management books explicitly focusing on the subject and in articles of note appearing in major publications such as *The Economist*, *Harvard Business Review*, *Business Week*, *The Wall Street Journal*, and *The New York Times*. Yet the attention accorded to the topic within top-tier academic publications has been scant and the rigor of the research lacking. It was the explicit intention on the part of the conference organisers to improve the standard of research in the design management field. It is our belief that the quality of the submissions to this conference reflects this goal and signals a move towards a higher level of academic rigor.

The conference received 507 submissions in total, 474 in the form of paper abstracts and 33 in the form of workshop submissions. After the first round of reviews 15 workshop submissions (50%) were accepted and authors of 286 abstracts were selected to submit the full paper (60%). After the double blind review process 152 papers were accepted (53% of the 286 received papers), 6 (2%) were placed on reserve list and 129 (45%) submissions were rejected.

The abstracts were reviewed by the programme conference committee (50 members) and the full paper submissions (286) were reviewed by 151 members of the scientific review committee.

The conference was organized around 6 meta themes, divided into 19 tracks:

The first theme examined *design in the creation of meaning*, looking first at designers as cultural intermediaries, and their role in constructing cultures and engaging users in an increasingly interconnected world.

Theme 1 also explored contemporary brand design and the strategies, practices and processes by which contemporary brand experiences are created and managed by companies in different product fields, from consumer goods to luxury artefacts. Finally, it looked at design management through the lens of artistic interventions, examining the role of creative and artistic interventions as a strategic tool in complex, chaotic and interactional global environments.

The 2nd theme considered *design management as an agent of transformation*. It first examined user-centred design as a disruptive business enabler for accomplishing sustainable consumption, along with the benefits of adopting a UCD approach to reduce over-consumption of resources and to encourage more sustainable actions. Next it explored collaboration in product development and the challenges new types of collaboration in innovation bring to cross-functional and cross-disciplinary relationships involving designers.

How to manage consumer involvement in product development, given developments in both hardware and software that have facilitated greater opportunities for consumers to increase their involvement in product design and manufacturing that has accelerate movement along the continuum between totally consumer-designed products and totally professionally designed products, was also examined. Finally, theme 2 included papers on the topic of enterprise eco system design, exploring how design offers potential help to companies interested in better managing relationships through improved information systems.

*Contextualised designing* was the focus of the 3rd theme. First, the presence of co-created value in service design, as it has become crucial for business enterprises or communities, and the attendant deep understanding of the different roles and expectations of the various stakeholders that this involves. Design in the creative and cultural industries (CCIs) in an era of disruption was another focus in theme 3, examining the role of design in cultural products that generate experiences and meanings. Finally, social and sustainable design management issues and the differences and commonalities in the management of social and sustainable design approaches, along with the challenges that social and sustainable design practices pose at different levels of intervention - whether they be strategic, tacit or operational - were examined.

Theme 4 looked to the future of design management. Included here were new modes of design management occasioned by the disintermediation of organisational hierarchies and the disruption to



organisational value and supply chains resulting as design management has shifted from coordination to integration. Questions about the future of the DM discipline, and even whether 'management' was the appropriate word, and whether a need existed to adapt in the face of the changing nature of design and management theories were raised. Finally, the role of designers in the shift towards product service systems was examined as designers and companies are challenged to find new ways of serving their customers.

*Design thinking, and its leadership and impact*, in all of its forms, were the focus of theme 5.

The extent to which design can contribute to public policy and the renewal of public services, along with an examination of the ways in which public leaders can acquire the skills of design to reshape and refashion the public policies and services that they are responsible for, was a key focus of this theme. Issues of measurement, how to assess the outcomes produced by a design thinking approach, along with the methodological challenges of identifying and calibrating these, was also included. Finally, the role of design thinking in relation to disruptive business model innovation, occasioned by the emergence of e-business organizations as a new locus for innovation, was explored.

The important topic of *educating design managers for strategic roles* in this new era was the focus of theme 6.

It has been our pleasure as editors of this *Proceedings* and co-chairs of the conference, to assemble this varied and thoughtful collection of papers and workshops. We hope that you find them as interesting and insightful as we do!



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# — Chapter 1 —

## **Design in the Creation of Meaning**

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**Section 1a: Designers as Cultural  
Intermediaries in an Era of Flux**

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# Editorial: Designers as Cultural Intermediaries in an Era of Flux

Francesco ZURLO and Erik BOHEMIA

The themed track includes 13 submissions from 21 authors. The theme of the track was to explore relationships between culture and design. For example, the initial call asked these questions: what challenges and opportunities do designers face when exploring 'local' cultural resources? What processes do designers use to frame 'local' cultural inputs? How do they then translate these insights into new offerings, including 'disruptive' service innovations? What processes do designers use to 'construct' users whether these are 'local' or 'global'? In what ways do these constructs enable or limit designers' thinking? How do designers represent 'culture' within their designs?

The importance of the themed track is related to idea that designers have been described as key cultural intermediaries as a result of their role designing symbolic goods and services. In this role they play an active role in promoting consumption through attaching particular meanings and lifestyles to products and services with which consumers will identify. However, as meanings of the products and services are negotiated rather than determined at the outset, designers need to develop an understanding of how others negotiate these meanings. In addition, due to globalization and increasingly interconnected societies through digital technologies and travel, 'local' cultures are in a flux on an unprecedented scale.

The papers included in this themed track present various take on the track's theme.

Aysar Ghassan's paper *Design Strategy Through a Turnerian Lens* suggests to use the cultural analysis of Victor Turner, anthropologist, (a change of state of the individual through culturally prescribed means), in order to explain how Mars negotiated new meanings for a number of his products (associated with some cases of childhood obesity) with the designed transit from a perception of danger to a desirable healthy condition. The aim is to create a model giving new means to the designer without forgetting, however, ethical implications that the application of the model could produce.

The paper by Zingale, Dominques and De Moraes, *Semiotics and Global Products Design*, brings to the surface an important key in understanding global products semiotics, which uses concepts belonging to the studies in semiotics, such as narratives, encyclopedia and dialogicity. The aim is to collect, visualize, categorize and analyze information – coming from different cultures – in order to foster the development of tools useful for supporting an effective management of global new product development.

The role of design for local sustainable development is at the core of the reflection by Sung Hee Ahn and Stephen L. Smith, in the paper *Participation-based Design Process in Jeju Local Regeneration Project*. Jeju is a South Korea isle which is part of the UNESCO world cultural and naturalistic heritage, a premium touristic destination. The authors realized a project of research-action through several means of participation and involvement, by using creativity and art, in order to stimulate new models of local regeneration, which are sustainable and able to protect the area's capital.

*Designing the City Identity: Strategic and Product Design for New Experiential Ways of Living, Enabling and Interacting with the Urban Context* by Marina Parente, provides a reflection on the “reputation-building” processes of cities and regions, based on a bottom-up involvement of individuals and groups with social networks tools or other "engagement" processes. The comprehensive overview of case studies offers a broad range of opportunities for local actors and institutions.

*Pragmatics, Plasticity, and Permission: A Model for Creativity in Temporary Spaces* by Deborah Maxwell and Alison Williams, explains how space can influence the creative processes of individuals and groups. The paper analyzes a case study, a workshop held within an unconventional space (a Victorian-style building), and how the participants transformed the space in a *milieu*, by making it theirs, and then fostering the creative process. Thereby, the paper proposes a correlation model between space appropriation and creative processes.

*Pre-emptying and the myth of the naïve mind* by Åsa Öberg and Roberto Verganti, deals with a recurring ideal in design world, that is making a real *tabula rasa* (*beginner's mind* in the paper) as a necessary condition for design innovation. The authors, even by empirical tests of some cases and with the support of theories such as Hermeneutics and the U Theory by Otto Scharmer, challenge this myth by proposing, on the other hand, the organizational need – in the frame of the product development processes – to become aware of our own prejudices, and taking them into account, to find and negotiate new possible meanings.



Adèle Martin and Denis Darpys' paper titled *Design and Identities: the Case of Carsharing*, highlights the global issue of sustainable mobility and how is challenging the industry to provide extremely satisfying user experiences, to marry up the natural inclination for ownership with the need to switch towards a service usage model for a reduced carbon footprint. The case of carsharing system Autolib in Paris supports the idea that a superior product-service system design encourages new social rituals and shared habits for a remarkable improvement of urban resiliency.

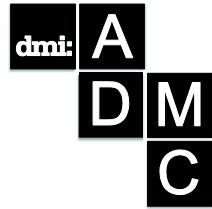
*Multimedia storytelling – managing between design and journalism*, by Christof Breidenich and Marlis Prinzing examine, within the ongoing dramatic transformation of the media industry, the current practices of multimedia storytelling against the post-modern trend in the traditional media economy of disrupting old forms and contents, towards a revolution in how the industry should be creating information today. Despite shared agreement among professionals upon the role of design for meaningful innovation, it is seldom integrated in production process, to which a systematic and transdisciplinary approach would benefit.

Wei Wang, Tie Ji, and Mohsen Jaafarnias' paper titled *Position designer in the process of local craft revival in the emerging markets: An Empirical Study on Chinese Ethnic Brocade Industry* highlights how, following the economical shift in recent decades, handcrafting is on the rise, thanks also to the democratization of systems, tools and shared services that are lowering the traditional market barriers, and allow access to new forms of funding. Crossing the boundaries between crafts and arts, design can be considered as a key element in the contemporary transformation of manufacturing industry, bridging modern industrial consumption and traditional craft production, with increased socio-cultural acceptance.

In Gloria Anne Moss and Gabor Horvaths' paper titled *The impact of nationality and gender on consumer preferences*, empirical research shows that the overall value that consumers are inclined to attach to product designs widely varies, correlating with many subjective variables that selectively apply. The aesthetic properties of products may heavily impact on perceived utility and, as a result, market value. This paper shows that some behavioural consistency can be found when considering socio-demographic segments like gender and nationality, suggesting their importance in reducing the odds against poor design decisions.

*The Role of Product Design as a Mechanism for Moral Legitimacy* is the paper of Sarah J.S. Wilner and Aimee Dinnin Huff. Meaningful design has the power to influence socio-cultural codes and play an essential role in

redefining the meaning of specific product categories. By acknowledging that meanings are continuously negotiated, this paper investigates how designers may influence consumer perceptions of self and social groups that result in new cultural exchanged meanings. Examination of a specific product category, filled with strong and contested cultural meanings, has evidenced the peculiar role exerted by design for market value, product availability, and popular discourse in mainstream media.



## Design Strategy Through a Turnerian Lens

Aysar GHASSAN\*

Coventry University

*I argue that in 2004, Mars' 'Kingsize Chocolate Bar' became characterised as a culturally constructed cause of obesity in the UK. Mars reacted by redesigning its large bar. In this discussion, cultural theory developed by the anthropologist Victor Turner provides a lens through which to view Mars' design strategy. Turner argues that when protagonists transit from a 'state' of being to a contrasting state, this movement occurs through culturally prescribed means. I argue that Mars' design strategy helped move its large bar from being associated with the undesirable state of 'danger' to the desirable state of 'safety' and that this transition facilitated the continued survival of the redesigned product. Accordingly, Mars' designers are framed as mediating the transition between Turnerian states. Beyond discussion on chocolate, Turner's cultural theory may be used to construct a model to inform design strategy in a wider sense. Accordingly, this paper supports calls to provide future designers (design students) with more instruction on cultural issues as this may increase the commercial success of their creations in professional practice. This move may create contradictions between commercial and ethical imperatives. In concluding, I argue that exploration of associated ethical dilemmas should accompany the delivery of cultural knowledge.*

**Keywords:** Victor Turner; Design and Ritual Symbolism; Obesity; Design and Cultural Constructs; Design Education; Mars chocolate.

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## Introduction

Research suggests that the choice to purchase artefacts is often not predicated on their ability to function more effectively than their competitors (Norman, 2004). This may help to explain the commercial success of Phillippe Starck's Juicy Salif lemon squeezer, a product which, through depositing pips in the collected lemon juice, has become famous for its inability to perform optimally (Lloyd & Snelders, 2003). Norman (2004) claims that desirable objects trigger deep-rooted, instinctual emotions which draw us to them. As well as 'biologically prewired' (Norman cited in Schofield, 2004, unpagged) determinants, *cultural factors* play an important part in contributing to why consumers find certain objects to be desirable (Parkins, 2004). This discussion explores important cultural factors which inform design strategy. It also discusses how the use of cultural theory may help facilitate the construction of successful design strategy.

Kopytoff (1986, p. 68) argues that artefacts exist as 'culturally constructed entit[ies]' which are 'endowed with culturally specific meanings'. Evidence of the role culture plays in assigning meaning to objects can be found through a brief discussion on the *Slow Movement* (Parkins, 2004). This movement rejects the fast-paced nature of contemporary life as problematic and inauthentic:

*We [...] are often overscheduled, stressed and rushing towards the next task. This rushing is not restricted to our work environment. We rush our food, our family time and even our recreation. (Slowmovement.com, 2014, unpagged)*

The Slow Movement argues for a return to what proponents believe were simpler times, epochs where they argue people were more connected with one another and with the environment around them (Slowmovement.com, 2014). The *slow* lifestyle includes "'mindful" rather than "mindless"' (Parkins, 2004, p. 364, Original Emphases) practices such as walking or cycling instead of making use of a car, and growing fruit and vegetables instead of resorting to supermarkets (Parkins, 2004). In this context, *fastness* and *slowness* are not neutral or objective terms, they aid in the construction of what Parkins (2004, p. 371) claims is a 'discourse of slowness':

*Mindful use of time through 'slow' practices [...] construct 'slow subjects' who invest the everyday with meaning and value as they*

*seek to differentiate themselves from the dominant culture of speed.*  
(Parkins, 2004, p. 371)

It is possible to suggest that artefacts which, in the West, might be termed *slow objects* (for example: slow food and bicycles (Parkins, 2004)) can be categorised as such because of Western individuals' anxieties regarding being, for example, being time-poor and disconnected from nature (Parkins, 2004). Equally, the above objects may not be characterised as *slow objects* in parts of the world which have wholly different economic systems. With Kopytoff's (1986, p. 68) already noted argument that artefacts exist as 'culturally constructed entit[ies]' in mind, it can be suggested that *slow objects* are culturally framed phenomena.

This paper reflects on Kopytoff's (1986, p.68) claim that objects are 'culturally constructed entit[ies]' to investigate the design strategy employed by the confectionary company Mars in the UK in the mid-part of the last decade. It should be noted that the Mars brand is discussed here because it is a popular, household name with a long history—the Mars Bar was the first chocolate snack developed by Forrest Mars in 1932 (Mars, 2014). The notion that the Mars Bar is by no means a niche product adds gravitas to the argument to be made in this paper.

In the Spring of 2004, an influential cross-party committee of UK politicians cited foods which were both 'calorie-packed' and sold in 'super-size portions' as contributing to rising obesity rates (Hickman, 2006, unpagged).

Additionally, this committee urged the government to 'publicly name and shame' companies that chose not to act on these findings (see Hickman, 2006, unpagged). At the time, Mars' large chocolate offering (the Kingsize Mars bar) was an example of a product which had both a large portion size and was rich in calories (see Elliott, 2007). The overconsumption of many foods and drinks can of course contribute to a person's weight gain. However, at this time, certain foodstuffs appeared to be singled out in Western society as particularly virulent causes of obesity. Take, for example, foods and drinks produced by McDonalds. The Spring of 2004 saw a huge amount of attention in the press around *Super Size Me*, a film featuring an individual (Morgan Spurlock) consuming nothing but the largest McDonalds meals for a period of one month (Veltman, 2004). This diet is argued to have had deleterious consequences, transforming Spurlock from a:

*healthy, energetic young man into a wheezing, lethargic blob with a liver well on its way to becoming pâté. (Veltman, 2004, p. 1266)*

Negative attention surrounding portion-sizes and calorific value was also placed on large chocolate bars. The following quote from a leading healthy eating campaigner illustrates this: 'I have always been concerned about super-size confectionery' (Jebb cited in Elliott, 2007, p. 3) Thus, in 2004, the Kingsize Mars Bar belonged to a group of foodstuffs which came to be characterised as *culturally constructed* causes of obesity. This had the potential of polluting the image of this established brand—i.e. it had the potential of placing Mars in a locus of **danger**. This discussion will reflect on the design strategy employed by Mars to counteract this danger. It will then claim that this design strategy helped move Mars' large chocolate snack to a more desirable position of **safety**. The discussion then moves on to introduce relevant cultural theory developed by anthropologist Victor Turner before using Turner's notions as a lens through which to view the transition in the design of Mars' large chocolate offering. This paper then moves on to argue Turner's theories may be useful in informing a wider arena in design strategy before making recommendations for design education. Turner's theories have not been used previously in research in relation to design strategy.

Earlier, it was noted that *slowness* (with respect to the Slow Movement) is a culturally constructed phenomenon and that *slow objects* can be characterised as culturally constructed objects. Similarly, the following discussion will explore culturally constructed elements of obesity as this is important in helping to frame the discourse around Mars' large chocolate snack.

## **Obesity Framed as a Culturally Constructed Disease**

### *Culturally Constructed Elements in the Description of Disease*

The description of illness and disease cannot be completely attributed to the use of supposedly rational and unbiased science. In part, their characterisation is also framed by particular cultural contexts. The role cultures play in constructing knowledge on disease can be illustrated through the way medical experts in the 19<sup>th</sup> Century framed hay fever. This illness was perceived to occur:

*among the educated and upper echelons of society rather than the working classes, occurring in men more than women. (Waite, 1995, p. 196)*

In the 19<sup>th</sup> Century, educated, high status males were considered to be *more civilised* than other members of society (Waite, 1995). The scientific description of hay fever was therefore far from objective and neutral; indeed the scientists of the era gathered evidence which:

*reflected the cultural and ideological views of the time, hay fever was made to fit the model of a 'disease of civilization'. (Waite, 1995, p. 196)*

Both society and medical science have progressed a great deal since the 1800s so it may seem appropriate to suggest that the notion of *diseases of civilisation* no longer apply. Waite (1995, p.196) disagrees, arguing the idea that hay fever is a disease of civilisation is 'still being applied [...] over a hundred years later.' Similarly, discourse on obesity clearly demonstrates how cultural and ideological narratives are woven into various discussions on disease.

### *Culturally constructed elements related to discussion on Obesity*

The UK Public Health Association and Faculty of Public Health (2003, p.1) provide a scientific framework for the description of obesity, describing it as an 'excess of body fat frequently resulting in a significant impairment of health and longevity'. Equally relevant to this paper is the notion that cultural constructions play an important part in how obesity is framed. The ability to accumulate fat is argued to be key to our survival as a species (Cunnane and Crawford, 2003). Accordingly, a body shaped by a layer of fat was viewed by ancient humans to be an ideal one to possess (Eknoyan, 2006). Excessive body fat is a relatively new worry for humans to contend with, as for the vast majority of our history hunger was more of a pressing issue (Eknoyan, 2006). The fact that malnutrition persisted well into the 20<sup>th</sup> Century in the USA, is attested to in Steinbeck's (1939) masterpiece *The Grapes of Wrath*. Indeed, Herbert Clark Hoover's 1928 presidential campaign promising a *chicken in every pot* helped secure his presidency when much of the USA was undernourished (Eknoyan, 2006). Currently, the situation is very different in the USA. Cheaper food (Pollan, 2003; Akst, 2003) and larger portions (Young and Nestle, 2002) have contributed to

increased incidences of obesity. Issues surrounding increasing body mass are not confined to the USA. According to the World Health Organisation (2011, unpagged) the majority of the world's population now reside in 'countries where overweight and obesity kills more people than underweight.' This situation has fuelled alarmism; Boero (2007, p. 41) argues that in health policy, academic literature and in the journalistic press, writers increasingly frame the prevalence of obesity as an 'epidemic'.

As with the aforementioned example of hay fever, ideological views in society play an important part in how obesity is framed. In the 1950s obesity began to be seen as a 'sign of weakness or moral lassitude' in the USA (Boero, 2007, p. 45). The construction of obesity as a moral issue is still prevalent in the West (Boero, 2007; Inthorn and Boyce, 2010). In the UK, rather than constructing obesity as a health issue, television programs frame it as a moral one (Inthorn and Boyce, 2010). The Leader of The Opposition (currently the Prime Minister) David Cameron's, criticism of obese people underscores the notion that in the UK, obesity is also framed as a moral issue on a national scale:

*We talk about people being 'at risk of obesity' instead of talking about people who eat too much and take too little exercise [...] There is a danger of becoming quite literally a de-moralised society, where nobody will tell the truth anymore about what is good and bad, right and wrong. (Cameron cited in Porter, 2008, unpagged)*

In this climate it is conceivable that any brand perceived as contributing to obesity could be stigmatised as an agent promoting both unhealthy *and* immoral behaviour amongst consumers. This may potentially damage the reputation of a household brand. The so-called overweight epidemic appears to be affecting the UK very seriously with a quarter of adults currently characterised as being clinically obese (BBC, 2014), that proportion is predicted to rise to over half of the adult population by 2050 (BBC, 2014). Furthermore, Great Britain tops the scales when it comes to rates of childhood obesity in Europe (The Sydney Morning Herald, 2007-A). In the middle of the last decade, a palpable association with obesity threatened to damage the reputation of the household confectionary brand Mars in the UK. The following discussion will reflect on the design strategy employed by Mars to tackle this potential crisis event.



## **Mars: From Kingsize to Duo**

### *A Perceived Rejection of Gluttony and Selfishness*

As noted, in 2004 influential politicians in the UK requested the government to berate manufacturers of large-portioned, high-calorie foods that did not make positive amendments to their produce (Hickman, 2006). In September, 2004 the Food and Drink Federation (FDF)—of which Mars is a member (Food and Drink Federation, no date)—made 7 pledges that, it claimed, would help individuals consume more moderately (The Guardian, 2004; BBC, 2004). These included ‘clearer labelling, reduced fat, sugar and salt levels, the removal of vending machines from schools’ (BBC, 2004, unpagued). The pledge that concerns the argument to be presented here comes in the form of the FDF’s promise that its members would rethink their position on their large chocolate snacks (Guardian, 2004; BBC, 2004). Creating products designed *for sharing* appeared to be intrinsic to the future strategy of FDF members:

*If, for example, we mark up a product for sharing, and that is backed by a general understanding that perhaps two products in one day is more than moderate, then we are starting to get somewhere. (Patterson cited in BBC, 2004, unpagued)*

At the time, Mars’ large chocolate product came in the form of the *Kingsize Mars Bar*. It weighed 85 grams (3oz) (Elliott, 2007). In 2005 this product was discontinued and, true to FDF’s (Patterson cited in BBC, 2004, unpagued) indication of a rethink, Mars introduced the *Mars Duo*, a product consisting of two chocolate bars placed inside a single wrapper (Elliott, 2007). The Mars Duo was developed as a product for more than one person to consume, the wrapper containing illustrated instructions to help individuals open the packaging in such a way (at the middle rather than at the end of the wrapper) that sharing of the chocolate would be facilitated (Elliott, 2007). The combined weight of the two bars contained within a Mars Duo wrapper *remained the same* as the Kingsize bar which it replaced (Elliott, 2007). Together, these two bars contained *the same* 386 calories as the Kingsize bar (Elliott, 2007).

Arguably, Mars’ decision to create the Mars Duo is linked to how obesity is culturally constructed. The vices of *gluttony* (Prentice and Jebb, 1995; Cafaro, 2005) and *selfishness* (Cafaro, *ibid*) are important notions which contribute to how obesity is framed in society. In the West, both traits are constructed as being unhealthy and immoral practices which harm both the

perpetrator and society at large (Cafaro, *ibid*). In an era where obesity has become a hypersensitive issue, the consumption of a large calorie-laden chocolate snack by a single individual has the potential to be perceived as being both a gluttonous and selfish activity. The act of sharing however is constructed in positive terms as this involves an individual consuming moderately. Indeed, traditionally, ‘the virtue opposed to gluttony was temperance or moderate use’ (Cafaro, *ibid* p. 143, Original Emphasis).

### *Reflecting on Mars’ Design Strategy*

The move from producing Kingsize bars to creating Duo bars necessitated design exercises. The development of chocolate bars is a high profile design activity (Seymourpowell, 2013) and is an example of product design. Also, the development of a new wrapper (including the aforementioned illustrated instructions to facilitate sharing) meant the initiation of graphic and packaging design processes. These design activities are physical embodiments of Mars’ brand strategy and are thus of examples of *storytelling* in design (Brown, 2009). In an era when obesity is perceived in scientific terms as unhealthy and is culturally framed as being immoral, it is sensible to suggest that a brand’s position may be strengthened by attempting to dissociate itself from terms of references connected with obesity. This claim is strengthened by politicians’ calls to publically humiliate companies who choose not to remove themselves from such frames of reference (Hickman, 2006). In creating the Duo, Mars’ design strategy revolved around an attempt to remove palpable connections with gluttony and selfishness. Instead, the design strategy attempted to associate Mars’ large chocolate snack with the positive traits of moderateness and sharing.

To gain a valuable and unique insight into to Mars’ design strategy, this discussion moves on to make use of cultural theory developed by the anthropologist Victor Turner as a lens through which to view it.

## **Cultural Theory Developed by Victor Turner**

The anthropologist Victor Turner was born in 1920 in Glasgow, Scotland (Deflem, 1991). After completing a degree in English Language and Literature, he studied Anthropology at University College London (Deflem, 1991). In 1950, Turner embarked on an ethnographic study of the Ndembu tribes people in the Mwinilunga district of Northern Rhodesia (now Zambia) (Deflem, 1991). It was during this time that Turner began investigating the ritual symbolism he believed underpinned human behaviour (Deflem, 1991).

Turner's work is viewed as being very influential, for it spearheaded an intellectual turn within the social sciences, establishing new processes and setting research agendas through:

*defining or giving fresh currency to terms such as 'social drama', 'cultural performance', 'liminality', 'communitas' and 'reflexivity' (Gonquergood, 1989, p. 84, Original Emphasis)*

Turner (1970) argues that occurrences in society can be described in relation to what he terms **states**. Turnerian states are characterised by the existence of a "relatively fixed or stable condition" (ibid, p. 93) in a wide variety of culturally prescribed phenomena. For example, a state pertains to 'constancies [such] as legal status, profession, office or calling, rank or degree' (ibid, p. 93). Turner also uses the term *state* to describe an individual's position in the journey through life. In this case, a state is:

*the condition of a person as determined by his culturally recognized degree of maturation as when one speaks of 'the married or single state' or the 'state of infancy'. (Ibid, p.93, Original Emphasis)*

On a broader note, the term *state* also signifies the temporal physical or psychological health of a person, a group and even a nation:

*A man may thus be in a state of good or bad health; a society in a state of war or peace or a state of famine or plenty. (Ibid, p. 94)*

For Turner, when a protagonist moves from being associated with one state to another related state, this journey occurs via a set of culturally prescribed rituals (Turner, ibid). For Turner (ibid), such journeys are to be found in all societies. The move from an initial state to a subsequent one carries with it a duty to perform in a certain culturally prescribed manner, for when in the new state a protagonist has:

*rights and obligations of a clearly defined and "structural" type, and is expected to behave in accordance with certain customary norms and ethical standards. (Turner, ibid, p. 94)*

Though immersed in Ndembu cultural performances whilst advancing his hypotheses, it is possible to see how Turner's theories resonate with expectations placed upon protagonists closer to home. For example, once a

person moves from a state of being *single* to one of being *married* he or she is legally forbidden from marrying anyone else.

One reason for individuals to attempt a transition from one state to another state is when they are gripped by a life crisis (see Turner, *ibid*). Amongst the Ndembu tribes-people, critical life states are represented by colours. The colour white is consistent with the following:

*Goodness; health; purity; lacking bad luck; having power; to be without death; to be without tears; authority; life; bringing forth young. (see Turner, ibid, p. 69)*

Consequently, the colour white signifies positive aspects of life amongst members of this tribe (Turner, *ibid*). The colour black is associated with the following positions:

*Badness; evil; lacking luck; being in suffering; misfortune; having disease; witchcraft or sorcery; death. (see Turner, ibid, p. 71)*

Accordingly, the colour black represents—on the whole—negative points of life amongst the Ndembu (Turner, *ibid*). A contrast exists between phenomena attributed to the colour white and those which are signified by black; indeed Turner (1970, p. 74) argues the Ndembu perceive, in the majority of incidences, these colours ‘as the supreme antitheses in their scheme of reality’. It is important to note that the Ndembu have not chosen these colours in an arbitrary fashion. These colours have a culturally constructed significance for they are associated with “‘rivers’” which ‘flow “from Nzambi”, the High God’” of the Ndembu people (Turner, 1970, p. 107, Original Emphases).

Turner (*ibid*) argues that both across the world and throughout history, humans have employed culturally constructed colours to symbolise contrasting aspects of their existence. The Swazi of south-eastern Africa are an example of a People whose rituals revolve around the use of pigments (see Turner, *ibid*). In the *Incwala* period in the Swazi calendar the king is ritualistically stripped of his power. Upon the performance of a series of culturally constructed rituals, the king re-emerges as a powerful figure. The following excerpt illustrates the Swazi’s use of colour in this process:

*symbolic acts are performed which exemplify the ‘darkness’ and ‘waxing and waning’ moon themes, for example the slaughtering of a black ox, the painting of the queen mother with a black mixture.....both the [king and his mother] are in eclipse until the paint*

*is washed off finally with doctored water, and the ritual subject comes once again into 'lightness and normality'. (Turner, ibid, p.109)*

Thus, in both Ndumbu and Swazi cultures, colours with culturally constructed meanings are used to symbolise Turnerian states of being and to facilitate the transition between these states.

It is important to recall Turner's (1970) argument that his states and the journeys between them exist in all societies and that both human and non-human protagonists exist in these states and are party to these transitions.

In this discussion, Mars' large chocolate bar is viewed as a protagonist in Turner's (ibid) terms. In the following section, Turner's (ibid) discussion around *states* is used as a lens through which to view the design strategy employed by Mars in the mid-part of the last decade. At this time, as has been described, Mars large chocolate snack belonged to a group of foodstuffs which can be characterised as *culturally constructed* causes of obesity. This paper will argue that Mars' design strategy helped move its large chocolate product from a Turnerian state of ***danger***, to one of relative ***safety***.

## **Turner's theories as a lens through which to view Mars' Design Strategy**

To recap, In the West, the hypersensitivity over the issue of obesity is fuelled by the idea that it is framed in terms of 'morality, risk, and science' (Boero, 2007, p. 42). Cultural constructions around obesity are intrinsically linked to negativity surrounding the traits of gluttony and selfishness. It is possible to argue that the cultural framing of these traits may have contributed to politicians' calls to 'name and shame' (see Hickman, 2006, unpagged) companies perceived as acting as contributors to the 'epidemic' Boero (2007, p. 41) of obesity. Conceivably, a brand labelled with association with obesity can be argued to be in a state (in Turner's (ibid) terms) of ***danger***. A brand's association with the culturally constructed concepts of moderation and sharing however may mean that it is positioned in a state of relative ***safety***.

It may be commercially advantageous for a brand to attempt a transition from a state of Danger to one of Safety. Here, it is argued that, via undertaking the design strategies described in the previous section, Mars' designers attempted to put the chocolate snack through just such a transformation in state. The diagram below illustrates this transition:

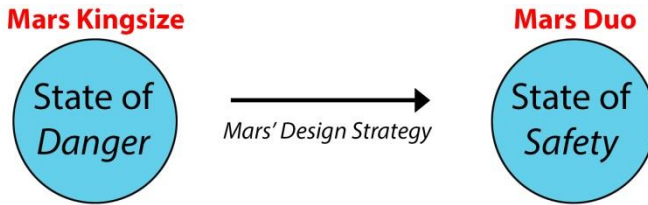


Fig. 1: Mars' Design Strategy Through a Turnerian Lens.

It is important to recall that the weight and calorific value of the two bars contained within a Mars Duo wrapper is *the same* as that of the single Kingsize Mars bar (Elliott, 2007). Through such a frame of reference it could be argued that there is *no difference* between the Duo and the Kingsize bar it replaced. Indeed healthy eating campaigners have argued the introduction of the Duo to be a cynical move on the part of Mars (see Elliott, 2007). However, through a lens provided by the anthropologist Victor Turner (1970) it is possible to argue that the act of undertaking a change of state has been important in enabling Mars to continue to manufacture a large chocolate product. It is important to recall Turner's argument that a change in state carries with it a duty to perform in a certain culturally prescribed manner, for when in the new state a protagonist has:

*rights and obligations of a clearly defined and "structural" type, and is expected to behave in accordance with certain customary norms and ethical standards. (Turner, ibid, p. 94)*

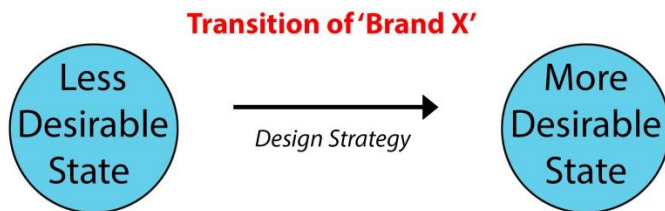
It may well be that, when viewed through a Turnerian lens, the Mars Duo is meeting its obligations for in Mars' recent pledge to discontinue all chocolate items containing over 250 calories by 2014, the Duo was spared the cull because it is purportedly 'designed to be shared' (Reilly, 2012, unpagged).

Viewing Mars' design decisions through a Turnerian lens may impact on how the designers intrinsic to this strategy are to be perceived and helps reframe the role of designers who were integral to executing this strategy. In successfully delivering examples of product and graphic design, these designers have successfully narrated the story of Mars' move from a Turnerian state of Danger to one of relative Safety. In this way, Mars' designers can be viewed as *intermediaries*, negotiating the physical

transition between undesirable and more desirable Turnerian states of being.

## **Possible Wider Implications for Design Strategy and Design Education**

The argument made in this discussion is of value to design educators as it provides a novel method of framing Mars' design strategy. It is however possible that Turner's theories can be used as a lens through which to frame discourse on design strategy beyond the world of chocolate products. It may be possible to perceive a brand (Brand X) that wishes to perform more successfully in a marketplace (or indeed successfully negotiate a move into a new marketplace) as existing in a certain Turnerian state (State A). It would be possible then, via conducting research activities, to conclude that in order to more become commercially successful, an attempt should be made to position Brand X in a more desirable Turnerian state (State B). In this case, the design strategy would necessitate methods of implementing the transition between states through the creation of, for example, relevant products and services. If Turner's lens is applicable in a wider sense in design practice, then (as with the Mars case study) designers (in general) can be argued to take on the role of *intermediaries* between current and more desirable states of being. The diagram below illustrates the role of design for 'Brand X':



*Fig. 2: Design Strategy through a Turnerian lens*

Research suggests that a role of mediation is one that designers may be accustomed to performing. Designers are argued to 'play a pivotal role in articulating production with consumption by attempting to associate goods and services with particular cultural meanings' (du Gay, P., Hall, S. Janes, L. Mackay, H. and Negus, K (1997, p. 5). Consequently, designers play an important role in presenting 'these values to prospective buyers'. As such,

designers are termed 'cultural intermediaries' (du Gay et al, 1997, p. 62). Moreover, in a similar argument to the one illustrated in Fig. 2, Buchanan (2001, p. 14) suggests a product can be framed as a:

*[...] negotiation of the intent of the designer and manufacturer and the expectations of communities of use. The product is, in essence, a mediating middle between two complex interests, and the processes of new product development are explicitly the negotiation between those interests.*

The use of Turnerian states builds on the above arguments by enabling the construction of a framework which provides context and meaning surrounding the articulation of *less desirable* traits associated with product(s) and/or service(s) produced by 'Brand X'. Similarly, this framework also provides context and meaning surrounding the articulation of *more desirable* traits 'Brand X' may wish to associate its product(s) and/or service(s) with. Consequently, the use of Turnerian states provides a model which may facilitate both the construction and implementation of specific design strategy which is focused on effectively narrating Brand X's transition from the *less desirable* to the *more desirable* locus to consumers. If Turner's theories are of value in a wider field of design then in order to make optimal use of them, it follows that designers should be equipped with cultural knowledge to help them:

- 1) Effectively frame culturally constructed issues
- 2) Successfully negotiate a brand's transition from, for example, its current Turnerian state to a more desirable one.

The potential use of Turner's states may have implications on the subject matter forming the diet in design degrees. It can be argued that the purpose of design education is to provide a passport for entry to the community of professional practice (Tovey, 2012). In aiding designers prepare for their professional role as 'cultural intermediaries' (du Gay et al, 1997, p. 62), this discussion supports calls for more emphasis on instruction on cultural knowledge to be included in the design curriculum (Ghassan and Bohemia, 2011; Bohemia and Ghassan, 2012; Bohemia 2012).

## Conclusion

This paper has claimed that in 2004, the Kingsize Mars Bar became characterised as a culturally constructed cause of obesity in the UK. It has also argued that this situation represented a crisis event for this brand of



chocolate. Cultural theory developed by the anthropologist Victor Turner has been used as a lens through which to view the design strategy employed by Mars in confronting this crisis event. This paper has suggested that Mars' design strategy was important in moving this brand's large chocolate product from a Turnerian state of ***danger*** to one of relative ***safety***. In developing this argument, this research has claimed that the role of Mars' designers can be viewed as one of effective mediation between less desirable and more desirable Turnerian states.

Beyond the world of chocolate products, this paper has claimed that Turner's cultural theory can be used to inform design strategy in a wider sense. Turner's theories may enable the construction of a framework which provides context and meaning surrounding the articulation of *less desirable* traits associated with a brand's product(s) and/or service(s). Similarly, this framework also provides context and meaning surrounding the articulation of *more desirable* traits a brand may wish to associate its product(s) and/or service(s) with. Consequently, the use of Turnerian states provides a model which may facilitate both the construction and implementation of specific design strategy which focuses on effectively narrating a brand's transition from the *less desirable* to the *more desirable* locus to consumers. Accordingly, this discussion supports research which suggests that designers can be framed as 'cultural intermediaries' (du Gay et al, 1997, p. 62) and literature which argues for further provision of instruction in cultural knowledge within design education.

The potential inclusion of Turner's theories and the further inclusion of cultural knowledge in design educational practices may however create contradictions between the commercial and ethical imperatives of design. This paper proposes a process of equipping students with cultural knowledge should be accompanied by exploration of associated ethical dilemmas, primarily around the issues of sustainability, corporate responsibility and global citizenship (Ghassan, 2014). Finally, this paper calls for more research into the application of the influential anthropologist Victor Turner's cultural theory in both design practice and design education.

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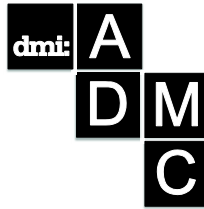
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## Pragmatics, Plasticity, and Permission: a model for creativity in temporary spaces

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*This paper considers the case study of a three-day residential knowledge exchange event, exploring the meaning of the event's physical environment for impact on participants' creativity and design thinking. The event's mixed group of academics, design professionals, and entrepreneurs were encouraged to think and respond creatively together on a thematic call (to which they responded in the application process) and were observed within the space. We examine how an unconventional workplace environment (a set of elaborately decorated Victorian hotel meeting rooms) influences a group who do not know each other beforehand, observing how participants appropriate the space, and make changes suitable to their needs. The authors (from polarised but privileged insider viewpoints of author-organiser and author-participant) present this through considering Pragmatics, Plasticity, and Permission and their dynamic interrelationships. These concepts develop into a new three-staged model comprising space-as-is, space-as-anticipated and space-as-used, which describes how the interaction over time of space, its affordances and its users have the potential to expand creativity.*

**Keywords:** Space appropriation; creative potential; knowledge exchange; meaning creation; creativity; temporary spaces

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## Introduction

It has long been understood on an experiential level that physical space impacts our creativity. The three Bs of creativity: bus, bed and bath, capture anecdotally our need for spaces to move through, spaces in which to doze and daydream, and spaces near or in water (acknowledging Archimedes). It is only recently that research (McCoy 2000, Barrett & Barrett 2010; Dul & Ceylan 2011; among others) has established that physical space has a mediated impact on the creativity of people using it.

This case study examines a further aspect of this: the extent to which space can be instrumental in the creation of meaning. Meaning in this context is how a specific space stimulated and supported knowledge exchange and design thinking during a temporary innovation event. We explore both the denotative (descriptive), and connotative (affective) aspects of the case study space's meaning (Ching 1979), describing its physical space and affordances, and reflecting on the affective impact they had on the organisers of and participants in the temporary event.

This paper's primary contribution is a new staged model that describes how the interaction over time of space, its affordances and users has the potential to expand creativity. We set out the model's three aspects, and introduce our supporting concept of the dynamic interrelationship between *pragmatics*, *plasticity*, and *permission* (see figure 1).

Our work draws on previous research including Resnick's (2007) and Sawyer's (2003) models of iterative creativity, Russ's (1993) work on affect and creativity, and research into physical space and creativity by McCoy (2000), Barrett & Barrett (2010), Dul & Ceylan (2011) among others. While there are almost as many definitions of creativity as there are researchers working on it, within the context of this case study we adopt Meyer's (1999) common characteristics of novelty and usefulness (summarising the papers in the *Handbook of Creativity*) echoing MacKinnon's (1962) earlier definition of creativity as originality, value and process over time. We also propose that iterative models of group creativity (Resnick 2007; Sawyer 2003) are also relevant to this case study, and note the central role of shared values in Tatsuno's (1990) five-stage group creativity model.

We present our case study methodology, and the context within which it took place. Next we present and discuss our findings, and introduce the model, relating it to the event space's denotative and connotative meanings. As part of the connotative meaning we reflect on the affective experience of the event, and the part played in that experience by the

physical space. We finish by presenting and discussing our findings and conclusions.

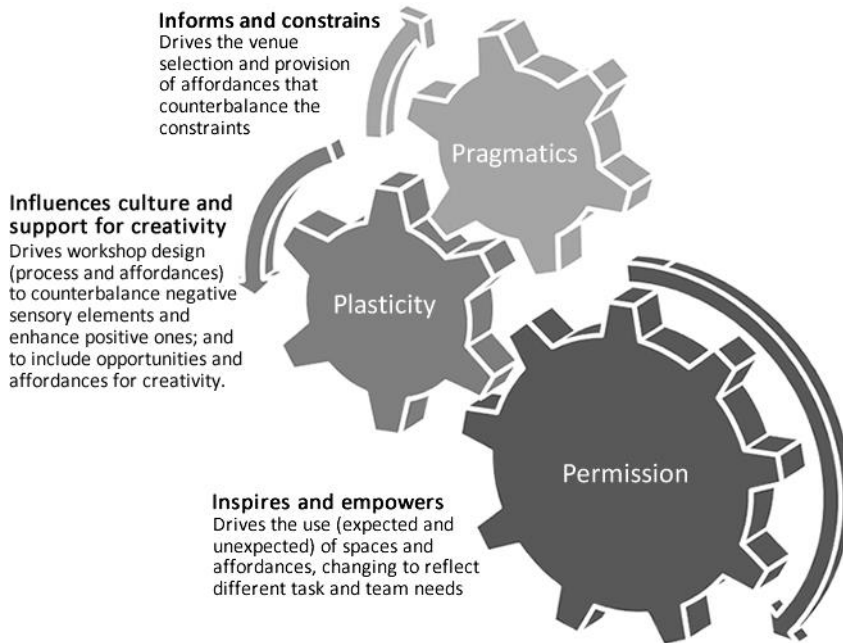


Figure 1 Diagram illustrating the interconnected relationships between Pragmatics, Plasticity, and Permission.

## Methodology

This case study was designed around the central event of a residential workshop. We adopted a selective (rather than descriptive or experimental) case study approach because of its ability to 'focus on particular aspects, or issues, to refine knowledge' (Hakim 1987:62). One of the authors was key to the design and running of the knowledge exchange event, the other was a participant. We therefore refer throughout to author-organiser and author-participant.

The data collection was structured in four stages:

- The space-as-is
- The space-as-arranged by the organisers
- The space-as-appropriated by the participants



- The space-as-experienced by participants and organisers

The *space-as-is* was audited before the event, using a visuospatial grammar to assess how well it would stimulate and support creative thinking. Each author carried out an audit. The *space-as-arranged by the organisers*, set up before the event to add affordances into the space, was recorded through notes, observation and photographs. The data from the *space-as-appropriated by the participants* during the event were collected through observation and photography. Data from the *space-as-experienced by participants and organisers* were collected from two detailed post-event reflections (one by each author) and interviews with and feedback from other participants. The data were analysed and triangulated between the different collection methods of audit, observation, note-taking, photography and reflection.

## **The Case Study & Its Context**

In this section we set out the case study's context and how it unfolded. We present it in three sections: *pragmatics*, *plasticity* and *permission*, relating the case study events to relevant research literature.

The temporary space under discussion in this paper is an intensive residential workshop that took place over three days in Edinburgh, UK, in February 2014, as part of the Design in Action knowledge exchange hub. The workshop was one of an on-going series of events that brings individuals together from different backgrounds, including designers, academics, and business people, and uses design thinking as a catalyst to frame discussions and ideation around key issues pertinent to specific industry sectors. Participants are exposed to alternative ways of approaching problems in high-pressured environments through design tools and methods, whilst also networking and working collaboratively with other participants. The workshop referred to in this paper was focused on the Information and Communications Technologies sector (ICT) and specifically, new technologies within the tourism and cultural heritage sector in Scotland. Twenty participants, including computer science academics and developers, digital publishing start-ups, heritage interpretation and museum consultants, and product and graphic designers took part in the event. Participants, with a few exceptions, had never met each other before the workshop. By intention, workshop participants encompassed a wide range of backgrounds, knowledge, and experience, and consequently a significant undercurrent of the event was around networking and group dynamics.

The workshop programme opened on early evening on Day 1 with ice-breaker activities, dinner and an after-dinner speaker, followed by structured discussions around the key themes of technology, cultural heritage, and tourism. Day 2 included unpacking themes, identifying challenges, generating ideas, and forming teams to work up each idea. At the end of Day 3 each team pitched their idea to a panel of experts (technical, academic, and business) and were encouraged to apply for funding to take their ideas to near to market prototype stage ready for further investment. Aside from directly funding new ideas created during workshops to drive economic growth, it was expected that participants would apply the strategic use of design tools and approaches in their wider workplace and communities, as well as continuing to build on the relationships formed at the event.

The workshop itself was situated in a medium-sized Edinburgh hotel, originally a grand family home. Over the course of the event, participants and organisers moved across four buildings in close proximity (for example, for evening meals). For the purpose of this paper however, we will consider only the central hotel meeting rooms (see figure 2), where participants and organisers spent the bulk of the workshop time, in particular, during creative thinking and ideation activities. Facilitated activities took place in three rooms (Drawing Room, Scott & Bryce Room) whilst two additional spaces were available for catering (Red Room) and break-out (Gallery).

## Pragmatics

In crafting successful research spaces it is important to remember that we always operate under constraints, whether these might include budgetary, research requirements, or logistical restrictions. This is particularly true in temporary environments that have not been designed as work places, far less as creative spaces. In related research, Harrington's ecology of creativity (1990) observes how creative people work with what they have in order to make their environment fit for purpose. His principal example is of a writer, a single mother, who waits until her children are in bed, clears the kitchen table, and writes there. In the case of the example under discussion in this paper, requirements (some of them self-imposed) included: being within budget, close proximity to city centre (Edinburgh), on-site residential accommodation, meeting and breakout rooms, and on-site catering facilities. In addition, the venue decision was influenced by a desire to move away from the usual 'beige' hotel conference suites towards

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a more unique environment that imparted a sense of curiosity and that provided an accessible and relatively inviting outdoor environment (weather permitting). Every decision has pros and cons, and the hotel setting referred to in this paper had its downsides too; primarily the lack of a bar or restaurant on site for use as a gathering space outwith the formal workshop activities.

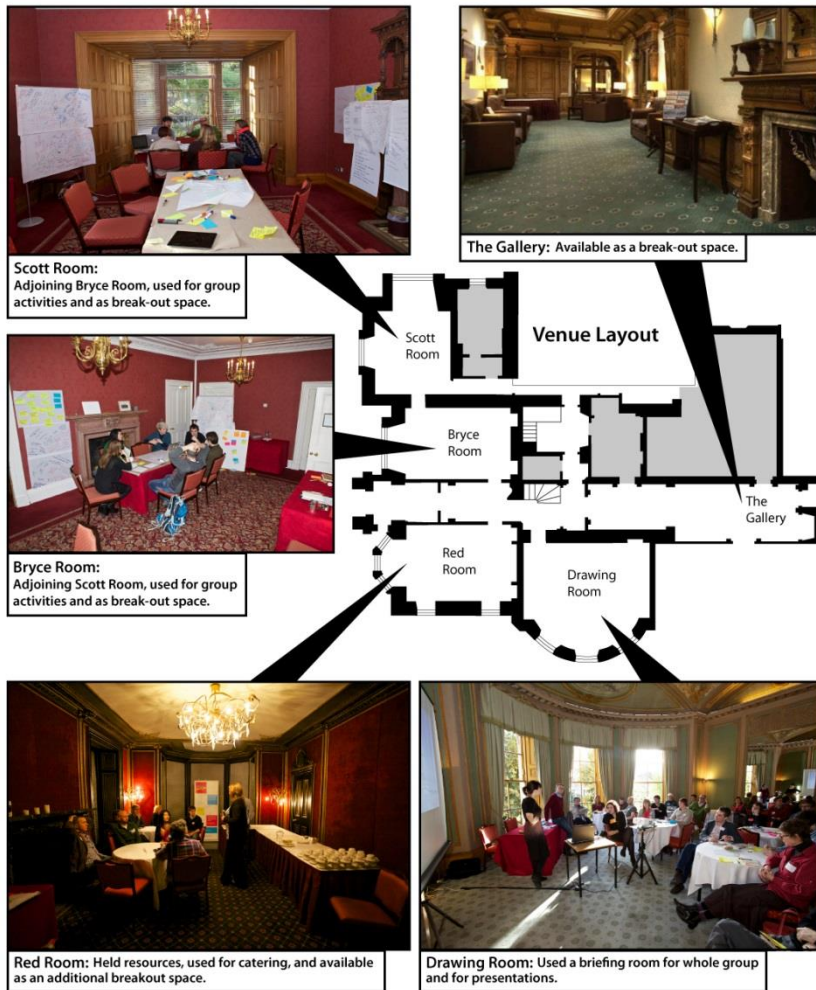


Figure 2 Venue layout indicating the core spaces and their usage in the workshop setting. Photography by Lindsay Perth.

It is worth noting that the choice of venue influenced the orchestration of the workshop activities just as much as the planned workshop activities influenced the venue selection. For instance, the use of multiple rooms in the hotel afforded lots of short movements, which have been shown to promote creative thinking (Beatty & Ball, 2011; Blanchette, Ramocki, O'del & Casey, 2005) but could be construed as problematic in terms of required levels of organising and planning. The rooms and buildings provided the backdrop for what was a complex set of negotiations and configurations around movement and anticipated disruption. To intentionally heighten the sense of movement, participants moved between four additional sites; dinner on the first evening, an afternoon excursion on Day 2 (which included a ten minute outdoor walk each way), dinner on the second evening, and final presentations on Day 3.

Despite a pleasant outdoor environment and large windows, early February in Scotland equates to limited natural light, and the building fabric of dark wood and rich red walls absorbed much of what natural light there was. It is worth in particular referencing Knez' (1995) observation that warm white light promotes higher illumination, more positive mood and better creative task performance. Each room had a slightly different feeling, and variations in light and colour were mirrored by participant noise levels, with the more sombre rooms having correspondingly muted voices. The event photographer noted somewhat exasperatedly that each room had different lighting.

It was clear that the venue as it stood (i.e. on hiring) could only promote creative thinking so far. People's responses to the venue, their interactions with each other and the overall atmosphere, and the dynamic flexibility of this response is critical (Franck 1984). The logistical challenges that participants and organisers faced, and how they worked and responded in-the-moment leads us into the theme of Plasticity.

### *Plasticity*

The physical contains its own cultural patterns:

*artefacts contain behavioural instructions in that they define the reality in which the physical organism is to operate. Often they also contain explicit directions for action – such as norms, regulation, and laws. (Csikszentmihalyi 1975: 61).*

Plasticity of spaces and affordances allows flexibility in how those spaces are used.



*Figure 3. Drawing on the existing fabric of the building as a resource. Photography by Lindsay Perth*

None of the workshop rooms were large enough in their own right to form the sole space of the workshop (20 participants and a support team of between 5-9 people). This seeming limitation afforded movement throughout the rooms in the hotel as best fit the purpose at any one time (see figure 2). In some aspects this was beneficial, as participants used the space fluidly, getting less ‘stuck’ in preferred seats and tables than can be the case in one large room. Early ideation tasks were deliberately choreographed to ensure participants worked in a variety of groupings, tables, and rooms. This anticipated movement, akin to the childhood ‘musical chairs’ game, was received in good humour by participants (“This is fun!” one woman commented when trying to find her next table). Similarly, activities were planned that alternated between standing and sitting, verbal and written, individual and collaborative. Conversely, once participants had self-organised into groups, each team took control of a physical area, generally an entire room, and to some degree this limited interactions between groups.

The nature of the hotel meant that using an adhesive to attach objects to the walls was not permissible, due to fear of damaging paintwork. Strategies for getting round this included using ‘magic whiteboard’ (which uses static to adhere to surfaces), attaching sticky flipchart paper to marble and wooden mantelpieces, and utilising a large, floor-to-ceiling height gilt mirror as a surface for mapping and clustering themes (see figure 3). Completed worksheets, mapping and post-it notes were left on display throughout the workshop, as a resource and as a tangible and visual footprint of the discussions and work completed; a ‘taking over’ or ‘occupation’ of the space.

Whilst the event was carefully planned in terms of activities, it was responsive and subject to change. Adapting the physical to the reality in

which we function is central to research into the impact of physical space on user creativity. In her extended case study, McCoy (2000) observes the *particularisation* of spaces by members of 'breakthrough creativity' teams (i.e. highly creative teams), crafting their workplace to their particular needs. For example, to enable more networking and knowledge exchange, participants were asked to change seats during dinner to talk to new people. Similarly, planned activities were altered following ideation into a more plenary sharing on the basis of participant responses to the main brainstorming session.

Some anticipated and experimental elements had mixed success, for example, the Red Room was set up as a resource space, containing books (on crafting, design, and technology), magazines, printed articles (e.g. Visit Scotland tourist board), lo-fi prototyping tools (e.g. Lego, Plasticine, cardboard), and a printer and a 3D printer. Over the course of the workshop the Red Room was used for catering, but the small cabaret style tables were largely occupied by the organisers and support team. This was not intentional but it served to demarcate the space as organiser territory, so participants did not linger in the room, even to drink coffee. As a result the resources were not well used.

## Permission

The event aimed to create opportunities for productive networking between participants, leading towards viable cross-sector projects. The organisers took the existing spaces, adding affordances to support the physical movement, serendipitous conversations and encounters with information (e.g. the resources area in the Red Room) necessary for such creative behaviours. They deliberately minimised the hotel's constraints, to avoid the possibility that any perception of restriction could remove the participants' agency (Bandura 2000; Jones 2014). They also designed a process to encourage and require this movement and engagement, and they fostered a social context where people could feel such activities were permitted, and could give themselves permission to use the space flexibly.

The workshop provided a 'softening off' of facilitation, from highly structured activities at the outset to more independent autonomous group working by the end of the three days. To enable this, and increase participants' agency and ownership over the process and environment, the organisers introduced elements of Playfulness, invited participants to Populate the Space, and Deferred Control.



*Figure 4. Crafting name badges. Photograph by Lindsay Perth*

- **Playfulness:** The organising team’s intention was to introduce a sense of play through the event, for instance: encouraging participants to make their own name badges using a range of craft materials (see figure 4), which were later available for prototyping purposes. Similarly, on Day 2, teams were issued with a set of cards that included ‘Steal a Team Member (for 30mins)’ and ‘Sugar Boost (get a snack pack)’, which they could redeem as required.
- **Populating the Space:** Participants were invited to bring an object with them to ‘brighten the space’. Despite the organising team not formally introducing this as an activity, several participants brought and shared objects, including a large papier-mâché sculpture, artificial flowers, and artistic images created using computer code. Even on the final day, one participant shared their object, a drawing by their two-year old son. On reflection, a networking activity or equivalent around the objects early in the workshop could have increased the trust levels significantly at a stage when it was most needed (Wheatley & Kellner-Rogers 1996).
- **Deferring control:** Midway through the workshop, teams were assigned their ‘first group task’ (see figure 5), where teams were explicitly given the opportunity to make their own decision about

what to do over the next hour. Two-thirds of the participants elected to go on an organised tour of a local archive, approximately a ten minute walk from the hotel. Whilst some participants found the talk interesting, the walk itself afforded significant intergroup networking and conversation around the ideas from earlier discussion sessions. This activity also served to alter the pace and provide a change of scenery.

From author-participant reflection:

*The walk outside was a life-saver, although ironically we got nowhere at all – went round in circles trying to get out – but the gate was locked, and by the time we got to the main gate and walked into the park a little, it was raining, and we were running out of time.*

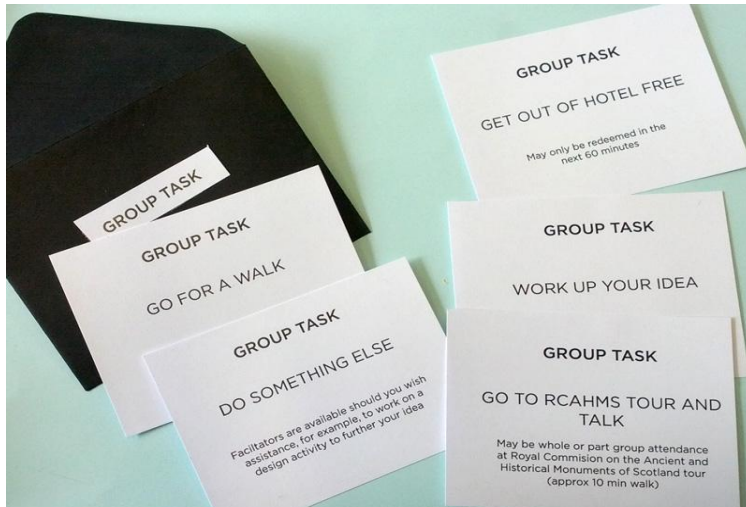


Figure 5. Assigning a group task: giving permission to play.

Most participants did not know each other and time was very short, therefore the time-based “form, storm, norm, perform” stages (Tuckman & Jensen 1977) that describe the necessary balance between a team’s task and its socio-emotional needs were compressed. This meant that clashes were more likely to be managed out rather than embraced, and the dissent and diversity that play an important role in creativity (Nemeth & Nemeth-Brown 2003) was lost. In this author-participant’s group, for example, an early and profound disagreement between two members led to the group splitting into two, with a consequent loss of creative potential.



Once groups had been formed, each one gravitated to a particular space, marking it out with materials and feedback cards. Even amongst the groups, and with the provision of similar materials (e.g. magic whiteboard sheets, pens, table top flipcharts) each group developed its own flavour and use of space (see figure 6). In related research, McCoy references the International Workplace Studies Program's (IWSP) finding that 'the physical environment must reflect the team's sense of identify' (in McCoy 2000: 180). She finds that a) teams 'display symbolic artefacts unique to the team as a means of self-expression. Higher levels of creativity are associated with the teams whose range of activities includes [making changes to] their professional domain and artefacts that reflect those professional activities' (2000: 251); and that b) 'team members [...] participate in the design of their environments in order to fit team requirements with the physical environment' (McCoy 2000: 256). Brill et al (1984; 1987) identify people's need to display personal artefacts, and to participate in the process of designing their environment, as factors supporting productivity and motivation. Individualisation, or how people seek to personalise the spaces in which they work and live, is one of three aspects of Barrett & Barrett's (2010) three-part model for informing the design of spaces (the other two are naturalism and stimulation).

The designed process encouraged flexibility between the groups as they formed, but (anecdotally) at least two participants stayed in groups they would rather have left. This raises the question of how to get beyond what Isaacs describes as "politeness [driven by] fear [which] seems to reinforce rule-following behaviour" (Isaacs, 1999, p. 261). For example, this participant-author, having decided not to work with a particular colleague, was driven by avoidance rather than an engagement with an alternative group's focus. The author-organiser also noted participants' 'compliance' with the process. The space's sub-divisions into smaller rooms made inter-group movement (both temporary and permanent) less likely. The 'law of two feet' (Harrison 2008) (i.e. that people can move wherever and whenever they wish) was constrained as the space made such moves more visible to other people.



*Figure 6. Differences in group spaces: a) Some limited physical prototyping did take place at the ‘thinking’ stage, in particular two groups sought out materials, including hacking a thermal receipt printer to provide a live demo for the end of the workshop; b) A discursive group, using very limited physical materials (largely the flipchart to illustrate), c) Technology group - note the 3 laptops and iPad. They also annotated the space with more traditional written notes (magic whiteboard just visible top right hand corner of image). d) This group favoured a paper-based approach to collaboration, and produced documents were largely confined to their working table. (from l-r, t-b).*

There was an observable shift of intrinsic permission-giving over the last day and a half, visible in furniture-moving. Initially only chairs were moved to accommodate different group sizes, but as the groups started to develop their ideas, they appropriated spaces, moved chairs and tables, and added affordances (e.g. boards, equipment) as needed. One group took over the Gallery (see figure 7) and moved the large heavy sofas and chairs to create a working space (inadvertently exposing a box of rodent poison). The hotel staff were extremely tolerant, and beyond a request to keep access to the dining room clear, left the group alone. The Breakthrough Creativity teams observed by McCoy (2000) ignored building regulations and often carried



*Figure 7. Re-appropriating and configuring the Gallery. Photograph by Lindsay Perth*

out changes at the weekend when the building supervisors were away; the basic premise being to ask forgiveness rather than begging permission. McCoy also observed that the least creative team was the one whose manager forbade them to change and improve their environment. Brand (1995) celebrates the possibility of interesting adaptations of space to suit users' purposes or to enrich their relationships with a place. Being able to make such adaptations links into Alexander's central tenet that the physical environment should *feel* right:

*There is a central quality which is the root criterion of life and spirit in a man, a town, a building, or a wilderness. [...] It is the search for those moments and situations when we are most alive (Alexander, 1979: ix – x).*

Without agency, creativity is constrained.

By the last morning, when the pressure to prepare a coherent presentation was overwhelming, all politenesses were gone, and groups appropriated spaces, furniture and affordances ruthlessly from the hotel and from each other, eventually taking over a room which was not part of the original paid package. The necessities of the task had over-ridden social niceties.

Questions arise here about a) people's own social constraints within the process, and b) the degree to which the physical space supports the task. How might participants' own permission-giving be supported to enable them to move beyond politeness into inquiry (Isaacs 1999) and feel that they can walk away from others without causing offence? To what extent does the organisers' arrangement of the space inhibit participants' appropriation of it? Might, for example, a heap of chairs and tables left in the space at the start of the event require space hacking/appropriation from the outset?

## Introduction and Discussion of the Model

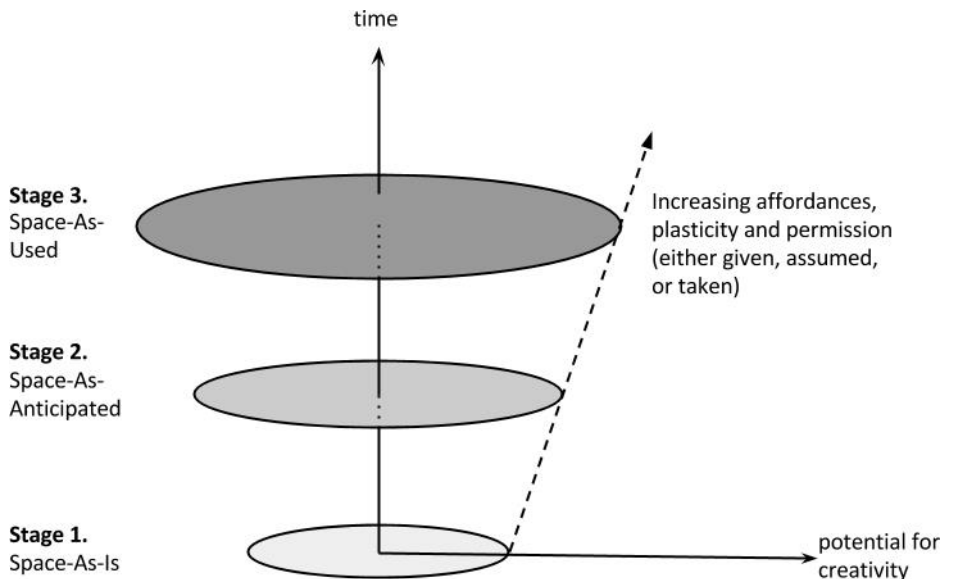
We have examined the case study from the standpoint of its pragmatics, its plasticity and its permissions, and how these different aspects interrelate and drive key parts of the ideation process: i.e. its denotative (descriptive) meaning. We now return to the stages outlined at the start of this paper as data collection structure: *space-as-is*, *space-as-anticipated*, and *space-as-used* and examine the extent to which space can be instrumental in the creation of connotative (affective) meaning (figure 8) i.e. how the workshop space stimulated and supported participants in their knowledge exchange and design thinking during the event.

We set out the three stages up a vertical axis of time, plotted against a horizontal axis of creative potential. We observed during the case study workshop that as time went on, so the participants' appropriation of the space increased. The affordances found, used, and appropriated by the participants also increased, as did the degree of agency they displayed (one participant commandeered a thermal receipt printer and dismantled it to create a model for his team's presentation).

We suggest that with the increasing affordances, plasticity and agency (permission) given to and taken by the participants, so the space's potential to stimulate and support users' creativity increases. We further propose that as the space is increasingly personalised and appropriated so its capacity to support creativity is also increased. We reference in particular the research by Barrett & Barrett (2010) and McCoy (2000) presented earlier emphasising the importance of the personalisation or individualisation of spaces by individuals and by teams in their creative ideation process.

The model therefore describes the potentiation of space for creativity, where the three workshop space elements of pragmatics (constraints), plasticity (added affordances) and permission (empowerment or agency) are

brought together with the space as it is, the space as the organisers anticipate the participants will need, and the space that the participants then hack, appropriate and play in.



*Figure 8. Three-Stage Model of space creative potentiation*

We suggest that the greater the degree of participant agency, the greater the take-up of affordances and the use of plasticity, and the greater the potential for creativity.

## Reflections

One of the authors was key to the design and running of the Knowledge Exchange event, the other was a participant.

Author-organiser Reflections:

*Writing this paper has been an interesting and challenging process. Never before have I had to relive a workshop so vividly and acknowledge a particular set of viewpoints, i.e. that of my esteemed participant-co-author. Adopting a shift in perspective has been incredibly enlightening and valuable, and whilst in many instances it reinforced elements that I was already aware of (e.g. need for even*

*more networking activities), in others it illuminated dynamics of which I was not aware (e.g. the significant negative effect of the oppressive sense of light in the space). Being able to independently and collectively reflect on our experiences, both insider perspectives incidentally, has, to me, enriched the writing process and demonstrated the value for such debriefings (even if only informally) for future events.*

*This intentional cyclical research reflection process, that was, 1) conducting an independent audit of the space in parallel with my co-author pre-event, 2) observing and conducting a space audit during the event, 3) independently noting observations and reflections post-event, and 4) in-depth discussions with my co-author; demonstrates our collective awareness of criteria (e.g. sensory properties, possible behaviours, and affordances) that infiltrated the design of the workshop.*

Author-participant Reflections:

*Being a participant rather than my more usual role as organiser/facilitator, and at the same time holding the researcher perspective, has been a fascinating and at times difficult journey. Writing my reflections after the event, and discussions with my co-author, have required me to question deeply my own prejudices, assumptions and responses to space and process. The force and diversity of my affective reactions to the space (including anger and compliance as well as curiosity and enjoyment) took me by surprise and has widened the future scope of my research (e.g. the affective impact of sensory perception). The co-authoring process has modelled best practice: being able to examine uncomfortable emotions and their origination from a position of academic curiosity, founded in trust and respect.*

## Conclusions

This paper has explored the specific context of a set of hotel rooms as a temporary space for knowledge exchange and creative thinking. The space was considered as 1) a bare bones space, 2) orchestrated and augmented with affordances as anticipated by the organisers, and 3) observed as participants used, ignored, and lightly reshaped the space to make it fit for

purpose. The disconnect between intentions and actual use has been discussed, focusing on the movement and fluidity of participants and artefacts throughout the space.

The space-as-is was assessed using a visuospatial *grammar of creative workplaces* (Williams 2013). The grammar sets out in detail those elements of sensory properties, affordances and place that stimulate and support creative behaviour, while at the same time being clear that each individual has his or her unique creative footprint and that what suits one person may not suit another. The grammar thus provides a benchmark of optimal physical space to the organisers of a workshop focussed on creativity and innovative outcomes. The relative merits of whatever workshop space is being considered can be assessed against this benchmark and appropriate decisions taken or not. In the case study, for example, the effect of the combination of the heavy red décor and the lack of natural light in February was not fully appreciated. Had it been, then the organisers would have introduced additional lighting using daylight bulbs. The multiplicity of rooms, however, influenced the workshop's design, supporting its playful nature; yet at the same time, as discussed above, restricted free movement and cross-fertilisation of ideas. Because all creative footprints (Williams 2013) are different, people when given a choice tend to gravitate towards the spaces where they feel most comfortable.

The alternative approach, that spaces are the main determinant of behaviour, risks the charge of physical determinism (Franck 1984), for example when Van der Lugt et al (2006), in contrasting the types of ideas generated in different kinds of rooms in one of their case studies of 'future thinking spaces', say:

*Participants [in the scenario rooms] experience time and time again that the set-up of the different rooms strongly affects the group behaviour. For instance, users of the 'Rules and Regulations' scenario room tend to come up with all sorts of strongly structured solutions to their problem, whereas the 'Community' scenario room evokes more free ways of thinking. (2006: 76)*

Van der Lugt et al do not consider what other variables may have influenced participants' choice of room: their innate preferences in terms of, for example, Kirton's (2003) adaptor-innovator scale are not considered. As set out at the start of this paper, we take the position that the impact of physical space on creativity is mediated through users' perception (Williams

2013; Dul & Ceylan 2011; McCoy 2000) which is in turn impacted by *pragmatics, plasticity, and permission*.

This paper recognises that consideration and evaluation of complex multilayered environments is challenging, and while it is important not to be deterministic about findings and conclusions it is also clear that physical surroundings can play an important role in creativity. Therefore, no sweeping guidelines for best practice are offered here. Rather, our case study highlights the key issues that should be considered when crafting temporary research spaces, namely *Permission, Plasticity, and Pragmatics*. We also introduced a three-stage model comprising *space-as-is, space-as-anticipated* and *space-as-used*, which describes how the interaction over time of space, its affordances and its users have the potential to expand creativity.

We have observed how important it is that the nature of the space-as-is is taken into account at the start of any process. The space should, crucially and obviously, overtly support creativity and innovation through an adequate provision of space(s), in the nature and quality of its sensory properties, and the range of its affordances (existing, planned and spontaneous) for stimulating and supporting creative and collaborative behaviours, i.e. enable agency and Permission. That is to say, that the space-as-is must be flexible enough to sustain the pop-up space-as-arranged and space-as-hacked. In this instance the constraints imposed by the hotel forced the organisers to be innovative about the affordances they provided for example using mirrors for whiteboards and poster displays (Pragmatics).

We conclude that the space should contain the people using it in a way that builds trust quickly and effectively, and the process should encourage the greatest possible degree of permission and agency for the participants so as to optimise the creative potential of the any temporary space.

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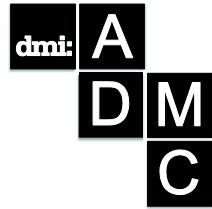
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## Design and Identities: the case of carsharing

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*Amongst the collaborative consumptions arising nowadays, sharing is one of the most widespread systems. Sharing traditionally owned objects such as cars has certainly affected the consumer-possession relationship. This paper shows the role of design in both identity and brand community building, in the context of carsharing. The carsharing system Autolib in Paris is the research field of this paper. Data from the interviews is analysed through a grounded theory method. Consistent, homogenous and peculiar car design helps a personal appropriation of a shared car by its users. In addition some design elements contribute to brand community development, mostly by creating shared rituals.*

**Keywords:** Carsharing, Identities, Brand Communities, User Design

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## Introduction

Collaborative consumption has emerged as one of the new economic and social trend of the past decade. This new form of consumption entices individuals to commit to a lifestyle of using but no longer having. Hence, the initial focus is not the creation of a new product but its utility, leaving design to become an illusory tool. The job of the marketing research field is to show companies operating in the collaborative consumption arena that design can be the key to success of a shared product. The links between design and marketing are not always easy to see; yet when these disciplines work in tandem the results can be incredible (Berveland and Farrelly, 2011). It is crucial for marketers to understand the power of design, and for designers the influence they have on consumers. By studying new types of consumption involving a design project this research aims to highlight the role played by design in the level of engagement of consumers towards a shared object. In particular this concept is studied in the case of carsharing. How do consumers relate to a product, which instead of being owned as it traditionally was, is now shared by multiple users? What can be the role of design in consumer's involvement towards shared objects?

Those questions are investigated through the study of a carsharing system involving a design project at its core. After presenting a literature review on consumers and their relation to products, user design and sharing, a study focused on Autolib users (Paris carsharing system) provides results with implications for design and marketing managers.

## Literature review and research question

### *The object and the self*

The question of the relationship between objects and their owner has been of major importance in consumer research since the 1980's. Belk (1988) presented a paper in which he identified possessions as being part of the self. He states that 'we are what we own' and draws on prior literature to understand how consumers use products to construct their identity. The car we own for example speaks a lot about who we are. The representation we make of a man who owns a sporty red car will not be the same as that of a man who has a large family car. The car is part of its owner's identity. It represents, as Belk called it, the *extended self* by opposition to the *core self* (who we are, the body, mind, experiences). To illustrate this concept, Belk studied the loss of objects and the subsequent grieving process, as well as

the different ways to incorporate an object to the self. For example controlling the object or knowing it are ways of integration. The implications of his article are major, and the most preeminent one is perhaps the role played by the extended self in generating a meaning in life.

Ahuvia (2005) furthered Belk's research to stress that the opposition between the core and the extended selves is not clear. He inclined readers to see the self more as a continuum, and stated that 'loved' objects can be a strong part of the self. Ahuvia's ideas drew on Cushman's (1990) theory of the empty self. Cushman (1990) argued that consumers' selves are empty and that they endlessly try to fulfil themselves through consumption. Ahuvia's findings were more positive. To him loved objects have the ability to fill the self. Loved objects are defined by the energy and the time spent on them. Cars are traditionally loved objects: people take care of their car; bring it to the garage, to the carwash... That is the reason why cars are part of their owner's extended self. Having a strong relationship with the environment and the objects that are in it helps individuals build a strong sense of self.

Belk's research on the relationship between user and the object led to a new definition of the consumption product. For Consumer Culture Theory (CCT) researchers (Arnould and Thompson, 2005), the consumption object has become something that 'groups use' to construct 'practices, identities and meanings – to make collective sense of their environments and to orient their members' experiences and lives' (Bettany, 2007). Bettany showed that objects are indeterminate, mutable, as they co-emerge with the user in action. By this she meant that the action of using an object changes the user (his identity) and the product at the same time (it becomes filled with meaning). This definition highlights the role played by goods in the creation of meanings in consumer's lives.

At the same time social psychologists like Tajfel (1974) studied the role of social groups in relation to identity construction. Tajfel found that a part of an individual's identity comes from the feeling of belonging to a group. He named this concept the social identity. According to Tajfel, behaviours could be located on a continuum, between completely interpersonal behaviour on one side to entirely intergroup behaviour on the other. Identity is thus built in part on possessions and in part on the feeling of belonging to a group.

### *The user at the centre of design focus*

Design today has responsibilities beyond visual culture. It focuses also on branding, service design, production, consumption, etc. (Julier, 2007).

Hence, it is important for designers to understand who the consumers in today's society are. Designers make objects that will help individuals build their identity. Buchanan (2001) proposed a definition of design with a central role in the individual's identity construction: 'Design is the human power of conceiving, planning, and making products that serve human beings in the accomplishment of their individual and collective purposes'. Therefore designers help consumers in the construction of their identity both as individuals and as individuals who are part of social groups. Consumers use products to bring meanings to their lives. How can design interact with identities is of crucial importance. Du Gay, Hall, Janes, Mackay and Negus (1997) deconstructed the process of new identity construction around the Sony Walkman®. They showed how designers were able, through radical innovation, to transform cultural practices. As practices evolve, meanings and representations of the cultural world also change for consumers, leaving spaces for new identities to emerge. The Walkman encouraged people to listen to music outside of their homes: in public transports, public parks... These news practices lead to the emergence of new significations in the social space. People started to associate the Walkman to youth, technology, to being in movement. A space for a new identity, the 'urban nomad' was thus created.

Stories like the Walkman participated in a change of scope in the discipline of design. Instead of focusing solely on the product or its technology, designers started to centre their thoughts on the people who will use the product. The discipline of design, in its most recent conception, is interested in the actor of the object (Findeli and Bousbaci, 2005). Designers do not speak of consumers, but of project's carrier or users. There can be no design project without thinking about the user first. The design of a new product is an interrogative activity revolving around the question of how to design user experience. Who will use the product, in what context, when and how? Objects are made to answer the needs of a person, but that need has to be identified first. Dubuisson and Hennion (1996) even referred to designers as 'sociologists of the products' in their book studying the relationship between user, use and the object. Studying this relationship in the context of sharing changes the question a little. It is no more object-use-user; it becomes object-use-users. In this context designers have to think about how can different individuals use the same product.

### *Sharing: a new form of consumption*

One of the main trends shaking up traditional consumption today is the emergence of collaborative consumption. Consumers have started to move away from owning and having to using and sharing (Botsman and Roger, 2010). This is no longer a secondary phenomenon. Firms like Airbnb, Couchsurfing or BlablaCar have millions of users (11 millions for Airbnb, 7 millions for Couchsurfing and BlablaCar). A definition of this phenomenon can be found in Botsman and Rogers' (2010) book on the subject: 'Collaborative consumption occurs when people participate in organized sharing, bartering, trading, renting, swapping, and collectives to get the same pleasures of ownership with reduced personal cost and burden, and lower environmental impact'. The authors divided collaborative consumption into three categories: product services system, redistributive systems and collaborative lifestyles. Product service system is about transforming a good into a service, and this is the category where carsharing activities would fall. John (2012) used the term *sharing economies of consumption* to refer to collaborative consumption, and made a distinction between sharing personal objects with others and accessing a third party good. Because users drive cars owned by a company, carsharing would fall into the second type of these economies.

Not all instances of collaborative consumption are about sharing. Nonetheless they are the ones on which this research focuses, because they are likely to disrupt the established relationship between the owner and his possessions. Belk (2010) defined sharing as 'the act and process of distributing what is ours to others for their use and/or the act and process of receiving or taking something from others for our use'. For Belk sharing is bound to exist more in close circles (like families or close friendships), yet it is more interesting to study this type of consumption when happening between strangers.

Bardhi and Eckhardt (2012) put forth a new concept they called Access-Based Consumption (ABC). This form of consumption is similar to sharing because no transfer of ownership takes place, but differs from it in the lack of sense of ownership inherent to it. The authors focussed on carsharing as a form of access-based consumption. They studied the US company Zipcar, and found no relationship between the users of the service and the cars they used. Their conclusion was that cars in carsharing system could not participate to the identity construction of the users of the service. In other words, they found that these cars did not belong to the extended self of their users. However there was no design involved in the project of Zipcar.

All the cars used in the system are different; they were not made specifically for a carsharing system. The starting point of this research was to consider that the lack of a design project rendered the appropriation impossible by the users.

### *Research question*

The presented literature explores how design and the construction of consumer identities are linked. Designers know that consumers will use their products to build their identity. One of the current challenges for designers and design managers is to learn how to propose not a product for one individual, but a product shared by many consumers within a service scope. Appropriation of a shared product seems difficult (Bardhi and Eckhardt, 2012) yet it is crucial for the sharing company in order to create a long-term relationship between its products and its consumers. How could design enhance the appropriation of a shared object? This research proposes to observe the role that design plays in helping consumers to build their identity within a sharing system (using both the product and the service). This research believes design to be the core element needed to a sharing system so that consumer can create a relationship with the shared product. How can design help to create a solid relationship between a shared product and its consumer?

## **Methodology**

### *The case of Autolib*

This research focuses on carsharing because it is one of the most visual examples of collaborative consumption. It today exists in many large cities in the Western world and keeps growing continuously.

It was important to focus on a carsharing system that involved a design project at its origin, which is why this research studies the French company Autolib in Paris. Autolib proposes a carsharing system like Zipcar, with the difference that all its cars are the same model. It was important to find a carsharing company that proposed homogeneous products. The models used by Autolib are the electric 'Bluecars' designed by Pininfarina. They are not cars that are seen everyday and everywhere; they are specifically associated with this project.





*Figure 1. A Bluecar in Paris. Source: Mariordo (Mario Roberto Durán Ortiz, 2012)*

Autolib is a concept that created new consumption practices in Paris, around a product and a service specifically designed for it. This research looks at the impact of the specific design of this shared object on consumer's identity.

### *Methodology*

The case of Autolib is interesting due to the importance of design at the core of the project. The subject was approached with an abductive method, which consists in constant back and forth movements between the field data and the existing literature. A Grounded Theory approach was followed (Glaser and Strauss, 1967); in its latest conception (Strauss and Corbin, 1990), which consists in producing an explanation of a phenomena based on field data, while referring to the literature to bring order to the findings. The goal of the grounded theory is to observe the relationship between different concepts, to interpret the sense of the actors' actions. The use of this approach seemed appropriate due to the exploratory nature of the research.

Four in-depths-interviews with Autolib users were conducted in Paris. Due to the difficulties in making contact with Autolib users, the respondents were recruited via word of mouth. All interviews were conducted face-to-face in Paris. Out of the four, three were conducted in a café and one at the respondent's home (Marie). Three respondents were men (Oscar, Thomas

and Jean), and all of them were in their mid-twenties. Interviews lasted between forty and seventy minutes. They were semi-structured; to allow new themes to emerge yet controlling that the respondents would not go too far from the research's topics. Interviews were centred on three main themes, to understand the relationships consumers have with the Bluecar, the service infrastructure and other users. The interviews were transcribed and then analysed with content analysis. First the interviews were analysed vertically to allow the researcher to grasp the specificities of each individual in its relationship to the car, the service and other users. Verbatims were sorted into categories and subcategories depending on the theme and subtheme they represented. Then a horizontal analysis was performed to understand the possible differences occurring amongst the respondents on each theme. The results presented below are split into two parts. First the results regarding the role of design in the appropriation of the shared car will be presented. Secondly the contribution of design in the building of a brand community will be addressed.

## Results

### *The Bluecar and the extended self*

This research focuses on the carsharing system Autolib because its products are homogenous. The cars are all the same and the model is called the Bluecar. With more than 2000 Bluecars, the likelihood of taking the same car twice is low. Yet, thanks to the uniformity of the cars users felt as though they were always driving the same car: 'To me it is always the same' (Marie); 'They are quite identical' (Thomas); 'I really feel that it is the same' (Oscar); 'It is always the same car... they have a certain identity inside' (Jean). Because they were always driving the 'same' car, they established a consistency in their use of the car.

The first thing that was remarkable in the interviews was that the four individuals declared to love driving the Bluecar. Jean said: 'I like to drive the Autolib... But otherwise I hate driving normal cars'. Why is driving a Bluecar different? They all referred to the fact that it was an electric car. Marie and Oscar both used terms associated to flying when describing their experience driving the car. The driving was uncommonly smooth because of the absence of noise. At the same time the car appeared to be extremely reactive. All male respondents talked about how happy they were to be the firsts to take off after a green light.

The four Autolib users described the pleasure they took in controlling the car. 'You change completely your relation to the mechanical part of the car' (Oscar). It seemed as though the electric components allowed the car to become secondary and give way to user experience. The experience portrayed was a fun and entertaining one. References to the toy-like aspect of the car, the easy driving as well as the height of the driver's seat were made to reinforce the feeling of control and fun. Belk (1988) identified ways that allow an object to be part of the extended self of an individual. He recognised that *controlling* the object was one of them. Here, the Bluecar's characteristics gave control to the users, helping them enact an appropriation of the car.

Knowing an object is another way to take ownership of it (Belk, 1988). It means paying attention to details, such as the unusual three lights at the back of the car that allowed Thomas to recognise a Bluecar from afar. Jean described the inside of the Bluecar as being different from any other car, which had for consequence to change the body movement he usually associated with traditional cars. He knew that the doorknob for instance must be pulled up to open, whereas in classic cars it is to be pulled towards you. The respondents were quite proud to show that they mastered the Autolib. Thomas expressed that to him 'it is a little game, playing the guy who masters perfectly the Bluecar'.

The relationship users built with the Bluecar did not exist solely thanks to the car's design. The Bluecar belongs to a system, the Autolib system. Therefore the service also had its role to play. It is necessary to understand that mastering the Autolib for Thomas also included using the system in an efficient manner. Autolib was not just a car to them. It was a 'concept', 'an idea', 'a system', 'an infrastructure' that combined a product (the Bluecar) and a quality service system. As Marie expressed 'Nobody is going to say: 'I'm going to get my car'. We all say: 'I'm going to get Autolib''. Therefore it appeared that when studying the appropriation of the Autolib by its users, both the product design and the service design must be taken into account.

Jean spoke about a 'very intelligent service', which combined with the built-in computer contributed to give the image of a 'smart car'. To Marie it was 'the car of the future' due to the built-in computer that allowed you to book your parking place in advance. Autolib was a way of life for Jean and Oscar; it was 'the simple life' (Jean).

It appeared that the Bluecar and the service system that Autolib offers belonged to the extended self of the respondents. This appropriation seemed to be stronger when the users were driving the car. Thomas said

that the Bluecar was 'my car for a limited period of time', Oscar expressed how when he was in the car 'It is mine, it is like if I had a disposable car' and Marie said: 'you see, during the moment I've got it, it belongs to me'. It appeared that there was a real feeling of possession of the car while driving.

The consistency and the particularity of the Bluecar's design (such as the driver's seat height and the silence of the mechanics), combined with the specificities of the services design of Autolib had for consequence to change user practices usually associated to driving. The appropriation of these new habits participated to the construction of a new representation of the driver's identity, revolving around phrases such as 'the smart car', 'the car of the future' and 'the simple life'.

### *Autolib and brand communities*

The research showed that Autolib's Bluecars belonged to the extended self of the individuals who used them. Yet they did not own the car. Autolib is a carsharing system in which they were using the cars, along with thousands of other individuals. Users were, of course, all aware that they were not the sole users of their car. However none of them felt that they were *sharing* it. To them, it was a very 'personal experience'.

Sharing, as Bardhi and Eckhardt (2012) proposed, implies an altruistic dimension that here the respondents did not feel at all. None of them decided to join for ecological or social reasons. Hence it seemed that Autolib users did not considerate themselves as 'sharers'. The identity created by the use of Autolib's Bluecar was not built on sharing, it was rather built on the particular 'way of life' implied by the product and the service system as seen in the previous part.

Although the respondents did not feel the sharing part of using a carsharing system, the experience was nothing like having their own car. The other users, the service system and the Autolib brand were important in their discourses. Users were somehow bound by the fact that they shared the Bluecars. Indeed several clues were found indicating that they constituted the premise of a brand community (Muniz and O'Guinn, 2001).

A brand community, according to these authors is 'a specialized, non-geographically bound community, based on a structured set of social relationships among admirers of a brand. It is specialized because at its centre is a branded good or service. Like other communities, it is marked by a shared consciousness, rituals and traditions, and a sense of moral responsibility' (Muniz and O'Guinn, 2001).

### **Shared consciousness**

Shared consciousness is a feeling of being alike, a feeling that other members of the communities are 'sort of like myself', that members 'sort of know each other' (Muniz and O'Guinn, 2001). For some of the respondents these feelings are expressed clearly. Oscar said 'I have the feeling that all Autolib users use it for the same reasons as I do (...) I have the feeling that all other Autolib users are like me'. Oscar was the most involved in a community around Autolib. To him it was a 'social group'. Thomas said: 'I have a feeling of fraternity, yes, it's like the Bluecar community', before stating that of course he exaggerated, but did feel curious about the other users. There was for all respondents, except maybe Marie, a real pleasure in seeing other Autolib while driving. Jean would like for instance to incorporate a function in the car that could start an interaction when two Bluecars pass each other, 'like something that pops up on the screen, I don't know'.

Marie had been an Autolib user for a longer time than the other respondents. As it turned out, she showed less interest in the other users. She had been amongst the firsts users of Autolib when it started. She had also been amongst the firsts users of Vélib a few years' back (Vélib is the bike sharing service in Paris). More research is needed to understand if Marie's feeling towards other users qualified for what Muniz and O'Guinn called *legitimacy*. Legitimacy is when members of a community differentiate between true members and those who are not. Did Marie feel more legitimate because she was amongst the firsts to drive an Autolib?

### **Shared ritual**

The sharing of rituals amongst Bluecar users is perhaps where design can play its biggest part in the creation of a brand community around Autolib. The researchers asked respondents to describe their actions when taking a Bluecar. Manifest similarities were observed in their discourses. They all looked out for the seats at first, to see if they got a leather seat or a fabric one. They all liked to see their name appear on the board, and they all have registered their favourite radios on the built-in computer. They all appreciated the possibility of booking your parking space beforehand, and they all did so each time they used the car. The creation of shared rituals can be enhanced by service design. It is crucial to think about the different steps through which users should go.

The rituals presented were very 'factual'. Muniz and O'Guinn (2001) advanced that 'These rituals and traditions typically centre on shared

consumption experiences with the brand'. After four interviews, one of the most striking finding was the pleasure of driving users shared. They all expressed real emotion of happiness when talking about driving an Autolib. The seat positioning, the electric battery and the silence induced by it were product design elements that made them feel this particular experience. To them it was like a game, like driving a 'toy' (the actual word came out in two interviews, with Marie and Jean). Driving a Bluecar appeared to be a very entertaining experience that users shared. To Marie and Oscar, it was close to the feeling of flying. Users could not have shared this experience if all Bluecars did not have the same design and if that design wasn't different from more traditional cars.

### **A sense of moral responsibility**

According to Muniz and O'Guinn, having a sense of moral responsibility in a brand community can be expressed in integrating, retaining and assisting members in the proper use of the brand. Marie joined Autolib after having used her mother's membership for a while. It was her mother who offered Marie her own membership, integrating her daughter into the community. Marie also described how at the beginning of Autolib, people did not know how to use the system very well and how they used to help each other's. She stressed that such examples of assistance are not common anymore.

The most prominent instance of moral responsibility occurred not amongst members, but between members, the brand and the product they shared. Unlike other brand communities, Autolib users actually share the same branded products. The sense of ownership towards the Bluecar may be the reason why all respondents expressed their will to take good care of the car they used. It was like their own car: 'I use it like my own car so I take good care of it' (Oscar). Another point is that they were all very satisfied with the service. They felt indebted: 'I feel that I am receiving, I'm benefiting from something (...) more that I give' (Oscar). They wanted to thank Autolib by taking care of the cars. It is the good service design of Autolib that created trust between users and the brand. The results were that users felt moral responsibilities towards the brand.

## **Limits**

This research presents several limits, notably methodological. Even with a grounded methodology, four interviews remain too little to be able to

draw any definitive conclusion on the topic. This research is of exploratory nature and a deeper field study shall be conducted to answer to this limitation. It is also important to note the lack of triangulation of this research. This should be addressed in the future by interviewing design professionals.

## **Conclusion, discussion and future research**

Throughout the research it has been observed that product design and service design combined participated to the construction of consumer's identity. The particular design of the Bluecar created a new, enjoyable driving experience. Product design, joined by a very satisfactory service system, enabled users to feel a real relationship with the shared car. They felt responsibilities towards it, affection, had stories with it, were proud of its history, its infrastructure and were excited about driving it... It appeared that users adopted the Bluecar: thanks to its design a real feeling of appropriation existed. The Bluecar belonged to the extended self of its users: it was their car, always the same to them. When building new product and service scope, designers are creating new gestures for consumers. New habits emerge, new rituals occur and a new relationship between the consumer and the product is generated. More research is needed to deepen the understanding of the relationship between a consumer and a product shared. For instance interviewees in this research talked about how the car was theirs for a limited period of time. It seems that the shared car belonged more strongly to the extended self of the users while they were driving it. When not driving, the car appeared to still belong to the extended self, but less intensely, somewhere on the other side of the continuum (Ahuvia, 2005).

The research also provided results regarding the power of design to create brand communities. New product, new service produce new rituals which, in a sharing system have the ability to link users together. Designers think about ways to give responsibilities to users, by involving them in the good functioning of the system (plugging the car after use, checking for flat tires...). Such involvement from consumers inclines them to take good care of the product they share, which is one of the elements central to the formation of a brand community. Those shared rituals bring the idea that in a sharing system consumer not only share a product but also have an experience in common. One product is use by thousands in the same service scape. The discipline of design in the context of shared products should

move from a user-centred to a users-centred thinking. How to enhance the sharing of experience? This preliminary research has shown that users are curious about other users. Who's using 'their car'? The design process in this context could benefit from integrating users-thinking stages. The question lies in how to render the experience personal to allow for the appropriation of the product, while integrating a community system in which users can interact within one another.

Future research shall deepen the knowledge on the brand community around shared product. In the case of the Bluecar, for instance, more interviews should be conducted among the firsts users of Autolib to see if legitimacy can create hierarchies among users. It would also be interesting to conduct focus groups with several users to observe the sharing of rituals or brand stories between them.

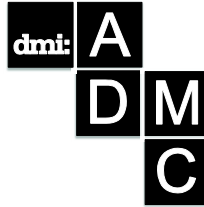
Designers have power. They have the power to give a product meaning for its users. Most famous brand communities are built around a product that has a unique design (e.g. Harley Davidson (Schouten and McAlexander, 1995); Apple (Muniz and O'Guinn, 2001)). Marketers and designers shall benefit from working hand in hand to develop useful designs that consumers can use to create meaning.

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# Multimedia Storytelling – Managing Between Design and Journalism

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*In an era of disruption, multimedia storytelling is key to the challenge facing media, design and journalism, namely, reinvention. Multimedia storytelling is the combination of the strengths of the textual, visual and acoustic approaches. Based on the tensions between the different channels of perception, networked and interactive media offer a broad stage for journalistic storytelling, which is still often neglected. Competencies in design and journalism are merging, creating new user-oriented combinations reflecting the quality of the content and the experience. Consequently, publishers and media institutions must take up the processes and strategies of design management. In our research, we asked about the most useful approaches to multimedia storytelling, and how multimedia projects can be improved through transdisciplinarity. We explored journalistic multimedia stories on several topics (sports, politics, environment, culture, etc.) published in 2013, mainly on German language platforms, and developed a multi-method design: guideline-based interviews with scientific experts and practitioners with experience working on multimedia storytelling projects, and an online questionnaire administered to media users, in order to compare the needs, intentions and challenges. The widespread behaviour among newsrooms is to learn through trial and error, even if they conduct pioneering work.*

**Keywords:** *transdisciplinarity, multimedia storytelling, narrative theory, visual theory, journalism theory, media design, interaction design*

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## **Introduction**

Text, video, photos, graphics, sound: Unlike a standard words-on-page article, the multi-chapter series ‘Snow Fall’, published in the New York Times by features reporter John Branch in December 2012, integrated modules to recount a story such that it made multimedia feel natural and useful. This became a benchmark and triggered a wave of journalistic multimedia stories in 2013, amongst others in the German media. As the first benchmark, most project managers have referred to ‘Snow Fall’ ([nyti.ms/1prfUPw](http://nyti.ms/1prfUPw)) as the inspiration for their own pioneering works. In May 2013, the Guardian’s project ‘Firestorm’ ([bit.ly/1bix0J3](http://bit.ly/1bix0J3)) provided another template which has since been named by many as a source of inspiration. This paper provides the first systematic analysis of this phenomenon by addressing the following questions: How might multimedia storytelling contribute to the renewal of journalism through digitalisation? What are the inherent potentials of such an endeavour, and what are the potential barriers? How can research findings be used to successfully implement multimedia stories in journalism? The theoretical approach is derived from the theory of design, the theory of narration, the theory of multimedia storytelling, the theories of roles, functions, cross-mediality and newsroom management, and from research on transdisciplinarity, that is, where projects are jointly developed from the beginning by collaborating specialists who sit at the same table (II).

Our empirical research is rooted in a secondary analysis of the key findings regarding storytelling from several perspectives, and two guideline-based interview polls published in 2013. The first constituted 15 interviews with experts in the fields of multimedia and transdisciplinarity, and the second, 8 interviews with the project managers of journalistic multimedia projects and an online questionnaire of media users about their impressions of multimedia storytelling in general and four selected projects in particular. This concept was framed to explore the statements of the scientific experts and experts in the field, and compare and contrast them with the needs and expectations of the media users.

This study aimed to address systematically the following questions:

- What are the key success factors of multimedia storytelling according to experts from varied disciplines?
- What are the criteria of success of online-published multimedia stories according to the project managers?
- Is a transdisciplinary approach determinative?

- Do the expectations of the project participants coincide with the impressions and needs of the media users?

We took success stories—defined as stories which provide the democratic public discourse and help to shape the responsible citizen, thus implying a journalism that is more than just entertaining. Our study adopts a multi-perspective approach to focus on the scientific disciplines of journalism and design/visualisation. This is also reflected in the fact that the two main authors of this paper work in these two disciplines and developed this study in a transdisciplinary process. The justification for this approach relied on the fact that in such journalistic projects, designers already are standing in the second row. This marks the starting point for follow-up-research: interviews with designers about their objectives might provide further insight. The background of the investigation is the era of media change, with its call for new networked media and new narrative formats, with audiences becoming communities and with the merging of formerly separated channels for reading (texts), viewing (pictures, movies) and listening (sound).

## II. Theoretical approaches

### *II. 1. The design approach*

The matrix of Klaus Krippendorff (Figure 1) shows the evolution and development of design and the understanding of what design means. First, there is the design of products (classic product and graphic design), followed by service design (interactive interfaces, networks) and, finally, the design of projects and discourses. This concept of design deals more with the interaction between users and recipients than with the mere production of artefacts. The Krippendorff matrix leads us to our theoretical approach: journalistic production in multimedia systems should focus on knowledge and interaction with the users.

In reference to the transdisciplinary work on complex multimedia narratives, the universal attitude of design offers an alternative scientific approach. Scientific methods, e.g. in social, media and communication sciences, mostly focus on determinable issues, and the term design is related to human behaviour and unpredictable media use in the field of indeterminate knowledge. Design as an integrative discipline, and designers, as experts on the importance of images, provide valuable support for the understanding of how multimedia stories work in our research project.

... the designer establishes a principle of relevance for knowledge of the arts and sciences, determining how such knowledge may be useful to design thinking in a particular circumstance without immediately reducing design to one or another of these disciplines. (Margolin, Buchanan, 1995, p. 16)

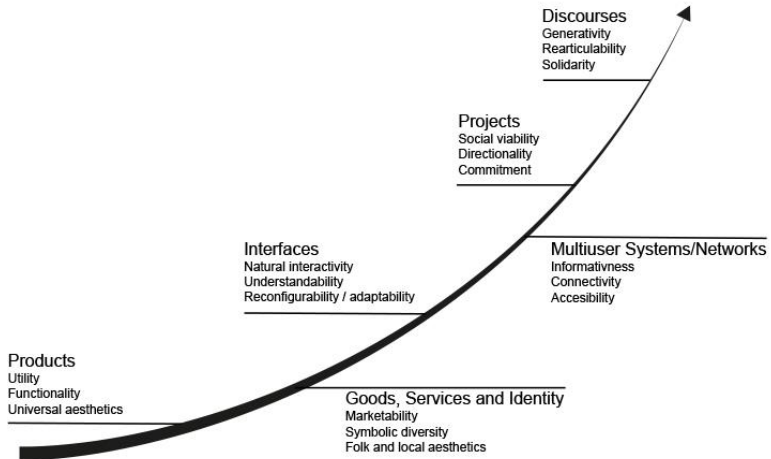


Figure 1. Graphic inspired by Krippendorff, 2006

We distinguish two phases of the design process: problem definition and problem solving.

Since mobile devices are increasingly being used in everyday life, the focus of design is more and more fixed on the experience of the user. In 'The Language of New Media' (Manovich, 2001) Lev Manovich shows how perception and knowledge is based on images or multimedia image-text-tone combinations.

Since mobile devices are increasingly being used in everyday life, the focus of design is becoming increasingly fixed on the experience of the user. In 'The Language of New Media', Lev Manovich (2001) shows that perception and knowledge are based on images or multimedia image-text-tone combinations.

Appropriate to the premise that the end product of design is always geared towards the use of the recipients, journalistic multimedia-based projects can be organised much more effectively by design. It has been proven that images—besides texts—can draw a considerable amount of attention and provide orientation. The effective use of images, from obvious signs (pictograms, logos, icons) to complex information visualisations, is also important for the selected case studies of multimedia-based storytelling. The American film scholar Seymour Chatman differentiates between the substantive components of storytelling (what) and the manner (how) (Figure 2).

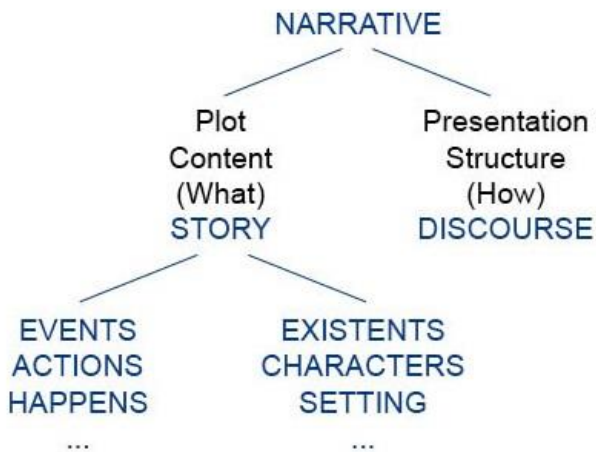


Figure 2. Graphic based on 'Story and discourse' by Seymour Chatman

Applying this scheme to multimedia-based storytelling illustrates the ability to hold attention with the help of visual design. Namely, the visual elements and their rhetorical staging exert a significant influence on the binding of the user and the design. The relationship between design and story and the way of telling it a multidisciplinary one. Journalists and designers (and even editors and engineers) should work together, using a holistic approach, as in the design dialectic square which delivers a four factor framework: design, story, telling and business (Vollmer, 2013).

## ***II. 2. Journalism research***

Storytelling is a cultural technique and a means to convey explicit and implicit knowledge with the help of words, images and sound. Journalism focusses on non-fictional storytelling. At the core of journalistic storytelling is documentation, which requires planning and research. However, there are many commonalities between fictional stories and journalistic stories. Both narratives include a narrative point of view, certain arenas and characters and a plot. Moreover, in every culture, stories are used to entertain, educate and disseminate moral values and facilitate cultural identification. This corresponds to leading journalism functions (Weischenberg, 1990; Burkhardt, 2002) which, in the case of journalism, are included alongside functions like criticism, to inform the public about the actions of the authorities and about social developments, to give both valuable and interesting information, and to transform the public into responsible citizens (Weischenberg, 1983).

Historically, linearity has been one of the narrative qualities that one can find in a journalistic piece or in a musical composition, such as in the structure of a fugue—subject, answer, exposition, discussion and summary. In today's media productions, we find a combination of linear and hyper-linear applications requiring accessible content for individual users. In this sense, multimedia storytelling is a user-centred approach which must integrate the experiences and preferences of the recipient. Thus, it must hold the recipient's attention and contain easily accessible information and a clear orientation (Manovich, 2001). For the successful transfer and acquisition of knowledge, it has been found that multimedia platforms are more successful than simple texts. The combination of linguistic content and visual and acoustic stimuli represents a much more intensive form of mediation (Hageboelling, 2004). Narrative theory offers important findings (<https://projectnarrative.osu.edu/about/what-is-narrative-theory>), as does narrative journalism, in particular about the conceptualisation of how to tell and interpret a story

(<http://www.nieman.harvard.edu/NiemanFoundation/ProgramsAndPublications/NarrativeJournalism.aspx>). This concept concerns the transfer of the techniques of fiction to nonfiction in order to tell true stories which, amongst other things, help to engage an audience in the relevant public discourses within a society via the compelling structure of the story. The analytic frame of narrative theory begins with the assumption that narrative is a basic human strategy for coming to terms with fundamental elements of our experience and the way we want to live. This corresponds to one of the core functions of journalism, namely, helping people make sense of the

world via making sense of stories. Media convergence supports transformation in journalism, giving narratives new meanings, in three dimensions: how a story is told, what is told and who the storyteller is (Renner et al., 2013, p. 7). Currently, online storytelling is more dialogue-oriented than print storytelling. As Herrmann (2013) explains, this is not only a matter of techniques but of other expectations and of the vanishing borderlines between public and private communication. Journalistic storytelling both covers reality and constructs reality. Renner argues (2013) that multimedia might combine journalistic reporting, public discourse and acting protagonists and weave narratives and counter-narratives.

In particular, due to the availability of free publishing online today, online narrative journalism has become popular among writers who are eager to share their personal perspectives on themselves and the world. The availability of social media has increased the importance of public storytelling in Web 2.0 and the importance of professional skills in public communication (Perrin et al., 2012). Sooner or later, we will live in an 'augmented reality' combining virtual and digital data with tangible things, the Internet and social media. Such an environment will not promote isolation; on the contrary, humanity will become increasingly important to make contacts and even to reject non-democratic regimes (Werner, 2012).

The changes to the media landscape include the changing ways of storytelling and reporting. Digital storytelling is becoming increasingly important (Sturm, 2013), whether journalists, newsrooms and media companies are able to implement this change systematically. Research (Kretzschmar, Kinnebrock, 2012; Rothmann, 2013) has shown that 'change management' is often missing. Most companies still focus on print; they use social media, but almost never exploit the potential of cross-media production and multimedia storytelling (Kretzschmar, Kinnebrock, 2012, p. 11). Researchers have issued warning statements as well. Failing to implement new techniques, exploit the potentials of convergence and fulfil the needs of the recipients will lead to disappearance from the market (Picard, 2013). A know-it-all-attitude and a lack of self-reflection cause blindness to the gravity of the situation and to the need for a change of attitude (Russ-Mohl, 2013). However, a wave of development might occur by changing newsroom concepts (Meier, 2007, 2013) towards integrated print–online newsrooms, where issue- and audience-oriented planning and production replace obsolete structures and working routines. In this endeavour, social media and the organisation's website become key drivers of change. Media companies should not only rely on the topicality of the



content but should create flexibility for experiments, new platforms and forms of journalistic presentation (Meier, 2013)—and also give more scope for multimedia storytelling.

### *II. 3. Transdisciplinarity*

Transdisciplinarity describes certain principles of research and science. It is not a method but a kind of procedural approach to an issue. It describes an integrated system of methods from different disciplines (Mittelstrass, 2003). Transdisciplinarity is clearly distinguishable from interdisciplinarity (cooperative connection) and from multidisciplinary (coexistence) (Jantsch, 1972). This corresponds to, and is embedded in, the systems theory of Niklas Luhmann (2001), a sociological abstraction of society as a social system, enclosing all other systems. The media system is a subsidiary system, and journalists have the additional special function of being members of society, whose special task is to critically observe the other systems and themselves. To carry out these observations, journalists take on different roles, from investigative watchdogs to pragmatic advisors, to educationalists, lawyers, promoters or entertainers (Meyen, Riesmeyer, 2009; Weischenberg, 1990).

The transdisciplinary principle, first, answers questions regarding systems knowledge, and thus concerns what has led to a certain situation and how to gain influence over future developments, second, questions regarding goals and what one wants to achieve and, third, questions regarding the possibility of changing specific circumstances in order to achieve these goals (Hirsch Hadorn et al., 2008). Transdisciplinary processes must be professionally moderated and facilitated. All disciplines are subject to an open dialogue, conducted in a transparent manner.

Transdisciplinarity is seen as a useful way of thinking and processing information in order to capture changes. The starting point is to identify existing problems, and then to develop solutions to those problems. This is done at the intersection between society and science, and focuses on the discovery of, transformation of and solution to societal problems, taking the problems as well as the actors as the core reference points (Bergmann et al. 2010, p. 10 f.). Bridging the gap between theory and practice is part of this process, and the results are both scientific insights and practical benefits (Perrin, 2012).

From these theoretical approaches, we develop our guiding research question: How can multimedia storytelling benefit from the key findings provided by design theory, journalism research and the research on transdisciplinarity? Are such findings implemented in the latest editorial

multimedia projects and, if so, to what extent? Finally, how can knowledge about perception (Hasebrook, 1995), multimedia (Manovich, 2001) and narratives be pooled in an integrative theory of storytelling (Hirsch Hadorn, 2008; Perrin, 2012; Renner et al., 2013; Sturm, 2013)?

### **III. Empiricism: Key findings from guided interviews with experts in the field**

We present and compare the results of 15 guideline-based interviews with scientific experts (A) and 8 experts from the field acting as project managers or leading participants in multimedia projects (B), and add the findings from an online survey of media users (C).

#### *A. Guideline-based interviews with experts from science*

We selected experts representing one or more of the fields related to our issue: transdisciplinarity, storytelling, journalism, design, music, multimedia and psychology. Further, it was necessary that these experts have experience in interdisciplinary work.

The interlocuted experts from science:

#### 1. Journalism:

- Multimedia journalist: Mirko Lorenz, journalist and researcher in digital publishing and multimedia;
- Crossmedia journalism researcher: Prof. Dr. Klaus Meier, University of Eichstaedt

#### 2. Transdisciplinarity:

- Prof. Dr. Daniel Perrin, Head of the institute of applied media research, Zuerich University of Applied Sciences, Winterthur, chairmanship of media linguistics (expert for narratives in journalism)
- Prof. Patrick Mueller, head of masters of arts in transdisciplinarity, Zurich University of the Arts;
- Prof. Dr. Wibke Weber, Professor of information design at Stuttgart Media University (HdM), since spring term 2014 Zuerich University of Applied Sciences, Winterthur;
- Prof. Dr. Joachim Hasebrook, Psychologist, Professor of human capital management, Steinbeis Hochschule Berlin;

### 3. Visual Communication:

- Prof. Dr. Stefan Asmus, Head of interaction design and hypermedia, University of Applied Sciences, Duesseldorf;
- Dr. Eunhyong Baek, Lecturer and researcher in design management; Chair Master programm Design Management, School of Design, De Montfort University, Leicester.
- Michelle Christensen, social scientist, designer at the UdK Berlin;
- Prof. Dr. Arne Scheuermann, Head of research in communication design, University of Art, Bern;
- Prof. Dr. Heike Sperling, Professor of digital visual media / visual music, Robert Schumann School of Music and Media, Duesseldorf;
- Ludwig Zeller, researcher in Interaction and speculative design;

### 4. Sound and music:

- Rainer Hirt, sound researcher and designer; audity - Agentur für Audio-Branding und Audio-Interaction
- Georg Spehr, sound director and designer; UdK Berlin, course sound studies.

Each interview lasted between 35 and 60 minutes. Thirteen were conducted by phone, two by mail. The empirical assessments were based on qualitative and quantitative content analyses. In this regard, we were guided by the advice of Roessler (2005) and Mayring (2000).

The interview guidelines were developed on the basis of the research findings on transdisciplinarity and multimediality, in particular concerning design, journalism and transdisciplinarity. The interview included questions about the role of text, images and sound to communicate information and about their role in communicating emotion. The respondents were asked about narrative structures, the conditions of successful multimedia stories and interactivity. They were also asked about how they define multimedia, how they define transdisciplinarity and which conditions they recommend for successful transdisciplinary processes.

#### **Multimediality**

All of the experts defined multimediality through the combination of different media modalities (auditory, visual, etc.), and some also through multi-code modalities (verbal, acoustic, etc.). The shares (multiple codes were possible) were between 44 and 81 per cent. According to them, interactivity does not matter, and digitality rarely matters (only one expert

addressed this). Surprisingly, most of the experts did not find that information transfer in particular works on the text, and emotion transfer on images and sound (e.g. Perrin). Most expressed other factors as more important. Hasebrook argued that if media presentations lead to different encodings in the mind, this is based mainly on the differences between analogue and sequential media. He emphasised the sensuous processing in the brain, rather than channels or modalities. Further, Hasebrook distinguished between 'surface and depth information' and warned of clichés. For instance, the idea that a picture is worth 1,000 words, which is common, is simply misleading, because you think there is a cultural key medium. However, with learning, for example, there is not necessarily a dominant medium; it depends heavily on which personal requirements one has to meet. Most visual media, in particular those concerning moving images, require a high level of spatial perception, but many people lack this. For them, visual information cannot be of great help. Hasebrook also distinguished between a rather spatial and a rather sequential-acoustic information processing in the brain that might also be done side-by-side. If you mix them, you generate attention, but at the same time, you might create mutually disturbing superpositions (interferences) and information that cannot be perceived. Furthermore, the transfer of emotion is far more dependent on context than on the component's text, image(s) or sound. The most successful mediation of both information and emotion should be achieved by creating stable contexts.

Mueller, however, maintained the distinction between digital and analogue, arguing that both are possible with language. The strength of language is that it enables one to make propositional statements. This is a linguistics term. A proposition is what is said in the utterance of a sentence in a particular context regarding certain issues in the world or even certain things. With language, this works much more clearly than with images and sound, but the boundaries are blurred. Experts with core competencies in visual communications often refer to the imprecision of the term 'multimedia' and the difference between the former meaning of the expression and what it means today. For designers, the concept is ahistorical because multimedia productions have existed since the Baroque era in the fields of art and design. Thus, the term is used reluctantly or even avoided (Scheuermann).

The experts were definitely united in the argument that the combination of modalities, if competently done, provides communication benefits (63 per cent). However, twice as many considered the multimedial process to be

more complicated (38 per cent) rather than easier (13 per cent). What matters is how you do it, according to Perrin: ‘For the communicator, the whole matter is dramatically more complex, but also for the recipient, unless the communicator combines the modalities so elegantly that it becomes easy for the recipient, again’. Also frequently noted was that much depends on the attitude of the media user; the elderly are less familiar with interactive interfaces than the young.

### **Transdisciplinarity**

The starting point of a transdisciplinary approach is agreeing on definitions. In the codebook, we operationalised the core points of the definitions given in the literature: starting point (everyday life problem or societal problem), aim (solution, insights), process (cooperation, combination, various disciplines, integration, theory–practise transfer), participants (stakeholders, actors, laypeople, experts, scientists) and profit (scientific insights, practical profit). Those manifestations were identified as basic codes for the conceptual content of the terms; moreover, multivalent coding was allowed.

According to present research references, cooperation is the most coded conceptual content used to define the term ‘transdisciplinarity’, followed by theory–practice transfer and various disciplines. In accordance with the ‘leading definition’ of transdisciplinarity in the literature, most of the experts consider everyday problems or social problems as the starting point for choosing a solution developed in a transdisciplinary manner. This is striking; although it deals with, at least for journalism in democratic societies, vital topics of social and life-world relevance, even the experts who are anchored in teaching or ‘practicing’ in journalism are not yet aware of this problem. This phenomenon is observable in another place. When asked about the supposed effects in three areas, which, again, are essential only for journalism in democracies—the promotion (or impairment) of discourse, democracy education and audience loyalty—in transdisciplinary multimedia approaches, 43 per cent detected a promotional effect on the relationship with the audience, but only about one fifth stated that discourse and democracy could also be promoted through such narratives. More could be done and more should be done, Daniel Perrin maintained, in society and in the newsrooms; media policy, media management and media practice must ensure change.

Unexpectedly, all of the experts, in contrast to the usual definitions in the literature, did not name or know that solution orientation and

integrating power are core characteristics of transdisciplinarity. Indeed, they mentioned cooperation and showed appreciation for it. However, few of them saw cooperation as a conscious or equal process but as being dominated by one discipline or author. Furthermore, few of them recognised the roles of stakeholders and laypersons, or the 'experts of everyday life' (Mueller). The practitioners and researchers are in the foreground of perception. Most of the interviewees expected benefits in finding solutions for both science and practice. Why research in this manner is practised relatively rarely was not clarified. Furthermore, they stated that role models are scarce. One interviewee explained this by stating that one must become accustomed to openness and face discourse. However, one in four had no answer. Sperling stated that vanity is the main problem: 'It lacks the empathy and respect for the thoughts of the others. All are always very self-centred.'

Two thirds recommended practising transdisciplinarity in general, and not only in specific projects. It is striking that there was a gap between the design and video experts, who strongly recommended transdisciplinarity, and the journalism experts, who admitted to being cautious in the use of language. On the other hand, the relevance of journalism was generally expressed. One should think out of the box. Basically, all issues would be appropriate, although only one in ten was satisfied with the preparation of the junior staff for multimedia and transdisciplinarity. Baek found, especially in combination with design and technology, that the transdisciplinary approach in journalism has high potential.

Both sides described the contact between theory and practice cautiously. Meier, for example, said that both sides would be more successful if they worked interactively. Thus, researchers should not simply present scientific results at the end of a linear process which then remain in the drawer: 'You have to go directly into the production processes to change journalism through a research group'. Particularly in times of change, it would benefit the journalistic practice to contact several research disciplines; Weber argued this with a view to the example of visualisation. Every expert supported this statement; most of them found that there is a lot of potential in multimedia storytelling, with almost everyone inserting it in another place. Patrick Mueller, for example, saw future opportunities in 'media convergence storytelling'. That is not at eye level but a willingness to say goodbye to 'conventionalised uses' and to overcome the classic defence mechanisms, and to no longer question one another. It is not just about new knowledge; one must also rediscover forgotten knowledge, as Lorenz said,

using the example of functioning and the effects and patterns of the reception of narrative structures. From the standpoint of the design and music experts, images and sounds are used in a rather additive manner (Spehr). The range of rating ranged from 'benchmark' (especially Snowfall) to 'very weak'.

Last point of this study: Those who had no opinion on the relevance of such approaches to journalism belonged to the group of 'other experts', such as the design and music researchers. One explanation could be that either experiences and role models are missing or that one group preferred not say anything about 'the other group', or that a transdisciplinary approach occurs in one's 'own work and relationship culture' far more naturally, especially as this is not yet widespread among journalists. According to Sperling, from the perspective of a designer, 'we always work in a transdisciplinary way'. Her colleague, Christensen, mentioned a post-disciplinary time that was being reserved in the transdisciplinary approaches, and free from traditional defence and behavioural patterns: 'What transdisciplinarity can bring to research is not just new questions, approaches, methods, and theories—which might provide more comprehensible insights about some of the complex phenomena that are taking place in a globalised, digitalised world, where the artificial is mitigated by multiple perceptions—and it can also provide us with a discussion of new epistemologies'.

In short: The sound and image experts focussed on different varieties of cooperation, whereas the experts in the field of journalism focussed primarily on themselves. The journalism practitioners considered the expertise of others as a decorative add-on service and performance. Despite media crises and changes in the media landscape, they tended to remain unchanging and to squander opportunities. The sound and image experts argued that journalistic flagship projects have high potential for improvement. Transdisciplinarity could especially help them to gain knowledge—in practice and theory—and promises to be a win-win situation for everyone. Therefore, transdisciplinarity must be exercised. Obviously, a journalist, even while working on benchmark projects, prefers to work following the principles of 'trial and error', rather than seeking advice and recommendations from, or cooperation with, scientists. Transdisciplinarity might be the key for change because it provides new insights into research and practice which one cannot discover alone. It seems to us that cases of multimedia storytelling provide the perfect example; journalism in a democracy must be based on the narrative power to regain its relevance.

Transdisciplinarity gives journalism the chance to offer surprising views on common issues, but this process forces researchers and practitioners to be more open-minded.

### *B. Survey: Guideline-based interviews with project managers*

We selected eight multimedia projects, all of which were published online in 2013 in the German mass media and dealt with different subjects: foreign countries (what remained of the Arab Spring), sport (Tour de France), culture (Quarrel/‘Pop auf’m Dorf’), history (Karl Marx Avenue; Willy Brandt), politics (Duisburg before the parliamentary elections; ‘Geheimer Krieg’ of the agents) as well as natural disasters (flood). Another criterion was that the stories had to be distributed throughout the year and published on various platforms. Four stories were uploaded on the platforms of national weekly media (Zeit Online, Spiegel Online), one on a boulevard platform (Berliner Zeitung), one on the platform of a regional paper (Rheinzeitung), one on the website of a public broadcaster (WDR) and one on an online platform created as a cooperation between two media houses: the newspaper Sueddeutsche Zeitung and the public broadcaster NDR. We interviewed the persons responsible for these multimedia projects and, in one case, a freelancer, because he was the project creator and was decisively involved in the project (Jonathan Sachse, Tour de France, Zeit Online). We conducted guideline-oriented interviews via telephone, containing a combination of questions on the project and questions on the use of the different modalities (text, images and sound), to allow for direct comparison with the experts’ statements. The conversation lasted between 20 and 40 minutes, and all interviews were conducted in German.

The projects included in the investigation, the interviewees and the publication date (upload):

- Arabellion <http://rheinstagram.de/Arabellion>, *Rheinzeitung*, upload: 2013-01-06 / Interlocutor: Marcus Schwarze
- Willy Brandt, der Jahrhundertmann, <http://service.bz-berlin.de/geschichten/leute/willy-brandt-der-jahrhundert-mann>, *Berliner Zeitung*, 2013-03-18 / Interlocutor: Oliver Stueber
- Tour de France <http://www.zeit.de/sport/tour-de-france.html>, *Zeit online*, 2013-06-29 / 2013 -07-03/ Interlocutor: Jonathan Sachse
- Leben nach der Flut, <http://www.spiegel.de/panorama/rekordhochwasser-in-deutschland-leben-nach-der-flut-a-909187.html>, *Spiegel online*, 2013-07-05 / Interlocutor: Birger Menke



- Duisburg vor der Bundestagswahl, <http://www.spiegel.de/politik/deutschland/duisburg-vor-der-bundestagswahl-die-spd-und-die-nichtwaehler-a-922175.html> , *Spiegel online*, upload: 2013-09-11/ Interlocutor: Sara Maria Manzo
- Karl-Marx-Allee, <http://www.zeit.de/kultur/karl-marx-allee/index.html#prolog> , *Zeit online*, upload: 2013-10-22/ Interlocutor: Steffen Dobbert
- Geheimer Krieg, <http://www.geheimerkrieg.de>, *NDR / Sueddeutsche Zeitung*, upload: November 2013 / Interlocutor: Marcus Bensemann
- Pop auf´m Dorf, *WDR*, <http://reportage.wdr.de/haldern-pop>, upload: December 2013 / Interlocutor: Stefan Domke

The interlocutors were asked both about formal criteria (expenditures of time and costs, participants etc.) and about content (examples, techniques and modalities, intention, teamwork, feedback etc.).

It was impossible to forecast the costs because the projects had not been calculated, and the people involved were on editorial teams or were dedicated volunteers. The number of supporters varied considerably: Rheinzeitung: 2; Berliner Zeitung: 2; WDR: 4; Spiegel Online (topic record-breaking flood): 9; Zeit Online (topic Karl-Marx Avenue): 20; Zeit Online (topic Tour de France): 50. The project duration varied between ten days and eight weeks (Zeit Online projects). Most of the participants were members of the Zeit Online editorial team. Journalists constituted the majority, but other professions, such as programmers, graphic artists and media designers, were consulted. Often, different departments engaged in teamwork. Elder projects resulting from cooperation between Sueddeutsche Zeitung and NDR were significant for their idea of ‘Geheimer Krieg’. All respondents acknowledged that teamwork was the crucial factor. Dobbert mentioned that a constructive atmosphere is important for reaching peculiar results and generating crazy ideas. This is more difficult in larger departments, like at Zeit. Journalists tend to work alone. The necessity to synchronise different departments is complex but undeniable.

The terms for suitable subjects remained vague: they should be ‘interesting’, ‘multi media compatible’, ‘explosive’, ‘news value and high aesthetics’, ‘humans should be the main topic, or [there should be] complex circumstances’, ‘emotional impact’ and ‘the story and the application should entertain’. The selected projects were indeed all multimedia based, but the significance of the modalities of text, images and sound were very different. The percentage of text alternated between 10 and 60 per cent. In contrast, Dobbert stated, ‘We would like to have equal amounts of video, images and

texts'. However, he stood alone with this conscious idea of multimedia. In the majority of the projects, text was the main medium of meaning.

According to the experts' statements, text is used for conveying appropriate information. Manzo said that only text can tell a complex story. Schwarze provided the strongest orientation on text—the core of the reporting on the Arab Spring was text, and other elements were built around this—and Sachse stated that the understanding of the story of the Tour de France could only be entirely realised by reading. Using only the multimedia elements would not lead to an appropriate understanding. In contrast to the other experts, Sachse considered that emotions are better triggered by texts. The beauty of texts are their ability to arouse virtual images better than motion pictures. Most of the experts used images to convey emotions: 'It is important to show people and their emotions', especially in topics around disruption and death. All experts agreed that interactive graphics contribute to a better understanding of information. Storyboards were only used in the political projects, Geheimer Krieg and Duisburg. For Schwarze, dramatic composition can be arranged as follows: introduction, four main chapters, map and comments. In Stueber's opinion, the projects with boulevard or local approaches used templates from the Internet. The projects of WDR and Zeit were tailor-made by commissioning external programmers.

Editorial teams benefit from multimedia projects as part of their daily routine. The high visibility of such projects helps the editorial brand (Manzo). New challenges are important for online media, Domke acknowledged. The goal is 'getting creative, letting off steam, trial and error, implementing things that are fun'. Bensemann stressed the educational effect: 'Media is still divided. It's necessary to learn to think multimedia-based'. All experts mentioned the lack of education and multimedia training to learn special skills. All editorial teams were open-minded about future projects. Sachse would centre the attention in future projects on the user. The attention from internal and external colleagues and the audience on the multimedia projects in 2013 was high. Some of the feedback was as follows: 'well narrated' (Stueber), 'good follow-up' (Menke), 'some argued that they were not interested in cycling, but finally went in it. A very positive result' (Sachse). The detached critical voices from users who disliked the brand were in the minority (Stueber). A few mentioned that the Arab Spring story could be told better without multimedia. Further, part of the praise was kindness. Rheinzeitung received 40 comments 10 minutes after going online. No one could have read this story in this short time. Some were

simply impressed with the huge images and the multimedia itself. Feedback was also given via Twitter. None of the experts evaluated social media feedback systematically. Half of the projects were planned and organised (storyboard, dramaturgy, schedule) afterwards or during the production of the topics. Only in three cases had the project been planned before it started. The project management was either assumed by a specialist in each resort or by one person, mainly an editorial journalist.

There was evidence of a wide gap between the experts and practitioners. Research can yield many findings in the field of new narrative formats. Even journalists working on innovative projects prefer the strategy of trial and error, instead of seeking help and support from research results. It had not occurred to the interviewed experts to consult scientists or publications. Further, there was no conscious involvement of design or any integration of the design steps in the projects. Thus, design plays a minor role in the perception of most journalists. The design and technical functions were handled differently. More than half of the projects were programmed in-house, while the others used a provided template. The journalists criticised that the potential of design was either limited by static templates or had to be programmed by software engineers.

Therefore, the answer to the research question is that the findings and the competencies of external disciplines, which were not immediately involved in the practical steps of the projects, have not been implemented. Hence, the benefits which can be generated from studies like the present one, including design theory, journalism theory and transdisciplinary research, have not been reaped. Consequently, the gap between multimedia storytelling practice and associated disciplines from the fields of graphics, motion, interaction and interface design is huge. Design was not integrated in the examined projects as a matter of course. In most cases, strategic planning and management had been lacking.

### *C. Online survey: How does multi media story telling reach media users?*

The following four multimedia projects were selected for a user-based online survey: Willy Brandt, der Jahrhundertmann; Tour de France; Geheimer Krieg; Pop auf'm Dorf (Figure 3). The aim was to focus on different portfolios (politics, sports, society, history), and preferably different media channels and basic patterns. We avoided selecting projects from one publisher and preferred to choose, e.g. Geheimer Krieg, because of the interactive map, which offered special possibilities.



Figure 3. Screenshots of the four selected multimedia projects

The questionnaire comprised two parts: the first one generally focussed on multimedia storytelling and the expectations and experiences of the users, and the second one concentrated on impressions of the four selected stories.

Fifty-one persons completed the survey. The younger respondents were chosen consciously: 3 out of 4 were between 18 and 25 years of age, and were either students or professors at universities, mainly in the disciplines of design and journalism studies. The motivation behind this selection was to consult an open-minded group of users, who were also experts familiar with the usage of, and conflict between, new media applications. Two out of three already knew about multimedia storytelling and applied them regularly, and one out of three did not know anything about the topic.

Everyone uses different media forms, such as print, broadcast, television, online, but prefer online channels and especially mobile media. Interaction was of average importance, and five respondents indicated that interaction is very important.

The question 'What do you expect from a multimedia story' centred on the expectations of the technique of narration: exciting, dramaturgically well composed, well visualised, credible and authentic. The differences as compared to traditional narrations which the respondents indicated were the individual immersion, the connection with social media, different approaches and multidimensional information. The stories were considered to be easily comprehensible, and nothing was unfamiliar. Some of them mentioned the good navigation and the well-structured elements. They appreciated the combination of the parts and the well-composed duration. The recipients saw the essential difference from traditionally told stories in the possibility of interacting and using more media channels simultaneously. The respondents were also asked about the importance of design in such multimedia storytelling, which they rated as medium to high (Figure 4).

Merging all answers, the users considered multimedia storytelling as enriching; they had no difficulty using the content; and they appreciated the possibilities for interaction and the quality in general. We should mention at this point that the selected stories are benchmarks in the field of multimedia storytelling. Therefore, the success of the multimedia storytelling is the result of the quality and the good combination of content and interactive elements. Briefly stated, in three to four applications, the interviewees felt especially attracted by the design (Figure 5).

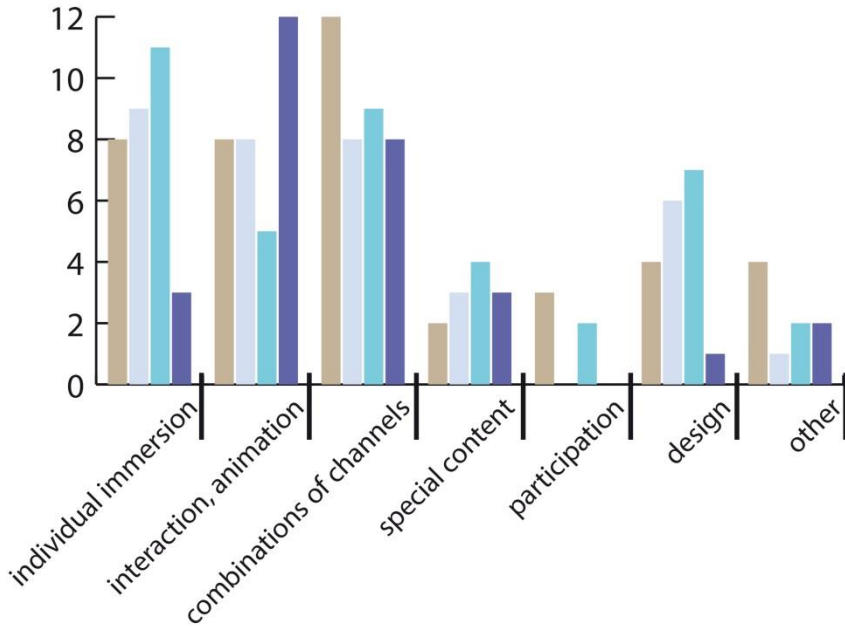


Figure 4. What constitutes the difference between this kind of storytelling and traditional media (TV/press)?

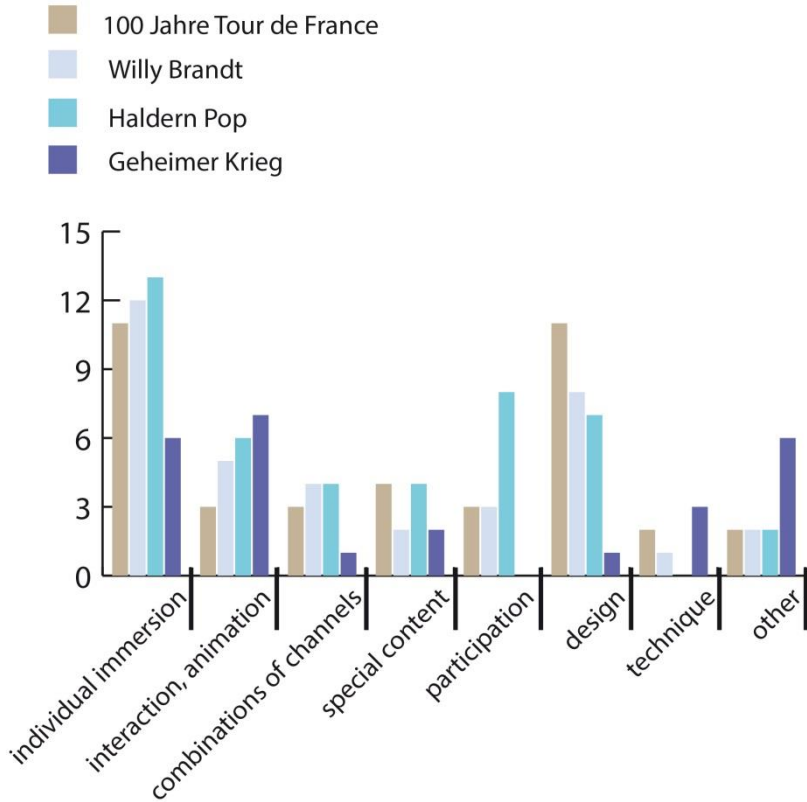


Figure 5, What appealed to you especially?

In comparison, the stories provided the following conclusion: The crucial point was the suitable choice and combination of the channels (text, sound, video and online) at nearly similar levels in the projects, Tour de France, Willy Brandt and Haldern Pop. This was a bit less so in the project Geheimer Krieg, because of an extraordinarily high potential of possibilities for interaction. In this project, the design was not outstanding, while in the other projects, design received a better evaluation.

## Conclusion

There is great potential in multimedia storytelling. Media users seem to be very open to such formats, and are sometimes even enthusiastic about them. Some potential has yet to be explored; apparently, much of the work has been done haphazardly.

There are two gaps: The deeper gap obviously is between the practitioners of journalism and multimedia experts who have research experience; even innovation-oriented newsrooms tend to follow the principle of trial and error instead of deriving benefits from the experiences of others or the findings of science, or the expectations of their audiences. This applies both to the medial implementations and—this has to be emphasised—the design. The study participants underlined the means of presentation, suggesting the growing involvement of design professionals in the development processes of new journalistic formats. Furthermore, they stressed ‘interaction’, as some of the project managers stated that in their next multimedia project, they would direct more attention towards interaction.

The eight applications which we explored reflected different priorities and production scenarios. The story about non-voters in Duisburg was a 90 per cent video narrative; the template for the Halderm Pop project should be used for future WDR stories; and Zeit Online aims to reduce the development efforts by drawing synergies and increasing the rate and the number of similar applications. The Geheimer Krieg project had a special focus on interacting with the user, with maps indicating which facilities are located closest to one’s residence. In the flood project, the before and after images were shown in order to exhibit patterns of behaviour and politics. All projects were pioneering projects that seem to have inspired all parties involved—in the newsrooms and in the audience. However, a more systematic, better approach—a transdisciplinary approach—would benefit all sides, especially the practitioners currently in the newsrooms. As useful as gut feelings are, and as important a practice as expertise is, and as surprisingly positive as the results of experimentation might be, a common, collaborative approach, also contacting researchers regarding such issues—this can be read from the theory as well as from the empirical findings—might reduce errors and omissions and set propelling impulses.

Linking the procedure of the makers with the reactions of the recipients, and comparing this situation with the annotations of part II. 1. The design approach offers the following picture: Even if there is little to no consideration of the design aspect in the production of a multimedia



narrative format, the recipients nevertheless regard design as a factor of innovation (the distinction from traditional media) and as important for creating a general impression. Related to the six levels of the extended design concept (Krippendorff, 2006), design is more than creating products, services or interfaces. If design is applied to the design of a network and complex projects, it is much more astonishing that the design is seldom integrated in the production process. It is the same with the differentiation in the narration model of Chatman (1978), where the narration only is composed partly of its elements (character, settings, actions). There is also a second level (level of structure) which is important in the design of the elements of the first level (level of content). Therefore, design, in its extended definition, is trend-setting for networking and media interaction, and also for the impact of good storytelling.

Finally, thus closing the circle: Narration includes the textual, visual, audio and creative presentations of content. The transdisciplinary approach allows for combining the strengths of different perspectives and requires a dialogue between practice and analysis. Our results from the guideline-based interviews with experts and practitioners and the survey regarding multimedia projects show strengths and weaknesses which can be bundled ultimately in the recommendation to become resolutely open to a transdisciplinary approach.

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## Appendix 1

### **Guideline-based interviews with experts from science**

#### Journalism:

- Multimedia journalist: Mirko Lorenz, journalist and researcher in digital publishing and multimedia;
- Crossmedia journalism researcher: Prof. Dr. Klaus Meier, University of Eichstaedt

#### Transdisciplinarity

- Prof. Dr. Daniel Perrin, Head of the institute of applied media research, Zuerich University of Applied Sciences, Winterthur, chairmanship of media linguistics (expert for narratives in journalism)
- Prof. Patrick Mueller, head of masters of arts in transdisciplinarity, Zurich University of the Arts;

- Prof. Dr. Wibke Weber, Professor of information design at Stuttgart Media University (HdM), since spring term 2014 Zuerich University of Applied Sciences, Winterthur;
- Prof. Dr. Joachim Hasebrook, Psychologist, Professor of human capital management, Steinbeis Hochschule Berlin;

Visual Communication:

- Prof. Dr. Stefan Asmus, Head of interaction design and hypermedia, University of Applied Sciences, Duesseldorf;
- Dr. Eunkyong Baek, Lecturer and researcher in design management; Chair Master programm Design Management, School of Design, De Montfort University, Leicester.
- Michelle Christensen, social scientist, designer at the UdK Berlin;
- Prof. Dr. Arne Scheuermann, Head of research in communication design, University of Art, Bern;
- Prof. Dr. Heike Sperling, Professor of digital visual media / visual music, Robert Schumann School of Music and Media, Duesseldorf;
- Ludwig Zeller, researcher in Interaction and speculative design;

Sound and music:

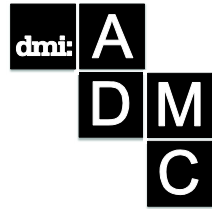
- Rainer Hirt, sound researcher and designer; audity - Agentur für Audio-Branding und Audio-Interaction
- Georg Spehr, sound director and designer; UdK Berlin, course sound studies.

## Appendix 2

### **Guideline-based interviews with project managers**

- Arabellion <http://rheininstagram.de/Arabellion>, *Rheinzeitung*, upload: 2013-01-06 / Interlocutor: Marcus Schwarze
- Willy Brandt, der Jahrhundertmann, <http://service.bz-berlin.de/geschichten/leute/willy-brandt-der-jahrhundert-mann>, *Berliner Zeitung*, 2013-03-18 / Interlocutor: Oliver Stueber
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- Karl-Marx-Allee, <http://www.zeit.de/kultur/karl-marx-allee/index.html#prolog>, *Zeit online*, upload: 2013-10-22/ Interlocutor: Steffen Dobbert
- Geheimer Krieg, <http://www.geheimerkrieg.de>, *NDR / Sueddeutsche Zeitung*, upload: November 2013 / Interlocutor: Marcus Bensemann
- Pop auf'm Dorf, *WDR*, <http://reportage.wdr.de/haldern-pop>, upload: December 2013 / Interlocutor: Stefan Domke



## What Does Design & Innovation Mean for MSEs? A case study of eight Brazilian furniture firms

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*Design and innovation themes have been discussed by many authors, with different emphases. Some approaches are systemic and involve the quality of the stakeholder's learning; others relate innovation to a design process or a way of thinking. In MSEs (micro and small enterprises), the improvement of competencies through relationships is crucial to support good design and to achieve successful innovations. Small companies interact in socio-economic networks, which highlights the importance for strategic development within them. However, many small companies are distrustful of the potential cost-benefit for both investing in improvement of competencies and in the employment of professional designers. In contrast, there is an evident need to enhance design awareness among them. The present work aims at discussing these issues in a contextualised Brazilian scenario through the analysis of eight wooden furniture MSEs, their understanding of innovation, and the use of design in their companies.*

**Keywords:** Innovation; Design; Wooden Furniture; Brazilian MSEs

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## Introduction

Design and innovation themes have been discussed with different emphases by many authors (Van de Ven, 1985; Swan, Newell, Scarbrough and Hislop, 1999; MacCraw, 2006; Owen, 2007; Manzini and Vezzoli, 2002; Morelli, 2007; Verganti, 2008; Bucolo and Mathews, 2010). Some approaches are systemic and involve the quality of the stakeholder's learning (Hall, 1995; Meroni, 2008); others relate innovation to a design process (Zhuang, Williamson and Carter, 1999), to a way of thinking (Brown, 2008), or to technological or cultural factors.

Some authors (Weick and Roberts, 1993; Carlile, 2002; Kloth and Applegate, 2004; Morelli, 2007) have affirmed that knowledge sharing is crucial for sustainable participation in design and innovation processes, and can be established only if knowledge processing is cooperative. This can occur by improving both individual and company abilities, making them part of an interconnected and diversified system of stakeholders to explore new opportunities, to support well-managed actions and, thus, to obtain better results.

The improvement of competencies through relationships, especially in Micro and Small Enterprises (MSEs), is crucial to the quality of solutions, whether related to products or to services. This improvement can also support the quality of relationships themselves, thus facilitating cooperative behaviour as well as openness towards collaboration. It is therefore valuable that innovative and management strategies include the exchange of knowledge among MSEs, hence contributing to the adoption of more efficient processes through design as well as contextualised solutions that respect and potentiate local cultural aspects.

On the other hand, achievement of effective innovations depends mainly on: a) the continuity of actions performed by a specific group involved in any experience, desirably an inter-organizational group of partners; and b) the quality of knowledge shared among them. Also, maintenance of such innovations will depend again on the quality of these relationships built on a collaborative network approach. Some authors affirm that MSEs already interact in socio-economic networks, which highlights the relevance of a strategic development.

However, most MSEs are distrustful of the potential cost-benefit for both investing in the improvement of competencies and in the employment of professional designers (Bruce, Cooper and Vazquez, 1999). This is strongly confirmed within Brazilian micro and small enterprises, clearly shown by those involved in the experience of this work. Due to their small size and



capacity for managing everyday dynamics, MSEs are generally focused on their own immediate problems. Moreover, the cultural resistance and the trust needed to try novel solutions as well as new ways of interacting represent a huge barrier in changing the companies' performances.

In contrast, there is an evident need to enhance design awareness among them, especially in the microenterprises. In order to evolve and reach a local cultural resource using a sustainable focus as a competitive strategy it is necessary to change the way MSEs face design and innovation issues as well as their management processes.

The present work discusses some of these issues in a contextualised Brazilian scenario through analysing an experience that involved eight wooden furniture MSEs, their comprehension of innovation as well as the adoption of design within their companies. These MSEs took part in a Design Pilot Project named MODU.Lares Project, during an 18 month period, from January 2011 to June 2012. The Pilot provided them with the opportunity to face challenging issues associated with collaborative strategies to improve performances in a highly comprehensive view. The aspects approached during this experience were mainly related to sustainable and economic management topics, which strongly demanded, from the MSEs, a new way of facing social and cultural issues in relation to their businesses and their connection to the broader context.

However, this work does not pretend to present a definitive answer to these issues, especially because, during the experience, the MSEs demonstrated very contrasting behaviours when facing the same situation. Instead, the paper intends to open a debate about the value of culture, knowledge and 'healthy relationships' among different profile organizations - whether they are businesses, institutions or governmental bodies - through a design connection in such a context like Brazil: is it really possible to believe in a socio-cultural and environmental role for design and designers within organizations? Or are business organizations convinced only in the importance of profiting, and therefore avoid any kind of effort to assume their cultural, environmental or social role in their operations?

### *Reflections on Design and Management*

Design management as an important instrument for market competition has been supported by many authors (Gorb, 1990; Walsh, Roy, Bruce and Potter, 1992; Roy, 1994; Bruce, et al., 1999; Mozota, 2003; Best, 2006). Indeed, for Mozota (2003), design management has a double objective: to familiarize managers with design and design with management; and to

develop ways to integrate design into the company environment. In this way, design can support companies, in particular micro and small businesses, in different ways (Bruce, et al., 1999): beyond managing processes and product creation, it focuses on improving customer services and experiences. Also, it contributes to increase the companies' efficiency as well as to define waste reduction strategies (Mozota, 2003; Best, 2006).

Some reasons that lead companies to undertake strategic partnerships can be associated with many aspects, such as:

- improvement of their productive capacities (Swan, et al., 1999);
- reduction of uncertainties in their internal structures and in external environments (Van de Ven, 1986; McCracken, 2005; Todeva and Knoke, 2005);
- acquisition of competitive advantages that enable them to increase profits;
- gaining of future business opportunities that will allow them to command higher market values for their outputs (Todeva and Knoke, 2005; Teixeira, 2005);
- compliance to specific requirements regarding environmental and sustainability changes (Manzini and Vezzoli, 2002; Vezzoli, 2007).

Despite its relevancy as a source of user-centred innovation and competitiveness, design is still little used, especially by small and medium-sized enterprises (Bruce et. al, 1999; Thenint, 2008; Raulik-Murphy, 2010).

In addition, Todeva and Knoke (2005) and Tsai (2009) argue, for example, that the company's engagement in a partnership within an inter-organizational collaborative network depends on the partnership purposes themselves, the characteristics of the organizations and on multiple environmental factors. Since viable solutions to problems of resources and capabilities are not often available within a single company (Das and Teng, 2000), inter-organizational collaborative networks (*ICoNs*) (Nunes, 2013) configure an important instrument to operate, aiming at achieving innovative and more sustainable solutions (Nunes, 2013).

These factors are positioned on different levels, and each one comprises specific issues to address change and performance improvement, such as: a) organizational level (*e.g.*, learning and competence building; adaptation to environmental changes); b) economic level (*e.g.*, market risk reduction, sharing of resources, economies of scale); c) strategic (*e.g.*, cooperation with potential rivals, business diversification); and d) political (*e.g.*, overcoming of

barriers, influence for investment in policies) (Todeva and Knoke, 2005; Tsai, 2009).

The role of design is, therefore, fundamental not only to collaborate with qualified knowledge, thus stimulating the building of scenarios that allow to seek better solutions (Zurlo, 1999; Mozota, 2003; Best, 2006; Rossi Filho, Meroni, Monti and Galisai, 2009). Design can also support the implementation of such solutions, through managing design processes with the aim of reaching successful outcomes (Mozota, 2003; Best, 2006) in all dimensions involved in the collaborative process.

But, although innovation can benefit companies, institutions, individuals and society as a whole, as already argued by Van de Ven (1986), some difficulties in managing its dynamics were confirmed during execution of the Pilot Project. The factors were mainly related to: a) little attention to management; b) resistance in acceptance of new ideas; c) part-whole relationships; and d) institutional leadership, among other aspects.

## **The Brazilian Scenario**

### *The Design Pilot Project Contextualization*

The research intervention took place in the city of Uberlândia (the Triângulo Mineiro and Alto Paranaíba region), Minas Gerais State, Southeastern Brazil. With a population of approximately 640,000 inhabitants (Boente, 2013), Uberlândia is a pole-city for nine neighbouring smaller cities and represents 70% of the regional demands for goods and services. Despite its strategic position and the relevance of the tertiary sector for local economy, the city presents a very fragmented design system among different institutions, whether academic, governmental or business entities (SEPLAN, 2009).

In particular, the wooden furniture sector is formed by about 800 MSEs<sup>1</sup> (Oliveira, et al., 2012) working mainly in craft and made-to-order productions. Almost 85% of these firms are not officially registered and work in precarious facilities with poorly adapted and obsolete machines,

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<sup>1</sup> Many indications have been used to classify enterprises as micro, small, medium and/or large-sized categories which vary according to the contexts and objectives (Lima, 2001). This work uses references from SEBRAE (2012), *i.e.*: Micro enterprises: <19 employees (I&B sector - industry and business sector) or < 9 employees (C&S sector - commerce and service sector). Annual turnover: ≤U\$160,000; Small enterprises: 20-99 employees (I&B sector) or 10-49 employees (C&S sector). Annual turnover: between U\$160,000 and U\$1,600,000.

employing an unspecialized labour force. The output of this system is composed of products with lower aesthetic or technical quality when compared to other competitors within Brazil, except for the companies that have already established relationships with interior designers and architects. In these cases, furniture projects are usually technically detailed with a high aesthetic quality.

Nonetheless, the majority of these firms (both formal and informal MSEs) lack control over material consumption and waste disposal. There is a recognized unawareness of better practices that could reduce the environmental impacts of the furniture sector in the region. Moreover, from the approximately 120 formal enterprises, only 50% are members of the Local Sector Association (SINDMOB). With few exceptions, the furniture sector is strongly characterized by an inertia to look for organizational, technological or knowledge advances, which reflects its lack of leadership (SENAI, FIEMG, SEBRAE and SINDMOB, 2006).

The furniture MSEs have different development levels and only a few of them present a potential for adopting more sustainable practices due to limited competencies regarding many aspects. Most of these aspects are related to: design (development of products, sustainable design, and design thinking among others), managerial issues (leadership, strategic planning, knowledge, processes and others), and operations (use and development of technologies, production, distribution and marketing) mainly due to their companies' complex facilities, as well as relationships (with clients, suppliers, institutions and others).

After a previous diagnosis, the MSEs that integrated the Pilot Project were selected based on their similar levels of structure and facilities, managing practices and similar targeted markets, in order to facilitate the carrying out of the pilot development. Even though still deficient, these companies demonstrated better conditions to renovate practices on design, production and management issues. Such a perspective also included the possibilities for improving environmental, social and economic performances, including new social and cultural values in their relationships with stakeholders.

Based on a combination of data from a previous diagnosis carried out by SENAI, et al. (2006) and an up-dated diagnosis (carried out by the researcher in 2012) (Nunes, 2013), the Pilot Project reinforced some recommendations (and proposed as part of the Pilot) to the furniture sector, as follows:

- **Management Practices:** an action plan for improving MSEs, starting from the basic concepts of management and their implementation;

- Collaboration: a strategy to improve knowledge by exploring practical knowledge concepts, personal experiences, and to foster the commitment of participants;
- Market Demands: solving the lack of market knowledge (*i.e.*, understanding clients, commercialization methods and marketing investments);
- a Pilot Project as a Strategy to Foster Collaboration: the trial of a cooperative action implementation.

As the MSEs had been operating on individual levels and in isolated ways, collaboration was quite absent among them. Such isolated behaviour resulted in a reduced impact of their decisions at strategic, tactical, or even operational levels. Moreover, this situation limited their capacity to obtain financial subsidies or economic incentives to invest either in research and development or in consultancies which could support not only the improvement of competencies within the companies, but also the increment of technology and manufacturing processes.

With respect to management issues, almost all MSEs were (and still are) managed by people that have been progressively learning how to produce wooden furniture. Their tacit knowledge has been passed from generation to generation, which means that, even in those cases where some evolution of manufacturing practices have occurred, the machinery used and even the production processes are still associated with highly crafted production and thinking, with few exceptions.

As pointed out by Atkinson and Meager (1994) and Bruce, et al. (1999), MSEs are, in general, mainly owner-managed. This condition creates a relation of dependence between company and owner, since the owner has the skills and experience. However, if the entrepreneur is not aware of the potential value of design for their company, or if there is no time to gain skills to work with a designer in a proper way, the adoption of design competencies in these companies may be very hard or might not even occur (Atkinson and Meager, 1994; Bruce, et al., 1999).

According to SEBRAE/MG (2011), there are regular initiatives in Brazil to improve the management of MSEs. However, much still remains to be done to professionalize their management attitudes and much more investment is required to improve their productivity and quality. Sometimes, this is due to the generalization of propositions the consultants offer to these micro and small companies, lack of mentorship or scarcity of resources (time, financial). In some cases the lack of interest by MSEs is related to their poor understanding or recognition of the importance of management within their

businesses. In fact, motivation is a critical aspect that is rarely exploited in consultancies or entrepreneurial courses oriented to MSEs in Brazil.

Moreover, there is an evident need for regionalized policies to stimulate these enterprises to search for higher levels of efficiency, thus creating advantages for their wood furniture production business to overcome their limited technological knowhow and also their managerial specialization achieved so far. Indeed, design policies could motivate furniture MSEs to seek design competencies in order to differentiate and increase the companies' positioning in the market.

As MSEs commonly have economic difficulties in hiring designers as a permanent teamwork resource, partnerships with the university, for example, to provide a design support for these enterprises until they are able to definitively assume professional designers, could be a feasible solution. Actually, at times the reason for not having a full time designer is also related to the entrepreneurs' little awareness of the real value of design to build novel ideas and approaches for innovative solutions, as argued by Brown (2008).

At times, and especially in the case of Uberlândia, the absence of designers in furniture enterprise environments is also related to the lack of interest that interior designers have in the manufacturing process of artefacts developed by them or even for participating in MSE operations, beyond the level of the project. As we see, there was a local pressing necessity for changing the approach to design issues from an isolated aesthetic tool into a strategic key tool for conceiving and manufacturing furniture and, above all, for developing these MSEs in broader terms, including an orientation toward a greater level of sustainability.

### *The Research Aims*

As argued, most micro and small wooden furniture manufacturers in Brazil do not have a strategic systemic vision. In addition, there is also a lack of mechanisms (*e.g.*, R&D; funding or tax incentives) and factors (*e.g.*, socio-economic resources; technical, technological and management competencies, among others) that could guide the construction of these collaborative, interconnected and systemic processes.

Thus, the main objective of this experience, involving eight MSEs of the furniture sector, to address these gaps was:

- To stimulate, through a Design Pilot Project, the openness to, and the further adoption of, new approaches for Design and Management that could contribute to the development of a

sustainable and systemic vision. It also aimed at triggering a behavioural shift that oriented a new scenario of production and consumption and that could contribute to a gradual changing process toward sustainable local development.

This “new Design approach” was associated with both the way of conceiving and producing objects and the way of relating with other organizations in order to achieve more effective results regarding sustainability in all its dimensions (Manzini and Vezzoli, 2002; Hardy, Lawrence and Grant, 2005). Some aspects were intrinsically connected, since the changes in one aspect would necessarily affect, or demand the adjustment of, some other. For example, the adoption of modularized solutions for furniture would contribute to reduce material waste as well as to optimize design and manufacturing lead time (Maxwell and van der Vorst, 2003; Ljungberg, 2005; Vezzoli, 2007; Federlegno-Arredo, Habitec and Trentino-Sviluppo, 2010).

Moreover, the social and cultural aspects of this proposal were confronted with the interaction among involved partners (*i.e.*, companies, institutions, government) in order to make the actual exchange of knowledge possible, thus increasing competencies and capacities for working together and making businesses advance. In addition, as the final products proposed by the Pilot Project were oriented to low income customers of Uberlândia and region, they also intended to fulfil some basic needs of this strata of population, beyond just cost and quality in production, providing solutions that were also sustainable and have a design suited to their requirements (Elkington, 1994; Porter and Krammer, 2006; Morelli, 2007; Parker and Ford, 2009).

Complementarily, two aims can be mentioned: a) the evaluation on what level the Design Pilot Project contributed to stimulate and support the *system-ability* of that context. This was done by using an assessment tool developed by the researcher that included environmental, technological, organizational, economic and socio-cultural aspects; and b) the indication of some actions for the stakeholders (*i.e.*, MSEs, university, support institutions, associations and local government), in order to foster the achievement of the full benefits of a collaborative environment, encouraging regionally based sustainable Design policies and promotion, thus contributing towards local development.

### *Findings of the Experience*

This work highlighted the importance of increasing competencies and sustainability awareness in relation to many aspects for more responsible practices within the context of MSEs. Indeed, this increase depends on a change in the way MSEs deal with problems, and requires knowledge and new behaviour. Due to the difficulties faced in daily practices such as work overload, for example, most of the time MSEs do not engage in processes to search for more knowledge that could contribute to their evolvement, even though this improvement is a basis for it. And, exactly because of this, a collaborative network could contribute to support the MSEs in achieving better operational levels.

However, it is also true that when business partners are not able to deal with internal problems, as mentioned, the difficulties of working together as well as the potential vulnerability of relationships, mutual respect and trust among partners increase, as happened in this experience. Thus, it is critical for MSEs to recognize the need for improving both the individual levels and the company's abilities, making them part of the process by learning and sharing knowledge and information to obtain better results of design and innovation aspects within their companies.

The MSE partners in the collaborative network, built by the MODU.Lares Project, assumed only partially their individual responsibilities for their improvement of competencies. The attention dedicated to organizational aspects (thus clarifying visions about their business and more adapted paths to cover), and to technological and innovation aspects (thus exploring new ways of dealing with manufacturing, even though still using craft systems) still must be reinforced and translated into the strengthening of the MSEs' management levels.

Above all, the increase of such competencies must be associated with the increase of interest in facing the environmental problems that regard each MSE operation. All these aspects, if coordinated with a main collective intent, can support better interaction in inter-organizational collaborative networks, thus contributing effectively to their evolvement and to the development of the broader context as a whole.

A crucial aspect of the experience was related to the leadership of the furniture sector. Any desired change that may affect, individually, the *status quo* of the local business organizations must be associated with their capacity for defining collective goals for the whole sector. To do this, the most challenging aspect is to strengthen the MSEs' participation in the Local Association (SINDMOB) in order to more easily access funding and other



incentives to facilitate investments in research and/or technology, or even for improvement of their facilities.

Only through this, the strengthening of the sector's governance can support the engagement of other collaborative groups to scale up positive impacts. However, this would depend on two main aspects:

- a previous preparation of new partners to respond to aspects such as those discussed in the project (*i.e.*, environmental, technological, economic, socio-cultural and organizational);
- the quality of learning and innovation that individuals are able to share in their relationships among the different stakeholders and contexts.

Nonetheless, by increasing their awareness of such issues not as distant problems identified outside the company but mainly as internal concerns, this would reflect in successful external benefits generated by the individuals' improvements.

Among the outcomes, as many authors have already discussed, the experience confirmed that:

- the owner's way of management within MSEs seriously interferes in the knowledge, skills and awareness of the potential value of design (Bruce, et al., 1999). On many occasions – during meetings, prototyping processes and exhibitions, the single way of expressing an individual entrepreneur's opinion easily changed the course of a collective decision among the group of MSEs;
- the exploration of design benefits occurs only in cases of immediate needs (Cawood, 1997). Among the involved group, these "benefits" were directly related to immediate profits and to the guarantee of marketing success before investing their time and money;
- the lack of financial resources and management, scarcity of skilled labour, and of marketing and sales skills remain internal barriers (Hughes, 2001), as well as lack of information on potential markets, sources of finance and government rules, restrict actions and partnerships. Despite hiring a manager-coordinator for the group, the absence of a long-term vision contributed towards abortion of the experience;
- the little belief in the value, or sureness in the results, of employing creative professionals delays the development of new actions and the trial of novel solutions (Cox, 2005).

## Discussion

Van de Ven (1986) argues that when dealing with design and innovation within MSEs, some restrictions can lead to inertia and early abandonment of ideas: first, there tends to be a short-term problem orientation in individuals and organizations; and second, the portfolio of ideas is little suitable for the situation or it is misunderstood by companies. Actually, the present experience validates that not every partner (MSEs or other organizational typologies) can successfully be engaged in collaborative networks, as well as positively implement innovations, whether technical or behavioural, or related to designing products, processes or services.

Many factors impact the potential for change that can be internal and external, even in the case of the MODU.Lares Project, which was a medium-to-long-term project based on a much focused context and on an updated diagnosis. These internal factors can be related to aspects such as: enthusiasm; leadership; potential and ability for collaborating; awareness of specific internal problems but also of their interdependence with external factors, among others. The external factors can be associated with aspects such as the quality of the collaborative environment, *i.e.*, the relationships established and maintained by such networks; the effective support that organizations obtain to operate in collaboration; the relations with market and consumers, in the case of business organizations; and the relations with social entities, in the case of associative and academic organizations.

In specific terms of technology, infrastructure and production aspects associated with the furniture sector in the region, the majority of local MSEs presented a low technological level. This condition has led them to technical stagnation, reflected in limited productivity and lack of competitiveness in a broader market. Nonetheless, the improvement of the facilities' quality would depend not only on the availability of financial resources, but also on skilled knowledge that would orient the acquisition of new machinery and allow its use.

Besides the technological aspect, design awareness is still quite challenging. While 72% of the MSEs affirmed to using design to develop furniture, it was not perceived as a key factor for competitiveness and success for the company. This highlights the pressing need for diffusion of the design culture within the sector, in order to improve both aesthetic and technical aspects as well as management issues by these MSEs.

A relevant aspect highlighted by the experience was the MSEs' motivation, *i.e.*, their main stimulus was based on economic aspects, despite the systemic relation proposed among all the aspects discussed from the

beginning of the Pilot. For the group of entrepreneurs involved, there was a need to guaranty the success of any investment of time and money, even if a little, before it could occur. In a few instances, only two entrepreneurs (from eight) recognized the experience either as an opportunity for both improving knowledge and creating value for their companies, or an opportunity for increasing their competitiveness in the market. However, their awareness did not contribute to change the whole group's vision and to stimulate commitment.

Despite diverse limitations, the MODU.Lares Project revealed that some partners had feasible conditions to adopt new paths and collaborate toward a new scenario. However, the strong state of passivity of the local furniture sector and other organizations (*i.e.*, support institutions, local government) as well as political constraints also demonstrated that, notwithstanding those feasible conditions, there is a demanding path to follow.

Moreover, the presence of an organization or a manager to efficiently assume the leadership of actions in partnership with the furniture sector by pushing participation among the different organizations and individuals is also crucial, yet challenging. Possibly, this attitude would contribute directly to the continuous execution of actions and to maintenance of a successful collaborative network and development of the furniture sector.

It is decisive for the sector to recognize that innovation is not the enterprise of a single entrepreneur and that co-design is a strategic key to MSEs. Above all, a network-building effort is necessary which focuses on the adoption and the continued execution of a set of new ideas among organizations which, through healthy interactions, become properly engaged with these ideas in order to transform them into good and replicable current practices.

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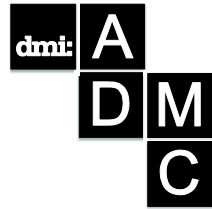
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## Semiotics and Global Products Design

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*This paper aims to make theoretical progress based on previous empirical studies on the semiotics of global products. Once these studies are supported by the theory of semiotics, this article proposes to discuss the possible ways to advance on research methodologies to analyze the relationship between users and their goods. Hence, the concept narratives, encyclopedia and dialogicity emerge as a manner of visualizing, categorizing, analyzing and linking information from/across different cultures. Furthermore, this discussion and advancement contributes to the management area in the sense of providing an epistemological foundation to improve systematic approaches on global products analysis, positioning and adapting, and its design process.*

**Keywords:** *Semiotics, Global Products Design, Encyclopedia, Dialogicity, Cultural Intertextuality*

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## Introduction

The relationship between individuals and products can be more complex than merely a material or an economic issue. They can then be understood as complex social phenomena, in which the semiotic aspects are equally relevant. Hence, it is necessary to better understand the possible relationships between physical and cultural signs in order to improve product development and adjustment for international markets.

Because of our dependence on symbols, it is desirable that objects materialize semantic codes to come to fruition in culture-specific contexts. Against this background, semiotics has evolved as a science that can adequately support empirical studies on the semantics of global products, improving the processes of product analysis and differentiation.

Unlike the commonsensical notion of differentiation, adaptation in the global market does not focus on changing the products' physical features, rather on the capability of transferring intangible features to the objects. This is evident in Moraes' (2008) argument that design, as a discipline, has drawn on the social sciences, aiming at anticipating the needs of future users. Thus, design has evolved into a multi- and interdisciplinary domain that is capable of providing timely responses while remaining open to interactions (Moraes, 2010).

In this context, semiotics emerges as an instrument for gaining better understanding of such issues as metaphors and identities of objects of use. Generally speaking, semiotics can be regarded as a scientific basis for designing objects that carry predetermined functions at the primary and secondary levels and are equally subject to being assigned functions at both levels (Domingues, 2011a). Regardless of Eco's (1968) contention that designers are supposed to manipulate variable primary functions and leave open the secondary functions, they are also able to deal with variable secondary functions. Domingues (2011b) provides empirical evidence that supports such a claim and points out the possibility of building on ethnographic technique methods to research and analyze cultural semantic categories that can contribute to the analysis and design of global products.

## Theoretical Context

### *Global Products and Symbolic Meanings*

In general, companies face complex issues when developing global products. As Levitt (1990) argues, ethnic specificities are traces of cultural



heritage, likes, and standards. However, as Levitt also points out, some of such traces slowly open up space for changes while, controversially, others simply evolve globally to make way for the homogenization of ethnic-specific standards at the worldwide level. This does not imply the end, but rather the widening of specificity and, in the face of current communication and technological progress, differences between users should be carefully assessed. In this context, design has been assigned the responsibility of efficiently adapting products (McCracken, 1988). As Levitt (1990) claims, technological modernization opens the way to design-based differentiation and other factors related to the market positioning of products.

The management literature features discussions on competition, differentiation, and positioning of products in the international market. The relationship of design, marketing, and other disciplines involved in product development is complex, and their integration is relevant to developing appropriate products. Scholars have observed that taking multidisciplinary approaches is relevant to understanding how product design provides superior experiences and adds value for the users (Kotler & Rath, 1984). Nevertheless, studies on which factors should be integrated into the design process to add such value remain incipient. Models of development of global products lack specific data on the interactions between users and goods and on their typical use. In our view, this can be obtained by identifying, analyzing and understanding semantic values, as well as advancing the use of ethnographic information, which has been restricted to the alignment of forms, functions, materials, and textures (Boztepe, 2007), rather than focusing on the possibilities of semantic relations between individuals and the objects of use. Such semantic relations are strongly associated with concepts of affordance, material culture, and identity.

As pointed out by Gibson (1986), the focus of the term “affordance” relies on the possibility of an individual performing an action within the scope of his own context. In applying the concept “affordance” within the design domain, certain objects and environments can be considered as being more or less adequate than others in specific functions, and it is their physical features that assure their adequacy to either one or another task (Lidwell, Holden, & Butler, 2010). This implies that designers who develop user-oriented projects design products focusing on their potential meaning (Krippendorff, 2006). As product design involves physical objects, designers should be attentive as to how shared cultural conventions within social groups directly impact on the actual affordances. Therefore, since the objects have cultural and social dimensions, and are also subject of a project

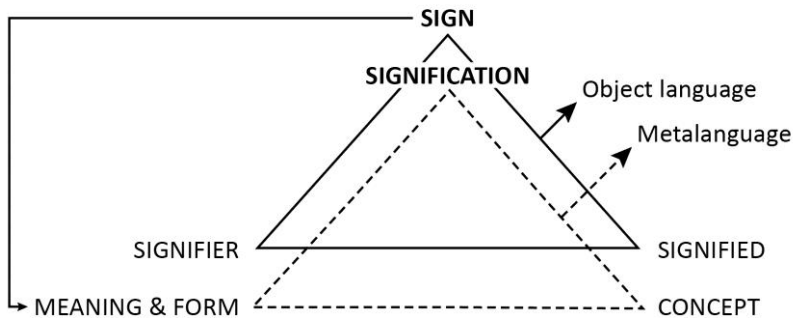
(Bianchi, Montanari, & Zingale, 2010), they can be named as artifacts and products (Bonfantini & Zingale 1999; Deni, 2001).

The purposes that individuals assign to artifacts and products derive from cultural processes, and designers should observe semiological features that are intrinsic to the material production. It is the production of goods and values that generates and reflects a society's cultural identity (Bomfim, 1999). One's identity is expressed in a product through three features: its very existence, origin, and quality (Nyemeyer, 2007).

As Eco (1968) claims, objects of use do not only function, they also communicate. Every use is converted into signs with the existence of a social group; therefore, an object that has a function enables and promotes this existence (Barthes, 1964). The use of objects goes beyond their functions: they can denote and connote specific functions depending on the cultural system (Eco, 1975).

Therefore, the notions of denotation and connotation are crucial within semiotics. Similarly, the terms signifier and signified provide analytical tools to describe two meanings: denotative meaning (level of the signifier) and connotative meaning (level of the signified), as indicated by Hjelm (2002). Such concepts refer to different levels of meaning, which explains why Barthes (1957) introduced the notion of new orders of signification. The first order is denotation, that is, the sign comprises both signified and signifier. The second order is connotation in that the denotative sign is used as a signifier and assigned a new meaning, referred to as myth (Barthes, 1964).

The myth comprises two semiological systems: the language and the system itself, referred to as object language and metalanguage (Barthes, 1957), Figure 1.



*Figure 1 The double integration of the semiological system within the Barthes' myth. Source: Developed by us based on Barthes theory (1957).*

As previously stated, objects of use can be deemed systems of signs, which should be characterized through contextualizing the signifier, culturally building on existing codes (Eco, 1968). This semiotic imposition admits the existence of a signifier within the signs of the objects of use, and this very existence enables the production of meaning or different functions.

Primary functions are clearly different from secondary functions: primary (denoted) functions are the initial functions, whereas secondary (connoted) functions are symbolically derived (Eco, 1975). In denotative terms, the object of use is the precise signifier of its function (Eco, 1968). However, certain forms may go unrecognized as determinants of certain functions (e.g., those of symbolic nature) and demand the awareness of a specific code for them to come to fruition.

The assignment of functions also implies a wider range of all communicative attributions of an object, as the symbolic connotations of an artifact are no less useful than its functional denotations (Eco, 1968). This means that before turning into actions, the functions codified by objects of use are classes of possible functions, or cultural units (Eco, 1975), and because the functions of these objects correspond to cultural units, the codes for their conception are found in cultural features and, hence, lie simultaneously within cultural anthropology and semiotics.

As a synthesis of the arguments on semiotics presented above, Figure 2 represents the theoretical foundation that allowed us to develop the framework that follows.

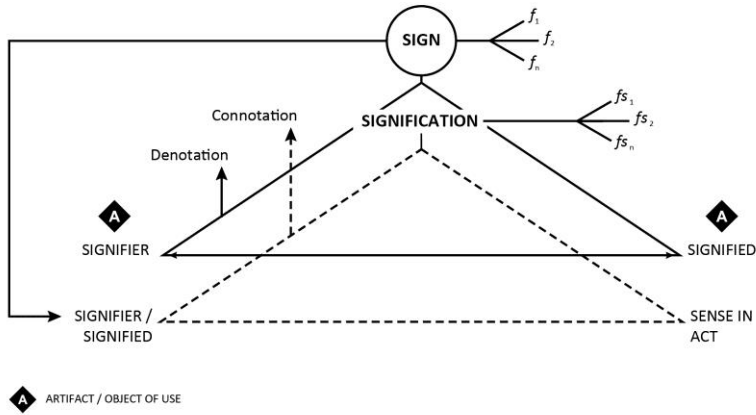


Figure 2 Model of interplay of functional and symbolic meanings.  
 Source: Adapted from Domingues (2011a).

Meaning assignment depends on the existence of an interpreter, that is, an individual that turns the object into a channel for the production of signs. In Figure 2, the left vertex of the first juncture, the denotation vertex, stands for the artifact existing [signifier], but still lacking representativeness. When the object starts representing something, it is assigned a sense [signified]. However, according to semiotics, only in a third moment [sign] is the object assigned the meaning of the first chain, which, for the objects of use, is realized in a use function:  $f_n$ . In the case of an object of use, shown in Figure 2 as an artifact, in the first articulation denotes its forms of use and connotes its possible functions –  $f_n$  – which are preconceived and recognized by the individuals. In other words, the object comes to being already carrying a socially and psychologically construed concept. At the configuration level, it denotes ways of working and connotes its possible functions. In the mythical juncture, however, the objects are assigned symbolic functions –  $fs_n$  – which correspond to institutionalized symbolic values.

Consequently, we believe that social discourses, as previously pointed out, can be regarded as issues strongly related to semiotics. That is, the sense of the artifact cannot be reduced to the mere relation between the signifier (the way object presents itself materially) and a signified (the expected function or performance). Hence, the concepts of “narrative”, “encyclopedia” and “dialogicity” can bring advancements and take an

important role in both the development and the analysis of global products based on the theory of semiotics.

### *Encyclopedia, Dialogicity and Cultural Intertextuality*

Each artifact should be recognized as an actor of a “narrative”, that is, as an element that takes part in a series of actions and behaviors in which artifacts on one side are called to act, and on the other to urge (Barthes, 1957; Deni, 2001; Landowski & Marrone, 2002). In addition, the notion of the encyclopedia provides a model of the semantic representation of an object regarding the historical, social and cultural complexities. In fact, the model of the encyclopedia (Eco, 1984; 2007) is suitable to make evident the multiple ramifications of the sense and knowledge, on different levels: individual, groups, social, cultural – perhaps even regarding general aspects of human beings. The metaphor of the encyclopedia allows the comprehension of the senses of the artifacts related to the cognitive or practical activities (Proni, 2012), and can also be considered as an intertextual network of cultural units interconnected – beliefs, habits, visions etc. This network produces not only connections, but also intercultural and intertextual dialogicity (Tedlock & Mannheim, 1995; Zingale, 2009), and then comparison and conflict (Landowski & Marrone, 2002), influence and infection, which can be considered “memetic” (Dawkins, 1976; Backmore, 1999), and drives inventive and innovative processes (Bonfantini, 1990; Zingale, 2012).

### *Things and Their Intertextuality in Our Environment*

Things are no longer alone, they are always in interaction with something else. That is, the sense of an artifact cannot be defined extracting it from its context. For instance, a word can be properly understood if it is in a sentence, and consequently within a text in which it takes part, but it is not enough. The text takes part in a context (in a situation and circumstance of utterance), and each text is conceived as a node inside of an intertextual network. In analogy, an artifact can be understood as a node inside its context, especially when regarding its role within a cultural context.

The interest of semiotics in artifacts and the material culture can be a starting point in the relational nature of objects. Semiosis itself, the process of identifying and generating sense, is relational. Therefore, semiosis originates when we establish a contact with the environment, inclusive of objects and everything which has a sensory and material nature. It is best to point out that semiosis can occur even in absence of a real language or

system of signification, like in the animal world. Indeed, the sense of an object emerges when we see something connected to something else, and that connection becomes an interest to the observer and therefore worthy of significance. All objects and events assume semiotic value only when they may affect our attention. As long as nothing happens in our minds, the objects are merely “objects”, things that are there, in total and absolute independence.

These “objects” and “things”, since they have a social and cultural dimension, and since they are the subjects of a project (Deni & Proni, 2008; Bianchi, Montanari & Zingale, 2010), we call them artifacts and products. They are in fact natural objects and cultural objects: the latter derive from our intentionality (Bonfantini, 2000). In this sense, objects are also facts and events happening in the world, or that we produce in and for our social life. Their relation nature (more precisely: semiotic-relational nature) is what gives them meaning. To invoke an old philosophical question, the sense does not lie in the being of things, but in their becoming: in their action and interaction. All things, once placed in the environment, tend to change the status of the other things with which they are related.

Therefore, nothing has a life of its own. Even things, such as human and nonhuman animals, have for us social existence, and the existence of every object, natural or manmade, is supported by a network of relationships. Only in this network can they express a sense. It is impossible to imagine the life of things, and even more so life in general, as a single and circumscribed event. Therefore, theoretically, we can set three possible dimensions to think about things regarding their possible contexts.

### *The Meaning of Things along Three Directions*

One should then try to think, at least methodologically, how to make theoretically evident that network of relationships. Only then can we try to obtain a model that allows us to understand how the meaning of objects and artifacts is built and composed in history and society. Thus we appeal to the dimensions of process (diachrony) and system (synchrony), which belong to linguistics (Saussure, 1916). Along with these dimensions, we added a third: the dialogical dimension (Tedlock & Mannheim, 1995; Bonfantini & Ponzio, 2010; Zingale, 2009).

Hence, in Figure 3, we propose a diagram that visually establishes the intersection of those three dimensions:

(1) The line of the diachronic sense: the artifact regarding its previous models within its own history;

- (2) The line of the synchronic sense: the artifact considering other system of artifacts, of the same or different category;
- (3) The line of the dialogic sense: the artifact in relation to its using interactions.

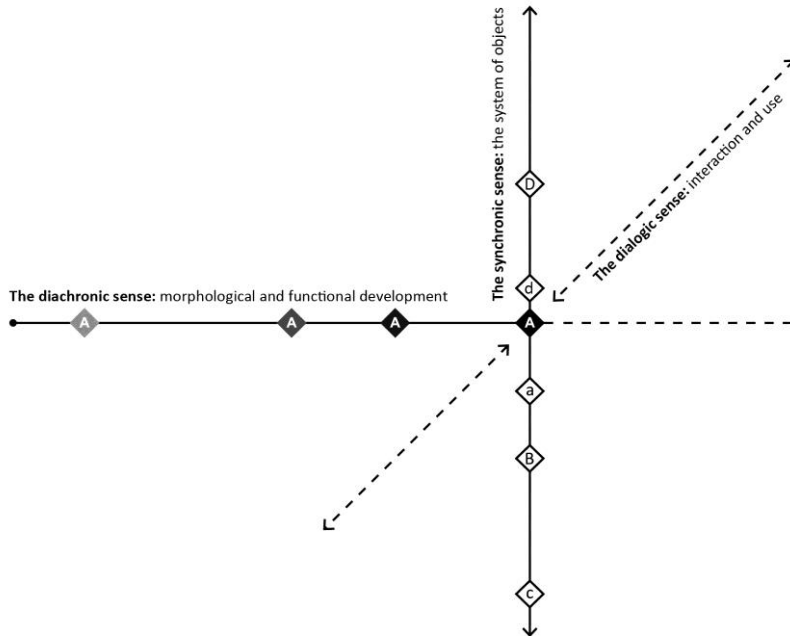


Figure 3 The three dimensions of the sense: diachronic, synchronic and dialogic.

### The Diachronic Sense

The first direction is that of the diachronic. That is, the study and evaluation of cultural objects considered in their origin and temporal development, often in the historical and comparative mode. The diachrony is the process flow of each type of artifact. It is the evolutionary unfolding of the objects. Diachrony puts objects in history: it is therefore the historical meaning of objects (Bonfantini & Renzi, 2010).

For instance: the TV. Once it was an object for collective fruitions, now it is an intimate device for personal vision. Once it occupied the domestic scene, now it is invisible and unnoticeable among other pieces of furniture. What changes is, its different way of “serving the communication”. Its formal metamorphosis goes hand in hand with the change in the use of

social communication. The TV is also monitor and display. Its history begins before the television industry and continues beyond this. On one side it is parent of the movie screen, on the other, its conception takes an important role in devices of vision and control (e.g., dashboards and radar), and with all family of computer monitors, smartphones and tablets.

The diachronic meaning of any cultural artifact can be potentially understood by asking two questions: a) What are the environmental and historical conditions that led to a particular artifact? b) How much and how well does an artifact represent the meaning of its era?

### **The Synchronic Sense**

The second direction is that of synchrony, the study and evaluation of cultural objects considered in a given historical moment, thus abstracted from their development over time. Synchrony, a term proposed by the linguist Ferdinand de Saussure (1916), offers criteria for the collection and study of a set of cultural objects, their simultaneity. In this way, this set is a system of objects in a given epochal dimension. The synchrony looks at the structural dimension of the objects, to their form and compositional syntax and to their sensory nature as determined in the environmental conditions of a given period: the trends of the period, the availability of technology and the social objectives. For instance, there is a different awareness of the ecological threat, or the attention to the body, that today guides the understanding and design of many artifacts, like automobiles and home appliances.

An object that has hardly changed over time is the bicycle. Once a poor transport vehicle, today it is a sign of an ecological vision of social life: an implicit request for a different view on metropolitan mobility.

Therefore, if we want to get the contemporary meaning of the bicycle – or even better, if we want to understand which would be the criteria for design innovation and invention with regard to the bicycle – it should be positioned in the net of its relations with other artifacts or structures where it can be found. There are many projects that seek the innovation of the bike, but do not regard its form or mechanics, but the lightness of the materials and the possibility of being able to bend and fit the bicycle into a backpack or a trolley (cf. [www.sadabike.it](http://www.sadabike.it)). In this case the bicycle is inside an urban system of mobility, such as public transport.

The questions about the meaning of the objects that we find here are mainly: a) Why at a given time a form is considered more appropriate, and therefore more full of meaning than others? b) Which other artifacts or



systems or socio-economic organizations enter into relation with an artifact?

### **The Dialogical Sense**

The third direction concerns the dialogicity sense, the sense that derives from all in question and interpretative actions on artifacts, and from the interaction between observer and object: by what we users are able to ask, and the answers, inferentially, that we are able to grasp. This direction is also the most scientific, because by asking an artifact (e.g., to understand how technological product works) the user puts in place processes of investigation not so dissimilar from those of the archaeologist, historian or anthropologist. This then is the experiential dimension of objects, which are particularly of interest to the processes studied by Interaction Design and usability ergonomic testing.

Before the computer, one of the first popular “dialogic objects” was the radio. Not only because it speaks, but because to make it talk or play we had to act on it. But greater is the complexity of performance, more difficult becomes the dialogue.

The relevance of the dialogical sense can be seen at the increase of importance of the communication items related to an artifact (e.g., manuals, tutorials etc.). These items tell us that each artifact asks the user to identify the interpretant relation that makes its use possible. The user must learn the language of the artifact. Hence, the task of the design is to conceive objects in a manner that makes the inferential language possible.

The line of the dialogical sense is also a social line. The “conversations” with the objects are also conversations around it: the dialogicity is also the aspect which increases the collective and cultural knowledge, the semiotic place in which people share and learn the complexity of the experience in the artifactual world.

The research questions, then, are: a) From which characters of the artifact depend our ability to use it properly and satisfactorily? b) Which are the inferential and interpretive procedures that come into play in understanding the usage schemes of an artifact?

### *Artifacts in Scene, Sense in Act*

Artifacts are predominantly on one or other of the three directions, or on their intersections, in daily use the objects are always in “scene”<sup>2</sup>, a semiotic scene. A delimited and coherent space in which the objects are next to us, around us and at our disposal. The metaphor of the scene tells us that each artifact is always associated with at least one second artifact: no object is alone, it is always a part of a syntax and a composition.

The concept of “scene” does not only regard the way things are set; it also regards the way things acquire, extend and change its sense. The model of the three lines of the sense is designed taking into account the complexity of the action that each line can generate, because the sense of the things lies not in the things, but in the actions they make and actions they allow us to do. In fact, it is necessary to start from Peirce’s idea of pragmatism (CP 5.402) on the meaning of signs and things: the meaning of any cultural act – a sign, but also an artifact – lies in the series of effects and consequences, in *habits*, that such an act produces or is capable to produce in the context of the interpreters. It is for this reason that signs and artifacts produce and nurture the cultural universes. And more specifically: cultural universes.

In fact, the language of the objects is not a system closed in itself, but a system that interacts with our experience of the world (Violi, 1997). Therefore, each semantic universe is continuously influenced by many realities (e.g., historical, environmental, psychological), and certainly influenced by the semiotic reality in its complexity, that is, the set of our knowledge about the world.

Arguing with semiotics based on the model of linguistics, Bakhtin (1929) brings attention to the fact that the sense is accomplished with “live speech”, regardless of the existence of a code or pre-existing system. Hence, Bakhtin makes the distinction between the “neutral meaning” of a word (for us: an artifact) and its “sense in act”. The latter is the overall sense of unity and of any semiotic act, the sense that you can define only in the reality of social interaction, such as the dialogue in a conversational situation as studied by communication pragmatics (Grice, 1975). This means that the sense of an artifact is not defined only by the way in which it manifests (for instance its shape or belonging to a product type), but also by its implicit

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<sup>2</sup> It should be noted that the metaphor of the scene asks to be developed, keeping in mind that from it derive many other metaphors. Perhaps, for this “etymological” reason, the term scenario appears to be repeatedly used in the theories of design. See Jégou & Manzini (2004); Carroll (1995).

meaning (the Conversational Implicatures, as defined by Grice) and environmental and historical factors. This current sense – or sense in use – thus requires an active understanding. Being designed, instead, the object requires an evaluation of the “dialogical game” in which it may be present and also that the artifact produces and urges.

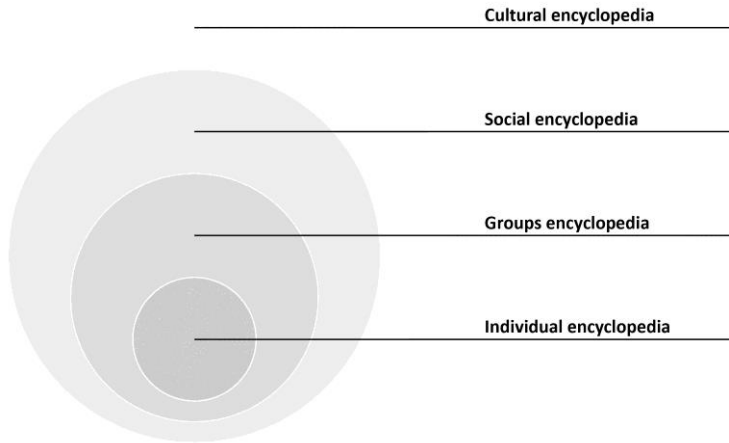
Therefore, the design cannot start from the possible tension between the conventional meaning [conventional signified] and the sense in use. Even the sense in use is the subject of the project, and this understanding of the design is strongly linked to the idea of abduction in the Peirce manuscripts (Bonfantini, 1987; Zingale, 2009, 2012).

To stay with the semantic models, the effort of design with regard to [prefigure] the sense in use – to understand the meaning of artifacts and therefore also the way to conceive – can be guided by the model of encyclopedia developed by Umberto Eco, first developed in 1975 and then in 1984. This model has been designed to overcome the limitations of semantics that separates the inside knowledge of a language (or a system of signification) from those relating to the knowledge of the world. In the model of the encyclopedia, for instance, each "unit of content" (e.g., "oven") is not only the definition (denotation) of the furnace as "an enclosed compartment", usually part of a cooker, for cooking and heating food ([www.oxforddictionaries.com](http://www.oxforddictionaries.com)), nor merely an aspect of the connotation associated with particular uses, such as "kiln" or "furnace". In the model of the encyclopedia, the content "oven" tends to include all the other knowledge that a certain culture has developed around this "enclosed compartment", such as metaphorical ones (a warm place), fairy (Hänsel and Gretel Brothers Grimm), and sadly even those historical (the cremation chamber in a Nazi concentration camp).

As in the library of Borges, an encyclopedia brings an entire heritage of beliefs and knowledge of a cultural community. But it is an irregular archive, often fragmented, incomplete, in continuous change. As a network of semantic interconnections, in which each node refers to other nodes, often unpredictable. But above all, the encyclopedia can have different extensions, for instance: the one that considers the human history of the entire planet; and the one that collects the knowledge of a nation, narrowing the circle of ethnicity, of a social group or even of a family community. Finally, the encyclopedia also has an individual dimension.

To improve the understanding of the concept of encyclopedia, Eco uses the metaphor of the rhizome, taken by Deleuze and Guattari (1976). The graph that we propose here - Figure 4 - is instead a theoretical hypothesis, a

way to represent what might be called an encyclopedic graph, where the knowledge of each individual is embedded in a number of others.



*Figure 4 The different levels of encyclopedia.*

Instead, the rhizomatic structure emerges once we try to give a representation, even if basic and fragmented, of the possible joints and “grafts” among encyclopedic fields at a global level.

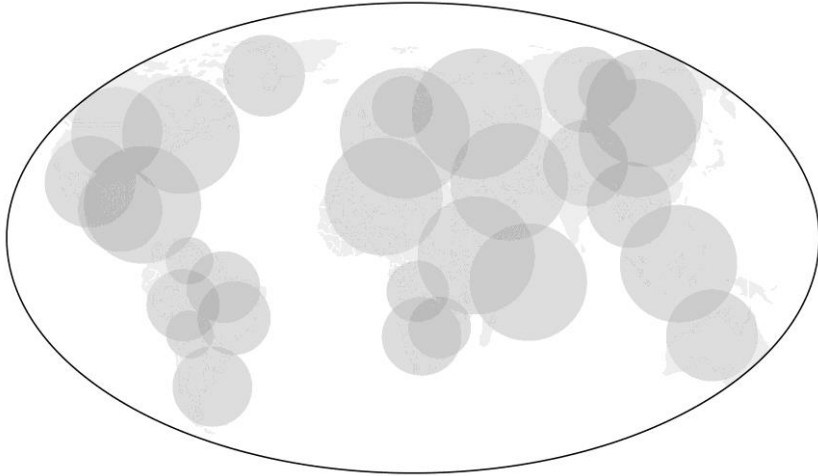


Figure 5 The encyclopedia as a complex and global phenomena.

In Figure 5, the circles which represent the encyclopedic universe would be multiplied to an indefinite number. It would be possible to think of an inextricable labyrinth, and perhaps even larger. As Eco writes, no graph is able to represent the model of the encyclopedia in its complexity (Eco, 1975), because this encyclopedia is not attainable in its totality (Eco, 2007). However, Eco also specifies that

*the encyclopaedia is the only way by which we can make it right, not only for the operation of any semiotic system, but also the life of a culture, as a system of interrelated semiotic systems.*<sup>3</sup> (Eco, 2007, p. 56)

Possibly, the model of the encyclopedia is then the only one which can allow the designer to deal with, regarding the necessary methodological caution, the problem of the meaning of artifacts. Or better: the problem of how artifacts propose and, at the same time, produce new meanings within a given anthropological reality.

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<sup>3</sup> Our translation for: "L'enciclopedia è l'unico mezzo con cui possiamo rendere ragione, non solo del funzionamento di qualsiasi sistema semiotico, ma anche della vita di una cultura come sistema di sistemi semiotici interconnessi" (Eco, 2007, p. 56).

## Final Remarks

Regarding the literature of management and design, the models and arguments previously stated tell us then that design – and the production of goods and artifacts in general, which includes global products – should consider:

1) Thinking of the diachronic dimension, the variation of the senses [denotation level] of an artifact can directly affect its acceptance in different contexts. Especially considering that the development of social and cultural aspects are not synchronized, even within the same contexts. That is, the individuals' response can be more or less effective when experiencing their goods.

2) The synchronic sense, which offers criteria for the study of a set of artifacts in its epochal dimension, can provide a structure of analysis that enhances the manner in which products can be redesigned or adapted to their contemporary context.

3) The dialogicity is understood according to the two acceptations: on the one hand to be seen as an action in relation to the reaction of the other (hence the sense of an artifact lies in the manner in which it is recognized); on the other hand is the dialogism and the awareness that every artifact is to be seen as the answer to interpreting another (e.g. the sense of an artifact can be seized only regarding the intertextual relationship with other artifacts). It is to say, to analyse an artifact, designers should also take into account the other artifacts around it, which makes the design process even more complex.

4) The sense is the result of a collection of stories, but these stories are inevitably dialogic and intertextual. Therefore, the sense of an artifact can vary across cultures, and detected differences can add value to the user's experience in their specific contexts.

5) The sense is a set of dependent and independent variables: variables that depend on an extensive and global knowledge, and variables that depend on specific and local knowledge. Hence, the analysis of global products design, as pointed out by Levitt (1990) and claimed by Boztepe (2007), should be taken in-depth in order to better support processes of conception, positioning and adaptation of goods, especially when dealing with different cultural backgrounds.

6) The consequence that the sense of the artifact is an experienced phenomenon and to be designed should be experienced, is just for the reason that the sense is always a reality defined by the practice of use and the relationship with other artifacts and "discourses". This built a network of

senses which on one side renders the process of artifact analysis almost unfeasible but, on the other can enrich the value of an artifact from the users' point of view. But, as demonstrated by Domingues, Moraes, & Dias (2014), empirical research has been done in this direction.

7) The design practice should then be developed from the ability of the subject-user to interpret the meaning of an artifact, according to what Bakhtin called answering comprehension: an understanding that it is also an appropriate response for the project, but also capable to regenerate the sense of the project itself.

As the theoretical assumptions have been discussed, for further advancements, empirical investigations are strongly desirable in order to test the theoretical arguments in different contexts and realities. The graphic of the three dimensions of the sense - Figure 3 - is not closed in itself. Any enhancement based on the theory of semiotics is welcomed. That is, we believe that broadening knowledge on the dimensions of the senses can improve the methods to analyze global products, which adds value to global products design, its management, and to users' experience.

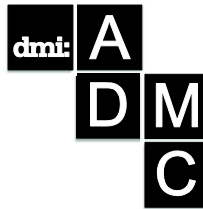
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# Designing the City Identity: Strategic and Product Design for New Experiential Ways of Living, Enabling and Interacting with the Urban Context

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*The city identity design is a very complex task, but it is indispensable to be recognized in a competitive market and to attract investments, companies and people in economic, cultural and educational sectors. This complexity comes from many factors, including the delicate relationship between identity and reputation, being and being perceived. For this purpose, besides the consolidation of the Place Branding discipline, some investigation methods have been perfected over the last few years. Their aim is to measure the satisfaction index and the reputation of countries and cities. Today, the diffusion of digital technologies and social networks is contributing to increase and spread some actions of bottom-up participation, crowdsourcing, collective creation of urban identity, which can interpret the social changes under way faster. In the age of open-source cities, what is the relationship between top-down identity processes and innovative visions, animating the territories' physical and virtual networks? How can we build a shared, strong image of the city, including and conveying new emerging narrations and innovative proposals of urban use and valorization?*

**Keywords:** *strategic design, experience design, narrative systems*

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## **Introduction**

The increasing need of telling and promoting the city identity arises from the new kinds of competition in global markets, proposing the subject of distinctiveness and relationship between places and - tangible and intangible - resources in a renewed manner.

The territories, as the products, try to steer their own development and perception in such a way as to be 'desirable' (Buchanam, 1999), but their success is connected with various 'utility' factors too, that is the fact of proposing itself as a business-friendly environment, providing opportunities and distinctive qualities, and 'usability', that is the possibility to be structured with networks of services and governance systems, such as to render the relationship between environment and its stakeholders easy.

Territory desirability is connected to its identity perception, the implied promise of a system of values of excellence or specialization compared to other places.

This is why cities and territories identity is increasingly becoming a core project and monitoring theme. Their identity is closely related to their competitive positioning (Anholt, 2007), necessary to attract investments and to facilitate processes of economic growth, environment quality and social development.

### *Designing Place Identity*

Place identity is very complicated to trace, because it depends on a multitude of factors:

- **Factors Tending to Change Over Time:** places and towns are developing bodies, where time dimension can be interpreted not only compared to the past and history (and the related system of values), but inside a dynamic and changing present, where the different ways of use can characterize again the sense of the places on the same day too. The theme that disciplines concerning urban studies are asking themselves is not only functional (Landry, 2006; Evans B., McDonald F., & Rudlin D., 2011), but social and relational too, well summarized by the exhibition entitled 'Cities. Architecture and Society' at the 10<sup>th</sup> International Architecture Exhibition, Venice, 2006.
- **Subjective Factors:** towns are the scene of collective memories and the personal approach which everybody has with place perception

and meaning. From this point of view, towns can be interpreted as the repository of personal stories and emotions embedded over time. This kind of approach is supported by emotional geography (Bruno, 2002) and environmental psychology (Landry, 2012).

- External Factors: accidental events (such as acts of nature) or unforeseeable circumstances (such as judicial investigations) can change the place identity suddenly or affect the way it's perceived from outside; or event beyond the control, such as the testimonies of international prominent personalities from the world of culture, economy or social movements of dissent, which can strengthen or obfuscate the identity framework we are trying to point out (Landry, 2006; Anholt, 2007, 2010).

Even only the activity of portraying the place identity, even before strategically targeting it, appears as a complicated matter of choice, an operation that cannot be exhaustive, but selective of a portfolio of identities, mutually compatible and converging on defining a framework of values and territorial specificities.

### *Identity and Reputation*

With regard to the last issue, we notice that the identity question is mingled with the reputation one. In fact, if identity is a representation reasoned, selected, designed and reinforced by tangible evidences and congruent actions, reputation incorporates collective imagination of people that perhaps do not know these places personally, but got an idea of them through what they perceived by media or other narrative forms (from movies to literature or show business testimonials). A bad reputation can arise from a shallow identity design, which stops at the image level, so it is not supported by the real situation and does not keep the promise.

There are many studies which measure the index of satisfaction of the countries and the major cities around the world each year, including the 'Nation Brand Index' and the 'City Brand Index' by Anholt-GfK Roper, or the 'Country Brand Index' by FutureBrand, proof of the growing interest in monitoring the external perception of our own country, taking into account variables measuring factors such as the importance of physical, organizational or social factors. These rankings arise from opinion polls targeting people who do not know directly the countries or cities under investigation, but who express the perceived idea and their expectations about service level, human relationship, investments and job opportunities, vivacity and wealth of the cultural and entertainment experience. So they

are indexes other than the specialist ranking for the different sectors, such as tourism, measuring *a posteriori* actual and quantitative results of a specific sector.

Furthermore, FutureBrand has recently conducted a new survey entitled 'The Made In Report' (issued in February 2014), concerning the relationship between the products coming from different countries and their impact on the overall perception of the Country System. This survey measures the 'value of the country of origin', that is how the successful products can contribute to increase a positive perception of the country of origin and vice versa. This first opinion poll confirms what is easily guessed, that is, for example, that fashion or food products for Italy, as well as the vehicle and precision mechanics sector for Germany, shall be used as successful testimonial for the country of origin. In the first case it shall strengthen the style and good taste idea, in the second one the precision and reliability idea.

Countries and cities are increasingly focused on strengthen their own image in order to intercept - like the companies do - cash flows and investments in different production sectors, tourism or culture, by implementing strategic plans to steer their 'brand identity' and in the same time by keeping the reputation variation, that is 'brand image', under control. These operations are not easy and need an ongoing commitment and coherence of choice.

Anholt would say that 'competitive identity is the art of playing chess by using reality against perception' (2007), a game requiring a great deal of attention, vision and action adequacy. If reputation is what we seem to be and identity is what we actually are (or what we are trying to be), the only way to align these two visions is to practice identity over time with conviction and coherent gestures.

Some towns, such as Barcelona, Bilbao or Turin, have been able to recalibrate their identity, directing it towards new strategic visions of development. They acted over time with an action plan, able to affect not only the perceived image, but also the real structure, by accompanying renewal with top-down initiatives and by facilitating the bottom-up ones.

## **Place Branding and Place Experience**

Zygmunt Bauman (2004) claims that in the liquid modern age even identity is mutable. It is like a dress we use until we need it. But above all he underlines that identity is something that must be invented rather than

discovered; it is like a target, something that may need to be built from scratch or chosen among alternative offers.

If we refer these argumentations to the local identity framework, we see that, to find a specific design methodology, we adjusted branding - brand design and brand management activities – usually used for companies or institutions - to places and cities, considered as complex organizations, which need to be recognizable and able to communicate their own 'personality' to the outside world.

The disciplinary sphere and the methods concerning Place Branding and City Branding, dealing with local marketing and destination management, are gradually consolidating through a specific literature and the verification of the results of the first experiences (Moilanen & Rainisto, 2009; Govers & Go, 2009; Dinnie, 2011; Baker, 2012). However, they point out some criticisms arising from the multi-player dimension (there are a number of territory stakeholders with at times widely divergent targets), as well as from the previously discussed changing factors, in the balance between identity and reputation.

In particular, Govers & Go clearly define the disciplinary scope: 'place brand is a representation of identity, building a favourable internal (with those who deliver the experience) and external (with visitors) image (leading to brand satisfaction and loyalty; name awareness; perceived quality; and other favourable brand associations)' (Govers & Go, 2009, p.17).

They also structure a three-step model of analysis and design of place branding - 'The 3-gap place branding model' (Govers & Go, 2009, p. 41) - based on:

- 'place brand strategy gap', interlinking place identity with projected place image and product offering (in different possible sectors such as tourism, trade, talent, treasury);
- 'place brand performance gap', interlinking projected place image and product offering with the vicarious and perceived place experience;
- 'place brand satisfaction gap', interlinking vicarious and perceived place experience with the visitors' perceived place image.

So the most delicate issue to be solved is the alignment between what has been designed and what is actually perceived, due to the real evidences in the territory as well as the expectations residing even in the user's unconscious.

The comparison with the real experience that each stakeholder may carry out in the territory leads to a constant verification between the brand promises and the brand experience, which, only if confirmed, may have a positive impact on the reputation and the strengthen of the identity.

It is therefore clear that place branding cannot act by its own, but needs to be related to political, economic, urban and social development's strategies, in order to avoid being limited to a superficial graphic 'dress' to be put on territories and cities: in order to be effective, place branding must be a synergetic action requiring long-term strategic actions, constant methods of monitoring and design, as well as the creation of sharing and network between the different players, including inhabitants themselves.

## **Cities and Processes of Bottom-up Change**

In parallel with the consolidation of this relatively new discipline, the diffusion of digital information technologies, especially of social networks, has made more evident - and in some cases has also contributed to increase - the presence of many forms of bottom-up activism, due to the increasingly growing need to modify the current methods of narration and use of the cities.

Associations, on-line platforms, interest groups, young start-ups are proposing not only new methods to communicate, live, visit, tell the city, but also to do business, connect and propose some forms of participatory design, by using the web as a core instrument of action or as an instrument to disseminate information and results, but not always as an exclusive tool. Certainly, the web and the social networks are a powerful real-time amplifier of what is happening in the cities.

The picture of cities that emerges is vibrant, proactive, dynamic, and made of snapshots fixing the instant of a changing journey. The web portrays another identity of the cities, linked to a present time looking at itself critically, in order to design and share some ideas of a very near future. Cities as a cradle of some emerging phenomena: the 'creative cities' phenomenon, not intended just as attraction spots for creativity professionals (Florida, 2005; Landry, 2012), but where social participation contributes to the creation of sense and use of the cities themselves; the smart cities, or better 'senseable cities' (Ratti, 2011) phenomenon, where the web system plays a role of information collector ('sensing') and implementation according to the gathered information ('actuating').

The two different processes – top-down design, usually guided by some opportunities such as major sporting, cultural or religious events (such as the Olympic Games and the European Capitals of Culture) or planned by local authorities; and bottom-up design, made of crowdsourcing, spontaneously suggested by those who want to actively contribute to changes - in the framework of a coordinated project of Place Branding, should contribute and mutually support the choices and goals of a competitive positioning, defined in a early stage.

That can happen if local communities are included within the phases of preliminary approach and design, right from the start, with procedures of comparison, co-design and participatory verification.

## **Collective Narrations of Meanings and Urban Identities: Case Studies**

With reference, especially, to the Italian situation, we are seeing particularly meaningful phenomena. Italy, thanks to its reputation of a country rich of important historical, artistic and scenic attractions, together with an Italian style of taste (fashion and design), and the pleasure of good living (environment, food, human capital), has been living 'on accumulated interest' during these years, by poorly investing in initiatives for the promotion and re-launch of its own image. A heritage, whose value is fading if compared to a competitive context, where other countries are focused on coordinated actions to strength their image. In fact, all ranking systems are registering a slow, but progressive decline of the country system image, which some Italian towns have been trying to remedy for some years, by promoting their own urban image, through more or less successful initiatives of long-term strategic design (such as Turin, Genoa and Milan) or through a new City Brand design (Bologna, Florence, Genoa).

In the current period of economic stagnation and policy uncertainty, the planning and development coordinated initiatives are struggling to materialize, and prefer to act occasionally in an almost uncoordinated manner, with the only aim of obtaining a 'wow' effect, often ephemeral and not-lasting.

In the absence of a policy planning, even more clear in the Southern regions where economies are weaker, and due to the local authorities' evident difficulty to cope with transformation processes and significant investments, surprisingly we are seeing the creation of bottom-up initiatives



trying to integrate new methods of narration, and thence perception and creation of sense, of the places.

This is more evident in the Southern areas, where it is very urgent to relaunch different economies as an alternative to the big corporations, based on tourism and the valorization of the cultural and environmental heritage and the productive sectors related to them.

As mentioned above, the web and social network diffusion makes visible what is happening in real time, and reduces the time needed to know phenomena, amplifies information and facilitates its diffusion. But they are also channels which foster sharing methods, collective participation, co-design and crowdsourcing.

Some case studies have been selected in order to understand what are the filters used to interpret the places identity, what participation methods have been activated in order to undergo physical or perceptive change processes, what innovative and relational tools to renew the experiences of cultural and environmental heritage enjoyment.

In summary, without going into details of each initiative, we shall try to schematize the narrative models and those of meaning creation and the relationships between the different players.

### *Bottom-up Models of Territorial Storytelling*

#### **Repository of collective memories**

- On-line Collaborative Mapping.  
There is a wish to draw new physical and mental city maps, in order to amplify the sensory perception, find out unusual places or track links during the time and social evolution. They are an evolution of the parish maps, used to define the values of the Ecomuseum areas, by integrating the emotional map with the collaborative and temporal dimension of an evolving continuum, and the update, which new technologies allow us to do.  
'MappiNA' (<http://www.mappi-na.it/en/>) and 'Napolirama' (<http://napolirama.it>) are two different ways to express this need of Naples: the first one is an alternative city map providing a geo-localized tale, which portrays the contemporary time, the daily relationship of use of the city, through little known noises, ideas, methods and places; the second one is a family album portraying places and people during all the XX century, pointing out the

evolution of the relationship between spaces and lifestyles over time.

Another important example is 'Nuok' (<http://www.nuok.it>), whose name comes from the pronunciation of a small child of the word 'New York': it's the collective travel journal written by Italians about some towns of the world, which wants to express the children's curiosity about unusual places. It's a collection of stories, perceptions, urban experiences, managed by a group of urban reporters. More than an on-line magazine, it is a storyteller, similar in some ways to the better known Cowbird (<http://cowbird.com>), which is more focused on human experience narration, where places are only the background.

The common elements between these examples are the collaborative dimension, the storytelling and the repository of collective memories.

- Storyteller as a Cultural Mediator.  
The territory oral storytelling is an ancestral form, which is becoming a core element today. With reference to Basilicata - a poorly known region of Southern Italy, except the city of Matera, recently brought to the world's attention by the movie 'The Passion of the Christ' by Mel Gibson (2004) – Gianni Biondillo, writer and architect, was commissioned, in the framework of a series of institutional actions of regional promotion, to make a trip in this territory in order to collect testimonies of the inhabitants and local stakeholders. The above shall be set down in writing, 'Il Diario del Pollino', an eBook, which can be downloaded for free: it is not a novel, nor a guide; it is a travel journal at the discovery of people, stories, excellences, innovations, cultures that we would not have been expected to meet. This experience is interesting, even though it is not a bottom-up initiative, but in a certain sense it is nourished with old exploration practices and authentic testimonies of the territory. The writer becomes a cultural mediator, who not only reveals hidden identities of marginal lands, told by the voices animating these places, but provides his own emotional and affective vision, which is amplified thanks to the web till reaching an unthinkable geographic scope. It is a way to feel, and not only to tell a land.

### **Collective - On-line and On-site - Actions**

- Participation Using Games

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'Critical City' and 'Whaiwhai' are two examples of interaction with the urban environment using games.

The first one uses the on-line web site (<http://criticalcity.org>) to create a play community, which, through some missions in the cities, competes with a points classification, with the only social and recreational aim to interact with urban spaces collaboratively. The missions, carried out in real places and documented and shared only on the web, are demonstration actions of how to regain the urban spaces, imagining different forms and uses, and building a meaningful narrative repository - in the framework of a collective contest - in order to renew them.

Whaiwhai (<http://www.whaiwhai.com/en/>) is a discovery game, aiming at a different touristic use. It is formed by a physical part – a guide book of every city – proposing a path to discover the mystery to be solved, and another part, available on-line on smart-phone, by entering an access code. Through geo-referencing systems and riddles to be solved via text message, the goal is to visit some city spots by following a narrative thread and challenging other users' groups to discover the hidden secret.

In both cases, the game is the instrument to trigger the real participation *in situ*, but the narration role is different: in Critical City you contribute to build it, in Whaiwhai narration shall become a way to know better what is not visible.

- Urban Critique

Wedu - decoro urbano ([www.decorourbano.org](http://www.decorourbano.org)) is a participative instrument reporting the city degradation, a social network aiming to foster the dialogue between citizens and municipality, and it contributes to take care of the city. Active in the Italian territory for about a year, it managed to obtain the accession of several active municipalities, which can in turn report when the problem has been solved. Based on an open-source project, it intercepts the city users' criticisms and moods, and directs them towards positive forms of participation and active citizenship. Among the active municipalities, there are many small towns of Southern Italy, which have intuited the potential of redemption of their reputation and narrative and perception reversal, and showed a real ability to listen and a resolution capacity.

Table 1 Bottom-up Models of Territorial Storytelling

<b>REPOSITORY OF COLLECTIVE MEMORIES</b>	
<p><b>On-line collaborative mapping</b> Network as a participatory archive.</p>	
<p><b>Storyteller as a cultural mediator</b> Storytelling of individual experiences, digital sharing and diffusion of the territory's emotional narratives.</p>	
<b>COLLECTIVE - ON-LINE AND ON-SITE - ACTIONS</b>	
<p><b>Collective storytelling through urban game's actions</b> Exchange-based relation between the real and the virtual, between places and web.</p>	
<p><b>Enjoyment of the territory using narratives as a game</b> Cognitive playful experience of the territory</p>	
<p><b>Urban critique for city care</b> Collaborative dialogues between users and authorities</p>	
<b>CULTURE-LED INITIATIVES</b>	
<p><b>Narrative networks of the territories</b> New sense creation through the connection between different environments.</p>	

### **Culture-led Initiatives**

There are many initiatives proposing new relationship networks between places and meaning systems, and they propose unusual city visions and narrations with a combination of procedures (on-line and on-site): from innovative experiences of urban exploitation (e.g. geo-emotional map of 'Citytellers' - <http://www.cityteller.it> - telling cities through the places of the books the users share; the 'Biciclettering's routes' - an initiative of the Association of Italian Calligraphy —, a urban cycling safari, looking for font of near and distant eras in the city spots), the initiatives proposing multisensorial or participative visit experiences of the cultural heritage (theatrical visit routes, educational experiences, caring activities or guerrilla gardening, accessibility to private sites of creativity, etc.). An exuberant proposal of different narrations that draw inspiration from the different levels of the city's porous identity to create innovative visions and uses. There is a urgent desire to have an impact and create change, pursued first of all by young creative talents, the real engine of urban renewal (Florida, 2005).

### **Souvenir as Touch-points of the New City Experience**

The summary of these initiatives (table 1) provides us the essence of an underground, very visible on the web and less perceptible in reality, excitement of affirmation of new meanings and new stories, a dynamic and authentic narration opposed to the canonical and stereotyped one, where the city seems to be caged. In the absence of a top-down courageous design of a portfolio of territorial identities, updated to contemporary reality, Italian towns are generally seen, exploited and perceived by external visitors according to the most traditional *cliché*. Upon arrival on site, the most innovative and interesting elements of ongoing change in Italian towns are not perceived at all. So they remain common knowledge of the web people, because all the physical elements of the territorial identity narration, including souvenirs, remain bound to the classic vision made of stereotypes.

Since a number of years, through a didactic experimentation carried out in two Italian cities, Milan and Naples, at the Design School of the Politecnico di Milano and the design course of the University Federico II of Naples, we have been checking how, in the framework of affirmation of new bottom-up identity strategies, the system of souvenirs of the territory visit experience could represent an evolutionary step, becoming testimonial of alternative visions of the city (Parente, 2012).

Previously considered as unnecessary objects, souvenirs could be interpreted as the physical link between on-line perception and *in situ* perception, as touch-points of the new city experience.

In this sense, a new generation of city souvenirs could:

- play a role of thickener of the personal experience and the manifold memories embodied by the city, going beyond stereotypes and trying to reveal a more intimate multifaceted nature of places;
- amplify the territory perception, by suggesting special interpretations and visit paths that otherwise would remain invisible;
- contribute to an active and participatory process of identity reinforcement and definition in a way that can involve the different local players, because the first users of the city are the same inhabitants;
- act on internal and external communication, by materializing and making visible some changes under way, in order to ferry the real action of change towards a recognized and shared perception, which starts to influence the crystallized reputations engrained in the collective imagination over time;
- go beyond the ideas of trip and tourism to interact with the new internal and external *city users*, and to meet the growing demand of cultural entertainment;
- be an instrument to renew the tradition, knowledge and local know-how elements.

Imaging new kinds of city souvenirs as devices which can contribute to the collective creation of the 'brand identity' of the place internally and can influence its 'brand image' externally, in other words its reputation.

The concept of device implies not only the instrument dimension, but also the possibility of flanking a more passive mode of sensorial interaction with the product, with an active mode of direct and indirect behaviors and actions, contributing to the territorial identity co-creation.

For design we adopted a three-step method: the first step is focused on city investigation. It is a direct 'on field' investigation using real and digital ethnographic analysis methods, to detect the most significant indicators of the contemporary time and trace the profile of the emerging meanings. The second step concerns the knowledge of the city's tangible and intangible resources, and is an analysis of the territorial capital, able to do a map of the values characterizing the place, and to review the elements dulled for a long

time and not recognized as valuable sources. The third one, focused on the disclosure of the hidden city, is the final design step of implementation of formal, cognitive and relation aspects, which the souvenir must be able to activate in the relationship between city users and the same city.

## Conclusions

All the above dissertation leads us to think to be near to a paradigm change:

- complex processes, such as the identity definition of a territory (strategy), the control of the different stakeholders' actions (performance) and the monitoring of the perception compared to the users' expectations and reputation (satisfaction), seem hard to be realized and controlled without infrastructural significant investments and without approving and sharing the aims;
- the capillarity of technologies and digital channels of communication are rapidly changing the social, political and productive modes, and are opening a new participatory, collaborative and open-source dimension, from the point of view of the meaning definition as well as action definition;
- the top-down design times are asynchronous compared to the speed of the social changes and the emerging needs of the use and enhancement of urban spaces;
- the 'Place Branding' discipline must act together with the economic, infrastructural and policy planning of countries and cities. At present, this coordination seems to be very difficult to achieve in Italy and we need to think about new strategies in order not to go back more than the international rankings.

It is accordingly proposed a shift of perspective, able to enhance and give visibility to the positive processes of self-determination and to the creation of new bottom-up meanings, arising from the active participation in the territory by:

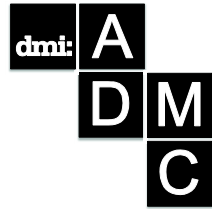
- creating the conditions for an enabling environment for the expression of creative and collaborative communities;
- monitoring the bottom-up activities and building coordination activities through the debate and the creation of shared visions (participatory design);

- facilitating the communication of the aspects of innovation and implementation of the territorial capital value, and considering the vision vivacity a positive factor of the territory vitality;
- flanking the territory main identity with the emerging ones, traced by creative talents;
- setting up relations between the real dimension and the web virtual one, where souvenirs play a new role and are considered as touch-points of the new forms of city experience.

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## The Impact of Nationality and Gender on Consumer Preferences

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*Design has a vital role to play in the Marketing Mix and can shape a person's overall reaction to a product including its pricing. Designers, for their part, are key cultural intermediaries between the product or services and the consumer but empirical research testing preferences for products, segmented by nationality and gender, shows that the value placed on designs by consumers can vary widely, with personal variables mediating reactions. This paper examines the part played by nationality and gender in negotiating value for the consumer and an understanding of the impact these variables can have on design preferences will help designers and marketers perceive the strength of an interactionist rather than universalist approach to design, permitting an understanding of how others negotiate meanings.*

**Keywords:** Gender, Preferences, Design

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## Introduction – Importance of Design in the Marketing Mix

Design has the potential to impact the Marketing Mix at each of its four points, whether in respect of Product, Place, Price or Promotion. Self-evidently, it will influence the look of the product and its promotion and can have an influence the price people are willing to pay for non-commodity products, adding a premium of up to 66% on the price people are willing to pay (Hassenzahl, 2007). Its strategic importance is such that it shapes a person's overall reactions to a product (Roy and Wield 1989), replac[ing] nature 'as the dominant presence in human experience' (Buchanan 1995, xii) and serving as 'an important strategic asset, both in the business and academic arenas' (Dell'Era and Verganti, 2010, p.124).

The product design field encompasses the functionality, aesthetics and ergonomics of a physical product that comes into contact with a consumer (Coates, 2003) and consumer reactions to the aesthetic aspects of products are recognized as important determinants of consumer behaviour (Vezyer, 1993; Creusen *et al*, 2010) and key sources of differentiation (Schmitt and Simonson, 1997). These aesthetic aspects consist of those characteristics that create a product's appearance and include materials, proportion, colour, ornamentation, shape, size, and reflectivity (Lawson, 1983). In today's increasingly competitive marketplace, companies need to take into account the aesthetic preferences of consumers when they make decisions about the appearance of their products (Creusen *et al*, 2010, p.1437-8). Design, therefore needs to interact with consumers, leading Buchanan (2001, p.11) to speak of "interaction design", a term he explains as being rooted in how:

*human beings relate to other human beings through the mediating influence of products. And the products are more than physical objects. They are experiences or activities or services, all of which are integrated into a new understanding of what a product is or could be.*

Buchanan goes on to state (p.13) that "interaction design" leads designers and design theorists to seek an understanding of products:

*from the inside—not physically inside, but inside the experience of the human beings that make and use them in situated social and cultural environments... we have an opportunity for new*

*The Impact of Nationality and Gender on Consumer Preferences*  
*understanding through an investigation of what makes a product*  
*useful, usable, and desirable.*

This objective of understanding the experience of human beings links with Bourdieu's notion of 'cultural intermediaries' (1984), one that Nixon (1997) has argued demands a 'differentiated picture' which is:

*sensitive to differences aligned with educational background and training, and which is aware of issues of gender and race.*

Regrettably, as Buchanan himself states, the issue of 'desirability' is thought to remain one of the 'weakest topics of design research today' (*ibid* p.16), reinforcing an earlier observation that 'there has been relatively little investigation of how this variable [aesthetics] affects preferences for products' (Vezyer, 1993). Even into the twenty first century the gap persists, with recent commentators lamenting the fact that 'a deeper knowledge of the area is lacking' (Noble and Kumar, 2010).

This paper seeks to address this gap through empirical work testing the preferences of men and women in five countries.

## **Two Contrasting Approaches to Design**

Broadly speaking, there are two approaches to understanding the process that leads people to perceive aesthetic value in objects. One is the universalist, Kantian approach which holds that the judgement 'this is beautiful' would be universally held insofar as every normal spectator would acknowledge the validity of the statement in relation to a particular object or work of art. As a consequence, this approach seeks to find rules and solutions that will satisfy everyone rather than just a sample of people. By way of example, Maeda's *Laws of Simplicity* (2006) offer ten principles for achieving design simplicity, with the presumption being that simplicity is a goal of universal appeal. Likewise, Nielsen's 113 design guidelines for homepage usability rest in the belief that the applied results will have universal appeal applicable across demographic groups. Two of these guidelines are shown below by way of example:

*(i) Limit font styles and other text formatting, such as sizes, colours, and so forth on the page*

*(ii) Use photos of identifiable people who have a connection to the content as opposed to models or generic stock photos. People are naturally*

*drawn to pictures, so gratuitous graphics can distract users from critical content.*

It can be seen that these guidelines presume a single best way of presenting information which in turn presumes a common aesthetic response on the part of all users. In fact, much design research is dedicated to isolating the visual principles that will universally optimise design. Veryzer (1993), for example, conducted empirical work with twenty four undergraduates with a view to isolating the non-conscious design processing algorithms, the so-called 'internal processing algorithms' (IPAs), that produce positive reactions to design. He concluded that proportion and unity 'may play an important role in many if not most consumer decisions' (p.227). In the same way, and more recently, Creusen *et al* (2010) sought likewise to establish universal rules concerning the effect of complexity and functionality on aesthetic preferences, testing reactions among a sample of 431 subjects. In neither of these studies were the results segmented by variables such as nationality or gender in spite of Veryzer's view that research should examine the role of biological and cultural influences in the development of IPAs. Something similar could be said of studies examining web design aesthetics which are likewise rooted in a universalist paradigm (Schenkman and Jonsson, 2000; Van der Heijden, 2003; Lavie and Tractinsky, 2004).

So we can see that the universalist approach seeks to identify the factors in the attribute that will have universal appeal and this stands in stark contrast to so-called Field theory (Lewin, 1936) or the interactionist approach (Mischel, 1977), the latter of which presumes that individuals will not necessarily view physical and social settings in the same way, producing, as a consequence, different 'life-spaces' and consumption behaviours (Gehrt and Yan, 2004). Both Field theory and the interactionist approach assume that gaining an understanding of people's reactions to the stimulus object ('format preference') relies on an understanding of the interactive impact of the stimulus object ('attributes'), the individual and the situation. So, rather than seek out solutions or laws that will apply to *all* situations, followers of this way of thinking seek out solutions that work in *particular* instances, thereby shaping products around the 'unique and particular needs' of the customer (Hammer, 1995) with purchases offering a vehicle for self-expression (Karande *et al*, 1997).

The interactionist approach to aesthetics has a distinguished history with a notable follower being the Scottish philosopher Hume who held the view that aesthetic value does not in objects but is bestowed on them by the

beholder. According to this way of thinking, the assessment of value is subjective rather than objective, with design optimisation following on from careful definition and targeting of the decision-maker and user. This entails a focus on the demographics of the target group and an understanding of its 'diversity in terms of ethnicity, age, gender, personality and educational background' (Dell'Era *et al*, 2010, p.126). Allied to this and in order to 'promote creativity and problem-solving capabilities', is the recommended reliance placed on diverse teams which it is thought can offer 'a variety of perspectives in a way that homogeneous teams will not' (*ibid*). Very much in this spirit, Dell'Era *et al* argue that designers of different nationalities 'can provide different viewpoints and support companies in the interpretation of product meanings to match the social and cultural needs of people in different countries' (*ibid*, p.125).

The evidence here of interactionist thinking as applied to design is in step with thinking in the management arena where it is widely acknowledged that people are more attracted to and influenced by others who share similar attitudes (Hendrick *et al*, 1970; Reagor and Clore, 1970). A focus in the social arena has been on research examining the positive impact of attitudinal similarity between individuals (Byrne 1971), with positive consequences extending not simply to incidental similarity between a salesperson and customer (e.g. similarity in terms of birthdays) but to also to attitude favourability and positive purchase intentions even when the interaction with the similar other was a brief encounter (Jiang *et al*, 2010).

The interactionist perspective then is one that, unlike the universalist approach which seeks to uncover rules and IPAs that influence all observers, seeks to understand the processes and elements that may influence individual responses. This paper tests the relative merits of these two approaches through empirical work testing the reaction of men and women in five countries to designs presented to them. In doing this, just as Dell'Era *et al* (2010) speak of the importance of heterogeneity in an organisation's designers, singling out nationality as a key variable, this article will focus on nationality, with gender as an additional variable, to test the relative value of a universalist and interactionist framework in understanding the elements that influence 'desirability' and visual aesthetic. Before introducing the empirical work, some background will be provided on the focus given to nationality and gender as key segmentation variables.

## *Nationality*

In an increasingly global marketplace product designers are faced with the challenge to offer usable products and services to an enormous variety of users. With companies seeking to diversify into the global markets, product and service designers need to have insights about the steps needed to ensure a good fit with a global market. This is sometimes just a superficial process such as translation of the language on the interface (Oshlyansky et al., 2004; Jhangiani, 2006) but there is also the deeper question as to how global markets will react at an aesthetic level to products and services.

The likely responses are neatly summarised by Sheth and Parvatiyar (2001) in an article on global marketing:

*Ever since Levitt's (1983) article on globalisation of markets, academics and practitioners have debated whether internet markets are becoming homogeneous and if the international marketing paradigm ought to change from highlighting national differences to exploring international similarities. Proponents of global marketing contend that because market needs are becoming homogeneous, country differences are less relevant to internet marketing planning. Yet others assert that the existence of global markets is 'a myth'. They point to the many contradictory trends around the world suggesting stark differences in national markets and hence the need for adaptation and customisation of international marketing based on individual country differences.*

In terms of individual country differences, Hofstede (1997) suggested that culture is shared with people who live or lived within the same social environment where it was learned with his definition of culture being (1997, p.4) 'the collective programming of the mind which distinguishes the members of one group or category of people from another.' There is recognition of the differences that can divide cultures (Adler and Gunderson, 2008) and a recognition, even by a strong critic of Hofstede's well known analysis of differences in management cultures, McSweeney (2002), that 'Hofstede's dimensions can usefully frame initial discussion about national peculiarities'. Developmental psychologists generally agree that values are established in childhood by the age of ten so these early years are critical in developing attitudes based on nationality.

Despite the endorsement of Hofstede's work on nationality and management styles, and some studies relating his concept to marketing

(Kapferer, 1992; Samli, 1995; Moss and Vintern, 2001; Marcus, 2005; Schuiling and Kapferer, 2004, Jhangiani, 2006), only a tiny body of research has yet described the impact of nationality on design productions with no previous work, to the best of our knowledge focused, on the extent to which preferences may be influenced by nationality. An overview of the small body of work dealing with the possible impact of nationality on design productions appears in the next section.

### **Nationality and design productions**

Most of the work investigating the impact of nationality on design relates to its impact on web design productions. One study, for example, compared the 'look' of websites in Germany, Japan and the US (Cyr and Trevor-Smith, 2004) but used criteria generated by people from industry and the academic community who had previously been asked to suggest characteristics 'that could easily be compared and assessed'. This produced eight criteria (language, layout, symbols, content and structure, navigation, links, multimedia and colours) that may or may not be priorities in terms of understanding the national style of a website. For example, language was rated in relation to three visual criteria (headlines, point form and paragraph) rather than, for example, in relation to the mental constructs informing the words used. Likewise, layout and spatial features were rated in relation to page orientation and banner/menu location rather than in relation to the incidence of straight versus circular lines. The lack of methodological justification for the selection of these criteria unfortunately weakens the methodological validity of this study.

Two further studies comparing websites have been conducted. The validity of the first of these (Cook and Finlayson, 2005) is reduced by further methodological failures, with the study focused on the analysis of no more than two websites, both of which were commercial ones and therefore subject to external, commercial constraints. Moreover, even with an improved sample, their model would be difficult to test since there is no descriptive classification of the visual elements in the websites. For example, their model suggests that low masculinity cultures produce 'pleasing visuals', while high uncertainty cultures produce 'redundant cues such as colour and typography' and it is not clear how the presence or absence of these features could be measured and charted.

The second study (Gunn and Moss, 2006) sought to overcome some of these limitations by using both a larger sample of websites (sixty personal websites produced by students at higher education institutions in the UK

and France) and also a larger number of rating criteria (twenty two) which were rooted in earlier, comparisons of websites by gender. The three main criteria used derived from research on design or website aesthetics:

- criteria concerning navigation issues;
- criteria concerning language, its register and the amount of self-promotion;
- criteria relating to visual elements.

Of the twenty two rating elements used, twelve showed significant differences between the French and UK websites. Seven of these twelve differences related to factors significantly associated in a UK website study (Moss *et al.*, 2006) with female-produced websites (these instances related to fewer subjects, more pages, less expert language, more rounded lines, greater number of typeface colours, more informal typefaces and greater use of certain colours) and a further three factors used to a significantly greater extent in the French than the UK websites and weakly associated with the female-produced websites (use of a welcome message, 2D images and colours in the background). Only two other significant differences between the UK and French websites (use of a crest and reference to one's own achievements) were related to factors which were significantly associated in the UK website study with male-produced websites.

This comparison of UK and French websites highlighted the fact that 83 percent of the features that differed significantly between the UK and French websites related to features that typified the female-produced websites in the UK-only study and this might be thought to illustrate the greater femininity of websites in France compared with those in the UK, reflecting in turn the greater femininity of French as compared with British values (Hofstede, 2001). This view is consistent with Samli's hypothesis (1995) that the masculinity/femininity cultural dimension will influence individuals' values across cultures.

A final study conducted as part of a Masters thesis, compared American and Indian approaches to mobile phone interface design (Jhangiani, 2006). Regrettably, the study focused on a comparison of conceptual elements, for example, the extent to which providing options is favoured by low power distance cultures (*ibid*, p.38), rather than on aesthetic features, restricting observation on the latter point to the observation that 'feminine cultures emphasize the aesthetics of the interface' rather than providing any examples of the manifestations of this observation in design (p.38).



This overview reveals that insufficient research has been conducted on the basis of which an authoritative response can be produced to Sheth and Parvatiyar's questions (2001) regarding the appropriateness for global markets of differentiated or undifferentiated brands. There is some evidence of differences in website designs across national boundaries, but there appears to be no research at all into the impact of nationality on preferences. This latter gap calls for research so that Sheth and Parvatiyar's questions can be definitively answered in respect of preferences segmented by nationality.

### *Gender*

Just as with nationality, opinion on the impact of gender varies (Caterall and Maclaran 2002) with opinions ranging from the post-modern view that gender is an unproductive dichotomy (Firat 1994) to the evolutionary psychological perspective that plays down the influence of sociocultural factors (Jackson, 2001), emphasising instead the role of innate factors (Lupotow, Garovich and Lupetow 1995). According to recent commentators, this second approach is gaining ground in several disciplines and should not be overlooked (Caterall and Maclaran 2002).

In addition to the evidential argument, commentators have emphasised the economic case for focusing on gender. So, Barletta (2006) writes of women control of 83% of consumer spending and Silverstein and Sayre (2009) write of women's massive global spending power, controlling about \$20 trillion in annual consumer spending in 2009. Their conclusion was that, in aggregate:

*Women represent a growth market bigger than China and India combined—more than twice as big, in fact (p.2).*

The substantial size of the female market prompted the authors to conduct a sizeable survey in order to ascertain whether women perceived product sectors to be focused on their own 'specific needs'. Analysis of the views of 12,000 women suggested that women perceived companies as offering 'poorly conceived products and services and outdated marketing narratives that promote female stereotypes' (*ibid*). The gaps were perceived to be particularly acute in the food, beauty, fitness, clothing, health and financial services sectors, with conclusions summarised by the present authors in Table 1 below:

*Table 1: Feedback from women on positive and negative features within different sectors (Silverstein and Sayre, 2009)*

Sector	Factors perceived as positive	Factors perceived as negative
Fitness	Helpers on hand to provide continuous support	Complicated equipment; bright lights; electronic music
Beauty	The availability of newly developed age-reducing products	
Clothing	Some chains offering fun, inexpensive clothing; a 'fit block' is available at Banana Republic which makes buying clothes easy since the same sizing applies to all clothes	Different sizing for different clothes
Health	Products developed to assist with identified problems (e.g. with baby care)	Long waits; higher fees for health insurance
Finance		Lack of respect for female customers; poor advice; one-size fits all forms; red tape

The question addressed by this article concerns the extent to which men and women's preferences differ or cohere, the interactionist and universalist position respectively. In the section that follows we will summarise the findings of existing research comparing male and female design and will then go on to present new evidence from across five nationalities.

### *Male and female design productions and preferences*

#### **Design productions**

Research comparing male and female-produced designs across the fields of graphic, product and web design has uncovered a number of sex differences which parallel those found in drawings and paintings (Moss, 2009). These differences have been shown to be statistically highly significant with a greater tendency for male-produced than female-produced designs to use straight lines, fewer and darker colours and a technical appearance and for female-produced designs to make greater use of rounded shapes, brighter colours and a less technical appearance and greater use of detail (*ibid*; Gunn and Moss, 2006; Stilma and Vos, 2009).

By way of illustration, one set of studies compared the features used in male and female-produced websites. In one of these (Moss *et al.*, 2006a), the aim was to identify the range of features used in male and female-produced websites and this was achieved by rating the personal websites of 30 male and 30 female students against 23 criteria. The study focused on personal websites as a medium where 'people tend to ostensibly be ... their true selves' (Miller and Arnold, 2003), manifesting the 'virtually real self' even if this consisted, in the act of communication, of multiple identities (*ibid.*). The fact that the rating criteria could be objectively rated, and that they emerged either from complex rating exercises or from earlier research, thereby minimised the risk of personal bias (Schroeder and Borgerson, 1998).

As with research reported on earlier comparing websites produced in different countries, the three main criteria used derived from research on design or website aesthetics. They were: criteria concerning navigation issues; criteria concerning language, its register and the amount of self-promotion and criteria relating to visual elements.

Where visual features were concerned, many of these derived from research on the gendering of art and design (Moss, 1995, 1999). The thematic elements included five elements: the formality of photos; the gender of images; the use of inanimate/animate themes; self-propelling/stationary objects; and the institution's crest. Where non-thematic elements are concerned, six features were rated: use of straight/rounded lines; the use of regular or irregular typography; the number and range of colours in the typeface/background; the extent to which design elements appear either three-dimensional/two dimensional; the presence or absence in the layout of a horizontal line; and finally the type of typeface colours used. Overall, a total of 23 elements were rated, all amenable to objective rating and all researcher-neutral in having been derived from earlier research.

A comparison of the male and female-produced web sites produced by thirty male and thirty female students at a UK university highlighted statistically significant differences on 13 (56 per cent) of the 23 elements rated (Moss *et al.*, 2006a). These were spread across the three areas of navigation, language and visual content. Those elements on which there were significant differences related to the number of separate subject areas covered (with men favouring more subjects than women), the character of the language (men favoured formal and expert language, self-promotion and infrequent abbreviations), the thematic features of the images used

(men favoured use of own logo, images of men and formal images, and women images of women and informal images), non-thematic visual elements (men favouring the use of straight lines, and a conventional layout) and the character of the typography (men favoured formal typography and a smaller number of typeface colours).

The most significant differences (at the  $p < 0.001$  level) related to four elements namely: (i) the use of colours (the use of a variety of text colours was more common among the women's websites); (ii) shape (use of a horizontal layout was more common among the men's websites); (iii) images (men used more formal images); and (iv) language (use of self-denigration and informal language were more common among the women, while the use of expert language was more common among the men).

In a second phase of research on male and female-produced websites (Moss *et al*, 2006b), the extent to which these differences were apparent in a comparison of personal web sites produced by 180 male and female students at a UK, French and Polish University is shown in Table 2.

*Table 2: The features which showed significance differences in the way they were utilised in male and female-produced product designs (Moss et al, 2006b)*

Element	Extent of the difference between the male and female use
Rounded or straight sided shapes	$P < 0.001$
Conventional layout with horizontal layout	$P < 0.001$
Range of colours in the typeface	$P < 0.001$
Animate / inanimate images	$P < 0.001$
Gender of images	$P < 0.001$
Formality in the pictures	$P < 0.001$
Regular / irregular typeface	$P < 0.05$
Colours in the typeface	$P < 0.05$
Formality/ informality in the words used	$P < 0.001$
Use of a site map	$P < 0.001$
Use of self-denigration	$P < 0.001$
Use of expert language	$P < 0.001$
Reference to one's own achievements	$P < 0.05$

The websites were rated against 22 features and 13 features emerged as significantly different in the male and female-produced websites. These differences are shown in Table 2.

By way of further illustration, other studies had as their focus a comparison of male and female-produced Product Designs. One recent

study compared the output of sixty Masters-level graduation product design students in Holland, with the designs rated against the twenty three criteria used in the earlier studies (see above) of web design (Stilma and Vos, 2009). The findings showed that fourteen of the twenty three features produced a positive correlation with the differences found in the web design study and five of the features demonstrated significant differences between the male and female-produced products. The significant differences are shown in Table 3.

*Table 3: The features which showed significance differences in the way they were used in male and female-produced product designs (Stilma and Vos, 2009).*

Feature	Level of significance of the differences in use of this feature in the male and female-produced designs	Whether significant in the Moss <i>et al</i> , 2006 study of web designs
Female use of bright rather than darker colours	*P<0.05	Yes
Female use of organic rather than 3-dimensional shapes	*P<0.005	Yes
Female use of greater humour	*P<0.02	Yes
Lesser use by females of moving objects (e.g. cars)	*P<0.005	Yes
The theme of the design focused on the gender of the designer	*P<0.005	Yes

### **Design preferences**

Alongside studies comparing designs produced by men and women there are those testing for the effect of gender in design preferences. Typically, these have asked male and female subjects to rate male and female-produced designs (graphic, product and web design. Where web design is concerned, a number of studies have been conducted with a deficiency being the variability in methodological quality. The first of these (Flanagin and Metzger, 2003) set out to establish the impact of gender on perceptions of site credibility but regrettably the study was based on the evaluation of just two websites with the gender of the sites' designer(s) unfortunately not

revealed. Despite these methodological drawbacks, the study had the merit of distinguishing website *production* and *preference* aesthetics.

A second study (Cyr and Bonanni, 2005) compared the *preferences* of 76 Canadian students for a single Sony website and found that women systematically reported lower preference values than men. The study also found that: (i) more men than women reported the site to be better organised (ii) more men than women had favourable impressions of the way product information was presented (iii) more men than women were satisfied with the navigation design (iv) significantly more women than men questioned the value of animations (v) women were more attracted by the colours on the site, and men by the interactive and 'flashy' aspects of the site.

While this study is welcome in having tackled the topic of web design preference, its value is reduced in having not only restricted itself to a single stimulus website but also in having failed to categorise its features and against a notional visual aesthetic scale. Had the authors tested reactions to a range of web sites from across a visual aesthetic scale, the study would have had greater value. A third study (Zahedi *et al*, 2006), advocated that web sites be produced 'in line with the audience's culture' but although web sites were grouped into four types, no empirical evidence was offered in support of this categorisation.

A fourth study overcame many of these shortcomings (Moss *et al*, 2008) by asking students (38 male and 26 females) to offer preference ratings to three male and three female-produced websites which had been classified, in an earlier study, as displaying design elements that typified the male and female production aesthetic respectively. The preference ratings revealed a highly significant statistical tendency on the part of men and women to ascribe higher overall ratings to web sites created by those of their own gender. Respondents were also asked to provide preference ratings for varied elements in the design and in every case, the female ratings showed a tendency to prefer the female-produced websites; the men, by contrast, while manifesting an overall preference for the male-produced websites, produced detailed preference ratings that prioritised the pictures in the female-produced websites; their detailed preference ratings also showed equanimity as between the shapes in the male and female-produced websites (for these results, see Table 4 below).

*Table 4. Preference test results: the size of the significance levels in terms of each gender preferring websites (or elements of the websites) produced using the production aesthetic of their own gender (Moss et al, 2008).*

	Male preferences	Female preferences
Overall preference for website	0.01	0.01
Language	0.01	0.01
Pictures	Preference for female production aesthetic	0.01
Shapes	No significant preference	0.01
Layout	0.01	0.01
Typography colours	0.01	0.01

This study of design preferences limited itself to reactions to websites, with reactions limited to those of UK respondents. It therefore failed to offer evidence on reactions across different nationalities to a wide range of design stimuli. In order to fill this gap, a new set of experiments were organised as described in the next section.

## **Methodology**

Respondents were students in five countries who had indicated their nationality from birth as being that of one of the five countries. They viewed six pairs of design stimuli shown in a PowerPoint presentation and in each case, indicated their preferences as between the two designs in each pair. Each pair consisted of a single product category with one object in each pair designed by a man and one by a woman. Of the six pairs, two were pairs of related products from the IKEA catalogue (chairs and cushions); one pair consisted of two separate canned drinks and a second pair consisted of fish finger packets, both taken from the catalogue of the design agency that produced the images; the remaining two pairs consisted of images of two Christmas cards, both illustrating an outdoor scene; and the final pair showed two London underground interiors.

Eliciting respondents' reactions from images in a PowerPoint presentation was considered acceptable since all of the product images bar that of the underground stations were either taken from a sales catalogue or were reproduced in the same vertical position in which they would be displayed online or offline (this was the case of the pair of Christmas cards). In this way, the PowerPoint images were a proxy for the situation confronting the consumer offline or online. The photographs of the

underground interiors were, unusually for the product images, not taken from a catalogue but this was justified on the basis that no such catalogue images were available and on the basis that the images were not qualitatively different from the other product images. It should be added that presenting respondents with images displayed in a PowerPoint presentation was the only practical and consistent means of showing clear images of the stimuli to the large numbers of respondents taking part in this study.

Reactions were elicited from 481 men and women in the UK, Germany, France, Hungary and China, with the gender distribution shown in Table 5 below:

*Table 5: Respondent numbers in the five-country preference tests*

	British	German	French	Hungarian	Chinese	Total:
Male	38	68	57	36	26	225
Female	41	60	80	33	42	256
Total	79	128	137	69	68	481

The designs were selected on the basis that they contained features that exemplified the male or female design production aesthetic based on features identified in earlier literature (Moss, 2009; Stilma and Vos, 2009), although the pair of children's chairs were more similar since both used bright colours and a child-like design to appeal to children. The designs consisted of product designs (chairs, cushions), graphic designs (Christmas cards), packaging designs (drinks cans and fish finger packages) as well as interior designs (underground designs) and the quality of the items in each pair was comparable since each pair was targeting the same or similar markets.

For each pair, the respondents were asked to:

- indicate the item in each pair they preferred
- score both items on a scale of 0-10 (where 0= I hate it and 10= I like it very much)

## Results

The results across all the responses show a statistically significant tendency by respondents from five countries, in respect of reaction to five



out of the six pairs of designs, for men and/or women to prefer the design produced by someone of their own gender (see Table 6).

*Table 6. Preference test results across five nationalities with an indication of the statistical extent to which male and female responses differ*

	Significance (difference between choices of male and female respondents)	MALE designed product preferred (M = by male respondents, F= by female respondents)		FEMALE-designed product preferred (M = by male respondents, F= by female respondents)	
Pictures 1 -2 Children's chairs	.536	M <u>55.6%</u>	F 52.7%	M 44.4%	F 47.3%
Pictures 3-4 Cushions	.000	M <u>59.1%</u>	F 30.5%	M 40.9%	F <u>69.5%</u>
Pictures 5-6 Christmas cards	.000	M <u>61.8%</u>	F 35.2%	M 38.2%	F <u>64.8%</u>
Pictures 7-8 Drink cans	.003	M <u>65.8%</u>	F 52.3%	M 34.2%	F 47.7%
Pictures 9-10 Food packaging	.009	M <u>60.0%</u>	F 48.0%	M 40.0%	F <u>52.0%</u>
Pictures 11-12 Underground Stations	.000	M 41.9%	F 23.0%	M 58.1%	F <u>77.0%</u>

These results confirm the finding of 'own-sex' design preference noted in earlier studies (Moss, 1995; 1996; Moss and Colman, 2001; Moss and Gunn, 2008). The case of the pair of children's chairs (Pictures 1 -2) was the only instance which did not illicit significant differences between the responses of male and female respondents. As Table 6 shows, both men and women preferred the product designed by a male designer, although the margin in the case of female respondents was very low (52.7% of female respondents preferred the chair designed by a male designer and 47.3% of them the product designed by a female designer). The similarity of response to the two chairs may be rooted in the fact that both chairs, as seen earlier, were child-like in character, drawing on elements of the female aesthetic with use of bright colours, and so were not as differentiated aesthetically as the other pairs of designs.

The case of cushions (pictures 3-4) elicited reactions that clearly illustrated 'own sex preference' (i.e. a tendency to prefer designs produced

by people of the same gender as the observer) since the majority (69.5%) of female respondents and majority of male respondents (59.1%) preferred the cushions designed by a female and male designer respectively. The difference between the choices of the two genders was highly significant ( $p < 0.001$ ).

The results were similar in responses to the pair of Christmas cards (pictures 5-6) with both genders showing own-sex preference at the high level of  $p < 0.001$ . In percentage terms, 61.8% of male and 64.8% of female respondents preferred the designs produced by someone of their own gender.

The analysis of the responses related to drink can designs (pictures 7-8) showed that both genders preferred the male-designed product although the percentage of male respondents selecting it was significantly ( $p < 0.05$ ) higher (65.8%) than the percentage of female respondents (52.3%).

The results for the food packaging (pictures 9-10) showed own-sex preference at a statistically significant level ( $p < 0.01$ ) with 52% of female respondents and 60% of male respondents selecting the product of female and male designers, respectively.

The case of underground station designs (pictures 11-12) was one in which, although both genders preferred the station design produced by the female designer, the proportion of women selecting it was significantly ( $p < 0.001$ ) higher than the proportion of men.

Taking the results overall, across the respondents from the five countries, it can be seen that in eighty per cent of men's preferences (five out of six pairs) and in sixty seven per cent of women's preferences (four out of six pairs), respondents displayed a preference for the designs produced by those of their own gender.

When segmenting results by nationality, some interesting differences in the extent of 'own-sex preference' emerged (see Table 7).

In the case of British respondents, only two pairs of designs (those showing cushions and those with Christmas cards) elicited statistically significant differences in response by gender. By contrast, in the case of Chinese respondents, there were three cases (cushions, Christmas cards and underground station designs) in which the choices of the men and the women differed significantly. Interestingly, the German and French responses threw up significant differences between men and women's reactions in 4 out of 6 cases (cushions, Christmas cards, drink can designs and underground station designs).

*Table 7. Preference test results by nationalities: significance levels in relation to the extent to which male and female respondents rated their own gender's designs more highly than those of the other gender*

	Overall	British	German	French	Hungarian	Chinese
	Significance levels in relation to the extent to which male and female respondents rated their own gender's designs more highly than those of the other gender					
Pictures 1-2 Children's chairs	.536	.858	.471	.531	.634	.145
Pictures 3-4 Cushions	.000	.000	.001	.000	.584	.005
Pictures 5-6 Christmas cards	.000	.020	.008	.001	.154	.001
Pictures 7-8 Drink cans	.003	.887	.000	.002	.264	.248
Pictures 9-10 Food packaging	.009	.747	.328	.655	.006	.108
Pictures 11-12 Underground stations	.000	.652	.014	.001	.673	.002

## **Discussion**

These results exemplify the tendency for design *preferences* by gender to strongly show a favouring of designs produced by people of the same gender as the beholder. These results add weight to the suggestion that design aesthetics can be optimised by following an interactionist rather than a universalistic process. As a consequence, internal processing algorithms (IPAs) should make allowance for differences in aesthetic response across demographic groups. Key variables, according to the research presented here, are gender and nationality.

### *Implications for design and marketing*

Although some argue against a specific "feminine sensibility" (Harris and Nochlin, 1976), some agree with Erikson in speaking of a "profound

difference in the sense of space in the two sexes" (1970, 100) and the evidence explored in this article adds weight to this view. There is also some evidence that the strength of this effect varies by nationality with the strongest effect observed amongst those of French and German nationality. What are the implications of this for design and marketing?

The form of a product relates to consumers' psychological and behavioural responses (Bloch, 1995), and research has demonstrated that a positive aesthetic response to a product will not only lead to enhanced purchasing where the function and price of competing products are equal (*ibid*), but will also correlate with an enhanced estimation of the product's utility (Tractinsky, 1997) and value (Hassenzahl, 2007). The results presented here show that preferences can be segmented by gender and by nationality and the importance ascribed to preferences in the literature highlights the need to factor gender and nationality into design decisions.

### *Implications for strategies and processes*

The findings presented here suggest that design is optimised when there is a match between the gender of the producer and the beholder, an effect of particular importance, with the empirical evidence reported here, in France and Germany. Such a finding suggests that organisations would do well, in order to optimise design, to give consideration to the gender of purchasers and, based on that, look to see a match in terms of the gender of personnel servicing these customers. This is to offer what Baden-Fuller (1995) calls the 'inside-out' and the 'outside-in' strategic perspective.

If a difference in demographics and perceptions emerges between those inside and outside the organisation, then it is possible that a paradigm shift will be required on the part of the organisation's thinking. The radical options involve the recruitment and promotion of staff whose perceptions and aesthetic preferences match those of the target market. A less radical and more evolutionary strategy would encourage greater diversity in people's thinking through a process of training and development. The first option may lead to more permanent change than the second since the effects of training may be temporary rather than long-lasting in nature. However, injecting a demographic into an organisation where that demographic constitutes a relatively small minority can cause difficulties for the demographic concerned, with failures to adequately acknowledge the talents or skills of that demographic. As discussed elsewhere, only an organisation acutely aware of these problems can put in place systems to prevent the worst effects of unconscious bias (Moss, 2009).

The efforts of doing this will be richly rewarded through enhanced customer satisfaction and a customer-focused mindset, in conjunction with an interactionist viewpoint, will be essential tools in the battle to win and retain customers.

### *Research limitations*

The number of design stimuli was limited to six pairs due to the difficulty of obtaining design histories of designed objects across a greater range of graphic, product and public design. A further limitation relates to the fact that, for practical reasons and in common with 75 per cent of British and American psychological research studies, (Coolican, 2004, 35), respondents were limited to members of student bodies. Future research could usefully repeat the research with samples of respondents from other sectors in the same countries.

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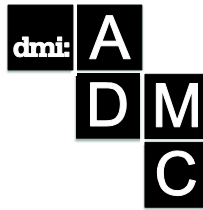
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## The Role of Product Design as a Mechanism for Moral Legitimacy

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*The socio-cultural meanings of products have been well documented, but these interpretations are not fixed; technological, environmental and social shifts conspire to disrupt the configurations of extant codes, values and relationships that constitute meaning. These cultural reconfigurations can be signified via the product designs that activate, reflect or accelerate them. Our study investigates product design as an important mechanism in the legitimization of a specific category of stigmatized consumption: sex toys. We examine the devices' changing meanings as they are reflected in North American popular media, conducting a Greimasian semiotic analysis of selected mass media texts from 1990 to present. Tracing the growing legitimation of this morally-charged product category, we provide an analysis of the fundamental tensions that characterize discourse related to sex toys. We find that design-based developments have been an important force in reconciling the binary oppositions that infuse the product category with stigma and tension, and provide evidence that design-related factors are an important means by which such products have gradually moved from culturally-contested to cautiously conventional.*

**Keywords:** design form, aesthetics, semiotic analysis, interdisciplinary, socio-cultural meaning, mass media

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## Introduction

The socio-cultural meanings of goods have been well documented in marketing management (cf. Oswald and Mick 2006), design (cf. Crilly, Good, Matravers and Clarkson, 2008; Rosenman and Gero 1998) and material culture (cf. Henare, Holbraad and Wastell 2007) literatures. There is general consensus that meanings flow among cultural categories and consumer goods via cultural intermediaries, including designers, marketers, and consumers (McCracken 1986). However, these meanings are not fixed; contemporary technological, environmental and socio-cultural shifts have conspired to disrupt the extant codes, values and relationships that constitute meanings. Such cultural reconfigurations can be signified via the product designs that activate, reflect or accelerate them (Forty 1986). Thus, from electronic cigarettes to prosthetic limbs, design has leveraged new technologies and shifting cultural values to play an essential and powerful role in redefining the meaning of specific product categories.

It is in this frame that we set out to study product design as an important mechanism in the legitimization of stigmatized consumption practices. Our inquiry focuses on products for which the transformation towards normalization appears to rely upon some form of aestheticization (Schmitt and Simonson 1997; Cova and Svanfeldt 1993). Accordingly, we examine the contribution that design can make in redefining moral consumption by investigating the role of products' design(er)s in redefining practices from deviant to desirable and from culturally-contested to conventional within a single product category: sex toys.

Our initial interest in this phenomenon was triggered by an article in *The Atlantic*, itself a mainstream publication, which profiled a new generation of vibrator design. Describing "well-designed gadgets that take their inspiration from Apple, not Hustler" (Isaacson 2012), the article profiled JimmyJane, a "design-centric brand" of sex toys<sup>4</sup> and its founder, designer Ethan Imboden. In the article, Imboden, who holds an electrical engineering degree from Johns Hopkins and a master's in industrial design from Pratt Institute, describes his impetus to start the company in decidedly unsalacious terms. Indeed, as we delved deeper, we were struck to find that many descriptions of this new sector of sex toys (by both the press as well as the companies' own communications) pains were taken to articulate the design objectives for these goods as prosaically as those of designers of any other category of

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<sup>4</sup> <http://www.jimmyjane.com/about-us/>

consumer products. For example, JimmyJane's website proclaims, "We've always believed the pleasure's in the details. Not just the aesthetic details (though we love those, too), but also the materials, technologies and engineering that go into creating a truly exceptional product and experience."<sup>5</sup> Similarly, the website of Standard Innovation Corporation, a Canadian-based company whose name reveals a conscious desire to quash extant connotations of its products, emphasizes that the firm strives "to focus on high-quality design and dedication to body and environmentally conscious materials and processes." Intrigued by the seemingly profound transformation of a product category from tawdry to tasteful and the emphasis of design's role in that conversion, we initiated our investigation by examining media- and market-based discourses<sup>6</sup> that have contributed to the popularization and eventual legitimization of sex toys.

Comparing popular culture texts (e.g. movies, television series, women's magazines) with producer perspectives as represented in media interviews, we construct a semiotic square that provides a framework for unpacking the role that design has played within this transitioning product category. Our contribution is a nuanced understanding of the role of designers and their designs in influencing cultural meanings of a product category undergoing transformation and moral reinterpretation. Examining multiple actors, agents and perspectives in the object system of this transforming product category provides an opportunity to more fully unpack and understand design culture's (Julier 2008) influence on consumer culture.

## Literature Review

The study described herein represents the exploratory phase of a larger investigation of products once labelled "unmentionables" (Wilson and West, 1981) but now more likely to be characterized as taboo (Sabri 2012); stigmatized (Sandikci and Ger 2010); or illicit (Goulding et al. 2009) as they are gradually legitimized through a variety of socio-cultural forces (Humphreys 2010). Research on stigmatized consumption has typically focused on the role of resistance or withdrawal from the mainstream, for

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<sup>5</sup> <http://www.jimmyjane.com/our-products>

<sup>6</sup> We acknowledge that product and consumption meanings are highly contextual and therefore offer the caveat that our investigation is situated in North American texts and discourses. Given that similar products have been developed in the UK (Myla) and Sweden (Lelo), we suspect that in fact the phenomenon we describe reflects Western sensibilities about both sexuality and design.

example, through participation in alternate consumption contexts (e.g. Kozinets 2002; Schouten and McAlexander 1995; Goulding, Shankar, Elliott and Canniford 2009). In these examples, individuals knowingly consume unconventional products or services, thereby tacitly accepting, if not actively seeking, the marginalization that results. In contrast, our study's context—sex toys, and specifically vibrators—involves a product category in “mid-disruption,” as it becomes increasingly normalized and destigmatized, in part through visual association with a popular taste regime (Bean and Arsel, 2013) which emphasizes simple interface and sculptural form (Levy, 2006; Segall, 2012). Arsel and Bean define a popular taste regime as “a discursively constructed normative system that orchestrates the aesthetics of practice in a culture of consumption” (p. 900).

In her groundbreaking history of the vibrator, Maines (1999) traces its history as an innovative technological solution to a phenomenon construed as a common and chronic disease as early as the first century A.D.: female sexual drive, pathologized as “hysteria.” As Maines chronicles in her historical account, hysteria was typically diagnosed by doctors, who then treated it using manual massage. Applying the manual “therapy” was both time and labour intensive, yet treatment of the “affliction” provided a ready and loyal clientele. A breakthrough came in the form of product design. In the late 1800s, two patents were awarded to an American physician named George Taylor for a steam and vibratory massage table he called the “Manipulator” (Maines, 1999). This innovation sparked an industry and by 1900 a “range of vibratory apparatus” was available to physicians. While the first commercial vibrator was designed by and for physicians and provided a medical frame in which to understand the product's application, soon after a range of models for home use was also on the market and provided important disruption to extant codes.

*The social camouflage of the vibrator as a home and professional medical instrument seems to have remained more or less intact until the end of the 1920s, when the true vibrator...gradually disappeared both from doctors' offices and from the respectable household press...When the vibrator reemerged during the 1960s, it was no longer a medical instrument; it had been democratized to consumers to such an extent that by the seventies it was openly marketed as a sex aid (p. Maines, 1999, p. 20).*

Early vibrator designs were limited to the technologies of their time, and were constrained by the mental models that defined their use. Water jets,

steam, electrical currents and a wide range of “percussive devices” were applied to women’s bodies. However, historian Maines notes that pervasive androcentrism endured, and the devices’ use for sexual pleasure or expression was almost entirely elided. Indeed, representation of stimulation for pleasure has long been constrained to pornography, resulting in a perception of indecency that endured despite shifts in women’s power, independence and control of their own sexuality. We argue that only recently—given multiple influences, one of being the emergence of a distinctive popular taste regime led by the aestheticization of other small appliances and electronics—have vibrators acquired more mainstream acceptance and legitimacy.

## Study Design

Our study draws upon Hirschman, Scott and Wells’ (1998) Model of Product Discourse, which acknowledges and assumes the dynamic relationships between practice and text as product meanings are continually formed, modified and re-established over time. We situate our investigation within mass media texts for a number of reasons. First, social and cultural norms are often both discursively created within popular media where expressions of normative consumption, relationships and gender-based narratives abound (Zayer, Sredl, Parmentier and Coleman, 2012; duGay, 1997). Second, examining news accounts and entertainment narratives over time provides an important opportunity to observe shifts in this discourse over time in ways that cross-sectional data would preclude (Humphreys 2010). Third, mass media is by definition created for a broad audience, therefore reflecting meanings and holding appeal for mainstream consumers (Arsel and Thompson 2011; Scaraboto and Fischer 2013). Finally, our data set is archival, consisting of historically accurate discourses and representations, which are not retrospective in nature (Humphreys 2010).

We followed multiple paths to gather representative texts for our study. In addition to searching for articles on the phrase “sex toys” in Business Source Complete database, we selected 36 consumer magazines to examine. We selected magazines whose editorial was focused on lifestyle/entertainment and targeted toward mainstream adults aged 18-50, and searched on the following terms: "sex toys", "vibrators", "adult toys", "massagers", "couples' fun", "sex", "sexual pleasure," "pleasure," "masturbation," as well as the brand names of top manufacturers. We examined any text related to sex toys for all material the publishers made

available online, as our libraries did not subscribe to most of these titles. The resulting articles were logged in a database that included any specific excerpts discussing and describing sexual aids. As with magazines, television programs were examined if they were likely to contain repeated situations or dialogue relating to female sexuality over a period of at least five years. We examined episodes from the series *Sex and The City*; *Weeds*; and *Mad Men*, as well as individual episodes or scenes noted by commentators in news media. For example, we investigated the examples given in articles on *Ms. Magazine's* blog (Vineyard, 2012) the *New York Times* (Howard, 2011), respectively, about the growing acceptance of the product category.

The resulting data set consisted of text from magazine articles and transcriptions of television episodes in which vibrators were featured or discussed. We selected and coded sections of content that explicitly or implicitly related to vibrator use and popularity, either current (at the time the content was produced) or past. As we moved through the stages of open, selective, and theoretical coding, we sought a robust interpretation that adequately and meaningfully captured the nature of the data from our poststructuralist perspective (Humphreys 2010; Thompson 2004). As we coded, we noted that the cultural readings of sex toys are firmly rooted in a number of binary oppositions (Greimas 1983), leading us to construct a semiotic square in order to map the complex semiotic relationships we found within the data. As Floch (1988) explains, mapping these conceptual boundaries can elucidate the conditions within which meaning is produced and interpreted. As such, this form of analysis reveals dynamic systems of signification.

## **Findings**

As noted above, we began by coding and then mapping cultural binaries onto a semiotic square, which is presented in Figure 1. A cultural binary is a pair of opposing concepts used to organize the world. Within the texts we analyzed, the role that sex toys played in women's sexual consumption and expression was characterized in four distinctive ways: hedonistic; filthy; therapeutic; and pure.

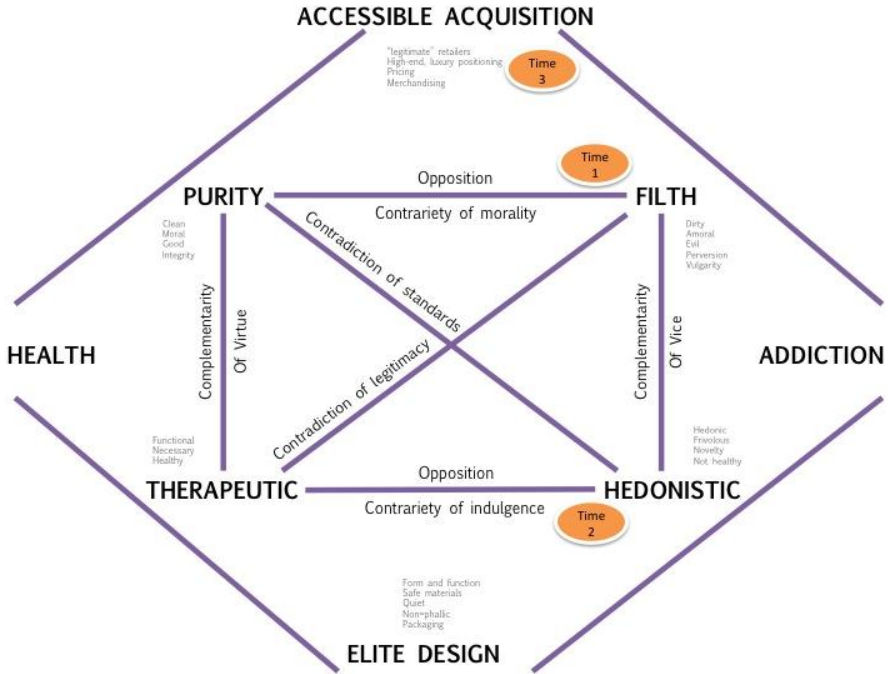


Figure 1 – Semiotic Square

Table 1 provides illustrative instances of each of these conceptual anchors. Importantly, as represented in Figure 1, each of these frames exists in tension with the other interpretations.



The Role of Product Design as a Mechanism for Moral Legitimacy

Table 1 – Data Illustrating Semiotic Concepts

Characterization	Source	Date	Illustrative Text/Scenario	Product/Role of Design
Hedonistic	Sex and The City, Season One: “The Turtle and the Hare” episode	1998	Charlotte, a character generally presented as prudish, is introduced to the idea of a vibrator by close friends. However, she becomes so enamored of her new device that she retreats from the rest of the world, preferring the uncomplicated, consistent pleasure of her sex toy. Her friends, worried that she is addicted, stage an “intervention.” Protesting, “Hey, it’s a vibrator, it’s not like it’s crack,” Charlotte points out that one of her friends introduced her to the idea. “I thought you could handle it,” the friend retorts.	A fuchsia, translucent, bunny-shaped vibrator called “The Rabbit” by producer Vibratex. Its form is portrayed as cute and therefore unintimidating and conceptually accessible. When Charlotte sees the product for the first time, she exclaims, “Look! Oh, it’s so cute! Oh, I thought it would be all scary and weird, but it isn’t, it’s pink! For girls! And look, the little bunny has a little face, like Peter Rabbit!”
Filthy	The L Word, Season Two: “Land Ahoy” episode	2005	At the airport, Dana annoys her friends by insisting that she needs to check her luggage to avoid going through security. Pressured to carry it on, the reason for her reluctance becomes clear when the security guard x-rays her bag and, seeing a phallic shape, calls over a female colleague. “I think we got something here,” he says pointing, “what is, that, some kind of <i>weapon</i> ?” Removing it—and the strap it is in—from the bag, the guard proceeds to examine the toy until Dana’s partner Alice explains its use by pantomime. Having conspicuously confiscating another toy found in the bag for her own use, a female security officer scolds, “you can’t take these on the plane ladies; you should know better than that.”	The toy is hyperbolically-sized and flesh-coloured. A male security guard “examines” it in front of Dana, her friends and curious onlookers. As he bends the rubbery phallus from side to side, muttering “What. The. Hell. Is. This?” the toy replica’s artificial quality is highlighted. The guard’s response to the device is exaggerated for comedic effect, but it also serves to deepen the humiliation experienced by the character.
Therapeutic	Women’s Health Magazine	Nov. 2011	“If you spend time with your battery-operated-boyfriend only when your real guy isn’t around, you’re both missing out: Forty-one percent of women and men have used a vibrator during foreplay, according to researchers from Indiana University’s Center for Sexual Health Promotion, and up to 37 percent of women and men have used one during intercourse. Not only do women who use toys report a host of pleasure perks, but guys say vibes increase sexual desire, erectile and orgasmic function, and intercourse satisfaction, says Debby Herbenick, Ph.D., lead author of the surveys and WH sexuality advisor.”	[#4/5] “When an engineer struggled to figure out how to use a sex toy with his wife, he decided to design his own—and the Ola was born. Unlike other vibrators, this one doesn’t have any preset patterns; instead, you create your own pleasure pulse by stroking or squeezing the pad. The rechargeable and waterproof Ola repeats whatever you request.”

Characterization	Source	Date	Illustrative Text/Scenario	Product/Role of Design
Pure	Chatelaine Magazine	April 2014	“Good news! When it comes to intimacy, we’ve evolved beyond plastic. When having sex, you should still be able to make ethically conscious, ecologically sustainable decisions, and now you can. There are many non-toxic, vegan and sustainable products made to enhance your intimacy and sexual health.”	“When looking to purchase a rechargeable toy you must ensure it’s waterproof, rechargeable, and phthalate-free. Phthalates are chemical compounds used to control the flexibility, transparency, durability and longevity of plastics, but they’ve also raised concern about potentially causing cancer and infertility. We recommend: <a href="#">Jimmyjane</a> , LEL O, and WE-Vibe are leading the pack in innovative—and safe—products.

As Humphreys (2010) has noted, “understanding shifts in discourse over time is crucial for understanding the process of legitimation” (p. 492). We identified two distinct shifts in cultural discourses related to sex toys in our data, and accordingly, have structured the semiotic square in three time periods.

*Time 1: 1990 to 1997*

We bracket our analysis at the turn of the twenty-first century, a period of changing conceptions of women’s power, status and choices sometimes referred to as the beginning of third-wave feminism (Walker, 1992). Popular discourse about sex toys, when voiced, drew heavily on language related to the binary opposition between the node we label *purity*—characterization of sex aids as clean, moral and good—and the more common representation of *filth*—text underscoring perversion, vulgarity, pornography with emphasis on illicit consumption. During this period, discourse relating to sex toys is more clearly organized around polar opposites of purity versus defiled and dangerous (Douglas, 1966). Vibrators are largely relegated to the amoral *filth* end of the moral continuum. The appearance of a vibrator in the feature film *Parenthood* (1989), while slightly earlier than the period’s definitional dates, provides an example of this tendency to frame sex toys as objects of depravity. In the scene, a large extended family is enjoying a traditional dinner when the power goes out and all is dark. The protagonist, Gil Buckman, proceeds to search for a light source. He ducks into the bedroom and emerges with what he believes to be a flashlight. As Gil turns the device on and it begins to noisily vibrate and buzz, power is restored and all eyes focus on the battery-operated, plastic, exceptionally long missile-

shaped vibrator in his hands, and he runs out of the room to dispose of it. His young daughter asks, “Mommy, what was *that*?” to which the mortified mother stammers, “that was ... an electric ear cleaner.” Still not placated, her daughter presses, “it was kinda *big*” to which her grandmother adds, “It sure was!” In this example, adults recognize what the object is, but the vibrator is considered taboo, secret, and its appearance in a family setting is clearly problematic.

### *Time 2: 1998 to 2007*

We see a sharp shift of representation with the creation of the HBO television series, *Sex and the City* (hereafter, SATC), and specifically, episode nine of the first season, titled “The Turtle and The Hare.” As described in Table 1, the episode revolves around a prudish character’s introduction—and subsequent “addiction”—to a pink vibrator called “the Rabbit.” *Sex and the City* is often credited with literally “re-mediating” the presentation of women’s control over their sexual satisfaction (cf. Arthur 2003) for a mass audience. While themes of sexual power, independence and control permeate the entire SATC series, the increase in sales of the Vibratex Rabbit Pearl (the brand featured in the program) after the episode aired, as well as the array of imitators and variations it inspired, offer strong evidence of both the program’s influence and its depiction of the device as a desirable object.

Some scholars have seen the ensuing commercial activity as a predictable, “typical of a contemporary cultural trend towards representing women’s sexual pleasure as fashionable, safe, aesthetically pleasing and feminine (Attwood 2005 p.393) while others have interpreted the representation of vibrators in popular media during this period as fostering fear of its easy substitutability for a male mate and addictive potential (Walther 2010). Under either interpretation, the presence, frequency and framing of vibrators in popular culture texts signals an ever-increasing acknowledgement of the existence and normalcy of women’s sexual desires and equally, the likelihood that they can and will satisfy those desires independently. Thus, vibrator use is increasingly represented as hedonic rather than filthy; it is still a vice, but because of its self-indulgence rather than perversion. Similarly, the opposing pole moves from the conceptualization of virtuous purity to one of natural, healthy and therapeutic desire. In this second time period the tension between categories remains real and important, but differs in terms of intensity, cultural legitimacy and ideological standards.

During this period, not only do the representations of sex toys shift, they become more frequent and occur in increasingly mainstream outlets. For example, in addition to the significant SATC episode, in 2006 “O” magazine, part of Oprah Winfrey’s empire, includes an article on sex toys that proclaims Vibratex’s Rabbit Habit to be “the Rolls-Royce of sex toys” (Kogan 2006) and celebrity Eva Longoria, interviewed by *Self* magazine for her starring role on the immensely popular *Desperate Housewives*, reveals that she bought her first vibrator in 2003 and gives Rabbits to all her friends as gifts (2005). These examples highlight the tension between hedonistic and therapeutic representations of sex toys. Although “O”’s comparison to a luxury vehicle underscores the product’s indulgent qualities, Oprah Winfrey’s brand is firmly rooted in self-improvement. Longoria’s interview includes the confession that she “really wasn’t sexual” until she discovered sex toys. Similarly, mainstream women’s magazine *Chatelaine* avoids the tension by providing readers with a range of possible meanings via a self-diagnostic quiz to find an appropriate device.

Importantly, as with the SATC scene that emphasizes how the form of the Rabbit dispels Charlotte’s intimidation, we note an increasing focus on the aesthetics of each apparatus. *Chatelaine* frames the consumption decision as it would any fashion feature. For example, women whose quiz scores showing their personal style as “pretty, cute and feminine” are advised to maintain their style in the bedroom:

*You’re ready to devote time and effort to exploring your sexual self, so you need a toy that fits your pretty and feminine style—phallic vibes just aren’t for you. Ninety per cent of the time, women will buy a sex toy based on aesthetics, says Andrea Dobbs, retail manager of Womyn’s Wear in Vancouver. If the toy reflects your personal style, you’re going to want to use it more—even show it off! Dobbs recommends shopping for a sex toy the same way you would a pair of shoes or a handbag (Goldberg 2006).*

Advice for “sporty” women is similarly framed:

*You need a toy that fits your sporty, tomboy style – cutesy pink bunnies and over-the-top leopard print just aren’t for you.... The Lava Spot is super cool. It’s like a little smart car...the ergonomic design is sleek and easy to hold – it even looks like a bike handle. [It] is completely waterproof and has a quiet vibration, and the control panel lights up...If you’re concerned about discretion, go incognito*

*The Role of Product Design as a Mechanism for Moral Legitimacy with Water Dancer (§34). This vibe is completely waterproof, small enough to throw in your backpack and perfect for your active lifestyle – the Good For Her website recommends this vibe for camping trips (ibid).*

In the article from *The Atlantic* described above (Isaacson 2012), designer Imboden recalls a visit to a sex toy convention in 2002 and his revulsion for the objects he encountered there: "severed anatomy, goofy animals, and penis-pump flashing-lights kind of stuff" and as Isaacson tells the story, Imboden was inspired:

*'As soon as I saw past the fact that in front of me happened to be two penises fused together at the base, I realized that I was looking at the only category of consumer product that had yet to be touched by design,' Imboden said. 'It's as if the only food that had been available was in the candy aisle, like Dum Dums and Twizzlers, where it's really just about a marketing concept and a quick rush and very little emphasis on nourishment and real enjoyment. The category had been isolated by the taboo that surrounded it. I figured, I can transcend that.'*

Imboden launched his response, JimmyJane in 2004, and its products have been credited for ushering in a new period of consumption, described next.

### *Time 3 – 2008 to 2014 (present)*

The third period represents a period of legitimation through radical redesign, conspicuously communicated attention to form and function, and the increased availability of vibrators through high-end, mainstream retailers. In this period, secondary semantic concepts emerge, depicted by the diamond shape encompassing the core semantic square in Figure 1.

#### **Health vs. Addiction**

The complementary meanings of purity and therapeutic resolve into a new reading of sex toys as normative and therefore "healthy." As the illustrations in Table 1 reveal, contemporary discourse of sex toy consumption has moved into a realm of healthful benefit; note how the excerpt from *Women's Health* magazine draws upon the source credibility of university studies, scientific statistics and frames of "improved function" to imbue the use of sexual devices as part of the virtuous and natural order

of things. The *Chatelaine* text reinforces this interpretation by underscoring the importance of materials in both human and environmental health.

### **Elite Design vs. Accessible Acquisition**

Design has long been an important mechanism for reconciling the apparent contrariety between the therapeutic and hedonistic behaviour (Postrel 2003). The value accorded effective design provides rationale for indulgence; for example, as devices are reengineered to take advantage of technological advances such as usb power, the result is a quieter, more discrete device which is also not at risk of losing its power source, as protagonist and widow Nancy Botwin, of the Showtime series *Weeds* experiences in a scene (Season One, episode Six, “Dead in the Nethers”) in which her vibrator batteries die and she cannot find any in the house to replace them. Similarly, the rhetoric of mindfully-designed objects for which ergonomics and human factors are a prime consideration can be seen as a reflection of the merging of therapy with hedonism. Note the description, excerpted from Standard Innovation Corporation’s website, about its research and development process:

*When inventor Bruce Murison began researching the sexual health business, he discovered an industry of products that were intimidating, poorly designed and cheaply made of potentially toxic materials. He dedicated himself to creating a safe, high-quality, eco-friendly sex product that enhances the experience for both partners. Many years, several products and thousands of designs later, Standard Innovation remains committed to ongoing innovation and to creating bodysafe and environmentally friendly sex products. The research and development process at Standard Innovation is much like that of any other advanced technology company. Every day, our in-house design team explores new technologies, materials and concepts that build on the genius of We-Vibe...our team employs state-of-the-art engineering tools and technologies to ensure each of our products fulfills our promise to create the most innovative and high-quality products on the market. Our process includes digital 3D models, 3D-printed prototypes, simulated human ergonomic software and a university-managed consumer testing and feedback process.<sup>7</sup>*

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<sup>7</sup> <http://www.standardinnovation.com/about-us/research-development>

Moreover, as the use of sex toys becomes normalized within the discourse of health and normalcy as described above, differentiation—particularly through design—emerges as a meaningful evolution among otherwise commoditized goods (Borja de Mozota 2003; Forty, 1986). As Sudjic (2009) observes, “The pursuit of luxury is more ubiquitous now than at any previous moment in history. In the absence of scarcity, luxury has acquired a role beyond its use as a coded social signal of privileges...department store[s become] museums where everything is for sale” (p. 81). These forces are evident in both the text about and the actual products available on the market in the past decade. Swedish company Lelo offers a collection of sex toys in 20k gold, including a product called Inez which is touted as “the most exclusive vibrator ever created” which arrives in a velvet-lined wooden presentation box and retails for \$15,000 USD. Similarly, JimmyJane sells a limited platinum-plated vibrator for \$545 USD (its 24k gold version, retailing for \$425 USD, is currently sold out) as well as a \$35,000 “Jet Set” experience which includes four hours of flight time on a private jet equipped with sex toys, video entertainment, and champagne. Sociologist Thorsten Veblen’s (1899/1994) theory of conspicuous consumption would interpret these offerings as conferring legitimacy and stimulating desire among the middle class who desire to emulate those “at the head of the social structure in point of reputability.” This is particularly important and notable in the context of the consumption of sexual goods, which have historically been characterized by their status as shrouded secrets. Yet here too, there is evidence of the category’s legitimation. Not only does a range of this new era of vibrator take its visual vocabulary from the genre of sleek, simply and elegant products pioneered by Apple, the usb-powered products are sold with recharging stations that mimic the bedside charging stations that allow iPhones to serve as clock radios.

Finally, while there is no denying that the luxury sex toys, such as those offered by Lelo and JimmyJane, sit at an extreme end of the sex toy market continuum, accessibility of the new design-driven objects remains an issue, with most models retailing for more than \$100 USD. Enter the democratization of design (see Molotch 2003, p. 196) and the accessibility of new retail environments. Where sex toys were once only available at opaque-windowed sex shops located in the marginal districts of cities, the growing legitimacy of the product category has had an equally disruptive effect on the availability of sexual goods. Large and respected manufacturers such as Philips and fast-moving consumer goods producers Reckitt-Benckiser (owner of the Durex brand) and Church & Dwight (maker

of Trojan brand products) have brought their manufacturing prowess and retail relationships to the sex toy category, resulting in product availability in mass merchandisers such as Walmart, 7-11 and convenience store chains as well as main street department stores and specialty shops. For example, in a *New York Times* article entitled, “The Adult Store Goes Mainstream,” Winerip (2009) chronicles the role of retail in providing moral authority and normalcy. Other important avenues for consumption noted in the media include the increasing use and relative privacy of online purchase, as well as the growing ubiquity of direct selling channels—hosted, home-based social parties in which sales representatives demonstrate products and discuss use options.

Emerging from the shadows also means that marketers and others engaged in product development are beginning to add their sensibility to the product mix. High-end products are given names like *Ida*, *Ina* and *Soraya* (Lelo) which forge emotional connections without individual associations. Unlike the “severed anatomy” products encountered by Imboden a decade ago, many of the new products’ sculptural forms are emphatically non-anthropomorphic and devoid of “cute,” childlike animal forms. Similarly, the couples market is an important force in mainstreaming. Once a gag or Valentine’s Day purchase by men, a new generation of vibrators have been explicitly designed for couples’ use, not only reframing their use as acceptable rather than shameful, but also providing a range of meanings over an individual’s life cycle. Thus, mothers are encouraged to buy their teen-aged daughters vibrators so that they can learn about their sexuality and empower themselves *before* becoming sexually active (as advocated by Dr. Laura Berman on an episode of the Oprah Winfrey show) and couples in relationships are encouraged to employ the devices to maintain excitement and closeness. Indeed, in 2009’s feature film *The Ugly Truth*, the protagonist is gifted a pair of *Astrea I Vibrating Briefs* (underwear with a remote control) by a male colleague who to encourage her to sexually experiment with her boyfriend. “What this tells us is we’ve reached a tipping point,” said Debby Herbenick, an author of the studies along with her Indiana University colleague Michael Reece. “Something once regarded as exotic has become commonplace” (Winerip 2009).

## Discussion & Conclusion

Our study examines the emerging moral legitimacy of sex toys, which are a class of objects previously rendered taboo by mainstream consumers due



to associations with vulgarity and perversion. We demonstrate that these cultural meanings largely influenced and were influenced by product design; products in this category were once dominated by distorted forms ranging from the hyperbolized pseudo-anatomical to infantilizing animals, and these forms were manifestations of the taboo, illegitimate nature of the product.

In very recent years, this class of product has undergone a radical redesign. Designers have transformed and indeed begun to legitimize sex toys for the mainstream consumer; through meticulous attention to form and function, vibrators have developed new cultural meanings associated with virtue. Thus, the very recent emergence of elite design in this product category has played a pivotal role in the increasing popularity of vibrators, as evidenced by product sales, product availability, and popular discourse in mainstream media.

As consumer products, vibrators were invented at a time when women's pleasure was defined as pathology. While many gender-based norms have evolved with women's ever-increasing social, political and economic status, market-based discourse related to sexual pleasure has until recently remained largely repressed and relegated to the margins of the mainstream. Yet the new sex toy designers are redefining and destabilizing the market with bold functional and technological innovations (e.g. ostensibly ergonomic designs, tactile materials; quiet and convenient power supply) and, of particular interest, aesthetics that transform the transgressive into tastemakers. There are important managerial implications arising from our study, including prescriptions for managers of illicit or "unmentionable" products. We suggest managers can influence the current cultural meanings of these types of products (i.e., help to de-stigmatize them) by referencing designs of less stigmatized product and product categories. Careful monitoring of popular culture, attention to packaging, and strategic introduction to mainstream retail channels are some ways that managers can destabilize and shift cultural meanings and begin to legitimize products that are, presently, morally contestable.

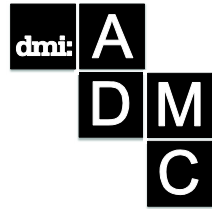
Our analysis has demonstrated that design can leverage new technologies and shifting cultural codes to play an essential and powerful role in redefining the meaning of specific product categories. While examining contested products situates our study within an "extreme" end of the product spectrum, we selected this context to foreground the very real influence that design can have on market-mediated consumption.

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# Positioning Designers into the Craft Revival of Emerging Markets: A Case Study on Chinese Ethnic Brocade Industry

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*Craft revival has made a comeback with the rise of creative and cultural industries both in developed countries and emerging markets. But the difference, against the so-called craft renaissance across Britain in the 1970s, is that today's revival mostly emerged with social responsibility from developing countries in a local-global scale, typically strike its root in a local culture and reform variants for the impact in a larger market. Alongside the blurred boundaries between craft, design and arts in theoretical level, design is more considered as a key element in the contemporary transformation between traditional craft production and modern consumption in social-culture level. So it is important to position designer into such local eco-system based on dynamic and diverse practices. Within literature review and the case study of Gaeml Brocade, this paper address the differences of craft revival in emerging markets, analysis the hierarchy of craftspeople and diversity of markets, and the changing of designers' role following local craft development. The co-creation model between designers and craftspeople has been proved advantageous towards the sustainable development of traditional crafts.*

**Keywords:** Co-creation; Craft revival; Handmade production

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## Introduction

After the economical shift in recent decades from craft production to flexible system and software industry (Cusumano, 1992), craft revival has made a comeback with the rise of creative and handicraft industries, DIY revolution, personal factory and with the application of the kick-starter model. From the development of Arts and Crafts Movement in the nineteenth century, to the so-called craft renaissance that spread across Britain in the 1970s (Peach, 2013), today's craft revival has differences in terms of characteristic and also has a fresh batch of challenges. Firstly, it is based on the changes ushered in by the post-industrial production bringing out massive changes in the socio-economic context, which is revealed by the productive, organizational and technological transition from the large Fordist factory that characterized the twentieth century, to the new post-Fordist production system, including open source, customization, crowd-sourcing and small batch (Imbesi, 2012). Secondly today's revival has to give a combined approach to the cultural heritage and social responsibility teamed with economic developmental needs ranging from underdeveloped regions in a global scale, typically striking its root in a local culture to reforming variants for the impact in a larger market. Thirdly current, margins between craft and design are fading eventually, with craftspeople trained to produce beyond the limited scale of individual work, and designers getting in the way of being able to economically justify production of unique pieces (Kettle, 2005). Within the dynamics of craft practices, professional designers qualified with expertise and industrial insights, play a pivotal role for the craftspeople (Shiner, 2012). Due to historical evolution of craft discipline and the characters of traditional handmade industry, modern design should find its position collaborated with arts and crafts, bridging craft revival to modern industries and diverse markets.

## Revival of local craft in emerging markets

Following a historical review, it present that no matter in developed countries or emerging markets, craft has made significant contributions to the economy in the last few decades. For example in UK, referring o the report of Craft Council (Schwarz el., 2010), the craft sector made a £3 billion contribution to the UK economy, and has a 13% representation of those employed in the UK's creative industries. The total market buying original craft is 11.3 million people, far bigger than that of fine art. In worldwide, according to the Creative Economy Report 2008 (UNCTAD, 2008), arts and

crafts are the only creative industry where developing countries have acquired a leading position in the global market. For this creative sector, developing country exports grew dramatically, from \$7.7 billion in 1996 to \$13.8 billion in 2005, accounting for 60% of total world exports of creative goods. Tourism and the expansion of leisure and art markets appear to have made a significant contribution to the dynamism of arts and crafts and even promises to do better in the coming years of the world market. But in emerging markets, the profession and operation of craft industry is quite different against which in developed countries. In developed countries, the participators, no matter employed or freelance, usually are well-educated creators with craftsmanship, modern design expertise, even have some commercial insights and could use personal social network to promote their works. So Craft Council (UK) use the term **maker** to represent those working with a contemporary aesthetic in craft disciplines, which as a role combines craftspeople, contemporary artist and modern designers (Schwarz et al., 2010). But in emerging markets, the profession would be blurred or somehow disorganized based on regional differences of socio-economic development. Craftspeople play multiple roles in an agricultural society and underdeveloped economy. Typically they have a low level of literacy, low-income and lack the connection with outside markets. They learn the craft from kinship or community, meanwhile considering it as an additional way for living as well as a cultural heritage of local tradition or identity.

Following globalization, craftspeople in emerging markets have more chances to involve into a larger eco-system of mass-production and consumption in different ways. A kind of craft-design collaboration is termed as “outsourcing the hand” (Murray, 2010). Western craft enterprises outsource their production to Asia or Africa, but shift from traditional mass-production factories such in China to varied craft workshop in poorer regions. From a modern western perspective, design entrepreneurs lead the production process as well as collect local acumen from craftspeople for new season’s design, then exhibit and retail them in western context. These ameliorative projects do not just take the economic benefit for craftspeople but are also controversial in reducing the degree of creative involvement from the producers and tread upon the integrity of intellectual rights and fair trade. A radical view from cultural preservationists is that craft would cease to be embedded in the natural rhythm of rural life and in turn become a product of a mechanized process that can be turned off and on with the whistle.

Closely analyzing the reason behind these arguments, one can come across the multiple meanings of craft in local living. From its economic, social and cultural value, Anna Kouhia (2012) addressed a multi-perspectival framework for the meanings of craft, including functional meanings, material meanings, aesthetic meanings, expressive meanings, experiential meanings, multi-sensory meanings, collaborative meanings and narrative meanings. It is obvious that the same craft has different meaning for its local producer, business owner and global customer in their different cultural context. Raymond William (2005) presented a notion of dominant, residual and emergent cultural behaviors. Woranooch Chuenrudeemol el. (2012) added to this by saying that crafts, considered as a form of cultural activity, has its own path of evolution through a period of time, which seems to correspond with the progression of cultural behaviors model (Figure 1). With the impact of global economy in different cultures, the craft from underdeveloped region would be considered as an exotic emergent culture for the western while the craft itself would simply remain a residual culture in local community. So if design involvement cannot revive local creation and reinforce its status in local dominant culture, local crafts would just remain a selling point for outsiders, while losing its inherent meaning for local communities in many centuries and fading in the local eco-system.

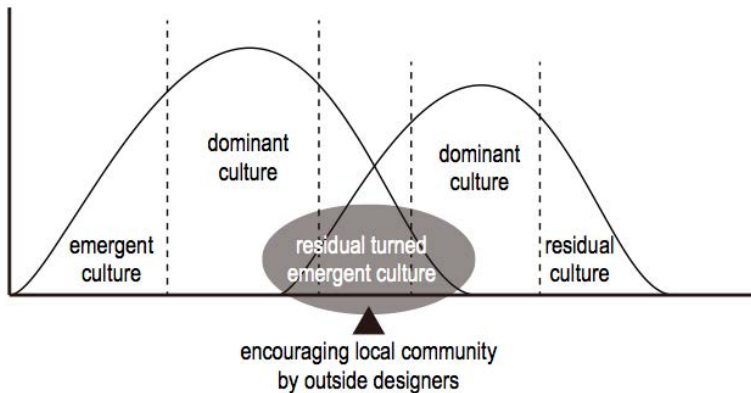


Figure 1 Residual-Turned-Emergent Cultural Evolution by Outside-Designers Stimulant. Source: Chuenrudeemol, W. (2012).

Following this point some NGOs explored a more supportive and constructive way for revival and restoration. For example, Aid to Artisans (Hnatow, 2009) helps local artisan community build its competence for



developing a market-ready product, from design mentoring to technical upgrading, and also exploring flattened distribution channel keeping in tune with the customer needs. It also provides some global training from India to Africa. Because of the diversity of crafts development, local community's knowledge background and markets' risk, it requires more involvement from the modern design expertise. Designers should be considered as the messenger of customized needs, the trigger of a global production ecosystem and the gatekeeper in cultural communication between craftspeople and customer, and also need work with craftspeople together to find a balance between local economic development and cultural sustainability.

Others employed participatory design methods to explore the collaboration between craftspeople and designers. These methods started from Scandinavia. For the last six decades it grew in recent user-centered design (UCD) trend. Sanders et al. (2008) used the notion **co-design** and **co-creation** to describe the collaboration closely between designers and users, and analyzed the changing of the roles in design process. Later some practice-led researchers explored the co-creation possibility in craft revivals, included the GoGlobal project initiated in 2005 (Barker et al., 2009), the cultural-oriented product design with human-centered design methods in Botswana (Moalosi, 2007), the new sustainable mode for the bamboo canopy craft of the Kotwalia community in India (Reubens, 2010), the practice in Bangchaocha's bamboo basketry crafts in Thailand (Chuenrudeemol et al., 2012), and the craft-design collaborations in revitalizing rush-weaving craft in Taiwan (Tung, 2012) etc. Beyond culture probe and ethnographic research, designers collaborated with the local community for social innovation, delivered breakthrough products for different markets, and extended new distribution channels like e-commerce. Contrasted with co-design in modern industries, the collaboration here focuses more on craftspeople than normal users. Because of the multiple roles of craftspeople, including creators, producers and even the first user of these crafts, they have a perceptual understanding of local needs and better creative sense than others. It is preferable to use the term co-creation than co-design because the collaboration between designers and craftspeople are not only limited in design stage but also includes experimenting in new materials, techniques and production, which covered almost all facts of new product development.

## Case study: Gaeml brocade

The case Gaeml brocade (Figure 2) is a typical example in recent Chinese ethnic brocade industry. It is one of ethnic weaving art fashioned by a southwestern Chinese minority community Kam (in Chinese called Dong, comprising 3 million population), and also distributed in Southeast Asia with the ethnographic migration. In the last one thousand years, Gaeml brocade is the main cloth and fabric material for local people. Most Kam women learnt weaving skills from their mothers or grandmothers, produced personal works with homemade looms, and used it as a main cloth and low-cost decorative materials like scarves, robes to baby-straps. Another reason why Gaeml brocade could survive is that the Kam people have their own language but do not have any script or text. They therefore used the Gaeml brocade to record folk beliefs and thereby sustained their own history with meaningful symbols, patterns and layouts, which is narrative and expressive form of art. Gaeml brocade now is one of the national intangible cultural heritage in China, and one of the eight most famous Chinese brocades, exported to oversea.



Figure 2 Traditional Gaeml brocade crafts. Source: photo by Yang Miao.

However Gaeml brocade has been facing crisis in recent years. With the progress of the Chinese economy and the subsequent motivation to join the modern industries, more and more rural youth prefer to work in modern factories and live in the urban areas as migrant workers. Even the youths in their hometown prefer to either start small ventures or startup a micro-enterprise. The remaining others engage themselves farming but not many

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go for Gaeml brocade. Weaving Gaeml brocade by hands is considered as a low-profit job and now deemed as an out-of-date custom. The lack of skilled Gaeml weavers has become a brutal truth.

In markets, because of the abundance of plenty machine-made clothing and commodities from cities, local customers prefer cheaper mass products rather than traditional handmade works. For example, a handmade scarf needs 15~20 work days by a skillful weaver. It would cost 90~160 euro (the average salary is about 6~8 euro each day in local). But local people find it more affordable to buy a scarf with 5~8 euro made by modern jacquard machine, manufactured from Chinese factories in coastal areas. Another factor about the shift in customers' choice is the impact of the modern media which demonstrate fashion trend on actors wear modern branded clothing. Here the old Gaeml brocade style cannot represent the new lifestyle that young people look forward.

Although some crafts workshop could try to sustain traditional Gaeml brocade with recent tourism growth and government funding support, most Gaeml brocade souvenirs sold in tourist bazaar bear a very similar look and are of low-quality, that reflect the lack of design involvement (Figure 3). Some are even made by outside factories in large volumes, priced at cheap rates and shipped to local bazaar for attracting tourists, which actually hits the original handmade crafts. Only a handful of local artisans could continue the authentic Gaeml brocade creation customized for cultural collectors.



*Figure 3 Early Gaeml brocade souvenirs sold in tourist bazaar. Source: photo by Yang Miao.*

### *The hierarchy of craftspeople and diversity of markets*

Traditional Gaeml brocade is quite time-consuming because of its elaborated jacquard and embroidery technique. So its production is usually organized in separated craft workshops (Figure 4). In each workshop, the average members are about 30~50 people, with a hierarchal unit based on location and kinship. There are typically 3 levels, masters, professionals and part-time participators. Normally one workshop only has 1~2 masters who control all issues. A master could retain his/her leadership status not only by excellent weaving skills, but also with apprenticeship, social status, creative thinking and even by possessing a good market sense. So the role of a master is more like a combination of a chief designer, a product manager and a business developer.

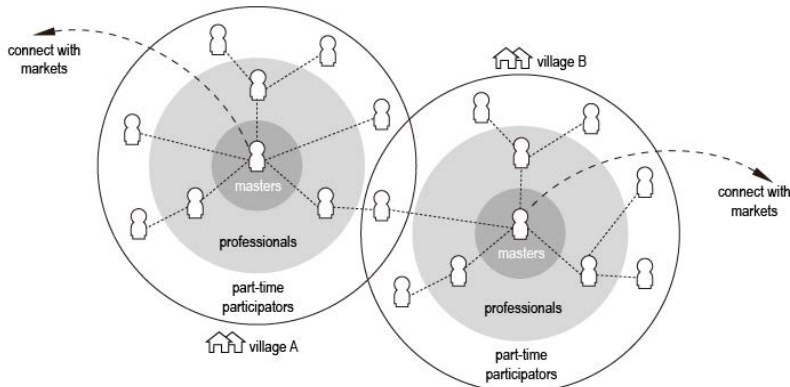
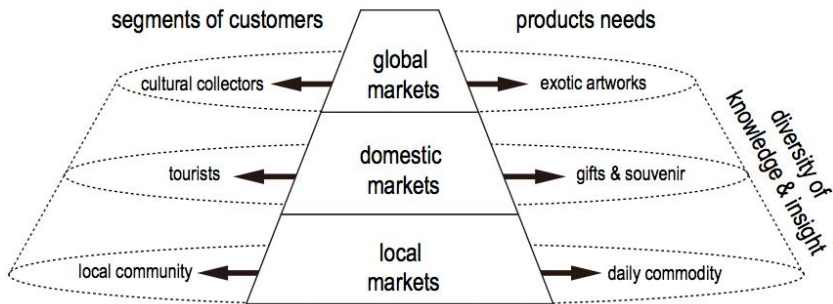


Figure 4 The social network of local craftspeople.

After conducting a survey we found that most masters now seldom weave their works, but spend more time on business and management. Professionals, who are skillful to sustain promised production in both quantity and quality, are the backbone for a workshop. They could keep most classical patterns and layouts in their mind and weave them efficiently even without reference. They could get a reasonable income based on their skill. The significant difference between masters and professionals are not the weaving skill, but the sense of market and product creation. That is why only the master could afford to become a channel with outside markets and decision-maker. The other sub-group, part-time participators, are temporarily based on deals. They participate in the workshop mainly because of neighborhood or kinship. Sometimes they become the pilot user

of product trials. These 3 levels have their different meanings for Gaeml brocade creation. Masters are creative and easy to collaborate. Professionals could improve production technically and keep the quality. Participators could present a wide feedback from both user and producer.

Products from the craft workshops could be usually distributed to different markets (Figure 5). Gaeml brocade, just like other traditional crafts, firstly has its functional and material meaning for local community's daily needs. Even now local youth prefer mass-production substitute in daily usage, other senior people could choose Gaeml brocade commodities owing to their cultural identity, especially in weddings and festivals. But in deliverables, a few masters have the competence to explore new product categories and create new patterns to match local customers' developing needs, which become the bottleneck in local commodities upgrade. Also most masters are either middle-aged or elderly. Their personal style shown in product creation is not so appealing for local youth's taste. So in this market segment, craft workshops need modern design involvement to help Gaeml brocade make a comeback to the local youth's daily life, and also use technical approach to improve product quality, and control production cost.



*Figure 5 The diversity of craft markets.*

Another important market segment is the domestic markets mainly for tourist. Kam people are famous for their complex wooden architecture and traditional musical performance. With the rapid development in recent years, a large number of domestic tourists have been visiting Kam's reserved region, and contributed dramatically to the local economy with their consumption. In this segment, the craft community need a deeper understanding of tourist's needs, and enrich the category of souvenir beyond producing the copies of several old patterns. But most craftspeople lack the sense on what the tourists want to take back home from such a

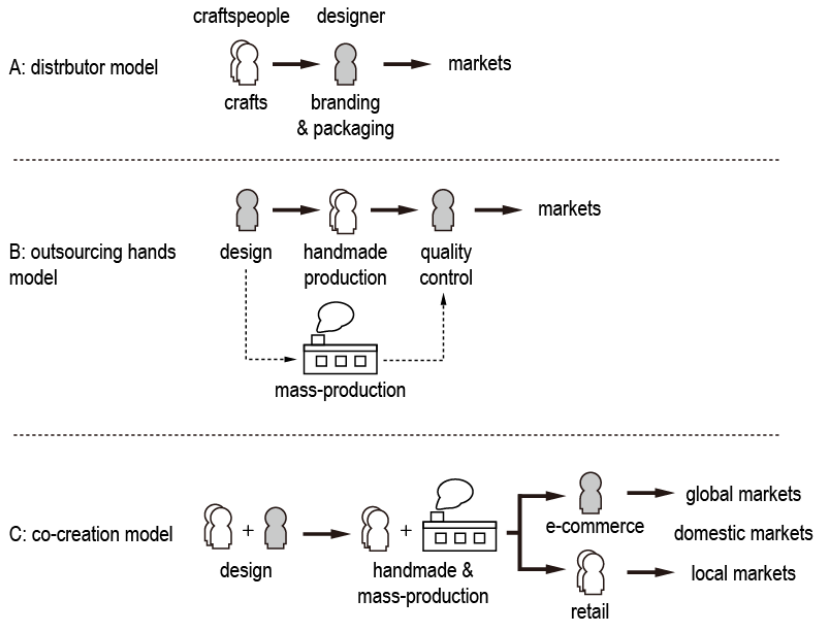
culture rich region? Which style is authentic and iconic in their eyes? How much is a reasonable price for such products? Based on a similar background, designers could have a broader understanding in it, and find shining points from local culture which may have been ignored by aborigines. Designers could contribute more towards packaging and branding with modern design expertise, which increase the additional value of local handmade works.

Additionally another sale channel for traditionally inspired artwork is the global market for cultural collectors which include the rich class in China and overseas. It may be mentioned that this segment mainly depends on the master's personal connection. For example, one of the masters Su Tianmei, officially entitled as the Gaeml brocade skill inheritor, has had more chances to promote her work in some international exhibitions and build a wide network with global collectors. In the recent years, she also claimed to have been asked by some customers for inclusion of modern style or fashion elements in her works besides sticking religiously to the classical patterns. So the 50-years-old master has displayed her eagerness in collaborating with young modern designers to create some fresh ideas to her works, trying out new materials and colors, or tailoring it in new ways. This brings out the relevance needs for modern design involvement in different markets.

### *Designer's potion: from distributor, product manager to co-creator*

Reviewing the design involvement in Gaeml brocade, it is a typical case of craft development in emerging markets. The initiated design involvement began more than 10 years ago. The first generation of local migrants working in the urban factories in the 1990s, came back to their hometowns with a commercial sense and some savings. Some of them invested funds to recover several craft workshops, and planned to produce the Gaeml brocade for markets culturally motivated. But because of low literacy and lack of professional training, they simply followed old patterns and hard to improve style and quality. However, even that, traditional Gaeml brocade with its unique pattern and ethnic style has its selling potential for urban people even for whom the level of its usability is very limited. So these workshop owners employed designers to brand and package original works, and sometimes use designer's social connection to promote the products.

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*Figure 6 Different models of design involvement in craft revival.*

This kind of craft-design collaboration (Figure 6 A) is called as distributor model where the designer only work on marketing issues after production but do not participate in the craft’s creation part. The collaboration between craftspeople and designers is limited without too much overlapping. Designers do not involve in these traditions and core production. For them, it is just one of traditional crafts which need to be wrapped up for commercial purpose (Figure 7). It is a craftsmen or workshop owner driven model. Its disadvantage is obvious as it quickly faces problems relating to continuous product development and lack of coordination with the market feedback.



*Figure 7 Package and brand design of early Gaeml brocade. Source: photo by Yang Miao.*

Following the growth of domestic cultural and creative industry, Gaeml brocade has displayed both cultural and commercial values in the markets. Another outsourcing hands model emerged later (Figure 6 B). Designer applied the craft's classical elements in his/her creation with their brands, then produce it with local workshops. Craftspeople are considered more as handmade production resources than culture inheritors and creation contributors. It is a designer driven model that he/she more like a product manager controls the whole process from product planning to quality control, and then outsources the work. This model has its success in new brand development and cross-cultural innovation in outside markets, especially tagged with the logo of famous designers and artists (Figure 8). In this model, the craftspeople do not find any space in the designer's creation stage, which usually happens in modern design studios. An interesting phenomenon following this model is that local craftspeople weave Gaeml brocade every day, but they do not use it in their daily life any more. Another challenge is that handmade products are now facing the impact of mass-production factories. More and more products complete its whole production process outside without any link with the local community. Gaeml brocade is losing its narrative, expressive and cultural meanings for local inheritors, as the ethnic element has become a part of the modern designer's personal style. As a historical craft, Gaeml brocade is dying in its original eco-system.





*Figure 8 Modern design creation based on Gaeml brocade. Source: designed by Liu Yi.*

The co-creation model (Sanders, 2008) was introduced recently to foster a deeper collaboration between designers and craftsmen. In the design stage, designers work with the crafts master in the field, and employ ethnographic and participative methods to leverage social innovation with local community. The result of a better merging between modern design expertise and local craft knowledge leads to the creation of varied products for diverse markets from local commodities to souvenir (Figure 6 C). For local market, designer could use user-centered design (UCD) method to analyze local needs and try out the design to test its feasibility and usability with the craftspeople. For domestic and global market, designers could lend their modern sense of functionality into upgrading the souvenirs and, as a cultural intermediary, promote Gaeml brocade in modern ways with a better understanding from local community. The co-creation's advantage in production is a more reasonable integration of low-cost and high-productive mass-production with emotional and elaborated handmade products. A series of product could be made by hand or by applying mass-production alternatively which could be priced differently based on its sales target. Even in one product alone, these two production methods could be mixed (Figure 9). For example, the decorative pattern or lace could be handmade on a mass-produced body. It could reduce the cost that would allow Gaeml brocade to become more affordable, meanwhile keeping its handmade identity. The advantage in sales channels is that craftspeople have their inherent networks in local retail market, and designer could explore new channels like e-commerce and display a complementary collaboration here.



Figure 9 Product categories delivered from co-creation model. Source: designed by Lu Jingyi & Liu Yi.

## Discussion

### *The iteration loop between craft-design co-creation*

Analyzing the mechanism of craft-design co-creation, there are different iteration loops in co-creation because of the market diversity and mixed production (Figure 10). Targeted on outside market, the loop would be initiated by designers with modern design sense, using more local handmade production facilitated by craftspeople, and collecting the customer's feedback based on designer's channel. Another loop focused on local market would be initiated by local community needs, using the designer's resource to leverage outside mass-production and get a product feedback from the local retail. As the core engine for running these loops, the craft-design co-creation is not only a mechanism for product creation, but also a platform for knowledge sharing and resources integration between global and local eco-system. The thorough communication between designer and craftspeople is very important, especially in the initial stage to build a new partnership. In our practices, designers should immerse into the rural context from a few weeks to several months, build their

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connection with masters of craft workshops in daily life. It is better to trial a specific co-creation in field, and involve more local professionals if it's need. Methods employed here should be ethnographic, participatory and practiced. For example, an informal discussion and experiment by focus group in workshop usually could deliver extraordinary ideas. And a face-to-face communication is always better than remote ways.

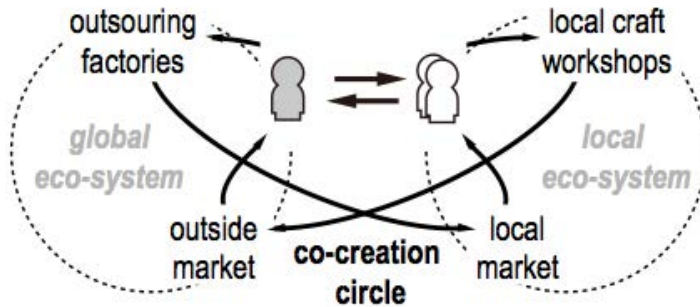


Figure 10 The iteration loop between craft-design co-creation.

*The balance between cultural preservation and innovation*

Like the development of other traditional crafts, Gaeml brocade industry faces the trade-off between culture preservation and innovation. A radical view is that traditional crafts should be preserved with all its historical appearance and behavior as a cultural heritage without any modern impact. But from Gaeml brocade case, it does not make sense for local community both from the economic requirement and cultural meanings. However design's strong impact without local inclusion could erode the local cultural development. So a designer in co-creation needs positioning his/her creation with an open and supportive attitude towards local culture, and gives a reasonable feedback addressing the local needs both in cultural production and consumption. Even design lead the whole loop in many our practices, this kind of leadership is not dominant, but respecting and encouraging local wisdom.

*The coherence with two production systems*

Handmade production came from craft era with individual uncertainty against machined production. A mixed production system needs more efforts on the operative framework to control the handmade quality and clarify its input/output process with mass-production. The network of local

workshops presents its value here. One of the useful ways is that make an intangible criteria and sample as references in the workshop. The regular training for professionals is also needed. The master should also have an important role to play on quality assurance (QA). During mixed production, the work division between local craftspeople and outside factory should also take into account the logistic cost and maintaining remote communication. So when the design is fixed, designer should work with masters to figure out weekly production schedule and the deliver date, and follow-up the process to reduce the possibility of delay or rework.

### *The challenges in the changing eco-system*

Chinese socio-economic context is changing rapidly. The economic shift and cultural conflict arising out of the Gaeml brocade case is partly an outcome of the discontinuity of the Chinese society. A vivid description of current China can be summed up is a tale of three countries. The first is the top four big cities, Beijing, Shanghai, Guangzhou and Shenzhen, which like any other developed country have a remarkable GDP and a good consumption record. The second is that the majority of the second-tier cities which are at a developing stage. The remaining are underdeveloped rural areas which includes most of crafts' hometown. The fast changing lifestyle influences the trend and taste reflected in the craft's diverse market and also leads to an escalated production cost. During our practices in recent years, local communities developed so fast that we could always find some new things emerged and others disappeared just in several months, and their changing attitude toward life, work and also their crafts. So the co-creation practice should strike its root in local communities, fit into the dynamic changes, and help the craft industry find a more sustainable development roadmap by the experiences and lessons from developed countries.

## **Conclusion**

Craft revival in emerging markets has its unique characteristics placed alongside the developed countries, especially placed it in current global eco-system. Design involvement has proved advantageous towards the sustainable development of traditional crafts. From the empirical study of Gaeml brocade industry, the co-creation model could become a reasonable solution for the craft development in emerging markets. In further practices and research, the co-creation could be improved with the changing of local

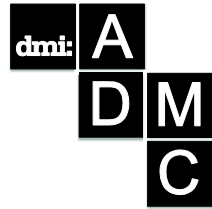
*Position designer in the process of local craft revival in the emerging markets*  
social structure, markets and production system. We hope the knowledge and experiences obtained from this study can be applied by other practitioners as a stimulus for further research.

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## Pre-emptying and the Myth of the Naïve Mind

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*One of the mantras of innovation and design in the last years is that innovation requires a "beginner's mind". Innovation is hoped to come from people who are non-experts, unaware of existing solution heuristics and therefore free from pre-conceptions. But, innovation does not always concern the search for new solutions. It can involve a search for new meaning. By meaning we refer to the purpose of a product, the "why" it is used, rather than the "how". Meanings come from individuals and influence how they interpret their personal and business reality; they create myths. Are pre-conceptions detrimental also when searching for new meanings? Should companies therefore look for beginner's minds, or clean the minds of their organization, also when innovating meaning? This article contends that, in the context of innovation of meaning, "the naïve mind" looks like a naïve theoretical construct itself. Our research shows that rather than searching for innovators with a beginner's mind (who hardly exist) and rather than trying to challenge an organization's preconceptions, companies may positively leverage the existence of pre-understanding. By a deliberate act of "pre-emptying", employees can clearly express the meaning they believe in, not to challenge and clean it, but in order to use it as a precious ingredient to be melted and framed into a new interpretation of product meaning. In this paper "pre-emptying" will be discussed in the light of hermeneutics, theory U by Scharmer and four empirical cases of global corporations.*

**Keywords:** Pre-emptying, innovation by meaning, hermeneutics, theory U

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## Introduction – The myth of the naïve mind

In a 2013 interview with Fast Company, Tim Brown, the CEO of design firm IDEO discussed some basic principles of their innovation process. “We come with what we might call a beginner's mind”, he noted. Over the years IDEO has built knowledge in multiple fields, but they still approach problems unencumbered by expertise. “We do rely somewhat on the value of having an open mind when we approach a new question”, Brown said (Baer, 2013).

One of the mantras of innovation and design in the last years is that innovation requires a “beginner's mind” (Stefik and Stefik, 2005; Brown, 2009, Bokeno 2009, Kao 2011). In other words, innovation is more likely to come from people who are free from pre-conceptions. This argument has been advocated not only in the field of design innovation, but also in innovation management, for example by theories of open innovation (Dunbar, 1995; Chesborough 2003; Lehrer 2010). The assumption is that outsiders have the advantage of being “as clean as a sheet”, unaware of the solution heuristics that dominate a domain.

This perspective has proven to be effective within the paradigm of innovation as “problem solving” (Sutton 2007). Indeed, when innovation is focused on the search for (technical) solutions to existing problems, then looking at problems without pre-conceptions may enable to search in areas previously unexplored. If the existing solution is “inside a box”, beginners, who do not know where the box is, are more likely to search “outside of the box” (Kelley 2001).

However studies on organizational change remember us that, still, it's company management and its internal resources, who have to take a new proposal in and make it happen. These studies have recognized the importance of internal organizational norms and values. These norms still act as pre-conceptions that eventually affect the deployment of change (Lewin 1947, Levy 1986). Therefore, these studies suggest organizations to make assumptions explicit so that they can be recognized and challenged before moving on into the new. In a way, they share a basic assumption with the studies cited above: that once assumptions are recognized, they should be challenged, so that people enter the innovation journey with a clean mind. Both perspectives therefore indicate that pre-conceptions hinder the innovation process; they create resistance to change; they are negative, rather than positive factors (Kanter 1992).

What happens, however, when innovation is not about a search for new solutions but a search for new meaning? By “meaning” we refer to the reason for “why” people buy and use products and services. A change in



meaning, therefore, is a change in purpose, in what makes sense. It points to a new need or experience – not a new solution to an existing need.

The role of product meaning has recently spurred several explorations. In design, for example, meaning is considered a central element of designers' practice: design, by definition, includes to bring meaning, to "making sense of things" (Heskett, 1985; Krippendorff, 1989). This takes design close to innovation by meaning, also discussed as a "design-driven innovation" (Verganti, 2009) as "meaning making" (Jahnke, 2013) or connected to "interpretive management" (Lester et al, 1998). Another well-developed stream of studies linked to meaning, comes from scholars in organization theories, who have explored how an organization makes sense of their environment (Weick, 1995) or of their identity (Tripsas, 2009), although they do not focus on *product* meaning, and its innovation.

Is the myth of the naïve mind still present when we address the innovation of meanings? Can we be as clean as a sheet when we innovate meanings, and is it valuable to act as beginners? Are pre-conceptions a negative factor and doomed to be challenged?

Our article takes an action research perspective to address the role of pre-conceptions in the process of innovating meaning. We first introduce the theoretical background; then, after having explained the research methodology, we illustrate the journeys of four companies in their search for innovating the meaning of their products. Finally we analyse and discuss the role of pre-conceptions, or rather pre-interpretations, in these journeys.

## **The role of pre-interpretations**

The concept of innovation of meaning looks absent within currently dominant innovation theories. In order to explore the role of pre-conceptions in this realm, we have therefore leveraged frameworks from theories of meaning interpretation and change: specifically, the role of pre-understanding in hermeneutics (Gadamer, 1975 and Ricouer 2010) and of deep change in the theory U of Scharmer (2008). Below we briefly lay out how hermeneutics serve as a valuable lense to discuss meaning, and how the theory U complements this philosophical approach with some practical implications.

### *Hermeneutics – a triple perspective*

Starting from a study of books in religion and law (and the intention of the authors behind) a philosophy of interpreting actors and actions has

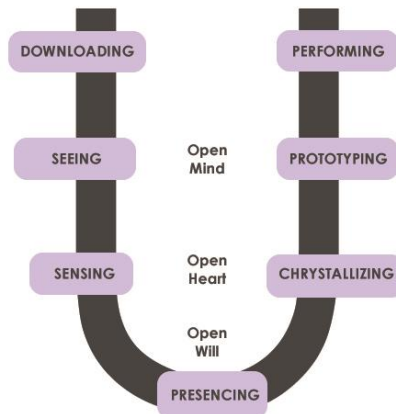
evolved. It is referred to as hermeneutics with the main focus on trying to interpret what you see starting from your own personal perspective (Alvesson & Sköldberg, 2008). The first fundamental part of interpreting concerns the subject, for example a customer, and how she, from her understanding, background and point of view, interprets an object, for example a product. The second level is where the acts of a subject are interpreted by someone else, for example a manager who wants to launch a new product. This is a researcher perspective – to observe someone in action. On a third level, the observer needs to ask herself about her field of departure, for example the meaning that drives her thinking, and deliberately try to take a different standpoint; to re-interpret, and thereby bring alternative understandings and novel proposals.

This third level challenges the myth of the naïve mind; because, hermeneutics acknowledges that no one, when searching for meaning, has a clean beginners mind. As Gadamer express it: ‘what is meaningful passes into one’s own thinking on the subject’ (Gadamer, 1975, p. 375). This approach, therefore, explicitly addresses the point of departure that everyone has (even the most unaware beginner) – and suggests to *deliberately* ask ourselves what this point of departure is and then – leveraging on it.

Another main concept of hermeneutics is that leveraging your own thinking can be eased by bringing other, conflicting views. It can, on one hand be described as an encounter, or a “clash of interpretations” (Ricoeur, 1984), or on the other hand as a blend, or a “fusion of horizons” (Gadamer, 1960/2004). This further challenges the myth of the naïve mind: both Ricoeur and Gadamer indicate that a novel meaning does not come from an empty mind, but, on the contrary, from a mind built on pre-interpretations, a mind with an horizon. It’s the clash between interpretations (the fusion of horizons) that bring novel perspective, not the absence of them. According to Gadamer: ‘A person with no horizon does not see far enough and overvalues what is nearest at hand, whereas to have a horizon means being able to see beyond what is close at hand’ (Gadamer 1975, p. 269; Laverty, 2003, p. 9). Awareness of the finitude of the human condition does not only constitute a limitation to, but is also a basic precondition, of understanding. Therefore, not only the naïve mind looks like a naïve construct, but also, the existence of pre-understanding is a *positive* and necessary asset to drive deep and profound reinterpretations. Without pre-understanding there is nothing to fuse, nothing to clash.

## *The Theory U – beyond the open mind*

Theory U, proposed by learning and leadership scholar Otto C. Scharmer (2008), gives guidance to how companies (or individuals) can strive deeper in their awareness of objects (such as products) and thereafter leverage new unthought-of visions and proposals. Even though not departing from the innovation management field, Scharmer gives valuable direction to the importance of moving beyond rational information processing when in search of change within organizations. His action research perspective combines theories from cognitive psychology, philosophy and organizational learning with joint research initiatives, for example community-engaged projects at the MIT.



*Figure 1 Otto Scharmer's Theory U (adapted from Scharmer, 2008)*

Scharmer's proposal of profound change (within people and in organizations) can be described in the shape of a U (Figure 1). Starting from the top, in the first level, companies take in information, such as a problem, to react and solve it. Some organizations stay at this level of interpreting. They "re-enact" patterns of the past – viewing the world through one's habits of thoughts" to quote Scharmer (ibid, p 39). We could say that they gather, or "download" data, to be used in a certain way to create a solution

without any further reflection. This reactive level goes from clean cut *downloading* of information to efficient *performing*.

When a little more engaged, companies do not just react on things; they actively try to understand problems. By listening, for example to consumers, they manage to take in new, previously unnoticed problems. Here, they “suspend judgement and see reality with fresh eyes” (ibid). It is a more embracing and reflective process than the pure downloading of “data”. It implies a process of going from *seeing* to *prototyping*. The first two levels of downloading and seeing are typical of innovation aimed at solving problems. They exactly mirror what Brown refers to as having an “open mind”.

But Scharmer also shows us two additional levels of awareness. The first is *sensing*, where understanding moves from pure knowledge (explained as the capacity of IQ) to also include empathy (explained as the capacity of EQ – emotional intelligence). Instead of listening with the mind (the brain) this involves an open heart. While sensing belongs to the left side of the U, *crystalizing* is the equivalent on the right. This third level is where vision is becoming outspoken and given a language – so that it can be communicated, to “envision the new from the future that wants to emerge” (ibid). This third step of the U can also be recognized in the work of Schön and his framing-re-framing construct, although this process of learning mainly refers to the past (Argyris and Schön 1995).

The deepest level of awareness is in the bottom of the U. Here, not only the mind and heart are involved but also the will. This understanding goes beyond bringing feelings to the situation but also to freely open up and “dive into” a situation; to show a willingness to “learn new”. It’s the level where we can reach our deepest form of creativity because it comes from deep within our selves. Scharmer calls this level *presencing*, a combination of the words being present and sensing. It includes an action of seeing the most intimate part of oneself – but as part of, and in relation to, the context around us. To reflect on our own future potential in the world we live in, or, as Scharmer puts it: to “connect to the deepest source from which the field of the future begins to arise” (ibid).

Similarly to hermeneutics, Scharmer helps us to further understand why the myth of the naïve mind does not apply to innovation of meaning: the concept of a “beginner’s mind” holds until the second level of Scharmer’s U (i.e. the level of problem solving based on seeing). Here is where an “open mind” is important, as Tim Brown noticed in his interview.

But when one wants to innovate meaning, and therefore has to move deeper in the “U”, an open mind is not enough: one needs also an open

*heart* and an open *will*. To open up these deeper levels, Scharmer leverages the existence of a “self”, the existing and original believes of a person – or with other worlds – an interpreter who comes from the past with her pre-interpretations. Rather than pretending being a beginner – a person has to put in place a clash: between the “Self” (a “Self” with a capital S, that comes from the future she aspires to) and the “self” coming from (the past and) present. It’s the clash between old thinking (the self and its pre-interpretation of something) and future will (the future Self) that generates an innovation of meaning.

Therefore, from a theoretical point of view, both hermeneutics and theory U challenge the myth of the naïve mind. They suggest that no one can be a beginner when searching for new meaning. Instead, acknowledging our pre-interpretation, making it explicit, and fusing it (with the pre-interpretations of others, as in hermeneutics, or with our own interpretations of the future as it emerges, as proposed by Scharmer), is essential. In other words: pre-interpretations have an important, essential value in innovation of meaning.

Both these theories suggest an act of pre-emptying: an act of becoming aware of ones own pre-interpretations, taking them out, discussing them and *building* on them. Our assumption is therefore that the act of pre-emptying might ease the revelation of a deeper knowing - to the birth of new meaning.

However, the mysteries of how to go deep, find these pre-interpretations, discuss them and leverage on them is not easily understood. We have therefore closely studied how companies go through this journey.

## **Being part of it – the method**

Over a period of four years we had a chance to participate into several projects in which teams were aiming to develop new meanings for their products. These projects were also for us precious settings to investigate the role of what we have come to describe as an act of pre-emptying. In this paper we will focus on four global corporations within consumer goods (see Figure 2).

During their journey of innovating their product’s meaning, all four companies invited external experts, or “interpreters” (Verganti, 2009), to enrich their understanding of meanings. Note that these interpreters were not designers, but came with specific competences from other fields than the companies’ expertise. The companies also made several iterations of

internal discussions to carve out potential new meanings of their products. Both these external and internal interactions can be seen as situations in which different interpretations are clashed or different “horizons” are fused. In Figure 2 below, external interactions with interpreters are indicated in green and internal interactions within the organizations are indicated in red.

In approaching these cases, our research perspective would be best described as a combination of action research and hermeneutic turns. As meaning concerns experience, a typical research perspective by observation and distance would limit our understanding. Therefore, instead of this second view perspective, we encourage a third, interactive approach, incorporating also personal interpretation. This means, we combined “data, theory and values” into a “trilateral science” (Galtung, 1977), an “innovation action research” (Kaplan, 1998). In practice, this means we have been active participants by proposing experiments, facilitating meetings, shared our opinions and contributed by bringing theoretical constructs to spur discussions and raise new questions. The paper contains short descriptions of the dynamic journeys of these four companies. We limit, in this case, our reporting to extracting the phenomena of pre-emptying.

In the description we start from the project with the less positive outcome to the project with the most positive outcome. What do we mean by “most positive outcome”? We are not concerned here on whether the firms envisioned a new meaning that was more or less successful on the market. Each project was just the first phase of a long innovation journey; it was a strategic research whose output (the potential new meaning) could then hopefully inform investments in new products and services. Final market success therefore would depend on several factors (e.g., product development performance, market launch strategies, etc.) that are beyond the scope of this study. We do not even assume that a proposal for an innovation of meaning must necessarily be successful on the market. For the worse, the outcome of a research project could even be judged to be wrong or uninteresting, but still the research project would have produced its outcome. Therefore we have been focusing on these specific research projects rather than on the overall innovation journeys. Hence, we considered their outcome to be positive if the team did envision a potential new meaning that went through an *engaged assessment* by the organization with an articulated consensus. In other words, if there was an arena in the organization where the new meaning was taken in, discussed, and decided upon.

## The four innovation journeys and how we analysed them

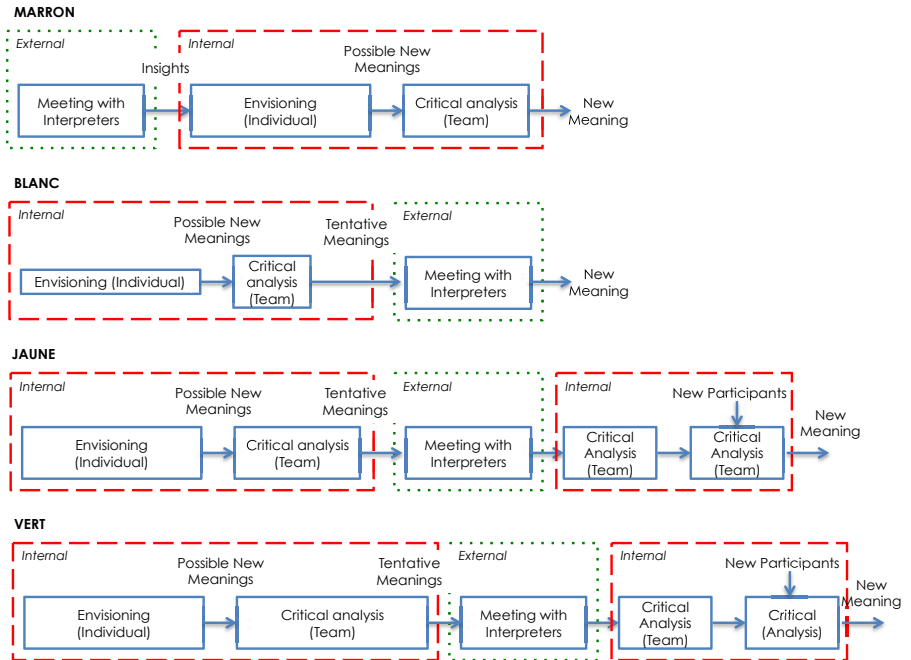


Figure 2 The four innovation journeys of the companies and their strive for finding potential innovations of meaning

### Case Marron: Rethinking core products

*The context:* Marron is a multinational corporation in the industry of consumer electronics. Its meaning innovation project was aimed at radically redefining the company positioning and launch a new range of products. The company had conducted, two years earlier, several creative workshops to generate innovative ideas, with scarce impact.

*The innovation journey:* “We would prefer first to meet outsiders. If we start from generating visions ourselves I’m afraid we would always come up with the same ideas that have been circulating in the last few years”, said the R&D manager of the company. There were two possible paths to start with the project The first implied starting from the outside: to meet external experts in order to collect new information on market trends, and then use

these new insights to generate the new visions. The second path implied instead to start from the inside: an internal workshop in which each member of the project team (consisting of about 20 people from different units) would share their own individual vision about new meanings for the company's products, and then, after the workshop, to critically discuss these new visions with external experts. In between these two options the firm opted for the second one: first collect insights outside, and then generate visions inside (see scheme above). So we started by meeting eight external experts who had a unique experience and perspective on customers' needs and behaviour. We call them "interpreters" (Verganti 2009) (for a detailed study of one of these cases see Altuna et al, 2014) since they may help to interpret how people could give meaning to products. Note these interpreters were not designers but representing different competences. After the meeting with the interpreters, each member of the project team was asked to envision three to five new meanings, leveraging the insights provided by these experts. One month later we organized a workshop, attended only by the internal team, in which these individual visions were shared, with the aim of developing a new meaning for the company. A total of 107 possible new meanings were proposed and our role, as facilitators, was to help the team to find connections among them, and screen them into a few possible scenarios. We proposed a framework, which these contributions should fit into, and also suggested a preliminary clustering.

*The consequences:* The external interpreters brought many insights into the opening meeting. However the project team that attended the meeting asked only a few questions, and the discussion was scarce. Lately, when the team members had to envision possible new meanings, we observed that they hardly considered the insights discussed by the interpreters. When then the team finally met in a workshop to critically discuss the different meanings, the team struggled to make sense of the variety of insights from the interpreters and contributions from the team. When we, as facilitators, proposed a framework and clusters to organize that rich information, the team similarly struggled to make sense of this framework: it looked as imposed from the outside, and could not capture the motivations that lead to the framework.

*Outcome:* the project eventually identified a new meaning. But it was not embodied and intimately absorbed. When team members, at the end of the project, were asked to tell what the new meaning was, they narrated different perspectives. In reality, there was no shared understanding of the new meaning, and the narrations of the team members were still



impregnated by their preconceptions. The new meaning went therefore soon lost into the internal organizational dynamics, and the project did not moved into implementation.

### *Case Blanc: Entering a new market*

*The context:* Blanc is a global corporation in the market of consumer goods. The meaning innovation project was aimed at entering into a totally new business.

*The innovation journey:* In this case the company decided to start first from the internals. They had already conducted some preliminary research and reflections, and wanted to see what new meanings this research could spur, before meeting outsiders. Therefore each member of the team (about 10 people) envisioned 1 new meaning. Then they rapidly discussed their visions into a workshop, giving space for us as researchers and facilitators to propose a framework and clusters to make sense of these visions, thereby generating in the end one tentative new meaning. In a new meeting, this new tentative meaning was discussed with seven external interpreters.

*The consequences:* In this project the meeting with the interpreters was more alive, with several questions and discussion between the outsiders and the team. However, the leader and other members of the team embodied only partially the framework for the new meaning formerly framed by us, the facilitators. In addition, this framework remained unchanged after the conversation with the interpreters. In particular, by focusing on the most conservative ideas, it seemed the company did not take in the more innovative instances.

*Outcome:* the team eventually identified a new meaning. But it was only partially absorbed. Similarly to case Marron, team members had different interpretations of what the new meaning was. Their pre-understandings were not fused. The project eventually moved into implementation, but with a focus on only the most conservative products, promoted by the most influential members of the team. The meaning went back closer to the old one, as the pre-conceptions of individual members were still creeping in.

### *Case Jaune: Addressing a growing market segment*

*The context:* Jaune is a global corporation in the market of consumer goods. The meaning innovation project was aimed at better addressing a growing market segment.

*The innovation journey:* The first part of the process was similar to Case Blanc: first an internal phase (to individually envision new meanings, and

share them to identify a common vision) and then a second external meeting with the seven interpreters. In this early phase however more time, engagement, and deep reflection were invested in about 70 possible new meanings by a larger team (about 15 people). Also, the facilitators had a more passive role, and did not propose any clustering or framework. More important, after the meeting with the interpreters, there were two additional intense working meetings where the company went back to the meaning and discuss it deeply again. In the second of these meetings there were new internal participants, who did not attend the early phases of the process.

*The consequences:* The new meaning took shape progressively along the different phases of the project. The team had proposed a preliminary meaning after the first meeting, but it was only after the meeting with the interpreters that they grasped the potential and radicalness of the new vision. Indeed, the meeting with the interpreters was very productive, and contributed to better focus the new meaning, and to avoid unpromising directions. The contribution of the new participants who came later was also very important. One of them especially, a top manager, challenged the new meaning, as if the project team had moved too far ahead and they had to wait for him to catch-up. Only after he took out his own vision (as the others did before meeting the interpreters) and the others discussed it carefully, he finally felt more comfortable to take in the new vision that had been developed in the project and make it even more robust (he even defended the new meaning during the final presentation to the company President). Finally, and curiously, at the end of the project the team did not only have a clear vision of the new meaning, but also a clear understanding of what the old meaning really was for customers and why it was outdated.

*Outcome:* the team fully absorbed the new meaning, albeit radical, and moved into implementation. They shared a common understanding of the new meaning, which was in sharp contrast with the previous direction. As well, the separate initial pre-understanding of each individual team member was not anymore recognizable in the final meaning. The team managed to create an arena to discuss and assess the new meaning, in which it had the strength to engage even the top executives and other units of the firm that did not participate to the project.

### ***Case Vert: a new shopping experience***

*The context:* Vert is a luxury fashion brand. The purpose of the process of innovation of meaning was to radically change the meaning of the shopping experience of their products in their own worldwide stores.

*The innovation journey:* The process was similar to Case Jaune. The main difference was that at the beginning of the process the team (consisting of 26 internal people) dedicated much more time to critically analyse the individual preliminary proposed meanings of the participants. Although the team envisioned overall 108 possible new meanings, the company realized that the point was not how many visions were proposed, but how much the individual preliminary meanings were seriously examined and really taken in. Therefore, rather than sharing all 108 proposals, each participants discussed in the plenary meeting only the meaning she/he found most promising (i.e. only 26 new possible meanings were critically analysed), but without time constraints: the discussion went on until everyone felt that their proposed meaning was thoroughly listened to, reflected upon and criticized.

*The consequences:* the construction of the meaning followed a similar behaviour than Case Jaune. The team moved however, more rapidly into the search for new meaning and was more engaged, because they had time to discuss collectively each individual meaning. In other words, there was time to transform each individual proposal into a common understanding, that was therefore fused into a shared reinterpretation.

*Outcome:* similarly to case Jaune, the team fully shared a common interpretation of the new meaning, albeit radical, and moved into implementation. Although top management support at the beginning of the project was not strong, the team had the strength to bring on board the top executives and other unit of the firms that did not participate into the project.

## **Discussion**

The four cases provide rich material to explore whether and how the myth of the naïve mind, or rather, a mind with pre-interpretation, contribute to the generation of new meaning of a product.

### ***The importance of pre-emptying***

The first observation confirms the theoretical stance of hermeneutics and Theory U: the myth of the beginners mind does not apply to innovation

of meaning. Project Marron, which explicitly opted for the beginners mind (i.e. asking the team to forget about the past and focus on new information provided by outsiders) did not succeed, and did not move into implementation. Similarly, project Blanc, that did pre-empt, but only partially, achieved only partial results.

One possible explanation for this not positive outcome could be connected to a lack of engagement of the team. Theories of participatory design and co-design, for example, show that a possible barrier for organizations to take in new constructs and ideas is a lack of active participation into the innovation process (Schuler and Namioka 1993, Sanders and Stappers 2008). This however is not the case in this study. In fact, the new meanings were not proposed by external consultants or designers. Rather, they came from a large multidisciplinary internal team that actively participated in the definition of the brief, meetings, homeworks and workshops over a period of four to six months.

What happened in both projects, instead, is that, although a potentially good new meaning was proposed, this was only “on paper”. In reality, the teams did not deeply assimilate the new vision, nor really grasped its uniqueness and implications; they were not intimately convinced. There was no arena for engaged assessment, nor consensus within the team that actively participated. Therefore, when moving into subsequent steps of development and implementation, the new meaning went lost along the way.

Projects Jaune and Vert instead acknowledged that when it comes to meaning, people’s mind is never empty and no one can really pretend to be a beginner. Therefore they dedicated a lot of energy and attention to pre-empt: the deliberate act of becoming aware of our own pre-interpretations, taking them out, discussing them, and letting them go, in order to leave room for new interpretations. This is clearly visible from the dynamic of their journeys. Instead of starting from the outside, they started from the *inside*, from their team visions. In particular: (1) each individual reflected on possible new meanings that they already had in their mind and soul (which enabled them to take-out what they had inside), and (2) these individual visions were taken-in by the other team members, who engaged deeply into discussion (which signalled to each person that her own vision was really considered, and also provided to the entire team precious meat for finding new meaning). The consequence is that eventually the two teams fully absorbed the new meaning and even managed to see the old meaning

of their companies as obsolete. They had therefore the commitment and strength to push the new meaning through implementation.

Hence, a project of innovation of meaning, differently than innovation of solutions, requires an explicit action of pre-emptying, which implies starting from the internal team's ideas about new meanings rather than from external insights.

### *Pre-emptying as a journey*

The second major finding of our analysis is that the action of pre-emptying (i.e. sharing and fusing one's pre-understanding of a scenario) is not a simple act in which a person "takes out" her vision. "Pre-emptying" does not happen in a moment. This is clearly visible in the story of project Blanc, where indeed the company started from the inside, and asked each member to envision a new meaning. But then the act of pre-emptying ended there. The company, did not dedicate enough time to critically discuss these new meanings internally. And we, as the facilitators, drove and pushed the conversation too much, instead of giving the team the time to assimilate and criticise each other's perspective. When the team moved into the following phases of the project (e.g. the meeting with the interpreters), it had still not deeply shared and fused their pre-interpretations.

Project Jaune and Vert instead show that pre-emptying is rather a sophisticated journey consisting of different actions:

- Envisioning: each member envisions one or more possible new meanings.
- Narrating: this new meanings are shared internally with other members of the team.
- Engaged Sensing: the other team members dedicate enough time to listen, critically analyse, understand and embody the vision of each other (vision that, initially, is not totally clear even to the proposer, who therefore needs time to make it significant through the contributions of the others who add new layers of meanings).
- Fusing: the individual visions are enriched, compared, clustered, connected, to generate a new common meaning, where the previous individual contributions are not recognizable anymore as autonomous bits, as in Gadamer's fusion of horizons.

Only when one's vision is melted into the others, then we can say that the process of pre-emptying is completed. Just envisioning and narrating is not enough. Meanings are not like ideas that can be rapidly tossed into a

brainstorming session and then move on. Ideas are “taken out”, meanings also need to be “taken in”. Without the actions of engaged sensing and fusing a pre-understanding will always be silently there and always act as a dead weight that prevents the entire team to move on (as it happened in Project Marron and Blanc). The metaphor of “melting” reminds us that pre-emptying requires much more time and energy than simply putting together individual elements. It is achieved when one’s meaning is not recognizable anymore, and yet it is there, into the compound: one can sense its properties and taste.

The action of engaged sensing, before the fusion, is crucial. The team (and the consultants/leaders/facilitators) have to avoid pushing towards convergence before the individual pre-interpretation are discussed and criticised. Interestingly, and differently from creative problem solving, in this engaged sensing, quantity does not matter: if in brainstorming sessions quantity of ideas is a major target, here instead what matters is how much your vision is discussed and by how many people. An example is case Vert, where, instead of considering all 108 proposals, the company focused just on a smaller number (26) but each discussed by the entire team.

### *Pre-emptying as an on-going journey*

The third major finding of our analysis is that pre-emptying does not happen only at the beginning. The act of pre-emptying instead occurs along the whole process of innovation of meaning.

First, because every time one meets new people along the journey, one receives new critiques to one’s pre-understanding and has new opportunities to melt it further with new horizons. A participant of project Jaune recalls how he became fully aware of his pre-understanding only after the meeting with the interpreters, i.e. half way through the project.

Indeed, we noticed that at the beginning of all projects the companies did not have a clear understanding of what the existing meaning of their products was. They mentioned superficial statements, often in contrast with each other (in a workshop conducted at the beginning of project Vert, the team articulated the existing meaning of their products in more than five different, contrasting, ways). In all cases the deep understanding and embodiment of the old meaning of the company became clear only at the project end. Only when the team embodied the new meaning, simultaneously it embodied the understanding of the real nature of the old one. This is in line with what Scharmer suggests in Theory U: the past and the future co-evolve; you understand the past (your “self”) by learning from

the future (your “Self”). It’s the clash between the future and the past that occurs all along the project, that makes your pre-understanding clearer.

Second, pre-emptying is an ongoing journey because as projects move closer to implementation, the team expands, and new team members are enrolled. If bringing people on board in problem-solving implies to transfer them the “specifications” of a new solutions, when it comes to innovation of meaning one needs to transfer a meaning: and this cannot simply happen through information transfer. First, the newcomer has to pass through a pre-empting action herself. In project Jaune, for example, we have experienced that a top manager joined the project towards the end. Only after he shared his own vision and the others discussed it carefully, he finally felt more comfortable to embrace the new vision that had been developed in the project and melt his own in. This implies that whenever a new person joins the journey, even towards the end, the team should not simply transfer her the project vision (as in an attempt to “convince”), but it should give space and engagement for pre-emptying the newcomer’s vision. This also suggests that meanings cannot easily be outsourced, for other externals to “refine” (Öberg and Verganti 2014).

### *Pre-emptying as a generative ongoing journey*

Finally, pre-emptying does not only serves the purpose of “creating space” into the project participants to take in new meanings. It is not only an act of forgetting the past. Pre-empting is also a generative action: it is the first step to imagine the new, the future. In fact, as earlier described, pre-empting does not start by sharing our vision of the past, but by envisioning a new meaning for the future. It’s an act of designing. In a project we conducted with a Polish company, the chairman envisioned 13 possible meanings during his exercise of pre-emptying. The final meaning of the project does not overlap with any of this, but some of the characteristics of the final products are inspired by these early visions.

In other words, the act of pre-empting is simultaneously an act of “letting go” and of envisioning the new. This makes the idea of the naïve mind even more naïve. The sequence is not: a mind loaded with pre-conception turning into an empty mind and finally into a mind loaded with a new vision. The state of empty mind is never reached: the pre-understanding flows away only when new stuff is put in. It’s by feeding in new horizons that one get rids of the old. As Gadamer says, there should never be a state of empty horizons.

## Conclusions

This article has discussed the role of pre-understanding and pre-interpretation in innovation of meanings. Thanks to the theoretical support of hermeneutics and theory U, and of four empirical cases, the article shows that the concept of the naïve mind does not apply to innovation of meaning. Rather than searching for innovators with a beginner's mind (who hardly exist), organizations may instead acknowledge the existence of pre-interpretation, and deliberately create actions to leverage them. We call this an act of pre-emptying, an act of clearly expressing the meaning a person believes in, thoroughly criticizing it, and fusing it with other pre-understandings to create a new one.

Our study shows that when companies do not “pre-empt”, innovation of meaning seems to struggle: the unspoken old meaning implicitly drives the discussions, the space for new interpretations becomes restricted, people hardly moves away from their pre-conception. Or as Scharmer describes it: “viewing from projecting past patterns and seeing reality as a shadows on the wall projected by our selves” (Scharmer 2008, p. 160). The act of pre-emptying instead eases is an engine to generate new visions.

Our work therefore proposes that, rather than searching outside the box, a valuable way to unlock interpretations is to search “inside” the box.

Whereas hermeneutics and theory U helps us seeing the importance of pre-emptying, none of them give guidance on *how* to do it. Our empirical material provides insights on the dynamics of this act of pre-emptying. First, pre-emptying does not happen in a moment; rather, it is a journey in which different pre-understandings are melted; only when each individual vision has been thoroughly analysed, discussed, and fused with the others, the act of pre-emptying is completed. Second, pre-emptying occurs all along the innovation process. Lastly, pre-emptying does not focus on the past, but on the future: one gets rid of old interpretations only by filling in new horizons; there is never a moment in which an innovator has an empty mind.

In its discussion of challenging the myth of the naïve mind and in exploring the role of pre-emptying, this paper bring two implications for further reflections in future studies.

- From a theoretical standpoint, it would be interesting to discuss the act of pre-empting with the help of other theoretical frameworks than hermeneutics and Theory U. One interesting path of research, for example, is proposed by philosopher Finn Hansen, who contrasts



our feelings as something meta-physical to the more abstract ideas of “wonder” and mysteries (Hansen, 2012).

- From a methodological standpoint, this article highlights the importance of immersing in the context, and action research, when exploring innovation of meaning. As Scharmer emphasizes, it is essential to integrate science (third persons view), social transformation (second person view) and the evolution of the self (first person view) (Scharmer, p 16).

Our research is maybe not there yet, but this construct helps us to describe our methodological approach: we not only observed managers in our research, but we also discussed and immersed ourselves within the organizations. In this way, we are on our way towards a more complete way of looking at science – as a combination of episteme (science), techne (producing, proposing, writing), phronesis (the practical learning in discussions and workshops) as well as the less obvious capabilities of the soul, sophia (theoretical wisdom) and not the least nous, our intuition and awareness.

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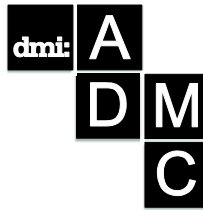
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## Participation-based Design Process in Jeju Local Regeneration Project

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*For the purpose of promoting innovation in the public design domain, this paper proposes abandoning the conventional design process in favour of a process based on participation by residents of, and visitors to the region or city concerned. Concurrently, the paper analyses how participation-based public design affects the sustainability of long-term local regeneration. The analysis can give academics and practitioners working in diverse design professions a valuable insight into how innovations can be facilitated rather than fashioned directly by the practitioner's own imagination and hands. The key is collaboration between designer (as a 'design manager') and the participants. This paper proposes a 'participation-based local regeneration design model' (the Model) which can induce intense interactions in the public design process. The Jeju local regeneration project is reported as a practical demonstration of this model. This paper can be classified as a review of an experimental project. The paper accepts a particular definition of 'sustainability: continuing autonomous transformation of the community through the participation process can be regarded as evidence of the sustainability of the local regeneration design model. Further evidence of its sustainability may be found in an increase in links and relationship among community members and between the community and the outer world.*

**Keywords:** Participation-based, Sustainability, Local Regeneration

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## **Introduction**

Our aim here is to elaborate an innovative public design model and offer a toolkit which encompasses open invitation to local populations to participate in spontaneous design. The outcomes are ‘all their own work’ nevertheless they would not exist had the process not existed.

The model was developed to facilitate local regeneration consistent with social and cultural sustainability. The model is tentatively named the ‘participation-based local regeneration design model’ (henceforth ‘the Model’). The background of this paper lies in

- culture-led urban design and city regeneration (Knox, 2011; Tallon, 2010; Florida 2002; Evans, 2005; Evans and Shaw, 2004; Hall and Robertson, 2001; Bailey, 2004; Vickery, 2007; Lees, 2003; Lennard, 2009; Fiske, 2005; Robinson, 2009)
- concern for human scale and public space (Jan Gehl, 2010)
- ‘soft’ activity-based project-work (Grasskamp, 1997; Garcia, 2004; Norman, 2003; McCarthy, 2002; Finder, 2005; Smith and Jenks, 2000; Kelley, 1995)
- the creative class (Florida, 2000)
- criticism of top-down urban regeneration (Evans, 2003; Julier, 2005; Miles, 2000; Miles and Kirkham, 2003) and of the ‘hard branding’ of the cities epitomised by the ‘Bilbao Effect’
- public art and design approaches for urban design and regeneration (Carey and Sutton, 2011)
- outright criticism of public art (Phillips, 1988; Hall and Robertson, 2001; Miles, 1997, 1998; Lippard, 1995)
- and support for a new movement in public art (Lacy, 1995; Kwon, 1997; Hunt and Vickery, 2010; Thompson, 2001).

Does the sustainable public design model and toolkit work? Critical to its success is the casting of an invitation which attracts passers-by to participate in the performance ‘Fluid’ and contrasting patterns of involvement including active participants and passive onlookers.

To verify and validate the elasticity and practicality of the Model, this paper concentrates on a test project – the Jeju local regeneration project (henceforth ‘the Jeju Project’). Through the field-testing of the Model, it became clear that designers can indeed be cultural intermediaries with only a basic understanding of the two key elements – the invitation factors and patterns of participation.

## Evaluation Criteria

The evaluation criteria of the field-testing was twofold: the degree of transformation and the degree of sustainability. The primary concern is whether passive spectators will transform into active participants within the period of the test project... and that the project would create an enduring trace, not of any conspicuous design genius on the part of the facilitator, but instead, of the collective genius of local residents. Our suggestion is that ideally-speaking the outcomes of participatory design obscure what traces there may be of the facilitator's presence. The trace of the facilitator is not conspicuous (as in so much public art), but instead 'grey'; even invisible.

The premise behind the Model is that, if any member of a community participates in a project, then, there will some degrees of transformation among community members. The transition from passive spectator to active participant is a profound one and of equal or greater importance than the work produced.

After this initial transformation, the transformation process is likely to continue autonomously among the community members without involvement of the designer. Continuing autonomous transformation is how we can define sustainability here. Other transformations matter intrinsically too: increases in the number and character of relationships and networks among community members and between the community and the outer world.

Based on analysis of *forty-six* prior projects based on *our* Model, *five features of invitation were identified* (Ahn and Lee, 2013):

- sensual invitation
- experience-oriented invitation
- site-specific intervention
- the emotional invitation of story-telling
- and local ownership of the programme
- Four features were identified as critical to participation:
- sensual participation
- active participation
- artistic involvement
- and involvement in exchange involvement

## A Celebrated Prototype: 'Fluid'

The great majority of these features can be appreciated in the performance 'Fluid' initiated by Alan Kaprow (1967). Dozens of passers-by, without any prior notice, spontaneously stacked big blocks of ice to build twenty rectangular nine-foot-high 'ice houses.' - the laborious but play like activity drew a diverse group of spontaneous participants –from a McDonald's manager and an off-duty policeman to neighbouring children - who joined the work in a celebratory fashion. Other onlookers were nonplussed, or even took the 'play' aspect as an affront to their own hard work. For Kaprow the project's importance lay in the unpredictable experience it evoked: 'What remains vivid in my memory is not so much the aesthetics of the event as its social interactions...' (Lacy ,eds., 1995)

Passers-by were attracted by sensual invitation to see the ice block and the performance. Participants could expect a unique experience from the performance – an experience-oriented invitation. The performance intervened in the ordinary life of viewers, awakening the curiosity of persons who happened to be present within the ambit of the event - site-specific intervention. The performance had the potential to be sustained as an 'urban myth' having the emotional appeal of invitation to story-telling. The supposition that new relationships were struck-up among participants – acquaintances, friendships and intimacies suggests how great a difference a short term event might have in a chancy World... events whose effects *multiply* rather than diminish over time and distance.

The participants could feel the performance was their own game - ownership-related invitation.

As for participation: participants could see, touch and feel the ice blocks (sensual participation), participated in the performance (active participation) and as the specific labour and collaboration by the participants were incorporated into the public art performance, they had direct artistic involvement. We are confident that had the result of the performance had been multiple art-works, some participants would have purchased the objects, allowing 'exchange involvement'.

Based on the interactions between invitation factors and participation patterns, a prototype model is originated as seen below.

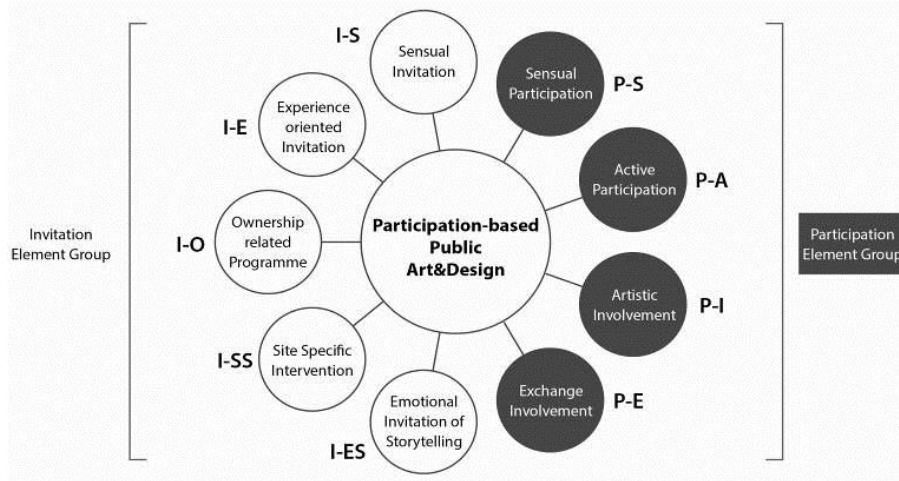


Figure 1 The Model of Invitation Factors and Participation Behaviour Patterns

## Test Project: Jeju Local Regeneration Project

Jeju local regeneration project has continued since its initiation in 2008. A designated UNESCO natural treasure, Jeju is a small island is visited by 600,000 tourists every year (Jeju Local government, 2012). The Jeju Project was initiated to protect the Island’s cultural heritage from external pressure to urbanise.

### Jeju Island

The island, with population of less than 600,000 or 1.3 percent of the total South Korean population is represented by numerous mythologies and legends of approximately 18,000 gods and goddesses, shamanic rituals, medieval feminism represented by a few groups of Haenyo (sea women and female divers) and a very distinct dialect which is still the first language of many elderly residents. This Island was occupied by the Mongolian Empire in the 13<sup>th</sup> century. Mongolian occupation lasted 100 years and Jeju Island was directly governed by the Empire as it was regarded as a key location for the supply of war horses.

### Gasiri

Gasiri, a small village located in the central mountain area of the Island has 1,200 residents (official figures for 2009) and covers 5,600 ha. For hundreds of years, the ancestors of the Gasiri community were involved in



raising war horses for the Koryo Dynasty (918~1392) and the Chosun Dynasty (1392-1910).



*Picture 1 Tamlasunryuckdo ,1702 ©National Museum of Jeju*

For these historical and cultural reasons, the most distinctive characteristic of the Gasiri community is its homogeneity and the spontaneous emphasis which Gasiri residents place on collectivism. The notorious massacre of the 4.3 (the 3<sup>rd</sup> of April) in 1948, when most males in the community were killed by their own government, in conjunction with the community's homogeneity and emphasis on community, makes local people reluctant to engage in open communications even among themselves as well as with outsiders. This is a community characterised by deep-seated and reasonable reticence.

Always known for horse breeding, Gasiri's maintains top-tier stock. Among ten national farms on Jeju, Gasiri hosted the royal horse farm 'Gapmajang' which produced the preeminent war horses of the Chosun Dynasty. In and around Gasiri, there are many features deriving from war horses, including 'Jat Sung' (a farm fence from the medieval period) and 'Maltaewoori' (packhorse drivers).



Picture 2 Horse Farm in Gasiri SungHee Ahn ©2010

In the 15<sup>th</sup> century, King Sejong established ten national horse farms in Jeju to breed the best quality of horses for the royal army. Gasiri is one of ten farms and called ‘Gapmajang.’ Each farm carries a horse-grade designation and Gap (甲) designates the best. The Gasiri farms have carried the best-in- the-whole-county status since that time.

### **Why Gasiri?**

Most public design projects have been tested in big cosmopolitan cities. This raises the question of whether they are viable in different circumstances, and especially conditions of lower population density and in places demonstrating more characteristically rural forms of sociality. The principal reason for trialling the Model in Gasiri is to find a location which will help us see how far the applicability of the Model might reach. The remoteness, homogeneity, population size and ethnographical differences might lead one to expect different responses to the Model. Indeed our wish is that the Model is capable of eliciting a wide range of responses according to local circumstance and its point is *not* to have similar outcomes everywhere. The extent to which the Model accommodates different contexts is one test of its sustainability.

A government subsidised regional regeneration project was being implemented by Korean government in Gasiri. The basic methodology for the project is a joint venture between public and private sectors, with ‘matched funding’ as the main tool for fund-raising. The community’s contribution towards matched funding was an area of land co-owned by community members. The first regional regeneration project was carried

out over a period of 2 years from 2009 to 2011, and a second was started in 2012 to run for five years.

Sub-projects were enacted within the regional regeneration project, taking advantage of government funding, even though the Gasiri Project itself, which was wholly designed and facilitated by the researcher, was not part of the regeneration project.

### **Project Design**

In the design of the Test project, the researcher took into consideration the homogeneity of the Gasiri community and its historical basis. The project, as a whole, can be regarded as an intervention in the everyday life of the community, though 'intervention' carries perhaps stronger connotations than we wish to suggest. The facilitator had no wish to impose alien concepts and imagery upon any social space.

Though sympathetic to the public performance process of 'Fluid' and entirely different from conspicuous hierarchical imposition of conspicuous artefacts the facilitator's approach had many layers and did not progress as a linear sequence of pre-planned stages. This structure had been appropriate for 'Fluid,' because the performance was carried out in a complex, multi-cultural environment under a fixed time-frame and strictly controlled schedule and budget. We acknowledge too that as Lacy(2004) argued, the simple and easy activity in 'Fluid' belied the complexity of the relationship of different stakeholders.

The situation in Gasiri Project was diametric to that characterising major city in Europe or America: above all, the characteristic of community is homogeneous and not multi-cultural, so the burden of controlling relationships is lessened. The industrial context different (long-standing horse-breeding) and a specific, brutal trauma was within living memory.

Reflecting all of those considerations, the Project was designed to be multi-layered and was thus composed of many micro-projects which were implemented concurrently. The multi-layers of the Project were designed to generate enhanced participation levels and degrees among the community members of all ages. Site-specific interventions in Gasiri were quite different from those interventions made by 'Fluid' and other public art performances to be executed in public spaces of metropolitan cities. It took full advantage of the stark contrast between those new facilities and 600 years' history in the village. Through comparison between the two contrasting phenomena, the project invited the residents to much intense discussion concerning this new wave of changes.

### **Invitation Design**

The guiding principle of the invitation was to establish as many opportunities as possible for Gasiri residents to be exposed to all of five 'invitation factors'. There exists a stark contrast between Gasiri Project and 'Fluid.' The invitation to Fluid' had only to follow the artistic instinct of Kaprow. By contrast, invitation to the Gasiri Project was much less constrained; indeed it featured incompleteness and improvisation. With diverse and abundant invitation opportunities, if a resident skipped a sub-project, she or he could participate in other subsequent sub-projects.

Sensual invitation was mostly composed flower-drawing and horse-drawing. This was engaged in by many residents old and young as well as by many Gasiri children and infants. Typically the researcher-designer-design-manager was not regarded as an 'authority' figure and made no attempt to become one. The facilitator became a collaborator, maximising the creative initiative of participating community members. Of course there is novelty here as the residents received new stimuli in the course of drawing, talking and discussing with outsiders as well as with insiders. There was novelty for them in transforming their own drawings into public designs, and in making and installing public design products all around Gasiri.

Experience-oriented invitations were presented through many impromptu interviews and discussion events between residents and visitors. Ownership-related programmes in the Project provided the whole community members with opportunities to create their own art works and public design products. In contrast, residents became viewers (not participants) in concurrent government-controlled regional regeneration project, which had invited many famous artists, designers, musicians, performing artists, entertainers, and other celebrities to the area.

For our work, the emotional appeal to participate in storytelling was essential to the invitation, involving meetings and discussions between outsiders and insiders. The older generation was especially active in relating abundant mythologies, legends and the history of Jeju Island and they did not avoid discussion of the traumatic 4.3 massacre of the male population.

### **Project Development**

One of the readily available symbols for Gasiri is the canola flower which grows wild in and around the village. Every spring, Jeju Island holds a canola flower festival, which is one of the main tourist attractions. At the outset of designing the invitation, residents were therefore invited to casual interviews composed of questions about their individual and shared

memories of the canola flower and a request to draw the flower from memory.



*Picture 3 Flower drawing by Gasiri Children ; Picture 4 Gamajang Road Sign Pole*

These interviews took place conveniently whenever an interviewee turned up in the public space. For a month, 72 residents of the approximate population of 1,200 participated in the process. This activity was designed to be especially inclusive of seniors and senior groups. Drawings were collected and incorporated through a visual material workshop into decorations for the village's workspace building, which is second only to the council building in having regular visits from residents.

There followed a one-day Horse Drawing Competition event, again held in Gasiri. A total of thirty children aged between five and twelve years and some adult volunteers participated in this event. Horses - mainly trained racing horses from the local farm - were brought to this event to enable an element of life-drawing. It should be noted however that both a horse trainer and a horse medical practitioner were present and that when the participants had finished drawing the horses, there was horse riding assisted by the horse farm trainers. Again, by these means, Gasiri was the focus of attention and contemplation, and not the facilitator-designer.

The visual materials from the Horse Drawing Competition were developed into the 'Gapma' (the best war-horse) logos incorporated into sixty designs of tourist information and direction-signs around the village.

The decision-making of what the design process might be was itself accomplished through continuous, iterative and collaborative discussions. A total of sixty-four way-markers were designed and made for a new 20km-long walk along the old fence boundaries of the 'Gapmajang' (the old royal war-horse farm). This route takes about seven hours on foot at a normal

walking speed. The village signs help to promote the newly established route for the visitors. The 'Gapmajang-gil' (war horse road) runs along the border of a national horse farm where war horses were already being raised six-hundred years ago. This walk connects into a path which encompasses the whole of Jeju Island.



Picture 5 Horse drawing of Gasiri Children ; Picture 6 Gamajang Road Sign Pole

The participants expressed delight at encountering logos and other designs which had been incorporated directly from their own drawings. While the imagination of the designer-facilitator is present in the way-markers, it is not especially conspicuous. In this way locals have been able to bring together historical and cultural resources in a successful (meaningful and relevant) attempt at 'community branding'. The hand of the designer was present much more in the process than in the artefacts.

Typical of this process there was continuous collaboration and discussion in the course of designing the logo and in choosing exact locations at which to install each way-marker.

#### **Evaluation: more than a gesture?**

From the outside, 'Gapmajang-gil' (the road running along the war horse farm's fence) can perhaps be read as an optimistic representation of an isolated village in symbolic and economic communication with the outer world (and mediating tourism). However, the intention at Gasiri was to design and facilitate a process-based participatory project to include village residents' voices in communicating with the wider world and communicating between themselves – communication on their terms, not on outsiders' terms. It can be noted that in any case, Gasiri was already

deeply integrated into a very far reaching imperial project of conquest by six centuries ago and its horses are emblematic of this connectivity.

We believe it probable that the participants grew in confidence and activity, becoming more pro-active and more involved in the project because they were working with the village's historical contents that relate specifically to horse and horse-farming culture.

Gasiri opened the 'Jorangmal' (Jeju horse) Museum & Farm in 2012. The Jeju horse is indigenous and recognisable because of its large course-haired head, thick-set powerful body and short legs. This is the first independent museum in South Korea to be built by a village council and run by a village community. Subsequently the Jorangmal Museum & Farm has enlarged on the concept of creating a healing process based on experiencing horse culture in daily life. As the Project was formulated to try to create more active links between the project and participants, the achievement can be seen in the pragmatic public design outcomes in the village as well as in changes in the behaviour and morale of the community members.

### **Participation**

In comparing the strengths and weaknesses of the 'Fluid' and Gasiri Projects, particularly in terms of the manner of the invitation and patterns of participation patterns, the strength of the Gasiri Project is that each sub-project could be executed without an outstanding celebrity lead-designer. The model used in 'Fluid,' made it necessary for a public art and design director to develop plans, raise funds, make numerous links in diverse disciplines and to control the whole process as its main author.

The success of Gasiri Project was essentially dependent upon community participation and they showed much pride in their achievements and ownership of the outcomes. Thus, the project enabled the local community of Gasiri how to draw on pre-existing solidarities and values, through spontaneous participation and horizontal communications among themselves and with the facilitator. At the same time the process did not compromise respect for Gasiri's 'top-down' communication culture which was already established long since. Finally, the project enabled individual artistic expression and reminiscences particular to participants own biographies – which even in villages has an inevitable degree of uniqueness. It now strikes us that the process enabled 'poly-rationality' by engaging 'Hierarchical', 'Enclaved' and even 'Individualistic' thought-styles (Thompson, 2008). Thompson thinks it important that there should be 'high quality discursive space' in order for timely, appropriate, workable and

surprising solutions to emerge to what he calls ‘wicked problems’ (difficulties which affect many persons and are never entirely solved, but tend to evolve as solutions are applied). The new thinking which emerged around the therapeutic value of contact with horses strikes us as one such poly-rational approach to the ‘wicked-problem’ of mental health: worth trying but without claiming to be the ultimate cure.

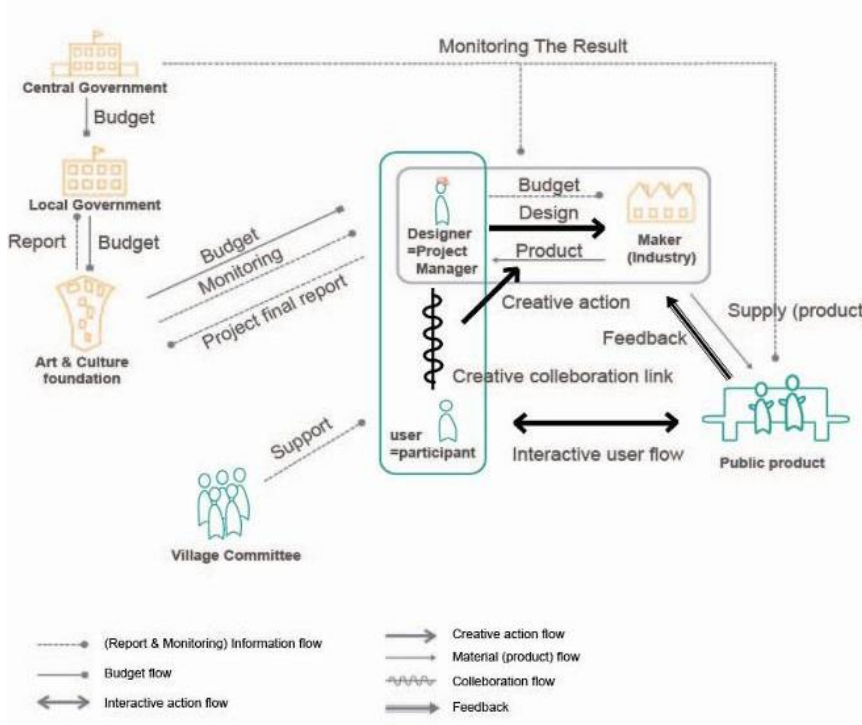


Figure 2 Participation-based Project Innovation Process Flow

### Transformation

A chief administrator at Gasiri stated, “As you see, there is no art gallery or museum in the village. We have never had an art and design project for children. Though the average income of the village is higher than that of big cities, the community is isolated from the diverse culture you can experience in the city.”

She added, “it was a magic time for me, maybe for others too, to see that the drawings made by our children could be directly turned into signage



for guideposts and other public design. It is natural for the children as well as community members to take great pride in the project. Now, it is not unusual for community leaders to use the expressions related to art and design such as 'in the viewpoint of design' or 'artistic value,' each time there is a community meeting for important decision-making. I think Gasiri Project could be a turning point for the community to understand this kind of project can be a tool for community regeneration."

The idea to revive 'Gapmajang-gil' came from Gasiri residents themselves, and it was not suggested by the researcher or by other official sources of authority.

### **Feedback**

In 2012, 'Gapmajang-gil' was newly-opened to outsiders. In the competition run by the Ministry of Land, Transport, and Maritime Affairs, for the best landscape in 2012, Gasiri was chosen as the best landscape in the category of Villages for Agriculture, Forestry and Fishery. Even though the selection criteria for the competition were complicated, it is certain that 'Gapmajang-gil' played a critical role in Gasiri being selected.

Every New Year's Day in Korea, the Chosun Daily, one of the country's major daily newspapers, predicts major trends to come into being, which are selected through interviews with experts from diverse disciplines. On January 1, 2013, the daily newspaper predicted the rise of community participation as a cultural trend, and chose Gasiri Project as a case for the trend in art and design, as part of wider cultural trends. The article also included pictures of Gasiri Project. Our sense of this event is that Gasiri's historic influence as a centre for war-horse breeding, has been re-animated in modest contemporary form via design-facilitation. This is not something that could have been forecast and not something which could have been enshrined in pre-project 'evaluation criteria'. The nature of the process means that clear direction and 'outcomes' cannot be stated at the outset and in this sense its evaluation is (quite properly) less straightforward than many public art projects.

We note with pleasure that on May 3, 2013, Gasiri community held the first Horse Festival, initiated and organised by themselves. The programmes included children's horse drawing and riding events. In fact, the programme for children's horse riding was initiated by a horse trainer in the course of executing in Test Project of this research. (Only with hindsight can we see that the seeds of change were created from the outset of the project.)

As Korea's many villages regarded Gasiri as a benchmark case, it did become exposed to mass media. KBS, the Korea Broadcasting Services, made a one-hour television programme introducing Gasiri. Though it could have been, we do not feel that this exposure has been harmful: community members started to learn their own history through a rehearsal process conducted in preparation for presenting that history to outsiders. The campaign to walk along 'Gapmajang-gil' was initiated as part of this and reminds us that ritual and symbolic acts can evoke emotions, clarify cherished ethics and animate actions (after Durkheim, 1912).

The self-governing committee of the village made a decision to maintain the artist residency programme through fund-raising from non-profit organisations and individual-contributions of the community, even after the end of the sponsorship from the regional regeneration project. The committee chairman announced that art and culture had already functioned as very important resources for Gasiri.

## Conclusion

By tracing the process, the feasibility and validity of the Model was observed and understood. Spectators in a participation-based public design project are the residents of the place where the project is held or processed. Residents share the initiative with designers who work for the project rather than for themselves. It is possible for local residents to interact directly or indirectly with specialists (such as horse-trainers, TV documentary makers and so on) or among themselves, via any process of the project, including planning, making art works, logo designs, installing and building diverse facilities, conservation and though official or informal meetings with officials and policy-makers.

### **Process Patterns and Innovation in Jeju Project**

The participation-based public design project had multiple sub-projects having multiple routes, and so-to-speak innumerable small and safe trial-and-error experiments. In 'Fluid,' there was much less room for trial-and-error because of structural constraints. The performance underpinning the "ice house" construction was constrained by a very tight project schedule and defined budget. Our sense is that though 'Fluid' is remembered, the Gasiri project has been more widespread (though less deliberate and planned) in its effects.

Table 1 Invitation Factors and Participation Behaviour Patterns of Jeju Project by Participation-based Public Design

Design Action (Designer)	Using local motives to evoke sense	Organising interviews and events	Designing co-creation process	Creating links of history and culture	Engaging with local storytelling
Invitation Elements	Sensual Invitation	Experience Oriented Invitation	Ownership Related Program	Site Specific Intervention	Emotional Invitation of Storytelling
Participatory Action (User)	Sensually participate in drawing flowers	Actively participate in the events	Participate in creation process	Co-work and co-owned design	
Participation Elements	Sensual Participation	Active Participation	Artistic Involvement	Exchange Involvement	

In the case of Gasiri, because there were multiple sub-projects (which could be alternative routes for the residents to select) and because the project had time and budget enough to execute multiple sub-projects concurrently, almost every kind of trial-and-error could be allowed. Though less explicit and formal, it was more robust, containing more ‘redundancy’(participation pathways). The table below shows a comparison between the two projects in terms of project layers and process patterns.

Table 2 The relationship between Participation Process Pattern and the Project Layers

Project	Project Layer	Process Pattern
Fluid	A single project	A single route Linear sequence to a specifiable destination Iteration is not allowed

<p>Gasiri</p>	<p>Multiple sub-projects under an 'umbrella project'</p>	<p>Multiple routes                  Multiple sequences are processed concurrently                  Iteration is allowed along all and any sequence (route)                  Choice among multiple sequences (routes) is allowed. There is redundancy                  Change of sequence (route) is allowed                  Multiple and unexpected destinations are allowed</p>
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In summary, 'Fluid' is characterised by a *definable single-layered linear sequence*, while the Gasiri Project is characterised by *multi-layered alternative sequences which are not known in advance*. The observation of the two prototypical projects discussed here might enable development of different sub-models. The first sub-model inferred from 'Fluid' might be termed a *single-layered linear sequence model*, while the other sub-model could be called a *multi-layered alternative sequence model*.

## How to Define and Evaluate the Sustainability of the Model?

It is a challenge to assess the sustainability of a design process whose effects defy accurate estimation. What should be included and for what period of time?

The sustainability of the Model can be interpreted as an extension of the *multi-layered alternative sequence model*. If any member of Gasiri community initiated any other participation-based public art and design project, or any other kind of cultural activity project, after the execution of Gasiri Project, the newly initiated project could be seen as a faithful iteration of the initial Gasiri Project.

If this was to trigger other members of the community, and as a result, other fresh rounds, again and again, the Model might secure sustainability without our being able to measure it with complete certainty. How would one treat an individual's recovery from mental distress that occurred subsequent to their contact with horses at the horse museum which might not have developed its therapeutic role had Gasiri residents not experienced the happiness of seeing their designs incorporated into way-markers (and so on)? In a process that is not designed to stop at any definite point, what outcomes (wherever and whenever they occur) can be attributed to it? This issue is illustrated in the extraordinary continuing influence of the decision

many centuries ago to make the island a strategically important war-horse breeding centre.

The ultimate aim of the project is that this sustainability would lead to sustainability of the behaviour pattern of the community in favour of arts and cultural activity. It would be hoped, also, that in the course of this process, the community's ownership of newly-initiated projects and cultural activities would also be secured. The community members who initiate repeated rounds of public art and design project or other kinds of cultural activity are defined as the 'transformation group.' The endless rounds indicate the continuing engagement of community members in initiating and further developing arts and cultural activities. In this context, the Model can be defined as a sustainable model. But in an important sense, the success of the project cannot be calculated with precision.

In the course of executing the test project, it was affirmed that the influence of the initial participants forming the 'transformation group' was at least as strong as the influence of the researcher on community members. Indeed the project could have been deemed to have failed had this not been the case. This is because reliance on the design-facilitator would have inhibited further extension of the Model. In the process, each participant creates many links, gives feedback and influences other potential participants, which are crucial sustainability elements of the Model.

### **Practitioners' Toolkit**

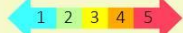
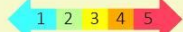
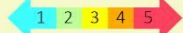
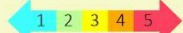
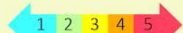
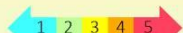
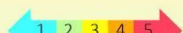


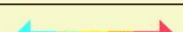

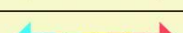
Though the Model has been supported by the test project, appropriate evaluation criteria and performance measurement tools are still to be evolved. A practitioners' toolkit is therefore proposed.

The primary use of the toolkit is in presenting designers specialising in urban or local regeneration with guidance in planning and evaluating a participation-based public design projects. This toolkit can also be utilised as a reference for preliminary evaluation of a proposed project or – with the important caveats entered above - for 'performance measurement' of continuing projects. It is probably needed by governmental bodies who need to be able to account for their funding decisions to the wider population.

In order to simplify decision-making, each element of the toolkit has only five degrees. For example, against the first element ('project objective') [see Table below], as we move closer to the right side ('everyday life'), the project can claim a higher level of validity and we move closer to the left side ('public manifestation'), this indicates, we think, a lower level of validity. The toolkit considers many elements displayed in below.

It is believed that use of the toolkit can foster interaction and collaboration between designers and residents, making the project ‘truly public’ in preparation of how it will be evaluated; not just the work of a single designer or specialist in urban design, local regeneration placed in public view and not just by a single evaluator. It should be possible for publics to use the toolkit for themselves.

Table 3 Participation-based Public Design Toolkit

No.	Project Element	Consideration Element & Degree
1	Objective	Manifestation  Everyday Life
2	Initiative	Designer  Residents
3	Management	Manager  Designer
4	Communication	Top down  Interactive
5	Participation Degree	Inactive  Proactive
6	Participation Partern	Passive  Volunteer
7	Process	Result oriented  Experience oriented
8	Collaboration	Disciplinary  Interdisciplinary
9	Cultural Dynamics	Excluded  Included
10	Scale	Monumental  Human Scale
11	Social Contribution	Implemental  Expressive
12	Aesthetic Value	Conventional  Experimental

The twelve considerations can be gauged qualitatively or less easily, quantitatively. Treated qualitatively, the toolkit is already adequate for the comparative evaluation of competing project proposals and for retrospective evaluation of actual projects. Each element is not to be given any absolute grade (ie. item 12 is not more important than 3, because these are qualitatively different items which, like ‘apples’ and, say ‘pensions’ cannot be added to each other in a meaningful way). For this reason any element for one project should only be judged against the same element in another project (ie. 12 with 12; 3 with 3 – that is ‘apples’ compared with ‘apples’).

Table 4 Using the Participation-based Public Design Toolkit

Level 1	Level 2	Level 3	Level 4	Level 5
low	Middle	Middle	Middle	High
90~100% Single	20~40% vs 80~60%	50% vs 50%	60~80% vs 40~20%	90~100% Single

The evaluation of each project element can be carried out easily and though a more elaborate toolkit could be evolved, even the simplest toolkit can articulate the chief characteristics of any project. It should not be a formidable challenge to develop evaluation methodologies and criteria for a participation-based public design project, though we stress that the further into the future that a project is imagined, or the longer the time elapsed from the outset, the harder it is to attribute its effects.

It is important, however, to analyse carefully all aspects of the information given in the toolkit before applying it to an actual situation. For example, it may not be appropriate to make a decision if the decision is based only on the grades affected by the budget size.

**Acknowledgments:** *Lastly we thank the people of Gasiri, who made the project possible because it was made from their resources and not from ours. This paper is an outcome of theirs.*

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## **Section 1b: Contemporary Brand Design**

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# Editorial: Contemporary Brand Design

Ashok RANCHHOD

This track looked for theoretically driven and practically relevant contributions that shed new light on the strategies, practices and processes by which contemporary brand experiences are created and managed by companies in different product fields, from consumer goods to luxury artifacts, from physical products to more service-driven brands. We were particularly interested in the mediating role of design in the creation of strong and sustainable brand recognition.

In this track theme we hoped to identify possible commonalities and differences in the strategies and approaches that brands in different fields apply in their product design and we were not disappointed. Papers submitted ranged from understanding the new conceptual frameworks for understanding brand design to a more holistic approach incorporating product and service design and the way they affect brands. *Branding is relevant to services, where the lack of physicality requires a new analysis based on customer relationship, experience, and trust as to how the interrelated designs help brands succeed (Berry, 2000)*. Pullman and Gross define *experiences* as the “emotional connections [engendered] through engaging, compelling and consistent context” (2004). This means that these experiences have to be designed for brands and experienced by users. On the other hand, there are many digital innovations that affect contemporary brand design such as advergames and digital content design including animation (Philip and Lee, 2005). Brand experience include specific sensations and cognitions created by brand-related stimuli, that can result in attitudes and general evaluations about the brand (Brakus et al., 2009). Brand design is also about understanding the impact of product and packaging design.

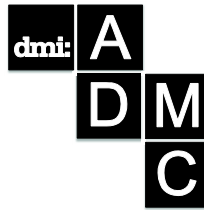
## *Summary*

This track considers many of the innovative ways in which contemporary brand design operates in the new digital and globalised world, with papers encompassing a range of different ideas and concepts.

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# Exposing the Monster in Media: a study of Ducati's product placement strategies

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*Product placement, and brand placement, is a practice that is increasingly used to expose both products and brands in cultural productions: film, TV, video game etc. The aim of this is to construct associations between a product, or brand, and what is exposed in the cultural production. The effect is thus a transfer of values from the cultural production to the product. Brands are pivotal aspects of any design venture. In order to construct a coherent set of values, and consumer understanding, of a product the brand and physical product need to communicate the same values. Brands thus have a possibility to strengthen design. Using the morphology of the Russian formalist of Vladimir Propp this paper aim to explore the effect of product placements of Ducati motorcycles in films. Through the analysis of 15 film published between 2010-2013 the presence of Ducati motorcycles are related to narrative and characters in order to understand associations constructed in product placement. The results in this paper show that while there is weak relationships between narrative aspects of the films, there are strong relationships between the Ducati motorcycle and the characters in the films. This is most evident in the relationship between the 'helper' character and the Ducati motorcycle as a tool for exploration and adventure.*

**Keywords:** *product placement; brand; design; value; Ducati*

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## **Introduction**

Product placement is a practice used by an increasing amount of companies to communicate brands and brand values (Williams et al., 2011); according to a PQ media report product placement business grew 11.7 % in 2012. By exposing a product in different cultural media productions, such as films, TV shows, or video games, a potential consumer are exposed to both design, functionality and brand (Karrh, 1998). The reasoning behind this practice is to assign sign-value (Baudrillard, 1993) to products and brands, which in turn would increase the potential of that product being present as an alternative when consumer are making purchase decisions. Following a Saussurian reasoning of linguistics, product placement is thus part of an ontological battle on sensemaking in order to inscribe brands with value; sign and signifier have little relation to what is signified as products, and brands, are related to different cultural products in the hopes of transferring meaning.

In 2010 the Italian motorcycle manufacturer Ducati was voted first runner-up for an advertising award about product placement in films ([www.brandchannel.com](http://www.brandchannel.com)). Aside from Harley-Davidson, Ducati might be the most distinct and recognizable name in the motorcycle industry; in terms of audio- and visual design. Since 1926, the Italian manufacturer has been a leader in technological advancement, innovation and design, producing both street-legal and race-ready machines for MotoGP. Ducati has during the last 10 years increased the exposure of its brand and product, through product placement, in different culture productions, primarily films and video games. After the hugely acclaimed exposure of a Ducati 996 in the film *Matrix: reloaded* the company seemed to have set the roadmap for future promotion efforts.

The aim of this paper is to analyse Ducati's product placement in cultural production, specifically in films, from 2010 and onward. In doing this it is possible to create an understanding of what symbolic meaning Ducati are striving to inscribe to its brand, and its products; also through what vehicles and in what form this is done. By applying Propps's (1968/2013) formalist analysis of films, and the exposure therein, of the Ducati brand and motorcycles, this knowledge will be possible to create. The contribution of this study will primarily be in a detailed case on brand product placement strategy, secondly to contribute to the on-going knowledge generation and discussion about relations brands, products and design.

## Background

Brands are immaterial artefacts, informational objects, used in order to communicate the value of a company, a product, or a service to a consumer, employee or other actors (Arvidsson, 2006; Kornberger, 2010). As such it can be understood as a sort of virtual real-estate (Schiller, 1999) that occupy the mind of the consumer. This constructed impact by a brand and on a consumer do affect both how the consumer identify herself, and how she perceive the products, or services, related to that brand. As Arvidsson (2006, p. 8) argue, 'brands do not so much stand for products, as much as they provide a part of the context in which products are used.' It can thus be argued that brands has a strong impact on how consumers make sense of consumption, both in how they relate to physical goods and the meaning the consumption of these have. In this sense, understanding the meaning of motorcycles are constructed by the symbolical meaning of the brand.

The impact of a brand can thus be understood through 'power of associations': a brands possibility to inscribe values through associations to other sources of (cultural) values. According to Saussure a sign can be understood as having two sides: signifier – signified, the associations constructed through a brand thus changes depending on what is being signified. A motorcycle, for example, has no meaning – it is but two wheels powered by an engine. The sign motorcycle thus refer to a signifier – a vehicle with two wheels – although what is signified is still under negotiation; the meaning of a motorcycle is not inscribe into the object, but through associations. But, as we shall see later, both the technical and aesthetic design of the motorcycle can support the value of the motorcycle.

A consumer's attention can, to some extents, be produced by means of advertising, design and brand management. Through what is communicated through images, the physical appearance of the goods and what meaning are inscribed into the brand. A brand can be described as having a semiotics meaning, pertains to the meaning or sign value of a product design (Van Rompay et al., 2009) or visual recognition of a product (Karjalainen and Snelders, 2010). The form or design of a product is interpreted by users and communicates important information. In this aspect there is a relationship between the brand and the physical design of a product. Both of these aspects supports the definition of a product.

In the early 1900s a formalist by the name of Vladimir Propp analysed Russian folk tales and developed a framework for understanding the basic elements in these. What Propp (1968/2013) argued were that most folk tales followed the same set or narrative structure, and the characters were

in general the same. The narrative structure followed a sequence of 31 function, described as *the hero's journey*. These functions brings the hero of the narrative from a known setting, through hardship and adventure, and finally back in the original setting. On this journey there are 7 types of characters present: *villain, dispatcher, helper, princess (prize), donor, hero* and *false hero*. Propp's (1968/2013) understanding of folk tales has during later years been used to understand both other literary sources, but also films and video games. In short, it is a useful tool to both construct and understand narratives with.

Viewing brand as narratives, Propp's (1968/2013) model can be used in understanding what role brands have in a narrative. Or, what types of narratives that are created in relations to brands. Precious studies that have studies brands in commercials has argued that these should be understood as "the helper", helping consumers to wash better, drive faster or be happier (Scolari, 2009). This and other studies have moved from studying the product placed in narrative setting without bracketing the product from the narrative. The value of these studies are that the mere presence of a product is but the initial step in understanding the relationship between brands, value and design. Understanding how they are used in enable a deeper understanding of brands in use.

## **Method**

The material for this paper was generated through the analysis of popular films. This media has a long tradition of facilitating product placement and has also had a huge impact as a cultural product on consumer culture. Not having access to official data on films where Ducati has used product placement online resources were used to identify films containing Ducati motorcycles. Using the Internet Movie Car Database (IMCDB) it was possible to identify fifteen films that meet the requirement: distributed 2010-2013, US/European market, English language, and the Ducati motorcycle should be exposed in the film for a somewhat knowledgeable viewer to identify the motorcycle.

Table 1 Films featuring Ducati motorcycles 2010-2013.

Title	Year	Director	Ducati Model
American Pie: Reunion	2012	Jon Hurwitz Hayden Schlossberg	Hypermotard
Beastly	2011	Daniel Barnz	Monster
Fast and Furious 6	2013	Justin Lin	Monster
Haywire	2011	Steven Soderbergh	Monster
I am Number Four	2011	D.J. Caruso	848
Inception	2010	Christopher Nolan	Streetfighter
Kick-Ass 2	2013	Jeff Wadlow	1199
LOL	2012	Lisa Azuelos	Monster
Takers	2010	John Luessenhop	848
The Expendables	2010	Sylvester Stallone	Desmosedici
The Losers	2010	Sylvain White	848
The Next Three Days	2010	Paul Haggis	Monster
TRON	2010	Donald Kushner	900
Wall Street: money Never Sleeps	2010	Oliver Stone	Streetfighter, 1098
Wolverine	2013	James Mangold	Diavel

After the list was constructed all films were viewed and analysed according to Propp’s (1968/2013) framework. The two dimensions of narratives and character has the possibility to guide the understanding on how the Ducati motorcycle and brand are presented in the films.

## Observations

### *Hero’s journey*

Although the Propp’s framework of Hero’s journey was constructed as a framework to understand Russian folktales through categorization it proved a very useful tool for this study. The film in this selection were all ‘Hollywood box office’ constructs with the aim of attracting a wider audience of easy digestible films – popular culture. This transportation of a male hero through the films much followed a path from a secure setting – through disruption – and on to an adventure. Although this structure created a common theme throughout the film the very same structure were not providing a common relationship toward Ducati motorcycles.

An attempt in relating the Ducati motorcycle to the hero’s journey would indicate that the bike is used in transporting a character between the different sections of the narrative. Most evident is this where the bike is

portrait as bringing the characters to adventure, disregarding where in the narrative these are positioned. First, in the opening section of *Fast and Furious 6* the characters called Mia and Han are summoned to join adventure, sitting in a food court in downtown Tokyo. Beside them two bikes, a Harley Davidson and a Ducati Monster. In *I am Number Four* the female character called Number six turn up at the house John Smith (the hero) had to abandon because he was threatened. The relation between Number Six and the Ducati 848 is that of transporting her toward the hero, assisting him (at this point unknown) on his forthcoming challenges with evil.

Second, Ducati motorcycles serve as transportation throughout the narrative. In the film *Beastly* a Ducati monster serve the purpose of transporting the male hero Kyle Kingson on his nightly adventures through the city. Here is also one of the few occasions where the Ducati is referred to in the film, when Rob Kingson, the father, mention that 'I'll get you that motorcycle you've always wanted' in trying to convince the hero going into (social)hiding (being stigmatised through his appearance). It also brings characters to adventure, as in the film *Wolverine*. Here the hero Logan uses a Ducati Diavel to transport himself to the headquarter of the villain, toward battle and struggle.

Third, the end of a narrative, according to Propp (1968/2013) is that of the return of the hero, punishment of the villain, and hero's ascending of the throne. Although this exact sequence might not be heavily present in today's Hollywood box office films there is still the idea of bringing the hero back to his/her original environment, the triumphal return and the punishment of evil. Looking at the resolution of these films the Ducati were also portrayed in this section. Most evident is this in *Kick-Ass 2* where the female character Mindy Macready (or Hit Girl), after given the hero a ride to his house on her Ducati 1199 takes of into the 'sunset'. This section is especially interesting as the character previously has used her Ducati as Hit Girl, an action hero, but the same bike now serve the purpose of Mindy, a 'normal' girl. The Ducati thus facilitate the transfer from a confrontation of evil though 'super powers', to incorporating the bike to transportation of a girl.

A Ducati motorcycle seem to service no single purpose in a narrative. As a vehicle it transport the characters to and from adventure, between different episodes in the narrative. If anything the, the presence of Ducati in the narrative communicate the lack of values. It serves no purpose, besides

transportation. In that sense the presence of Ducati has no effect on the narrative, and the transpiration could have been any vehicle<sup>8</sup>.

### *Characters*

Although the films included in this study have a much richer set of characters than suggested by Propp (1968/2013), the set up seven types serves the purpose of structuring the main characters, important for the narrative. The observations made here are that there are in general only two of these characters that are interesting, the hero and the helper. The hero is the character that the narrative revolves around, the person that are thrown into adventure, overcome difficulties and return victorious back home. The helper is the character that travel with the hero, assisting him/her on the adventures and helping with tasks that the hero can not complete alone. These two characters were the only characters that were driving Ducati motorcycles in these films. There is only one occasion where the villain were driving a Ducati. In Wall Street there is a race between Jake Moore, the hero, and Bretton James, the villain, where Jake is driving a Ducati 1098. The villain is also driving the same Ducati, but modified in design – shape and colour, and lacking the brand name.

In several of the films the hero use Ducati bikes. Sam Flynn, the hero in the film Tron (see image 1), is Driving a Ducati 900. The appearance of Sam is related to the retro model of the 900 model. The bike is thus an extension of the personality of Sam. In Beastly Kyle Kingson, being disfigured by a magical spell use a Ducati Monster when cruising the streets during dark. Dressed completely dark the bike is the extension of his dark persona – a Ducati Monster for a monster. The female hero Mallory Kane in Haywire also uses a Ducati Monster. Although this time the bike is coloured brighter, and Mallory in turn are dressed in matching motorcycle gears. In the film Wolverine the hero Logan is using a Ducati Diavel on one occasion, as mentioned above.

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<sup>8</sup> Note that including older films would changed these observation slightly. There is an example in the film Matrix Reloaded (2003) where the female character Trinity uses a Ducati 998 to escape the villains on a wild chase through traffic. The bike is here used for a purpose that bring the narrative forward as well as communicating the values of Ducati: speed and agility.



*Image 1 Sam Flynn, the hero, on a Ducati 900 in the film Tron.*

*Source: <http://thebikeshed.cc/wp-content/uploads/2012/01/Tron-3.jpg>.*

There are two interesting films where the border between hero and helper is not as strong as in the rest of the films, *The Expandables* and *American Pie: Reunion*. It is the relation between the main characters in the gang that makes the character driving a Ducati either a hero, or a helper. One analysis of *The Expandables* could be that there are a gang of guns for hire with different persona, all being hero's. Or one could single out the character Barney Ross as the hero, the rest helpers. Although this latter analysis do not do justice to the narrative in the film. Lee Christmas, hero/helper, are here driving a Ducati Desmosedici. The rest of the gang/hero's are driving Harley Davidsons. The Ducati is thus used to single out Lee from the rest of the characters. The same aspect is present in *American Pie*, but this time the character Finch are driving a Ducati Hypermotard. Meeting his high-school friends again Finch turns up on this bike, bragging on all the travels he has done, on the adventurous character he has become.

The hero's that drive Ducati in these films are using this primary as a vehicle for transportation, seemingly. But the bikes are de facto extensions of the different hero's persona, from the cool Sam in *Tron*, to the adventurous Finch, and to the darker hero's Kyle in *Beastly* and Logan in *Wolverine*. All these embody different values and emotions that seem to be

strengthened by the use of a Ducati, notice that the different characters are using different models – each communicating different values.

Where the hero is the character that embody values, the helpers are constructing their meaning through a unity with the bike. As with the observations by Scolari (2009), the helpers in these films seem to find use of Ducati in accomplishing their roles as helpers. Compared to the hero's the helpers relationship to the bike is more of a unity then extension. The bike is no longer an extension of that character, but a non-human helper in the same sense as the human helper. The unity is those who help the hero on his journey.



*Image 2 Number 6, the helper, on a Ducati 848 in the film I am Number Four.*

*Source: [http://s18.postimg.org/tpglc4wrt/Ducati\\_I\\_am\\_Four.jpg](http://s18.postimg.org/tpglc4wrt/Ducati_I_am_Four.jpg).*

Number 6 (see image 2) can be defined as an helper on a bike. Her role in the film is not as the one driving the narrative forward, of being the one who do the hero's journey. She is but the helper, assisting the hero on his journey. This is what defines her as a character. In that aspect the Ducati motorcycle is not an extension of her persona. It is but a tool of her, amongst other tools. The same aspect can be found in Kick-Ass 2 where the helper, Hit Girl, drive a purple Ducati 1199, dressed in a purple jumpsuit, helm and (super hero) cape. The character has a warehouse of tools and weapons to her disposal, the motorcycle can be understood as but one of these tools. Both of these are (magical)helpers on (magical)bikes. This was a special case of helpers defined by Propp (1968/2013). The magical helper



has magical powers. In these films both Number 6 and Hit Girl could be categorised as having (close to) super powers.

The take-away from these observations are that Ducati motorcycles are in these films stronger associated with the characters of the film, then the association with different sections of the narrative. Although bikes are present throughout the different sections of the narrative there is no clear pattern that indicate an coherent relation between narrative and bike. The relation to the character on the other hand are much stronger. Ducati motorcycles are used by both hero's and helpers in the films. Although both types of characters are using these bikes, they differ in how they are used. Hero's use Ducati motorcycles in order to strengthen different aspects of their character: adventurer, dark, monster. The helper on the other hand are defined in a symbiosis with the motorcycle. He/she is thus not defined by the bike, but the helper-bike assist the hero on his/her journey. In the films in this study the helpers are equipped with Ducati motorcycle as part of their magical tools.

## **Reflections**

It is evident that the framework constructed by Propp (1968/2013) provide a structure of narratives and characters in films that makes it possible to relate to Ducati motorcycles; beyond the mere observation that there are brands and products placements in films. Through this analysis it is evident the relation between product and brand, and cultural artefact.

It is recognised that the main reason for brand and product placement is to achieve brand recognition. To be on top of consumers mind in a purchase decision process. Although this study show that exposing brands and products in cultural artefacts also have the potential of communicating the meaning of a brand. This communication strengthen the design of a product as the symbolical meaning can be inscribe into associating the product with the narrative and characters of the film.

Returning to the semiotics of Saussure it is evident through this study that what is signified by Ducati are defined through associations with the characters of these films, mainly with the hero's. The films are thus a possibility to construct sign-value that strengthen design. Although the symbolical meaning of a Ducati motorcycle can be inscribed into the aesthetical design, moving these motorcycles into films there is a possibility to strengthen associations with chosen characteristics. The result is that the

symbolical meaning of Ducati communicate a context, as Arvidsson (2006) argued, in which to understand and use the motorcycle.

We can only guess on the intentions of Ducati, as their official list of films they have collaborated with cannot be accessed. As for the brand this might not be as problematic. Brands are today public commodities, where meaning and value of the brand are co-constructed by the consumers themselves when interacting and using the goods (McAlexander et al., 2002). In that aspect Ducati has been transferred to a public brand where actors in the film industry use these motorcycles in order to associate characters to Ducati. In that aspect the character in the film and the motorcycle both strengthen the symbolical value of each other. Just as motorcycles do not have an inherent symbolical value, neither has a character. It is all about what associations are constructed.

Although this study is limited in its scope it indicates an interesting future area of the relation between brand recognition and design. I believe that there is a strong need to pursue further studies in line with this in order to construct an understanding how design are strengthened through the construction of brands value, in relation to cultural products and other public areas where the meaning of brands are negotiated.

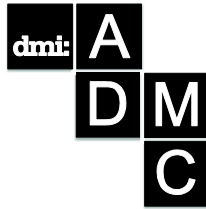
## Conclusion

By applying the framework of Propp (1968/2013) it is evident that Ducati motorcycles are associated with characters in these films. Through this associations the values of the motorcycle are constructed as the hero use these bikes as extensions of their persona. The value constructed through this product placement constructs consumers understanding how to understand the sign-value of Ducati, this in turn strengthen the aesthetic design of the motorcycles.

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# Dynamic Brands: Shifting from Products to Customers

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*There are currently limited attempts to analyse the implementation of service design at a strategic level and its impact on the brand. Several studies have covered the relationship between branding and design management but they focus primarily on consumer goods settings (Brodie et al., 2008). In marketing, the natural inclination is to associate branding with goods. Therefore literature on branding tends to focus on the physicality of the product, its visual characteristics, and the meanings it embeds. Nonetheless branding is just as relevant to services, where the lack of physicality requires a new analysis based on customer relationship, experience, and trust (Berry, 2000). A shift of focus from products to services exposes organisations to multiple opportunities to affect customer experience. Choosing to design a strong service proposition around an existing product offering, and to invest in customer experience, produces a consistent increase in customer satisfaction, sales and customer loyalty. This article, based on primary research with the largest general insurance company in Norway, makes a case for service branding as cornerstone to achieving customer orientation. The article presents six success factors to prioritising customer experience in service branding.*

**Keywords:** Service Branding; Service Design; Customer Experience; Customer Satisfaction

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## **Introduction**

Brand management literature has long advocated the importance of delivering a consistent and distinctive customer brand experience but surprisingly very little of this approach has been applied to service brands. According to Mosley, the reason behind the late adoption of a fully rounded customer brand experience by service brands is the level of complexity involved, which is both operational and interpersonal (2007, p.124). Service experiences being by their very nature intangible rely mainly on personal interactions between customer and provider, which are highly affected by the number of people involved, depth of knowledge, length and quality of the relationship.

As a result of this complexity, organisations tend to depend heavily on data, hence the rise of investment in customer relationship management (CRM). Literature has now widely proved that such an approach and investment does not produce the expected return in terms of satisfaction, loyalty and sales (Frow *et al.*, 2010; Meyer *et al.*, 2007; Mosley, 2007; Peppard, 2000). Scholars and professional service firms agree on the need for “a shift in emphasis from conventional CRM to a more holistic view of the total customer experience” (Mosley, 2007, p.124). The CRM data-driven approach fails to consider that customer satisfaction is simply the sum of a series of experiences, and from this kind of data it becomes difficult to extract relevant information on how to recognise areas for improvement. Customer experience is indeed a result of a number of touch-points and in order “to understand how to achieve satisfaction, a company must deconstruct it into its component experiences” (Meyer *et al.*, 2007, p.2).

In this working paper we will present how Gjensidige, the largest general insurance company in Norway, has managed to successfully implement a customer orientation business strategy. This is an initial work, a pilot to explore (1) the key elements behind the company’s transition from product to customer centricity, (2) the shift from product to service branding, (3) the role of design in this transition.

The company’s transition strategy towards customer centricity has been informed by the collection of individual touch-point customer satisfaction data, in this paper we present data in the context of inbound and outbound call centres. Individual measurements captured the quality of customer experience as delivered by each individual employee in customer-facing roles in the organisation. The data collected have proven a clear correlation between customer satisfaction, customer loyalty and business growth (Figures 4, 5 and 6). These background data have informed our initial study

on the key success factors for the creation of a successful customer service brand experience, and on the mediating role of design in this transition. Collection of customer satisfaction touch-point data have proven to be a key factor in focusing investment and resources in the most critical touch-points and to create a consistent experience for customers across different channels over time. As a result, an analysis of the company's general customer satisfaction data shows an extremely positive trajectory on the curve from 2008 till today (Figures 1 and 2). The company has proved that opting to invest in customer experience represents a sound long-term competitive advantage.

Based on this background data, our argument will explore the relationship between service branding, service design and customer experience as key elements for the successful implementation of customer orientation as business strategy. We identify three principles and three tactics that together represent the six key success factors to thrive customer experience in service branding: Principles - (1) culture, (2) consistency, (3) measurements. Tactics - (4) systemised cynicism, (5) empowerment, (6) starting with low hanging fruits. This paper is structured as follows: First we briefly describe the theoretical positioning of this paper. Second we present the context of Gjensidige when they started the customer orientation journey, the dynamics that brought them to decide to invest in customer experience, how they designed the vision, and how they decided to implement it. Third, we will describe the mediating role of design in achieving success, through the analysis of the role that the service design firm Livework<sup>9</sup> had in the process. Fourth, we show an analysis of the key success factors that brought the company to embrace customer orientation. Finally, we draw conclusions and identify key areas for future research.

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<sup>9</sup> Livework Studio is a service design firm headquartered in London, with offices in Oslo, Rotterdam and São Paulo. The company has been involved with Gjensidige since the very beginning of their *Customer Orientation* journey, providing support and knowledge on service design.

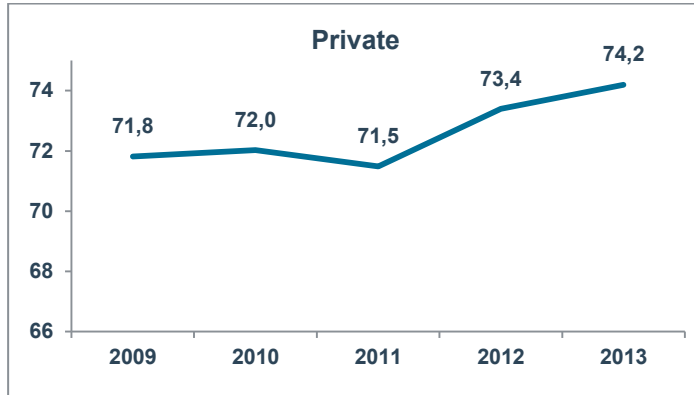


Figure 1 Customer satisfaction data in the private segment. Based on 2500 respondents each year.

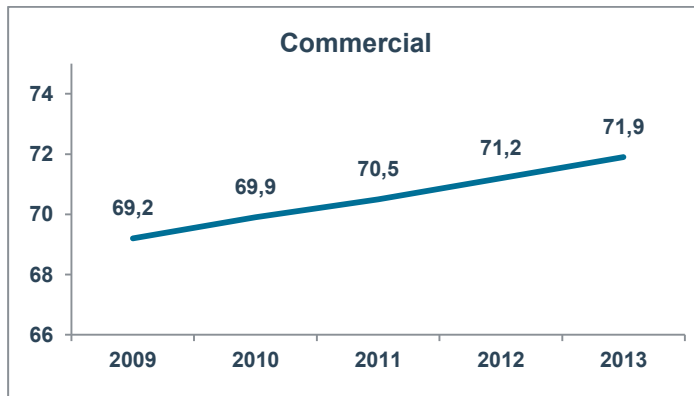


Figure 2 Customer satisfaction data in the commercial segment. Based on 1000 respondents each year.

## Theoretical positioning

There are many examples of brands that successfully manage the total customer experience, turning this capability to their competitive advantage. These companies usually belong to the fast moving consumer goods sector, as Mosley underlines, Procter & Gamble was one of the first companies to adopt a systematic approach to brand management in the 1930s (2007, p.124). Although the service sector has been playing an increasingly dominant role in developed economies, we struggle to identify examples of

service brands that successfully managed to internalise customer experience as core strategy. Additionally the insurance sector under analysis in this paper requires an additional consideration; although officially belonging to the service sector, insurance is a very product driven industry. Organisations that operate in this sector are constructed with the product at the heart of everything they do. Adopting customer experience as core business strategy means shifting focus from product to customer and therefore requires a whole set of principles, structure, practices and processes that are unknown to most product-led organisations (Oliva *et al.*, 2003). To quote Olivia *et al.*: “not only are new capabilities, metrics and incentives needed, but also the emphasis of the business model changes from transaction to relationship based” (2003, p.161). Therefore choosing customer experience as a competitive advantage requires a transition from products to services, which adds another level of complexity to the argument. The transition required is therefore from CRM to customer experience and from product to service mind-set. Not an easy task for any large organisation and in particular for the company under analysis in this paper which has a 200 year history, 3000+ employees and that operates in the highly regulated, structured and data-driven industry of insurance.

Management literature is almost unanimous in suggesting that the integration of services to the current product offering of any product-focused organisation is beneficial for competitive advantage (Oliva *et al.*, 2003, p.160). As Heskett *et al.* already pointed out almost 20 years ago, services are difficult to imitate, turning them into a sustainable source for competitive advantage. The reason behind this resides in their very nature; services are less visible than products and more labour dependent (1997). Nonetheless, literature on how this integration could be carried out, the consequences for the organisation, its architecture and management and for the business and its growth, is sparse. As Merz *et al.* argue quite clearly, in the past ten years marketing has been evolving toward a service-dominant logic that has service at the heart of the exchange, that is process oriented versus being output oriented and that puts the customer at the centre of value creation as co-creator (2009, p.328). As a result “goods remain important, but are identified as vehicles for service provision” (2009, p.328), putting the perceived value for all the stakeholders involved at the centre. In this context, social interactions among the different stakeholders construct the brand value dynamically, which is seen as a “continuous social process” (2009, p.337). To quote: “any brand is dynamically constructed through social interactions and thus its value is located in the minds of its



customers and the wider group of opinion makers and stakeholders” (2009, p.337).

The natural inclination in marketing literature is to associate branding with products - the tangible aspects of the product itself such as its packaging and logo. When a company undertakes a substantial shift of focus from products to services, the brand is no longer experienced by customers purely on the basis of these tangible aspects, but on the quality of the interactions with the service provider. Building a strong service brand becomes as relevant as building strong product brands, “a strong service brand is essentially a promise of future satisfaction. It is a blend of what the company says the brand is, what others say, and how the company performs the service - all from the customer’s point of view” (Berry, 2000, p.129). It is possible to argue that a service is, from the customer’s perspective, an experience where “Brand related symbols (e.g., name, logo, signage) can evoke memories of past service experiences and expectations of future ones. The brand promise equates to the experience the customer can expect from the service provider” (Ostrom *et al.*, 2010, p.22). To date, several attempts have been made to analyse service branding from customers’ points of view (Brodie *et al.*, 2007) but we believe literature is generally lacking an in-depth exploration of what it means for the organisation in terms of practices and processes.

In this framework, the concept of customer experience becomes key, and we opt to use the definition provided by Meyer *et al.* who define it as “the internal and subjective response customers have to any direct or indirect contact with a company” (2007, p.2). We argue that in this light, consistency and precision become key factors in delivering a successful customer service brand experience. Quality needs to be maintained across all the different touch-points, therefore having specific touch-point data becomes crucial to ensure both consistency and precision, to avoid waste of resources and create a holistic approach.

## **Methodology**

This is an initial study whose investigation was exploratory and based on retrospective new service creation projects. In order to inform the analysis, we made use of semi-structured interviews and a detailed archival assessment of the projects. Five interviews were run with Gjensidige’s Head of Branding and Customer Experience, who has played a central role in the

company's transition since the very beginning. Furthermore three interviews were run with Lavrans Løvlie, founding partner at Livework Studio. Livework, because of its expertise in service design, has been involved in a number of projects with Gjensidige in the last seven years as a trusted partner. The design company has supported them, providing in-depth insights on their customers, and knowledge on service design tools and methodologies. Their involvement was key in proving the fundamental role of design in a product to service transition.

A whole set of documents produced during the development of the projects has also been analysed in detail. Customer satisfaction data collection and analysis has been undertaken by Gjensidige and by a number of external parties, including the National Norwegian Customer Satisfaction Barometer<sup>10</sup>. This material has informed the framework for our observations, which generated an understanding of the key success factors. These elements have emerged clearly as the most mentioned in the interviews and they also represent pivotal moments in the transition. This article simply represents an initial effort to understand Gjensidige's shift of focus from products to customers and its impact on the brand. This is a pilot study, an initial exploration on the topic and case, which encompasses several limitations: 1) data is mostly based on a number of interviews realised with only two interviewees, therefore the outcome might be biased by these two perspectives. 2) the graphs have been produced by the company itself during the last two years, we as authors have not yet got access to the original data. 3) we plan to interview Gjensidige's customers at the next iteration of this study. This will look at using a more extensive methodology taking into consideration all the different stakeholders involved in the case.

This paper covers the first phase of Gjensidige's transformation, which was very much internally focused. This first phase has then informed a second stage that looks at the external perspective focusing on how to communicate this internal transformation to the outside through visual profile and communication strategy. Both the first and second phases are currently subjects of further studies.

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<sup>10</sup> The Norwegian Customer Barometer (NKB) is a research program conducted by BI Norwegian Business School. The NKB focuses on the relationships between customers and suppliers.

## The Context

In 2008/9 Gjensidige was facing a number of challenges: their market was undergoing a fundamental change, competition was becoming stronger and price was the major factor influencing customers' choice. The company realised the need to differentiate themselves from other companies more strongly in order to survive and grow. It was the year of the birth of a number of comparison sites for insurance policies that quickly became widely used: all their competitors were playing the price-war. Gjensidige decided they didn't want to play that game, it was never in their strategy to be a price leader, and they wanted to secure the quality they were known for by their customers. There was no imminent danger - the company was still performing well, but the CEO, Helge Leiro Baastad, knew the company had to change in order to thrive in the future. In the strategic discussions that followed, Helge and the board drew inspiration from several sources, one of them being the Toyota Way, which is a set of principles and behaviours that define Toyota's DNA. It revolves around two main principles: "Continuous Improvement" and "Respect for People" (Liker, 2004, p.2). The first element looked at quality, the second at employees. The Toyota Way made Helge think about his company's defining element, which in the case of Toyota was quality. In Gjensidige's case it was trust and security. His company had a long history, and it was trusted by its large pool of customers. In 2009 Helge and the board decided that the company's key competitive advantage should be customer orientation. Instead of playing the price-war, Gjensidige chose to invest in customer experience as key competitive advantage. The ambition was to be among the top ten most customer centric companies in Norway regardless of industry: what they started internally to call *Extreme Customer Orientation*.

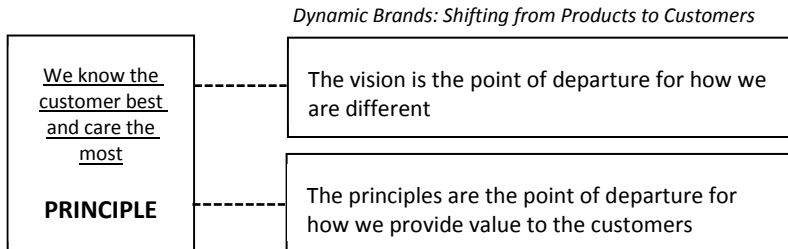
Helge was an experienced and visionary CEO who knew that in order for Gjensidige to undertake the customer experience journey he had to secure two key elements:

- *The involvement of everyone in the organisation*, making sure that everybody understood and believed in customer orientation as a viable business strategy. Customer experience is often seen belonging to the marketing domain, but this strategy had to be embedded in the organisation's DNA. It had to become each business unit's interest, not only marketing's.
- *The journey must be owned and driven by the organisation, not by consultants*. The reason for this choice was to ensure that the new

strategy and the solutions developed were “baked in” the organisation rather than “bolted on”, in order to achieve a long lasting impact (Gratton, 2012).

The new strategic focus was communicated by the CEO in person to the whole organisation and interlinked with the company’s existing vision statement: *we shall know the customer best and care the most*. The existing vision and new strategic focus were then articulated and operationalized in *The Gjensidige Experience*, that was designed as a framework for the customer orientation of the company. It consists of a set of four principles, each of them supported by a brief description, a number of related actions, and the reason why they’re important (Table 1). The principles are guidelines for Gjensidiges’ customer focus. They ensure clarity for the organisation and act as guiding principles for the company's added value and development, securing precision and consistency in the realisation of Gjensidiges strategic direction – Customer Centricity. The Gjensidige Experience was developed as a framework that was to be adopted by the whole organisation and by all the units under the Brand Gjensidige. Once the Gjensidige Experience was formulated, its key elements became the Gjensidige’s branding guidelines. Here, the service brand is the result of a holistic view that includes products, content, customer care, communication, marketing, third party delivery, direct and indirect touch points.

The CEO wanted the organisational change that the new strategic focus required, to be organisationally driven. He therefore appointed The Marketing Director, Hans G. Hanevold, and the Head of Brand, Kim Wikan Barth, to drive the first phase of change inside the organisation. In order to gain momentum they designed and personally rolled out a change programme across all the different business units. The change programme had several objectives: (1) securing a sufficient momentum and impact, (2) creating awareness and understanding of strategic choice and direction, (3) securing reach, (4) providing the necessary tools to start a number of projects aimed at improving customer experience. The aim was ensuring that the necessary initiatives were undertaken and projects prioritised. The result was a 2 year change programme and 183 projects aimed at simplifying existing processes, changing organisational culture, improving service experience, and improving efficiency.



*Figure 3 The Gjensidige Experience: vision and principles.*

*Table 1 The Gjensidige Experience: structure of the key principles.*

Principle addressing the entire company
What is the essence of what the principle addresses (value creation)
How do we relate to this? <ul style="list-style-type: none"> <li>• Actions and attitudes ☑ The sub-items address the individual</li> </ul>
Why do we do this (desired consequence, effect from a business perspective)

The background data Gjensidige has provided, that represented the starting point of our research, are individual touch-point customer satisfaction data in inbound and outbound call centres, collected between 2010 and 2013. Individual touch-point customer satisfaction data have been collected systematically at every single interaction of customers with employees. Touch-point individual data on customer experience were then interlinked with individual employee performance. This new set of data were integrated in the score cards, and customers’ feedback was actively used during staff training and coaching sessions. As well as this, individual customer satisfaction data were introduced as one of the key parameters for assigning bonuses, next to the traditional ones. Employees embraced this new practice with enthusiasm, as this was a KPI they could have a direct impact upon.

Establishing a CSI survey on touch-point level provided Gjensidige the data to surgically zoom in problems and quickly react to them. Customer satisfaction started increasing dramatically and - unsurprisingly for the company, sales started to grow accordingly. Sales per call grew by almost

50% in three years (Figure 4). These data gave Gjensidige the confirmation that more satisfied customers tend to spend more. Customer experience resulted in having a direct impact on business growth. Betting on customer experience as a point of difference started to pay-off.



Figure 4 Customer satisfaction and sales per call related to the same touch-point. The Touchpoint Customer Satisfaction graph is based on data from 220.000 respondents.

By interlinking the data, a number of new insights started to rise. Comparing the average premium growth and touch-point call centre customer satisfaction scores, it became clear that more satisfied customers tend to invest more in the long term compared to less satisfied ones (Figure 5). Moreover, comparing data on churn and the same touch-point satisfaction, the company had data to prove that satisfied customers are more loyal in the long term (Figure 6).

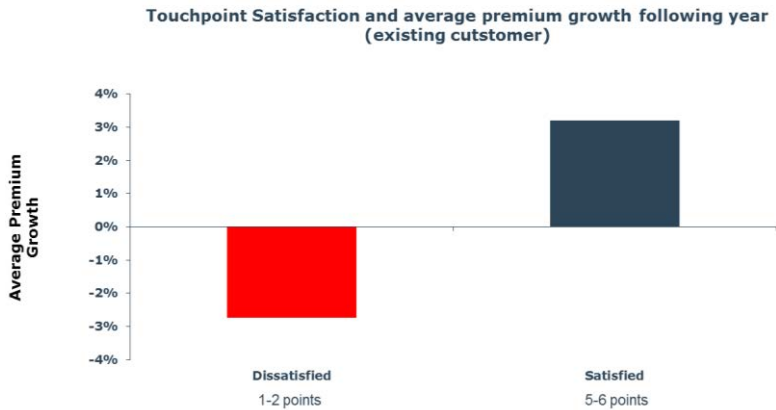


Figure 5 High satisfaction score contributes to growth. Based on 2500 respondents.

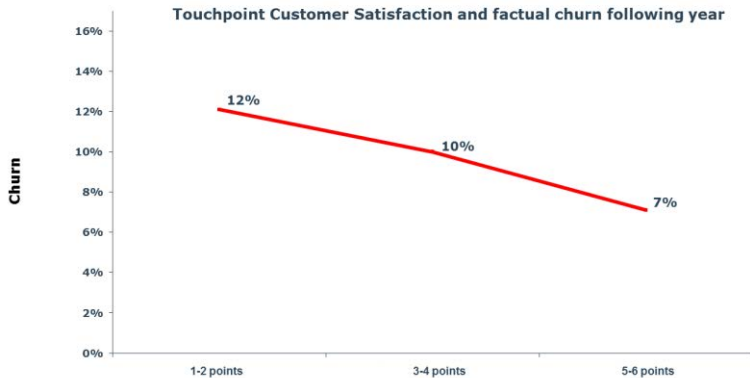


Figure 6 High customer satisfaction drives loyalty. Based on 2500 respondents.

These data clearly show that providing superior customer experience is a sound business strategy. More satisfied customers spend more in the short and long term, and are increasingly loyal to the brand. It's important to underline that one of the key aspects behind Gjensidige's success is the introduction of the individual touch-point customer satisfaction index. Being able to gain details about what customers are experiencing, when, and with whom, became fundamental for the strategic improvement of the total customer experience. These background data have represented the starting

point of our analysis on the key success factors that ensured Gjensidige's success and the mediating role of service design in this transition.

## The mediating role of design

Although one of the CEO's prime directives was not to rely on consultants for the overall organisational change from product to customer centricity, Helge knew that in order to provide a better customer experience the company would need the support of somebody that knew the experiential aspects of services thoroughly. They decided to partner with Livework, one of the most widely recognised service design firms, who in the last ten years have worked with a wide range of clients across different industries, investing in gathering a deep understanding of people's drivers, expectations and behaviours in a wide range of contexts. Since then Livework has been working to support Gjensidige where necessary in the design of their customers' experience. Pullman and Gross define *experiences* as the "emotional connections [engendered] through engaging, compelling and consistent context" (2004, p. 553), they further articulate this concept stating that "an experience occurs when a customer has any sensation or knowledge acquisition resulting from some level of interaction with different elements of a context created by a service provider" (2004, p.553). Being able to deliver "experience-centric services" (Voss *et al.*, 2008, p.248) was key to deliver Gjensidige's vision.

Livework closed some of the gaps that Gjensidige was experiencing, providing the following: (1) organisational outside-in perspective, (2) support with pilots, (3) relevant tools and methodologies that are at the core of the service design discipline.

Firstly, the projects the different business units decided to develop were mainly informed by employees' insights on customer experience and traditional customer satisfaction data. This proved to be a too narrow view of customers. Through observation and fieldwork, Livework provided insights on real customers, what they value, what they experience and what they do versus what they say. Gulati argues the importance of an outside-in mindset as follows: "embracing an outside-in perspective - focusing on creatively delivering something of value to customers instead of obsessing over pushing your product portfolio - builds an inherent flexibility into organisations" (Gulati, 2009, p.3). Livework provided a view that complemented the company's perspective by running two hundred face-to-face interviews with Gjensidige's private and commercial customers on



specific project related issues. This approach produced a number of insights on what customers really value, their behaviour and expectations, that didn't emerge from the customer satisfaction data.

Secondly, insurance is a highly traditional and risk adverse sector, where running pilots is not ordinary. Livework introduced the concept of *prototypes* - small-scale qualitative tests of service experiences early in the development process, helping Gjensidige to adopt more cost effective ways of quickly testing ideas with customers before implementing them. Solutions were therefore designed around real customers' needs.

Thirdly, Livework educated the company on how to use a whole set of tools that are fundamental to designing multichannel experiences. From simple persona cards to more sophisticated service blueprints, Gjensidige's employees across different business units got exposed to this new way of working.

Over a period of seven years Livework were involved in 31 projects, providing different degrees of support depending on the projects' requirements. The strategic role of design experts was to inform on real customer needs and providing the tools to tackle problems in creative ways.

An example of the strategic role that service design had in Gjensidige's effort to redesign their customers experience can be found in the work developed for their new branch offices. Here, through a close study of the company's customers, Livework has supported Gjensidige in the creation of a new model for giving financial advice as well as for the re-organisation of the office and staff tools. The key insight that emerged during the interviews was that customers are not always fully informed about their current and future situation. As a result of this insight, the team implemented a practice that put greater emphasis on asking customers the important questions connected to security, insurance and pensions in order to generate more relevant and personal conversations about present and possible future scenarios.

The role of Service Design in this transition emerges to be as the intermediary, not the driver of change. Service Design acted as buffer between the different business units' project intentions, and customers' needs. Livework was involved in defining the projects' needs working directly with the people involved in the project. The value was therefore recognised directly by employees. This observation opens up a new research question on the role of design consultancies in the context of the organisational transition from product to service centricity. In the case of Gjensidige, the company had to build a strong framework and change

culture before being able to involve the design experts. Livework was placed as key partner with specific skills within a clear framework. This ensured the generation of projects that were designed around customers but within the organisational capabilities. This meant that projects could be implemented quickly, providing fast feedback on their success and a clear trajectory for the collaboration - and finally customer experience improvement. This insight is currently the subject of further research.

## Key Success Factors

During our retrospective analysis of the work developed by Gjensidige to improve customer experience, a number of factors emerged as key in the successful implementation of the vision. Ten recurring themes arose from the initial set of interviews as being the most important: (1) Support of top management (2) Visionary CEO (3) Systemised cynicism (4) Everyone needs to be involved (5) Empower managers (6) It's a business strategy (7) Start with low hanging fruits (8) Communicate top-down, operate bottom-up (9) Reporting (10) Measurement. We have extensively challenged and analysed the real meaning and impact of these factors with our interviewees and clustered the initial elements around six fundamental success factors, which can be differentiated in principles and tactics.

### *Principles*

#### **1. Culture**

Mosley argues "one of the most powerful factors in shaping an organisation's culture is the consistent alignment of leadership behaviours with their stated brand beliefs" (2007, p.129). In the case of Gjensidige, the shift in culture represented the fundamental starting point to making the transition from product to customer happen. Customer orientation needed to exit the marketing and branding domain to permeate each business unit under the Gjensidige's brand. Aligning leadership's behaviour around the principles of the new strategy was key to making those principles operational. In order to achieve the required commitment for a long period of time, the core team in charge of rolling out the change programme decided to make top leaders experience customer orientation first hand. During a 2-day management programme, where all the business unit managers had to attend, they were handed a list of randomly selected customers and asked to call them to enquire about their experience with

Gjensidige. The CEO and all the members of the board also undertook the same exercise. Many of the managers didn't have a direct interaction with customers very often, therefore talking with real people was a breakthrough, proving not only the importance of listening to customers, but also that top management was aligned in achieving the new *Customer Orientation* strategy. This example clearly shows that in service branding, customer orientation is as much a cultural exercise as an operational improvement effort.

## **2. Consistency**

As discussed in the introduction to this paper, services are rather complex entities requiring operational and interpersonal capabilities. Within this framework "in attempting to manage the total customer experience, complexity is generally the enemy of consistency" (Mosley, 2007, p.125). The high volume of projects and large number of people across different business units involved required an exceptional degree of coordination. Consistency here is twofold: (1) it relates to the outcome, the service provided, and the customer experience across different touch-points (2) it also relates to leadership, maintaining leadership's alignment over a long period of time. In the first case the reporting system - in both its frequency and structure - ensured a holistic view of the multitude of projects under development and the possibility of aligning them under a common denominator. In addition, the involvement of Livework as a trusted partner across a number of projects, ensured that the service design company had the ability to work across the whole of Gjensidige's organisation, with almost every department from sales to product, actuaries, marketing, online, and retail. Livework was deployed with different degrees of involvement across the organisation, having the possibility to work with a number of different departments and business units meant that they acquired knowledge about the experience delivered by the different business units. Both the accumulated team knowledge and the service design tools helped Gjensidige bridge some of the gaps between different departments.

The latter refers to the challenge of maintaining leadership's interest and effort high over a period of seven years or more. This has been achieved by designing a consistent internal communication strategy, informing employees on a frequent basis on how improvement work is proceeding and the measurable effects on customer satisfaction.

### **3. Measurement**

Deciding how to measure progress since the very beginning was key to assessing the quality of work developed and the determining further work to be done. Deciding to measure customer satisfaction at every single individual touch-point resulted in the ability to zoom in on real problems and solve them quickly. Deciding to systematically measure results and the impact of the different initiatives resulted in the following: (1) Showing clear results communicates the message that the decision to be customer oriented is a primary management goal, to be taken seriously by all employees. The implicit message is: “we measure because we care; your effort is really important for the organisation.” (2) Constantly measuring progresses provides the data to judge whether the projects are producing expected results and confirms that the company is moving in the right direction. (3) Measurements got interlinked to a new set of KPIs. A clear example is individual touch-point customer satisfaction data feeding staff training and coaching sessions. Measurements were instrumental for improvement, which becomes even more important than the results themselves, providing a platform and method for constant enhancement.

### *Tactics*

#### **4. Systemised cynicism**

Customer orientation is seen by many as the soft side of business - something to flavour the customer experience with, but not a strategy in its own right. To Gjensidige, customer orientation was, from the very beginning, strongly tied to the company’s business strategy. Framing it as such was of utmost importance for a successful mobilisation of the whole organisation.

At the core of any business model lays the fundamentals of offer and demand, and in an ever-changing marketplace, the organisations that are most responsive and adaptive to change are the ones who survive and thrive. To Gjensidige, customer orientation as a core element of the business strategy was systematically addressing this, whilst being firmly based on the core goal of all business, namely revenue growth.

#### **5. Empowerment**

When launching *The Gjensidige Experience* the CEO stressed that customer orientation at Gjensidige should have been “A joint effort - a common task - an individual responsibility.” Empowering each business unit

to take the responsibility for the ideation, implementation, and budgeting of the different initiatives, ensured that employees achieved a sense of ownership and pride for their own improvement. Empowerment came with the right support from the organisation to make sure staff had the right tools and methodology in place to succeed. Although the vision was deployed top-down, change happened bottom-up. Here the concept of empowerment is two-fold - it is both structural and individual.

The structure needs to be flexible enough to give employees the opportunity to make customised choices depending on the situation. An example of this can be found in the decision of not to issue call centres with a script of the dialogue they should go through, which is a common practice in this industry. Instead, they provided call centre staff with a set of guidelines. These had two typologies; divisional and situational. Those for the divisional section were strict, as per the insurance industry requirements. The situational ones advised on what the goal of the conversation should be, leaving staff the flexibility to draw on their own experience and creativity in choosing how to approach customers. Opting not to have a scripted dialogue, but simple, clear guidelines and objectives provides a flexible platform for staff to use their own judgement. Therefore empowerment is also individual, showing trust and respect for people's intelligence. Personal judgement becomes key in a process that needs to be driven bottom-up operationally. Additionally, in the context of the insurance industry - highly regulated, with a strong set of legacy systems - this approach ensures staff to become creative in navigating within the restrictions of the industry itself.

## **6. Starting with low hanging fruits**

Being able to showcase results in the short term was key to keeping momentum and enthusiasm around new initiatives. Starting with the easiest problems to fix helps build the confidence to tackle more difficult tasks. An example of low hanging fruit is *customer reassurance*. Gjensidige knew, both from experience and research, that people like to be reassured that they've made the right choice after buying a new product. Therefore they decided to introduce a new practice in call centres both inbound and outbound. Every time staff has contact with an existing customer they should confirm the previous choice (made at a different touch-point), ensuring it was the right choice for them. Realising the positive impact that this has on customers first hand, creates a positive attitude in employees making them strive for more.

## Conclusions

Analysing the recent management literature it becomes clear that brands are no longer seen as static, but as being in a continuous process of evolution depending on the given cultural context, language and meaning (Berthon *et al.*, 2012). Focusing on customer experience enables organisations to evolve together with their customers' needs. As a result "properly executed experiences will encourage loyalty not only through a functional design but also by creating emotional connection through engaging, compelling, and consistent context" (Pullman *et al.*, 2004, p.553). Collecting the right data, at the right time, becomes key in knowing how to respond and being proactive towards an ever evolving context. Deconstructing customer satisfaction in its component experiences is beneficial for turning customer orientation into a successful business strategy. Delivering experiences is undoubtedly a must-have for leading-edge companies that need to be able "to combine functional and emotional benefits in their offerings" (Mascarenhas *et al.*, 2006, p.404).

Design and specifically, service design, plays a fundamental role in developing such experiences and providing relevant customers' insights in order to anticipate potential customers' reactions and expectations. Although this case proves that change needs to be driven internally by the organisation, it also proves that service design has the capacity to act as an instrumental buffer between the staging of the necessary organisational framework, the definition and creation of the organisational attributes, and the final customer experience.

As authors of this paper, we will keep monitoring the company to check whether Gjensidige will be able to keep evolving dynamically around their changing customers' needs. This initial work has opened up a number of research areas that we plan to explore in the future:

- Defining the role of design consultants in the organisational transition between product to service centricity. Although we started laying down some key elements, we believe further research must be undertaken in this area.
- The customer branding experience key success factors must be validated across industries. This could inform a model for the adoption of customer service brand experience more widely across a large variety of sectors.

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# Embodied brand meaning through design aesthetics: An Underdog Brand Story

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*This paper is an experimental contribution aimed at empirically exploring design as a method of managing the materiality of brand experiences. Little attention has been given to the importance of the sensory-perceptual encounters of the material qualities of brands, that to which the embodied aesthetic knowledge of design attends. The perspective of embodied cognition and John Dewey's notion of art as experience serve as the theoretical and methodological underpinning for a design project of developing a personal brand. I use an artistic research approach to consider how my intersubjective experience of a personal brand, through the material management of my clothing, acquires meaning through both concrete qualities and abstract concepts that operate between me and others. The purpose is offer an (en)active, embodied orientation to design management and to challenge the predominant research assumption that brands meaning can be represented through primarily symbolic relationships. "Underdog" refers to this embodied perspective of design knowledge that is not considered in brand management research but gets filtered through cognitive research frameworks for understanding the symbolic dimension of brands or managerial decision-making.*

**Keywords:** Brand experience, design management, embodied cognition, pragmatist philosophy, aesthetics

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## Introduction

Recent research on brands has departed from a functional view of brands as collectively held meanings that can be controlled and managed to a more multidimensional view of brands (Berthon, Holbrook, Hulbert, & Pitt, 2012) and how it is experienced and interpreted from consumers (Allen, Fournier, & Miller, 2008). In this socio-cultural view, brand knowledge is considered more holistically, studied as situated in experiences with brands as symbolic artefacts or of an emergent quality (Diamond et al., 2009). There has been an emphasis on the importance of the emotional and experiential aspects of consumer culture in brands (Brakus, Schmitt, & Zarantonello, 2009; Schmitt, 2009; Thomson, MacInnis, & Whan Park, 2005). “Brand attachment” and “brand experience” has been linked to product aesthetics (Stomppf, 2003) along with the role of consumers to construct and express (or co-create) symbolic meaning of brands (Hatch & Schultz, 2010).

While the discourse around communicating brands in multiple manifestations (visual graphics, products, marketing campaigns, packaging) of consumer experience has expanded, design has also grown as interdisciplinary field of practice (Julier, 2006). In general, design practices are becoming more integrated with development processes in management and marketing, and specifically within brand management, for instance, there has been an explosion of interest in design and co-creation methods (e.g., (Ind, Iglesias, & Schultz, 2013; Ramaswamy, 2009). Hence the literature on design management that focuses on the intersection of design and management is making the argument that design approaches are needed to play a strategic role in configuring brand experience (Hestad, 2013; Montaña, Guzmán, & Moll, 2007). One area of research highlights design as strategic signifying process that helps send a coherent brand message or meaning in all of the mediations or forms of representation (Ravasi & Lojacono, 2005). As well, another stream of design management research has focused on product design and the symbolic implications of expressing brand meaning through a coherent design language(s) including product aesthetics, features, styling, or visual appearance (Karjalainen & Snelders, 2010; Kreuzbauer & Malter, 2005; Page & Herr, 2002). The range of literature linking brand management and design indicate the mixed understandings of design and design’s role in communicating brand meanings or affecting emotional responses to brands (Allen et al., 2008).

These different perceptions of design underscore the difficulty of conceptualizing and articulating design knowledge, particularly using the

theories and methods of management research (Rylander, 2009). Although design practice itself has increasingly become an object of study within management, the research with a focus on understanding how design gives meaning (Ravasi & Stigliani, 2012), the qualitative methods of management research currently used to convey design knowledge and meaning, relies on the positivistic assumption that fully cognitive representations of knowledge are possible. It suggests that design knowledge is reducible to abstract disembodied symbols including language, and thus, can give an essentialist account of design activities. This ultimately poses limitations to the unrepresentable, mutable relationships of design, those that are part of shaping multisensory, discursive, emotional encounters with the world but also what makes it important to designers (Johansson-Sköldberg, Woodilla, & Çetinkaya, 2013).

Design knowledge coming from a different epistemological tradition than management has an assumption that design knowledge implies wholly different theories and methods than qualitative research (Cross, 2006). From a tradition of artistic practice, design knowledge, here referred to as embodied knowledge, is inherent to practice and derived from the senses and direct experiences. One such theory, embodiment theory of knowledge, implicates the bodily basis of human thought and behaviour (cognition) to be ascertained through practice or the body's continued activities in the real world rather than in terms of representational content alone (Gibbs, 2006). In this view, descriptions of how design knowledge works are not a substitute for what is felt because descriptions negate the emotional, subjective experience of embodied knowledge. Thus, experience of meaning is considered to be based in our sensorimotor perception, feelings, and kinaesthetic interaction with the world because bodies in action are tied to our capacities to abstract concepts like concepts of self (Gibbs, 2006; Johnson, 2007). Such a dynamical approach to knowledge is highly situational and applied, indicated to intervene in the research situation, as identified in theories of wicked design problems (Buchanan, 1992), and thereby contributing to the process in which meaning about a phenomenon is shaped.

The implications of this embodied view of design are profound and it is easy to surmise that there is much more to understanding the practical consequences of design knowledge in the development of multisensory and emotional aspects of brand experiences. Solely considering design from a brand management view, or what has traditionally been a marketing perspective drawing from the field of consumer psychology (Allen et al.,

2008), frames design knowledge in descriptive and evaluative forms. As a result, by the embodied, aesthetic dimensions of design knowing get reduced to instrumental means often focused on either the symbolic function of products or strategic decision making. As today more constructivist, sociocultural views of branding suggest that there are ambiguities and tensions in brand meaning and its ongoing construction (e.g., (Kärreman & Rylander, 2008), it might also be appreciated that design is an equally multifaceted, representational practice of constructing and performing meaningful identity relationships.

In response to the perceived limitations of the underpinning philosophical assumptions of management to describe design, which I admittedly generalize because of the ontological dualism between objects and concepts in positivism and interpretivism alike, I turn to classical Pragmatist philosophy that challenges a representational theory of cognition. Likewise, the pragmatic approach methodologically matches the artistic and experimental nature of design because it surpasses the perceived separation of thought and action by bringing about new situations and new concepts (Rylander, 2010). Specifically, John Dewey's (Dewey, 1934/2005) theory of aesthetic experience is relevant to approaching brands as experience and the experiential perspective of design management or "managing as designing" (Boland & Collopy, 2004). This reflects a process-based ontology in which meaning is not able to be captured in the scientific sense, but categories and material existence are learned through their ongoing relationships.

Hatch (Hatch, 2012), in a recent theoretical paper called "The Pragmatics of Branding", makes a similar connection that I am making here between brand experience and Dewey's (1943/2005) aesthetic philosophy. She outlines the role of aesthetics from Dewey's writing to highlight the relationship of "beauty" alongside usefulness in understanding brand meaning. In doing so, she categorizes aesthetic qualities as a further set of criterion for defining a brand's symbolism. This way of intellectualizing Dewey's theory into a conceptual construct for management obscures the more difficult point of how individuals, such as designers, qualitatively assess brand attributes through subjective experience. There is in the interpretive view an inherent essentialism in the abstraction of a brand's meaning from the experience of a brand as though the representation and reality of a brand were distinct.

Consequently, I propose to *operationalize* what Hatch says are “the more radical implications of Dewey’s philosophy” (p.886), and aim to apply pragmatism through design practice.

The contribution of this experimental case, then, is methodological. In trying to experience a brand, it specifically problematizes the notion of *brand experience* in the interpretive view of knowledge that brand knowledge can be reified and made coherent or illuminated through an abstraction of symbolic meaning. The pragmatic point I lay out here, similar to material- oriented approaches in ethnography (Henare, Holbraad, & Wastell, 2007), is that meanings are not ‘carried’ by objects but are identical to them or constituted through them. I focus on how brand experience is situated in our interactions and grasped from sensory qualities and feelings of relationships and is not distinct from the materiality of things themselves. Because the concern is with materiality of experience(s), this case of personal branding exposes a difference between the description or symbolic appearance of brand and the material experience of a brand.

This paper is structured as follows: I introduce the design project of personal branding with the context and rationale for the methodology and design. Then I move on to consider and reflect on my experience of the personal branding project and specifically centre this discussion around themes that emerged as they related to Dewey’s ideas of art and experience and embodied cognition that focus on continuity of inner and outer selves to illustrate how design management connects to brand meaning through material qualities of experience. I conclude with some reflections on the analytic separation made in management research between meaning and things and the implications for brand management if they are taken as one in the same through embodied design knowledge.

## **The Case Study of an Underdog Approach to Branding**

The premise of this project, is that because of the problematic nature of knowledge in how to actually implement a brand experience, an embodied design perspective is appropriate to investigate a designer’s experience of a brand through material encounters in order to ‘think through things’ themselves (e.g., (Henare et al., 2007)). I use an artistic research approach to focus on my experience of design managing a personal brand. I have done so by conducting an empirical project which consisted of investigating the personal branding phenomenon by enacting a material intervention, which

has been to wear the same clothing to project my personal brand over the course of two months. I have also been observing instances of my personal brand negotiation, interviewing colleagues, friends, and family about their experience and knowledge of me both before and after the material intervention. I have collected their thoughts through both informal conversations and an online survey. I am still in the process of collecting data both from others and me. Before the asking people about my material intervention, I have tried to note how they respond to my clothing without revealing it as my brand as such, and then, after telling some people about the project, I have gathered their reactions and suggestions for how to continue with the project.

When confronted with a methodological choice, I decided that an artistic research approach sits well with my background in architecture from which I am familiar with design as an experiential, holistic way of working and learning. This has epistemological significance since it includes a situated, aesthetic approach derived from senses, specifically an awareness of a feelings and embodied experiences in relation to others and the material world. Opposed to the focus on cognitive representations in other research traditions, this embodied approach parallels the classical Pragmatist view of the 'self' as socially constituted and fully embraces empiricism. The pragmatist view opposes the realist attitude of a purely subjective or individualistic experience and by extension the common suggestion that an artist simply imposes his/her self- expression freely onto others. Rather, from a pragmatist stance, artistic practice is intersubjective and revolving around expressive and implicitly social forms of denoting significance to a material reality. Dewey (1934/2005), for example, stresses the point that art is an internal and external process since the artist embodies the attitude of the perceiver when producing a piece of art. Subjectivity is linked to the awareness and ability to generate representations external to the subject that can be observed, analysed and contemplated the same as other forms of representations of knowledge such as data collection. The difference being that design is a holistic approach to knowledge that grounds representational meaning through ordinary experiences and interactions and does not classify aspects of knowledge in order to study the world (Johnson, 2007; Schön, 1983).

### *The unfolding design management of a personal brand*

I began the experiment by asking how can I research brand experience if it is at once highly personal and socially symbolic? The conceptual analysis

of brand experience in the literature (e.g., (Brakus et al., 2009) is contradictory to the subjective and situational understanding of lived experience that authors of experience economy point out (Pine & Gilmore, 1999). I thought that one way exemplify the paradox of trying to define brand experience could be through personal branding. Personal branding reflects the struggle of the marketing approach of commodification of a generic notion and measurable construct of experiences by branding and the implementation issues and subjective meaning of practices as deeply identity driven as a personal brand. Thinking about branding human experiences also made me wonder, in today's ever broadening umbrella of branding, what are the values, experiences, or sacred parts of our identity that are free from market values? And, is this important or relevant anymore?

There is currently a large industry devoted to personal branding (e.g., (Andrusia & Haskins, 1999; Peters, 1997; Roffer, 2002) in a modern work environment defined by individual agency, creativity, flexibility, fast paced development, and uncertainty. It is notable, however, that this explosive phenomenon of personal branding does figure much if at all in academic literature (Shepherd, 2005). Researchers have been placing greater emphasis on identity creation and individual agency in today's networking context (e.g., (Benkler, 2006; Howe, 2008; Leadbeater, 2008; Shirky, 2008; Tapscott & Williams, 2008). There is a more individualized approach to work and for entrepreneurs and a growing class of freelance workers in the knowledge economy, and there is a blurred line between someone's work and someone's identity (Florida, 2004; Shepherd, 2005). In this way, personal branding is maybe not far removed from current cultural practices of alleged "co-creation" of value (Ind et al., 2013). This objective social "me" in current contexts of social production is becoming a new part of marketing and value creation. Knowledge workers contributing their "unique promise of value" are familiar with the refrain to "sell yourself!". It is repeated that persons are now their own CEO's and must differentiate themselves in order to communicate a value statement. Individuals and primarily so-called creative class workers supposedly have more agency in value creation in the current creative, innovative work milieu, but is this rhetoric focused on the appearance or the substance of work?

The personal brand literature suggests, like the corporate branding literature from marketing, that a person can control how others perceive him/her by actively defining what image he/she projects: "It means cutting and polishing your brand so everyone who comes into contact with it forms

the same basic set of words in their mind when they hear your name. It's packaging the things that make you great at what you do, and sending that message out into the world to sparkle" (Peters, 1997 p.7). Trivial as it sounds, this resembles the product branding literature that focuses on symbolic association in product appearance, "it is the designer's job to decode the common values and opinions that exist in the culture and reproduce them into forms that embody the appropriate symbolic meaning" (Opperud, 2004 p.151). This essentialist desire to turn ideas into images has the same marketing rhetoric that dictates that a brand must be clear, focused and consistent. But, can something as complex as an experience, and in this case an experience of someone, her multiple personalities, inconsistencies, nuances, contradictory thoughts be taken up through the rationalization of a clear brand image? Can a person be reduced to sound bites and clichés? Seeing this disparity between research approaches of branding focused on symbolism in relation to perspectives on individual agency in social production, I wanted to empirically test an interpretive research view of branding. By trying to enact (i.e., manage through design) brand relationships (or experiences) rather than trying to cognitively interpret and "construct" them, perhaps there something more to an experiential interpretation of someone's brand.

### **Clothing as site of material experience**

For my personal brand, I thought about where I actually have agency in terms of manifesting some kind of brand experience. My immediate interest was to make or do something that operates as part of my everyday experience and situation. I thought that this could be a way to make the process accessible to others in a common language of design values. By focusing on design in the everyday, I narrow the distance between the assumed agency of design and the consumer in shaping brand meaning to look at what design does to make an experience important.

I started by looking at the personal brand literature and spent time asking myself "where" my qualities of experience or brand presence are, that is, how I locate myself in the material and immaterial. My few online "bios" and profile activities on the web seemed impersonal intellectualized and felt step removed from how I engage with others and how I actually feel about myself as a person. I also sought a design medium that explicitly deals with temporality, because I wanted to try to keep alive the way this case was experienced, how it was made or perceived, as a means to reveal designing as a *matter of experience* not only a matter of materializing a



design product. I concluded that should focus on my physical presence somehow, this being a very pragmatic solution to the problem of demonstrating brand experience in the every day. In one sense, I am being quite literal using experience as design to convey design as experience, the premise being that even if I were to design an object, the design is still located in the experience with the object. In another sense, this design example is elusive. I was curious about how the experience of designing a brand can be seen as something connected to who I am as a person and how I understand the relationship between what I consider a my brand and what others see as my brand.

As I wondered how I could generate certain intensity in my physical presence in some way, my first impulse was that that as brand “design”, the form needs to be distinctive as a brand, like with a logo or some material artefact. After some thought I regarded clothing as a way of expressing a personal brand, the term “clothing” used to refer to the items of cloth worn on the body. Initially clothing as a medium seemed superficial, but then I started to reflect on the challenge of exploring clothing as a brand enactment or an expression of inhabiting my brand. I imagined that assembling clothing could be, in fact, an intimate way to illustrate design as an aesthetic activity, also as one that is difficult to pin down and multidirectional as “managing as designing” suggests. It brings up the difficulty in agreeing upon a design outcome in advance of the process of designing, where the daily act of assembling clothing is recognizable as an ongoing practice of design management and by extension can be framed as an ongoing externalization of personhood. “Personhood” is a term from the embodied cognition literature that refers to first-person bodily experience that constitutes the basis for self-conception and abstract thinking (Gibbs, 2006). This is not a monolithic concept of self, but a link between self and body that is *in process* and constantly forming an identity through interaction with others and the environment (*ibid*). I am constantly negotiating relationships with my clothing and with others as much as through social gesture and response, so this became a site of personal brand experience to direct my attention.

### *Social context for clothing as a personal brand design*

There is very little discussion in branding literature addressing artist’s practices of personal representation in our cultural systems (Schroeder, 2005), but many artists ranging from pop stars like Madonna, Lady Gaga, Bob Dylan, and Bjork to visual artists like Andy Warhol and Banksy have

created strong brands by taking an art-based approach to managing their identity. For my purposes, I became interested in the numerous artists and creative personalities that are known for repeatedly wearing the same clothing (Smith, 2012). They have used clothing as a type of ‘self-portrait’ or participation in culture through art. These range from the artist Joseph Beuys who wore a felt suit uniform, Carrie Donovan fashion editor for Vogue who consistently wore large eyeglasses and pearl necklaces, writer Tom Wolfe who wears only white suits, singer/songwriter Johnny Cash that wore all black, and even Steve Jobs CEO of Apple was notorious for only wearing black turtleneck, blue jeans and New Balance sneakers.



Figure 1 Tom Wolfe in white. Source: <http://www.gq-magazine.co.uk/entertainment/articles/2012-12/03/tom-wolfe-interview-back-to-blood/viewgallery/>

In addition, many well-known modern architects have developed signature brands beyond their buildings through their personal style of dress and accessories. Examples can be traced back to Modernist architects from the turn of the century like American Frank Lloyd Wright who famously wore a cape and a cane, French architect Le Corbusier who had a signature bow tie and round black frame eyeglasses that subsequent architects like the American Philip Johnson also adorned. The continued prevalence of architects with personal brand attire into current day begs the question as to whether they think a particular way of dressing represents, as one blogger amusingly puts it, “a typological solution to the problem of clothing” (Holland, 2010).



Figure 2 Zaha Hadid's signature style, Riverside Museum, Scotland. Source: <http://0.tqn.com/d/gouk/1/0/3/t/-/-/115730131.jpg>

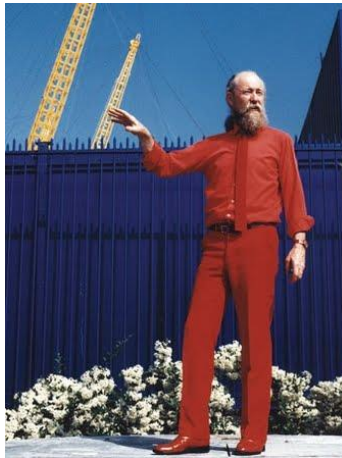


Figure 3 Mike Davis in red. Source: <http://constanzeschweiger.blogspot.se/2012/09/2012-mike-davies.html>

Examples from this tribe include Philip Stirling who reportedly had a uniform of blue shirts, purple socks and Hush Puppies, current architects like Bernard Tschumi who always wears a black suit and red scarf, Frenchman Jean Nouvel who wears all black or all white depending on the season, Englishman Richard Rogers who wears bright coloured shirts and his partner

Mike Davis who dresses in entirely red, Peter Eisenman who has amplified the cliché of the architect's bow tie, Daniel Libeskind dons black cowboy boots, and the Iranian architect Zaha Hadid who is celebrated for wearing bold, sculptural clothing akin to the design of her buildings.

Perhaps in some cases this self-imagery is about enhancing an individualist, creative sensibility, but it appears in most cases for the designer or artist to explore the aesthetics of oneself is a natural extension for the artist to explore multiple materials of self-expression. It is simply a different matter of putting ideas into another form/context. Artists are constantly evolving their art form often along with a highly personal and sometimes eclectic style, and they employ this language of style, performance, artist persona, etc. to catalyse thinking about what the boundaries and construction of art are and how creativity relates to self-identity. They highlight this relationship between appearance and lived experience. This focus of relates the brand management's interest in the ability for objects to carry symbolic meaning, but there is still an open question about what that meaning of self-identity construction is for the designer, how it works in dialog with their art and with others perception of them.

### **Materiality**

Contemplating my material interaction with clothing brought out the immediate, aesthetic relationship that clothing provides for defining who I am in terms of my body, and my identity of my body, in the world. I felt that my clothes have more meaning to me and has more of a manner of expressiveness for a concept of myself than of other representations of "self", such as online profiles. I enjoy the texture and feeling of clothes, and this direct sensory concreteness of clothing feeds into my identity since I wear them on my body as a way that I both appear to myself and present myself to the world. In the Western ontological tradition it is learned to contrast surface to substance, to hold that deep thinking is more consequential than emotional feeling, and to divide the inner self from the superficiality of how one looks (Klingmann, 2007; Woodward, 2005). Thus, research discourse has difficulty deeply interpreting materiality and appearances without relying on semantic processes to provide understanding (ibid). Yet, the supposed superficiality of sensation that humans experience and might not fully understand is what binds communicative meaning of any perceptual experience to a response (Johnson, 2007). This correlation between experience and meaning was

notably offered by communications philosopher Marshall McLuhan over thirty years ago in a comment that, "Everybody experiences far more than he understands. Yet it is experience, rather than understanding, that influences behaviour" (Klingmann, 2007 p.35).

In a conference paper about inhabiting design, Laurene Vaughan (2006) highlights clothing as an artefact that has meaning in that it exists in a lived relationship between user and object. She writes, "Our relationship with clothing is intimate. It is based on touch, we touch it and it touches us. It is a private conversation where each forms the other, an ongoing process of co-creation" (Vaughan, 2006 p.45). Clothing is of the few things that I display that carries degree of self-affirmation since I do not typically have a strong desire for exhibition or ownership of material goods. Nor would I consider myself fashionable or fashion literate, but I do think my clothes constitute a "personal aesthetic" that emerges from my attention to certain relationships I construct when selecting my clothes. In another article titled "Looking Good: Feeling right-Aesthetics of the Self", Sophie Woodward (Woodward, 2005) discusses a case of the material assemblage of clothes by women "as being the site where the self is constituted through both its internal and external relationships" (p.22). I similarly notice that clothing becomes a materialization of my personal aesthetic which is what Woodward says, "emerges as perceptions of what 'goes together' based upon colour, texture, style, cut pattern... what 'goes together' is taken in terms of what 'feels right'. As material culture, clothing is not seen as simply reflecting given aspects of the self but, though its particular material propensities, is co-constitutive of facets such as identity, sexuality and social role" (p.21).



Figure 4 Zentai body suits worn by Japanese club members. Source: <http://www.japantimes.co.jp/news/2014/04/17/national/full-body-suits-give-identity-freedom-to-japans-zentai-festish-fans/#.U0-AzU2KBMt>

### *The Uniform*

Having decided upon clothing being the design expression for the study, I came to the idea that I would wear a uniform, meaning the same thing every day. Rather than focusing on the symbolism of a uniform I thought uniform could become a site of the experience of turning inward to the actual self, my brand. A uniform sets up a bit of a contradiction because a uniform stands in opposition to creativity. It is characterized as being institutional, monotonous, muted, all the things that one would think of as the contrary to capitalism, choice, and even the enhancement lived experience. It speaks of “the system”. Paradoxically, no longer focusing on the construction of my outfits frees me from the consumption of clothing and the role of a consumer of brands in the market. Maybe the mono-brand becomes my brand. By not changing my clothes, I now give the look of not caring about my appearance, but perhaps the outcome is that others become more aware of my appearance and the fact that I do not change my clothes. After starting the uniform exploration, I discovered an equally contradictory phenomenon of enacting personhood in Japan where people wear entire body Spandex suits called ‘zentai’ (see Figure 4) to interact with others because they seek personal liberation “through complete sublimation of physical self” (Ozawa, 2014). Perhaps for them, as with me, the assumed diminishment of an external framing device such as clothing helps regard the self as more present or clear or maybe it simply a different form of self-expression.

### *Continuity of Inner/ Outer Experiences*

As this personal brand exploration became an exploration of self, it reminded me of having to create a self-portrait in my past design studio assignments. Such self-portraits were understood to be more than merely an image of myself, but an exploration of what form gives the expression of myself meaning (to me and others). From those introspective projects, I gathered that my brand would not take shape in a highly stylized, object-oriented way, but rather, to draw an analogy to gestalt perception, my interest in design is, and has been, about understanding design as a condition of the context. Reflecting on my past design experiences helps me illustrate how my interests in design have evolved into this current concentration of materializing concepts through performance. My approach to design work has always been restrained, focused on drawing attention to the mundane, the everyday, the hidden, the background. I have had an ongoing interest in the question of “where” the design is in a work and if I can remove the designer in some way. In my architectural work, I used to use the terms the “unbuilt” and “indeterminate” to describe this illusive idea being sought after in my projects, and I was often criticized on my drawings for having too light of a pencil stroke which was perceived as not showing enough conviction in the lines (or maybe what I perceived as divisions) I laid out on paper. Although these imprecise and tentative qualities of my design procedure and identity continue to take on different forms, they become more articulable the more self- reflection I give my creative processes. This being the case, I would still not be able to express the extent of my seeking and experimentation over the course of my life that has led up to this present case study. Each design case reflects my way of thinking in an incremental learning process, and accordingly says something about who I am because they arise from my coupling of my experience and designing in the world. Here is Dewey (1934/2005) on this idea:

*The scope of a work of art is measured by the number and variety of elements coming from past experiences that are organically absorbed into the perception had here and now. They give it its body and its suggestiveness. They often come from sources too obscure to be identified in any conscious memorial way, and thus they create the aura and penumbra in which a work of art swims (p.127-128).*

Thus, this design work can be understood as having many internal tensions which are noted as processes of “development and fulfilment”, to

use Dewey's terms, rather than suggesting a rational logic of coherency or recognition. Where branding normally has a purpose of conveying brand values, I did not have a predetermination of a brand image in this case. My brand design is an act of continual experiential fulfilment and identity negotiation. Design always exists between inside and outside, it is an experience, "which is intervening as well as final—always presents something new" (Dewey, 1934/2005 p.144). The work to develop my brand concept is about how the inner and outer are in conversation with one another. These are two sides of a situated transformation of my understanding of my personal brand: "Pragmatism recognizes that thought can be transformative of our experience precisely because thought is embodied and interfused with feeling" (Johnson, 2007 p.92). Designing is not merely a mental interpretation of an external reality, but an operational *how* of carrying expressions of brand intent in a situation.

As I contemplated what my brand does, I explored how to get new perspectives from friends to think about ways I could develop the process. I do not know if it possible to avoid re-affirming my concept of self, but I thought I would try by seeing what others said about me. When starting out, I initially followed the directions from one personal branding book, *The Brand called You* by Tom Peters (Peters, 1997) where I am to confront myself and ask honest questions about my personality and then have I asked the following questions of myself and then to friends and colleagues: What aspects of my personality do I project, what moral values do I associate with myself, what skills or talents do I have, and how do I describe myself and my personal style. I first answered the questions with adjectives including: playfulness, sensitivity, criticality, openness, having values for creative freedom and thought, the ability to see connections and reflect deeply on issues, and that I see myself as neurotic, humorous, complex, down-to-earth, and shy. Next I asked friends and colleagues to answer the same questions and let them do it via an online survey so their answers could remain anonymous. They answered with the following descriptive words: discipline, accomplishment, ethereal, visionary, shyness, utilitarian, youthful, innocence, funny, emotional, upbeat, and never-ending learner. I also received statements like, "sense of humor about herself and the ability to see the absurd in life," and "a sense of surprise and wonder and curiosity about the world" and "creative and reflective side puts her into places or situations where she doesn't feel comfortable, safe or in balance."



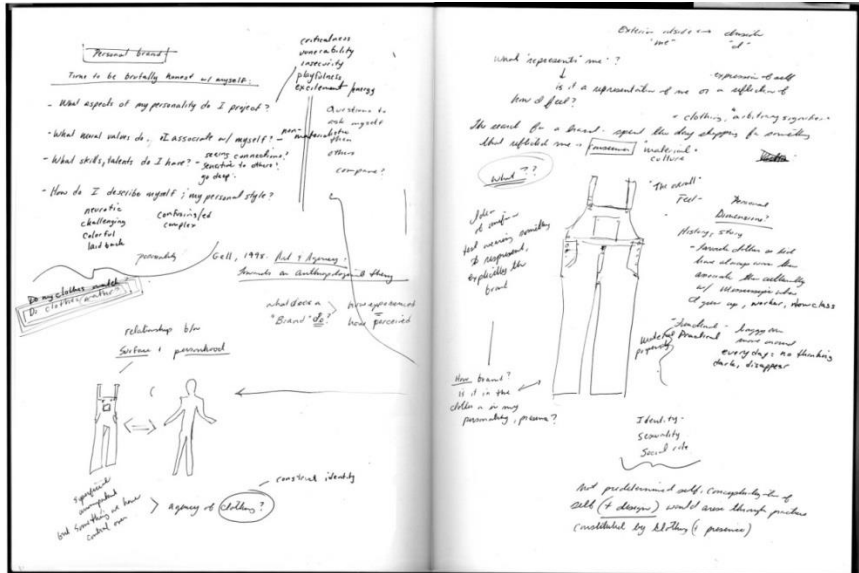


Figure 5 Notes on the case study.

I see their interpretations, which are reflective of my own answers, as part of an unfolding process to keep interpreting my brand. I do not think this is to be interpreted as a coherent, external image of me, but a unity that is in my perceived continuity of self, an identity connected to my body through time and space. It is a natural ongoing navigation between my different selves, between the objective "I" and subjective "me", part of human experience, and in the same way that others perceive themselves or their interaction with me. Thus, the uniform (my brand) is not discontinuous or exceptional in other's experience of me, but part of shaping my experience with them, between me and them.

In classic aesthetic philosophy, the frame of aesthetic judgment or act of contemplation of the *object* of art and the ultimate aesthetic goal is one of "beauty" (Townsend, 1997). This theory makes divisions between content and form, but moreover, between perception and production, which in essence, distinguishes perceiving from knowing. Thus, the struggle with comprehending design knowledge from such traditional philosophies of knowledge, Dewey (1934/2005) says, is that they serve to separate matter and form and thus impose a compartmentalized view of how artistic practices generate holistic expressions or felt meanings of experience: "Aesthetic experience has not been trusted to generate its own concepts for

interpretation of art. These have been superimposed through being carried over, ready-made, from systems of thought framed without reference to art" (p.136).

It is this ontological subject-object divide that shapes the discourse within design management and makes it difficult for design activities to be understood from a pragmatist process-based ontology, or as having a dynamic conversation with a situation (Schön, 1983). Instead, the designer's attempts to represent qualities of experience is usually interpreted by another as producing a designed object. As Dewey (1934/2005) phrases it, "Art is a quality of doing and of what is done. Only outwardly, then, can it be designated by a noun substantive" (p.222). This, linear one-directional model of production of meaning -a thing- is reflected in the way that the meanings of the organization (brand's creators) and the meanings of the consumer (brand's interpreters) have been approached by brand management as discrete. The brand identity, which is in differentiated product features and a concept, is seen to originate from the company and the brand image comes from consumer perceptions and set of belief consumers have about the brand.

For Dewey the material (object) of design that causes contemplative effect, but the object is an effect of internal and external interactions. By example, from my design background, I find that focusing on the experience of designing is not so different from focusing on the object of design, because in practice they are intertwined. When designing buildings, for example, I am actually more focused on the experience of being inside the space than the design of the building itself. Thus, a building is not the *work* of architecture, but rather as Dewey (1934/2005) writes, "the work takes place when a human being cooperates with the product so that the outcome is an experience that is enjoyed because of its liberating and ordered properties" (p.222). The point is that in artistic practice how one engages in the world, that is, how they perceive the relations between body and world, is how one also understands social and symbolic meaning. Things and meaning are not separate, but are in context to how we experience them. Dewey (1934/2005) argues that "art, in its form, unites the very same relation of doing and undergoing" (p.50), the same integrated view of perception and action being presented by embodied cognition theory. One claim from this theory is that perception and action are two aspects of the same neural and physiological processes and that the brain does not simply register representations of the world but is actually adaptive and responsive in representational behaviours (Gibbs, 2006). This being the case, design is a

synthetic knowledge activity of direct encounters, doing and perceiving with the world, and as a representational behaviour, design does not disembodiment meaning, but the acts of production (artistic) and perception (aesthetic) are taken together.

### *The Uniform Part II*

Before deciding on what clothes should constitute the uniform, I resolved to spend a short amount of time shopping for an outfit. My reason for shopping for something new rather than using clothes I already had was for this task of making a choice of clothing. I thought it would be interesting to see what I chose. Furthermore, a new item of clothing also gave me a point in time from my pre-branded self to say, "This is where I'm beginning my brand". Since I am testing the relationship between appearance and experience, I did not want the decision to be overwrought, based on any particular appearance of who I think I am, but I wanted it to be something I just liked, without much up front explanation. I gave myself the stipulation not to overthink the choice, and I succeeded in selecting something after only visiting a few stores in town, being quickly drawn to a pair of black denim overalls on sale at a women's chain store where I live. I immediately liked the hardy fabric and the baggy cut so I tried them on over what I was wearing. There must have been a literal translation of flexibility in this case, because I thought that if they fit over my clothes, their looseness would give me more options for variability if I chose to appropriate them (I later found out that working men sporting overalls in the 19th century actually wore them over another pair of pants). And though I usually prefer to dress in bright colours, I found their colour practical because I thought they could "disappear" by being nondescript and easy to combine with other clothes.

### **Notes on the Overalls**

I did not explicitly evaluate the overalls from their symbolic qualities, though I had a more or less conscious awareness some of their socially communicative aspects. After wearing the overalls, for example, it was pointed out to me they convey the idea of a "builder" which has a figurative match to my architecture background, but I had not thought about that direct translation of my self-biography. I began to wonder how much weight gender and class symbolism overalls have since they have become ubiquitous fashion attire within modern American culture like green military jackets. I learned that overalls, more precisely "bib overalls" which features a pair of pants and a bib area that covers the stomach and chest and held up

by buckle closures at both shoulders, were historically worn by working men in the U.S. in the 1750s. They became then standard dress for painters, farmers and railroad workers when manufacturers started making them out of denim at the turn of the 20<sup>th</sup> century. Around that time they started being worn by children and women and later becoming common attire of women in factories during World War II. By the 1960's, overalls became a fashion item in American culture and today they are both work and casual wear. They have been noted to be part of broader a clothing evolution to more relaxed garments and specifically referential to a current cultural trend of “keeping things simple” with a resurgence in homesteading, D-I-Y, or farm-to-table movements in the U.S. (Rotenberk, 2013).



*Figure 6 The Overalls.*

The overalls actually caught my attention for being an item of clothing that I have always enjoyed wearing since I was a kid. I have had several pairs over the years which have been a favourite of mine, and I can recall a picture of my aunt wearing overalls in her youth hanging on a wall in our house. Besides just being fun to wear, I strongly associate overalls with where I grew up in the southern United States where they are commonly

worn by farmers and working class. These memories with overalls have some underlying associations that I connect to my self-identity, and the aspect that most coincided with this that they are gender neutral, if not masculine, and roughly speak to a “work ethic” or simplicity of lifestyle. I am not highly sexualized through feminine clothing but have always preferred clothes that serve a degree of utility (having many pockets, being loose, durable, etc.) and effortlessness. The overalls fit into this space between my biography and the world, so that I am able to “feel like my ‘self’” in them ((Woodward, 2005).

Having chosen the overalls from a genuine place of self-identification elicits a sympathetic and authentic reaction from friends and colleague versus if I had intentionally chosen a provocative or disruptive outfit. By example, on more than one occasion friends complemented me on the overalls before knowing that they were part of my brand exploration. When I asked them if they thought they suited me, some said yes and that they are “special” and “different” but “they don’t jump out you” and others said that they had not really noticed. I think there should be more of extensive exploration of the perceptions and emotions elicited by the uniform including its associations or the reaction to repeated wear. Not knowing about my project, most people have not commented to me directly. Only one person has mentioned, “Oh, you’re wearing your overalls again.” But for those that I have told, they have stated kindly, “I thought you just ran out of clothes,” or “Now I realize what is going on. I noticed before, but I realized it when we met again. When I told my family they just laughed and said, “Haven’t you done something like this before?” The next round of questions is about my rules for the uniform (see below) and information like, “Can you wear the striped shirt or does that go against the non-colour thing?” There seems to be an interest on their part to check that I am following ‘the rules’ and to help establish or negotiate them, as some have given me suggestions for shoes or other accessories to further the identity. As time goes on the uniform can continue to be a format around which I can gather input into my brand image and enactment. It serves as a stage for wearer-viewer overlap, where I can where I can introduce and discuss the implication of the uniform for a personal brand experience with others.

*Start day, March 3, 2014.* When starting out I set myself some rules for the uniform: 1) I will wear it when I meet people and all social and work-related occasions, 2) I will wear the same undershirt and shoes, 3) I will wear it for a few months (or at least until the final version of this paper is

completed). Thus far, I have held to rules to and 1 and 3, but within the first week I realized it was hard for me not to mix shirts and shoes, so I have allowed myself this margin. This revealed something about me, that I require rules but to an extent, or mostly that I need an element of variation or otherwise I feel constrained. I found the repetition impeding, like eating the same thing every day. I do not mix the undershirts much, but the little amount of change between black, grey, green, and on a couple of occasions, white shirts has an interesting psychological effect. The sense of choice that comes with the ability to vary my clothes, has been for me, a matter of changing my day to day experience. It is not particularly an act of expression or symbolism.

There is a tension the overalls as a representation of myself or how much they are an expression of how I feel about myself. I think the latter is more the case, and the former is the symbolic connection, overall as “signifier”, that arises in a particular social encounter with someone. Someone will perceive the symbolism or cultural currency of overalls and connect that to me as a person. The overalls become a mediator that allows others’ intentions, bound up with their lived experience, to connect back to me. Until they recognize my processes in choosing my materials of expression for this presentation and until they have a sense of me, they may or may not comprehend the ‘self’ or the inner material that I have exposed to the world (Dewey, 1934/2005). Without engaging with my brand, the experience of me through all my attributes and over time, there is a difficulty of describing the meaning of such encounters with my brand, me in a uniform. I do not become “Ariana” wearing overalls, a symbol or meaning for certain qualities to my friends, I am experienced by my qualities when I interact with my friends, and those experiences become internalized by modality-specific, situational perceptions that friends recall in their memory of me (Damasio, 2005). With friends, the uniform is only one aspect of an experience with me among repeated experiences with me. The uniform is an artistic medium for inner exploration and expression of personhood or ‘self’ as much as it is serves a collective system of symbols and cultural meanings. My action of “wearing overalls” is the doing and making in design management, not an outcome of a design. It is a mode of interpersonal communication, a conversation for myself and others that is *consummated*, to use Dewey’s term, as “my brand” because I recognized it to be experienced as such. It has significance for me and others through our relationships that already have emotional meaning. My brand, that is me in overalls, is comprised of various relational meanings, not one complete

narrative. It is not purely cognitive because it is both contradictory (comprising my multiple selves) and ongoing (still being formed) in its material realization.

### **Meaning of Experience**

The pragmatist focus on experience challenges the recent interest in semantic perspective of design that suggests that design objects convey meaning through semantic interpretation (Krippendorff, 1989). In one such area of product design research, the focus on the design aesthetics as signifiers towards an instrumental end to distinguish semantic interpretations of brand qualities or product categories (Kreuzbauer & Malter, 2005). Product aesthetics are easily conflated with products possessing semantic attributes and it seems reasonable to specify the representations or “styling” of a brand should be primarily based how it should look through a visual language or product form (e.g., (Person, Schoormans, Snelders, & Karjalainen, 2008). The intent is to elicit emotional responses from consumers, often under the term “affect” (Nathan Crilly, James Moultrie, & P John Clarkson, 2004) through design attributes by offering perceived symbolic representations of brand meanings. Because semantics, through language, classifies meanings onto things, studying design from this perspective assumes a cognitive (thinking) meaning separate than an affective (acting) meaning and a causal, behavioural relationship of producer-receiver. Brand knowledge, then, is assumed to exist in cognitive forms in the minds of product designers and consumers, so that brand recognition and categorization can match a one to one signifier-signified semiotic thought to exist in discursive symbol systems (Kreuzbauer & Malter, 2005). This approach becomes practically functional because it internalizes an underlying, and perhaps collective, meaning which and works to stabilize or make coherent what are ultimately deterministic and reified brand categories or identities.

Dewey’s claim is that meanings are not mediated through the symbolic dimensions of art alone, but meanings are also caught up in direct emotional response to form, presentation, or materialized experience. Relations are perceived and felt, not just thought, meaning that body-based perceptions of the qualities of a design are what gives a design the so thought “higher-level” symbolic meaning. Johnson (2007) summarizes Dewey’s argument of aesthetic experience in this way,

*Instead of isolating the “aesthetic” as merely one autonomous dimension of experience, or merely one form of judgment, we must*

*realize that aesthetics is about the conditions of experience as such, and art is a culmination of the possibility of meaning in experience (p.212).*

In other words, from the pragmatist standpoint, there cannot be a translation of an experience into the discursive symbol systems of language and selecting qualities of semantic meanings is a reductive view how internal ideas (thoughts, concepts) can represent the outside (world). The inner and outer are the same substance in existence—the outer result is expressive, but it is equally for internal fulfilment. In my case, I was not interested in managing my identity through only symbolic representations (meanings) of ‘self’, but also felt and reacted to different sensory qualities with the items I dressed in. This exemplifies the relationship of doing and undergoing in the way that Dewey (1934/2005) articulates, “The material is not employed as a bridge to some further experience, but as an increase and individualization of present” (p.127).

Consequently, how knowledge is reified in the cognitive constructs of traditional management research, does not support the material, intuitive, multisensory, context-specific interactions with the world that is assumed by Pragmatism and practiced by designers. Design revolves around qualities of experience and the situational encounters with brand “tangibles” (Hestad, 2013) at the individual level. Aesthetic meaning does not rest in general (in a social definition) nor out of context (in the head of perceiver) but is intertwined in experience. Designers, in that respect, experientially consider or qualitatively assess design attributes and relationships through their affective experiences with the world.





Figure 7 Photographs taken every time the uniform is worn.





## Conclusion

This case questions design management's suggestion that design can play a role in managing a coherent brand image (Ravasi & Lojcono, 2005) or visual recognition of a brand (Karjalainen & Snelders, 2010). The predominant approach to design management research on brands aims to understand how a brand is intended in agreed upon semantic terms or expressed values. From a management perspective, it is implied that multisensory brand experiences can be translated into verbal, cognitive representations of meaning: "Brands most certainly carry expressions of intent of the intent of their originators" (Hatch, 2012 p.888). It is important to point out from a design perspective that this notion of formalizing and modelling knowledge in advance through an intended image (or reified view) of knowledge is not necessarily how design materially develops ideas or meanings (through things). In design management where it is currently understood that design and management are both engaged in the production of representations (Orlikowski, 2004), I would add that unlike management, design is not preoccupied with operating in the world through a priori, symbolic terms. In design processes there is a gratification in the artistic behaviour to express, elaborate, or make experiences special in themselves which is not secondary to the symbolic meaning of the experience. Thus, where there is difficulty for design, in management terms, is in sharing the aesthetic perception of felt qualities of design. Management's instrumental concerns and need for rational explanations over the experiences themselves requires a translation from action to thought or vice versa. Thus, the interpretive view of framing brand experiences for management purposes actually keeps the discussion of brands in the conceptual (linguistic) realm and characteristically reduces any kind of complexity or ambiguity of implementation and the context-dependent, relational experience of meaning(s).

In this project of personal branding, it took me a process of self-reflection through my material circumstances to uncover some hidden values that I inhabit and project without necessarily being able to articulate them first. The concreteness of the overalls provided an externalization, a modelling process, by which I have been able to reflect on the concepts of personal branding and "personhood" but also how I find personal meaning in the work itself. I am able to see a connection between my process and outcome of a brand. On one level, I have become alert to the idea that my brand (or personhood) is both reflected by constituted by my decision to wear dark, asexual pants with a utilitarian aesthetic. The clothes, as a

symbolic vehicle, speak to my desire to be practical and for gender mobility, but also my desire to be seen by others in that way. They are at once an application of clothing I find personally evocative but also in the context of others as clothing that surfaces facets of my biography. The materiality provides a way to go into the embodied emotion and feeling of the substance of form.

Moreover on another level, the repetitive wear of the overalls as a uniform serves as a means of enhancing my reality which includes an emotional and psychological component. It gives my behaviour an artistic or special behaviour that is a means of production inseparable from the making special of my material conditions (Dissanayake, 1992). This behavioural enhancement of performing a kind of clothing ritual revealed to me my deeper interest in how aspects of design can arise from the ordinary. Repetition, I am discovering, is one technique that I enjoy as a means to enhance the material and social consequences of my actions where representational meaning does not necessarily come first. In other words, repetition of an activity makes the experience important, and thus aesthetic for me. It has been a way of managing my behaviour that includes a sensual pleasure and intellectual curiosity that I value apart from the symbolic function of the overalls.



*Figure 8 Brand Placement.*



Figure 9 Brand Launch.



Figure 10 Brand Turnover.

This design project helped illustrate how embodied design knowledge constitutes meaning in situation-specific experiences, but it scarcely reveals some of the many contradictions that executing “the intent” entails in practice. The intention of an experience or idea, which is more than an image, may not be understood until it is materially articulated and can be experienced and thus reflected upon. Knowledge of brands reside in individuals’ material experiences, and these in the end are assessed through multiple sensory qualities and felt aspects. These cannot be easily reified into linguistic concepts or reduced to design features as product design literature rehearses (Crilly, Moultrie, & Clarkson, 2009; Hestad, 2013; Kreuzbauer & Malter, 2005; Person et al., 2008). Instead, experience contain multiple and conflicting views. Thus, the management of such design qualities cannot be predetermined or fixed, but must be ongoing with aesthetic, material attitudes. Design utilizes a material perception of form and interaction to also denote, signify, and shape representations through non prescriptive artistic concepts of expressive, emotional content, one that is learned through embodiment.

Finally, this case exposes, in a small way, the conflict of designer caught between the traditionally polarized imperatives of management and art. On one hand, the designer must support reified, commodifiable meanings of brands, and on the other, pursue an artistic notion of exploring non-economic, non-deterministic, felt qualities of experience. The instrumental values of marketing and the compartmentalized perspectives of management research work to separate the intent and consequences of a brand experience. This separation between values and intent is a source of confusion in trying to understand and cognitively represent brand meaning.

In the context of branding, understanding for a designer’s role and approach means that a designer not only provides practical and technical contribution but also a conceptual and compositional one. There is an intrinsic value for the care put into carefully and thoughtfully designing an experience, care in the detail and thought that is not necessarily rational or economically measurable. This is more than an output but a labour of love. Dewey (1934/2005) writes that “craftsmanship to be artistic in the final sense must be ‘loving’, it must care deeply for the subject matter upon which skill is exercised” (p.49). This provides a critique to the current attention being paid to co-creation processes by branding (e.g., (Hatch & Schultz, 2010; Ramaswamy, 2009) which might be missing the point that there can be a kind of artistic authenticity or value for expressing an intent in intersubjective, felt qualities of experiences, not first through a marketing

purpose for profit and predetermined values. Therefore, what might be important is a degree of autonomy associated with art to place more value on the creative process itself rather than on any preconditions for co-creation processes. This rather, is what gives design processes self-fulfilling or intrinsic motivations for people to engage with creative processes beyond economic concerns. Dewey (1934/2005) acknowledges this aspect of consummation of meaning in the social process of creative production:

*Wherever conditions are such as to prevent the act of production from being an experience in which the whole creature is alive and in which he possess his living through enjoyment it will lack something of being esthetic. No matter how useful it is for special and limited ends, it will not be useful in the ultimate degree—that of contributing directly and liberally to an expanding and enriched life (p.27).*

If the intent of a brand can be seen beyond the instrumentality of symbolic meaning to the qualities of engaging in brand experiences, it would be to see that a brand does not just become a symbol of experience, but is in the aesthetic (thinking and felt) qualities of the that experiences the brand provides. Pragmatism and embodied cognition both imply that design does not translate meaning semantically through visual languages, but intertwines values and intent in experience — where there is usually an aesthetic expressiveness of intent in framing such experiences consistent in experience itself. This is the Underdog approach of design. It does not put experience over theory, but holds them together, and it is our experience with things that “*can be conceptual*” (Henare et al., 2007 p.13). This means appreciating the intrinsic value of design knowledge in helping shape experiences, because there is an expressiveness that is not necessarily predetermined by linguistic categories or images of meaning. Furthermore, this logic of embodied knowledge has the intriguing and provocative capacity to actually convey multiple, inconsistent meanings. Individuals perceive things in more than one way in experience and design, as a material practice, draws on the associative perceptions constituted by relationships between people and material world. It would not matter what symbolic meaning brands are perceived to adhere to but suggests rather that they are about engaging people in experiences of ongoing identity fulfilment. There should be seen great potential for brand management through embodied design knowledge because a brand can be dynamically performed, constructed or enacted along numerous continuities and qualities of experience.



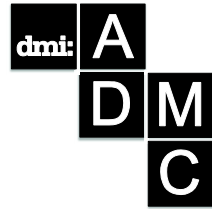
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# Consumer Engagement in Co-creation of Contemporary Brand Design

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*In this paper, the literature review and theoretical framework is aim to understand how companies co-create the brand experience with their consumers. An in-depth case study has been developed on recent strategies developed for Nutella, brand of the Italian chocolate's manufacturer Ferrero. The discussion is focus on how consumer's contributions are being considered to create contemporary brand experiences by providing a framework of how companies are using different tools to engage consumer as an alternative approach for reinforce brand recognition. The paper analysis has significant implications for designers, marketers and research professionals because it shows how companies can consider consumers as participants of an integral brand building process. Finally, it point out some follow-ups and future development for this research topic.*

**Keywords:** Brand Co-creation, Brand experience, Brand design, Collaboration.

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## Introduction

Consumers are no longer placed at the end of the process where they used to be receptors of the information developed exclusively by companies about brands. Companies have started to recognize in their own customer a source of valuable information and they are enabling platforms and spaces to exchange content with them. For the purposes of this paper, “consumers” refers to buyers of products and services, including, end-consumers, users, businesses, governments, etc.

Some of these contributions are emerging in communities where consumers who feel identify with the brand, voluntarily join their efforts to support it. The Internet has radically altered the proposition that listening to your consumers can help to improve your product and services (Kambil et al., 1999). New media have empowered consumer’s voice, making them feel closer to the brands they consume.

Moreover, design is recognized in terms of branding to create a symbolic interpretation, brand identity or communication strategy, but it is more difficult to understand how design enable the process of communication with consumers, how design could bring closer consumer's inputs and creative process to reinvent brands or what is the role of design in the dynamic data exchange that companies are experimenting. Designed by the company, the consumer brand experience affects how the brand is perceived (brand communication) and how the brand is interpreted (brand interaction), but the brand experience from the consumer perspective is also a motivating reason to start a conversation (positive or negative), in some cases to rethink the brand or to consumers to make their own contributions. Acknowledging the power of consumer’s contributions, some companies started to collaborate with consumers to create and manage their brand experience, giving them a new role as brand co-creators. As the value of the brand has grown and so has the participation of the consumer, have been recognized that the responsibility of design of the brand experience is not only on company’s hands.

Although there are some scholars inquiring into how the brand meaning to the company may differ from what the brand means to its target consumers, there is not much in the literature about how companies collaborate with consumers with the purpose of create a strong brand recognition and what is the role of design in this collaboration process.

The paper has been structure as follows: First, the review of the emergence and definition of brand co-creation concept. Second, the literature relating to the potential for companies willing to co-create and for

consumers willing to participate. Third, a company case analysis of engagement of consumers for brand co-creation and understanding of the role of design in the process. Finally, the contribution of the paper is presented together with future research opportunities.

### *Research Methodology*

An exploratory approach has been applied for reviewing available literature in the topic followed by the analysis of an existing company case in the process of co-creation for brand communication content using netnographic study methodology.

Netnography is a participant-observational method conducted on the Internet (Giannelloni & Vernetto, 2012). This methodology provides information, meanings and describes consumption patterns of online groups (Kozinets, 2002; 2006). Netnography adapts the principles of traditional ethnography to the study of virtual communities (e.g. brand communities, forums, chats, CRM platforms) emerging through computer-mediated communications. According to Kozinets (2002), netnography is the methodology implies the researcher's immersion into the virtual community long enough to familiarize himself with the community's culture—that is its values, norms, language, rituals (Cherif & Miled, 2012).

The netnography was conducted from September 2013 to May 2014. For the purpose of the paper a selection of quotes was made from a previous selection of 125 (from all the content shared during these months on the two unit of analysis), based on the aim of focus of analyze the material connected to the objective of the paper on development of brand co-creation community.

### *Brand Co-creation: theoretical foundations*

The theoretical roots of the brand co-creation concept lie in what Prahalad and Ramaswamy (2004) refer to as joint creation of value by the company and the customer. Similarly, Roser and Samsong (2009), refers to co-creation as an active, creative and social process, based on collaboration between producers and users, that is initiated by the firm to generate value for customers. Further, Ind et al. (2013) suggest that co-creation notion is not purely an organizational opportunity or simply a place where consumers interact, but instead a way of organizations and individuals working together in a process of discovery that delivers benefits for participating individuals (such as fulfilment and socialization) and for the organization

(such as insight, idea generation and development, and marketing platforms).

Co-creation is different from the crowdsourcing of ideas (such as competitions and polls) because it implies an active intellectual participation in a process. For the purpose of this paper, co-creation differs from mass customization, because of the two-way flow between the organization and the participant and because it involves the participant in a process that creates value not only for the individual, but also for others (Ind et al., 2013).

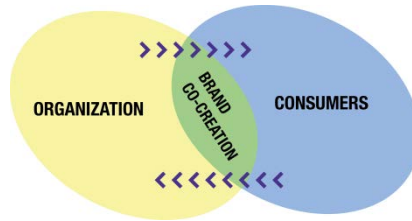
The emergence of co-creation has been possible due the technology advances and development of the network, which have facilitated communication between consumer and companies. Thanks largely to the Internet consumers have been increasingly engaging themselves in an active and explicit dialogue with manufacturers of products and services (Prahalad & Ramaswamy, 2000). The sophisticated information and communication technologies (ICTs), which have developed in parallel with the rise of the Internet, have served as platforms facilitating interaction with and among consumers, and the formation of brand communities (Muniz & O'Guinn, 2001; Muniz & Schau, 2005; 2006). This online connectivity has enabled users to build communities of interest beyond limits imposed by proximity (Muniz & O'Guinn, 2001) and to customize products and share their ideas (von Hippel, 2006).

In an attempt to become close to customers and to understand better their behaviour, organizations have recognized that they can become part of the customer experience (Ind et al., 2013). As described by Prahalad and Ramaswamy (2000) the market has become a forum in which consumers play an active role in creating and competing for value. Companies have started to recognize the importance of a most participative role of consumers. Researchers such as Grönroos (2000), Prahalad & Ramaswamy (2000) and Vargo & Lusch (2004) argue that value is embedded in the co-creation process between the customer and the supplier, and where the customer shifts from being a passive audience to an active player. "The answer, we believe, lies in a premise centered on co-creation of unique value with customers. It begins by recognizing that the role of the consumer in the industrial system has changed from isolated to connected, from unaware to informed, from passive to active" (Prahalad & Ramaswamy, 2004).

Most of the time, co-creation deals with product design or with communication campaigns. Brand co-creation emerges as the space



between organization and consumers conversation. This is a fluid space where brands are discussed and developed and people participate in the movement of ideas (Ind et al., 2013). Consumers and brand communities, or, as Sitz and Amine put it “individuals sharing values, norms and representations emerging from similar consumption practices, from collective reception of advertising messages” (Sitz & Amine, 2007), have to be involved in the brand’s value creation process (Vargo & Lusch, 2008).



*Figure 1 Brand co-creation as interaction between company and consumers*

### ***Brand Co-creation interaction***

Depending on the situation, brand co-creation communities (i.e. group of people participating in a co-creation project) can be organized to last either a few days, or be conducted over the course of several months. The co-creation community could involve as few as a few hundred participants, or it could be scaled up to involve thousands of voices (Riney, 2011).

However, no matter how long or big is the co-creation process there are two types of interaction for develop a co-creation process. Co-creation takes place through *physical* or *online* interaction. First, meet face-to face with consumers to discuss about brands, products and/or services, schedule meetings or events where communication between consumers and firms happen. Second, meet through online communities where interaction between participants occurs by using online platforms (including also corporate websites) and social networks. According to De Valck a “virtual brand community” is a specialized, non-geographically bound, online community, based on social communications and relationships among a brand's consumers (De Valck et al., 2009) A co-creation community is a place both to learn and to share that enables people to realize something of their own potential by exceeding their perceived limits (Agamben, 1993). Cova (2011) has been defined two objectives of the community brand, contribute to social interactions between brand community members and

encourage consumer investment on community: it can be self-exposure or a personal branding. Organizations have the opportunity to be active listeners via social media and brand communities and also to be the instigators of dialogue (Ind et al., 2013).

### *Consumers and company's roles*

The competence that customers bring is a function of the knowledge and skills they possess, their willingness to learn and experiment, and their ability to engage in an active dialogue (Pralhad & Ramaswamy, 2000). Füller suggests that consumer's motivations for participation vary depending on personality and that this creates different expectations towards co-creation. While some people seem to be primarily motivated by extrinsic rewards, other participants are engaged by more intrinsic rewards (Füller, 2010). For co-creation to be sustainable as a practice it needs to engage with people who are intrinsically motivated (Ind et al., 2013). Intrinsic motivation is a vital component of creativity (Amabile, 1997) and drives high-level and long-term interest in co-creation projects (Füller, 2010).

Consumer engagement is has been recognized by different authors as a key point for decision making, Voyles (2007) suggests consumer engagement enhances profitability, Neff (2007) views consumer engagement as a primary driver of sales growth, while Sedley (2008) have seen it, both as a strategic imperative for establishing and sustaining a competitive advantage, and as a valuable predictor of future business performance and recently Brodie et al. (2010) emphasizes how the discourse portrays consumer engagement as a vehicle for creating, building and enhancing consumer relationships.

Beginning a two-way dialogue using the co-creation technique can also result in a variety of positive unintended consequences (Riney, 2011). Co-creation offers a milieu in which people can forge closer links with brands, develop new possibilities (Füller et al., 2008) and build on the ideas of each other (Iba, 2008). As participants begin to build trust and commitment both towards each other and to the organization, they start to feel closer to a brand. As a result, people are willing to provide significant input in response to questions, to contribute their creativity, to engage in discussion, and to generate new ideas (Ind et al., 2013).

The value of this is that external contributors can bring their different skills and expertise to develop ideas together that "combine and combust in exciting and useful ways" (Amabile, 1998). Engaging customers in this way

can yield considerable value, because it goes beyond the gathering of intelligence about customer attitudes—information that can be obtained through more traditional methods such as focus groups and surveys. A key benefit of this approach, as opposed to conducting a conventional market research survey, is the ability to gather stakeholder input rapidly and, depending on the nature of the conversations, redirect the discussions towards topics of interest that emerge from the community (Riney, 2011).

The co-creation process offers a richer, larger and more varied knowledge base, while bringing together different stakeholders. However, it has been recognized for some authors that this in turn requires a participatory leadership style that enables the organization to share and work effectively together with consumers. Organizations can absorb learning from the co-creation space, but only if the knowledge generated with consumers is shared inside the organization (Ind et al., 2013).

### *Consumer engagement for co-creation of brand experience*

A company case have been selected to analyse how companies collaborate with consumers with the purpose of create a strong brand recognition. The emphasis would be in an online platform developed for engage consumer in the creation content and share ideas to strengthen brand recognition and to virtually co-create the brand experience, which allows for an in-depth analysis of what is the role of design in this collaboration process.

#### **Context**

Founded in 1946 the multinational manufacture Ferrero from Italy is a family business recognized by the production of chocolate and other confectionary products. First product of the company was the Pasta Gianduja a cream of hazelnuts and cocoa, which was modified by his creator Pietro Ferrero five years later in Nutella, a softer chocolate cream, today's the most recognized product of the company. Nutella was named in 1964 using the English word "nut" and the Latin suffix "ella". In 1965 the product was introduced to Germany and France, and in 1977 to Australia.

The Brand have been developed a strong brand, including a recognizable jar as packaging and different communications campaigns (e.g. "Nutella® party" in 1992 a fashionable event with Nutella and bread to share with friends or "Nutella® party an Italian Myth" developed in 2004 by the journalist Gigi Padovani). With 640 million Euros in sales in the world, Nutella accounts for 15 percent of global sales by the Ferrero group that has

16.000 employees, 15 plants and 28 companies worldwide, with a turnover of 4.5 billion Euros. In Italy the annual per capita consumption of Nutella is 800 grams per head, while in France is more than a pound per head per year (La Repubblica, 2004).

### *Description of the Co-creation strategy*

Two of the latest brand communication strategies of Nutella in Italy were selected, that best represent the co-creation initiatives of the brand. The objective was twofold: first, to understand how consumer collaborate with companies for the co-creation of the brand experience and second to analyze the role of design in the co-creation process.

### **Nutella® Sei Tu**

On September of 2013, Nutella launched “Nutella® Sei Tu” -Nutella is you- that for some advertisers was the application of a Coca Cola previous successful campaign (The gift bottle), where people can find some packages of the product where their name printed in the label. However, the Nutella strategy included more elements than an advertising campaign. Additionally to the strategy of producing some labels (initially there were 150 names available on stores), it was launched “My Nutella community” an online community with different strategies to reinforce the cult of the brand. First difference, consumers could go on line to create their own labels using the online app “Youtella” in case they wouldn’t find it at the points of sale. Additionally the service “The Name Delivery” was launched to deliver the label created by the consumer to a personal e-mail address or to send the physical product to a specific address. It was the first time the brand connects all the content created by the brand for social networks (including Facebook, Twitter, Pinteres, Instagram and Youtube) in the same platform called “Social Wall”. In addition, more traditional media (TV, Billboards, Radio) were used and some offline strategies where implemented as the “Buongiorno entusiasmo tour” (Good Morning enthusiasm tour) a multi-city event whit activities for the consumers or “Colazione al Buio” (Blind breakfast) a contest to win a breakfast with some VIP guests. At April 30 2014, there were 253.721 delivered via online around the world.

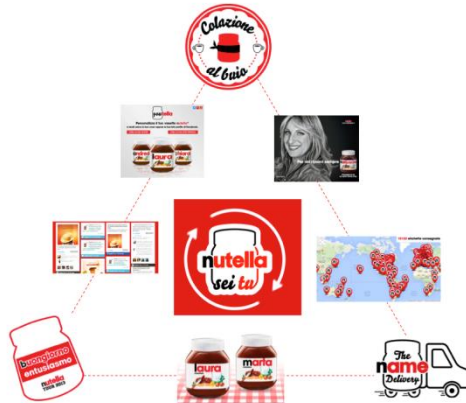


Figure 2 Nutella® Sei tu, Brand co-creation strategy landscape

### Nutella® Stories

For the 50 years of Nutella in February 2014, the company decided to launch a second version for the online community of Nutella lovers called Nutella® Stories. For this occasion consumers were invited to share their touching moments including Nutella using different media (e.g. photos, video, written stories). After participate, consumers receive a Nutella Storybook to their e-mail accounts they can share in social networks (e.g. Facebook, Google+, Pinterest or Twitter) while accessing to stories from their friends and other members of the community.

The content uploaded by the consumer has been visualized in an interactive Nutella's world map, which shows the number of entries worldwide by continents, countries and even local regions. A countdown for a Nutella event was launched to celebrate the product's birthday on May 2014. Consumers can participate with their stories, uploading the contact they received an email with a link for participate in an "instant win" of a weekend for the celebration event or some customized wall clocks.

### Role of design

According to Kapferer (1992, 2004) there are six dimensions of brand identity (physique, personality, culture, relationship, reflection and self-image), divided over two dimensions (externalisation vs. internalisation). The in-depth analysis of brand co-creation landscapes for both strategies (i.e. Nutella® Sei Tu and Nutella® Stories) evidence how the design of each

element has played an important role in communication and weaving all aspects into an effective whole (Table 1).

*Table 1 Role of design of Nutella brand co-creation through brand identity dimensions*

	<b>Dimension</b>	<b>Design Role</b>
Externalisation	Physique -physical features-	-Use of brand identity colours (red, white and black) and icons (jar, labels, slogan). -Name of the strategy related to the brand's name (Youtella, Nutella Stories, etc). -Replacement of brand name on packaging for consumer names (Chiara, Francesca, Paolo).
	Relationship -beliefs and associations-	-Iconic brand and product for Italian market: reinforce the quality and importance of the brand in the country and in the world. - Proximity: strategies to bring the brand to the consumer using deliveries of both, labels and product to all places (home, offices, etc).
	Reflection - view of the brand-	-Happy -Irreplaceable -Fun -Global: communication of number of participants in the community, initiatives.
Internalization	Personality -character and attitude-	-Enthusiastic: Positive language and attitude promoted by brand initiatives. -Active: Design of platforms, events and activities to push a <i>participative role</i> of consumers. -Contemporary: Mix between tradition and modern communication tools, use of technology, platforms and social networks.
	Culture -Set of Values-	-Italian-related: Brand's name replaced with Italian names. -Traditional: Italian consumption tradition gathered through the collection of old pictures and stories. Contrast between old stories and new stories. -International: Use of maps to illustrate the impact of both campaigns in national and international context.
	Self-Image -mirror of the target group-	- Active, full of energy. - Protagonist - Important

Designed elements for both Nutella strategies reinforced the brand identity of the company, the use of new ways of communication (platforms, brand community, social network, apps) connect the consumers with more technological media and devices than traditional advertising (TV Spots, Radio, Billboards, Flyers) and create a new way of interaction between company and brand, where consumers have a more active role. The design of the platforms, events, strategies and brand communication is important also because is increasing the interest of people in the brand. While the people have access to online platforms to share content, they started to feel more connected to the brand, they upload more information and they share more ideas.

### *Interpretation and Data Analysis*

#### **The Nutella community strategy through the Brand Equity Model:**

The Brand Equity Model (Keller, 2012), also known as the Customer-Based Brand Equity (CBBE) Model is based in the idea of to build a strong brand equity, companies must shape how customers think and feel about their product and services. Companies should build the right type of experiences around a brand, so that customers have specific, positive thoughts, feelings, perceptions, opinions and beliefs about it. According to Manktelow on Keller's model "When you have strong brand equity, your customers will buy more from you, they'll recommend you to other people, they're more loyal, and you're less likely to lose them to competitors".

The CBBE model distinguish four steps (Figure 3):

1. Establishing the proper brand identity, that is, establishing breadth and depth of brand awareness.
2. Creating the appropriate brand meaning through strong, favourable, and unique brand associations.
3. Eliciting positive, accessible brand responses.
4. Forging brand relationships with customers that are characterized by intense, active loyalty.

Achieving these four steps, in turn, involves establishing six brand-building blocks –*brand salience* (awareness of the brand, consumer's recognition of the brand) *brand performance* (how well product meets customers' needs), *brand imaginary* (how well brand meets customers' needs on a social and psychological level), *brand judgments* (customers' responses about quality, credibility, consideration and superiority), *brand*

*feelings* (how the brand makes consumers feel) and *brand resonance* (when consumers feel a deep, psychological bond with the brand and the company achieve behavioural loyalty, attitudinal attachment, sense of community and active engagement).

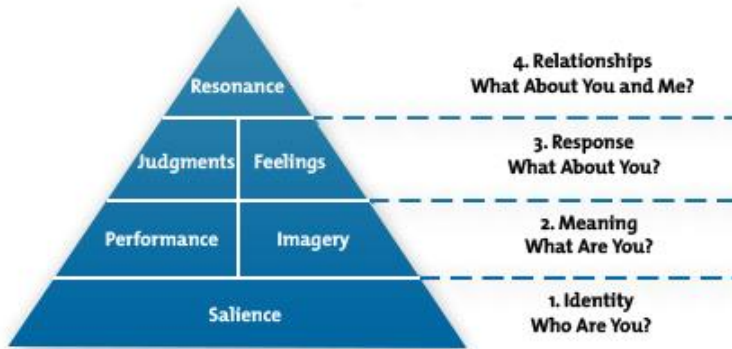


Figure 3 Keller's Customer-Based Brand Equity (CBBE) Model

The Brand Equity Model aims to analyze how the brand co-creation community developed for Nutella have been influence the brand experience and how relates with the different levels to strength brand recognition. The Nutella equity model was elaborated from analysis of communication material (TV commercials, Billboards, Radio spots) and developed for both Nutella® sei tu and Nutella® Stories platforms, including the observation and analysis of the material (pictures, videos) shared by the members of the community and the analysis of the comments on the various websites and social networks linked to both initiatives.

*Step 1- Brand Identity:* Nutella brand initial message for target consumers was focus to describe the product as Hazelnut-Cocoa Spread. At the time of this investigation Nutella is a recognized product in different countries around the world with a strong brand identity, recognized by consumers through the product, esthetical aspect and physique (Kapferer, 1991) including the name, logo and packaging (Nutella Jars) and the slogan "What a world it would be without Nutella".



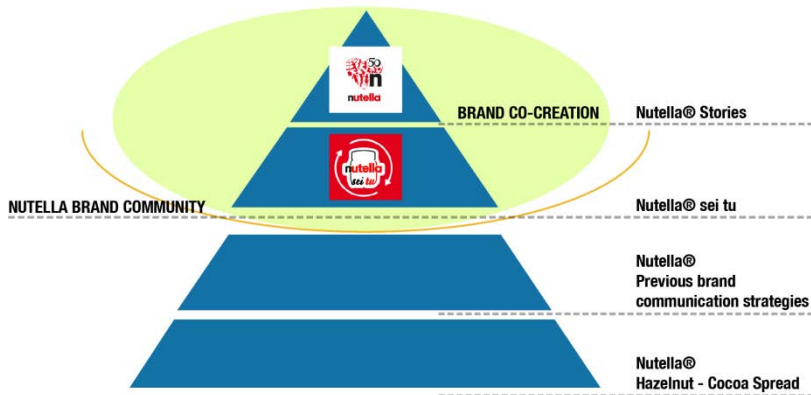


Figure 4 Nutella Brand Co-creation through CBBE Model

*Step 2- Brand Meaning:* At the second level of the model, previous communication strategies developed by the brand have been focus on both, building and strengthen of the brand meaning. The previous brand identity features are the intrinsic characteristics of a brand qualified as “iconic” and “enthusiastic” and associated to passion, happiness, breakfast and taste. Most of the clients purchased Nutella products at supermarkets and the typical usage situation are during morning breakfast at home. The brand may take associations with there past, specially in Italy, where the product was invented 50 years ago and has been consumed by different family’s generations. Associations may involve previous behaviours and experience of friends, family or others.

*Step 3- Brand Responses:* A focus on the last Nutella communication strategies, have been use for understanding of brand responses, analyzing the content shared by consumers in the Nutella brand community developed during last campaigns. Consumer’s personal opinions and evaluations with regard to the brand reflect the positive brand judgments of members in relationship to the brand and the product.

Some others were more focus on the feelings and emotional responses related to the brand e.g. *“I’m almost 39 and I eat the sacred Nutella from when I was a child, I don’t live without Nutella, I’m a “nutelladipendente”... The important thing is not just gluttony, but has always helped me in*

*difficult times of my life in those times of sadness, when things are bad, hard times and depressed... I eat my jar of Nutella and come back as new! It gives me the charge... that energy that is lost when everything goes wrong, for me it is not only the best recipe on the planet, for me it is a source of life. What a world it would be without Nutella... I hope that you will be able to have my custom jar, it will be nice gift ever received..."* Tamara. 10.10.13

Strengthened the use of social network and the Facebook app by consumers during the Nutella® Sei Tu, some consumers focus their opinions on how they feel and what they think about the different initiatives implemented by the brand during that period. *"When I opened the package I could not believe my eyes, wrapped in flaming red satin Nutella jar with my name, I experienced an indescribable feeling my dear beloved Nutella you are unique".* Angelo. 25. 09.2013.... *"I have received the package with Nutella personalized with my name yesterday. It 'was a welcome surprise. Thanks Nutella always in my house"* Maria 27.09. 2013... *"Thank you for this surprise! It really is true what world would be without Nutella! Luckily I don't have to find out!"* Giorgia. 24.09. 2013

*Step 4 - Brand Relationships:* The final step of the model, brand relationships, focuses upon the ultimate relationship that consumer has with the brand (Keller, 2012). Nutella has designed a platform to celebrate the 50 years birthday of the brand, where consumers have participated in the elaboration of different material (photos, video, written stories) where they share what they consider are the most important moments in relationship with the brand.

The material developed by consumers has different purposes. One is to share a retrospective story about how the consumer meets the brand, the first time the product was consumed and how is the relationship from there. There are others entries focus on explain what are the life occasions connected to the brand, including the typical usage situation and some life events (e.g. morning, holidays, picnics, sport competitions, birthday celebrations, weddings, etc) where the brand was part of the memories of the consumer experience. Some consumers share recipes, objects customized with Nutella brand and some designs creating by consumers (kid's drawings, home decorations, wearables, accessories) and some places where they find Nutella brand at home and outside home (supermarkets, restaurants, public spaces). A big collection of pictures of Nutella jars and selfies has been created promoting the consumption of Nutella.

### *The Positive and Negatives effects of the Co-Creation of Nutella brand experience*

The Nutella community's netnography study on the Nutella® Sei Tu and Nutella® Stories campaigns has made it possible to draw negative and positive effect of co-creation of the brand experience.

#### *Positive effects over the brand*

##### **Attitudinal attachment**

Customers must go beyond simply having a positive attitude to view the brand as being something special in a broader context (Keller, 2012). Raies and Gavrard-Perret (2011) perceive the brand attachment as being bidirectional. Gupta and Kim, (2007) additionally see this attachment as a commitment to the community, which can lead to brand loyalty (Algesheimer et al., 2005; Raies & Gavrard-Perret, 2011). The notions of brand community, tribes, sub-culture, attachment or commitment are then not geographically delimited. They transcend the boundaries of national territory (Cherif & Miled, 2012). Content created by consumers in both campaigns succeeded in evidence the attitudinal attachment to the brand. Consumers have state that they "love" the brand, described as a favourite possession and view it as a "little pleasure" that they look forward to. For example: *"It is just love! Nothing else can be said about this incredible, big, fantastic cream! Love is giving a Nutella jar to your girlfriend!"*ciscovich, (IT) Italy, 04.05.14. *"When I was 7, I used to go to the kitchen at midnight when all my family was sleeping. I opened the fridge door and there was a nice and shinny jar. Nutella and I together, mmmm..."* rt.farshad, (IR) Iran, 03.05.14. *"Nutella makes me happy, it makes me smile, it inspire me to share and it is fun to taste it. I love Nutella!!"*ariana.chavez.rocha, (MX) Mexico, 28.04.2014.

##### **Sense of community**

Identification with a brand community may reflect an important social phenomenon whereby consumers feel a kinship or affiliation with other people associates with the brand (Keller, 2012). The community can act as a co-promotion tool (Cova, 2008). The community created around the brand, indicate feeling of happiness about participating and the importance of the growing number of participants involved in the different initiatives proposed with the campaigns. For example: After the company published a video communicating achievement of 5 millions of people in the community some

consumers share positive comments like “*We are five millions!*” Giorgio. 05.01.14. “*I’m one of them, beautiful*” Hajar. 23.12.13.

The community has also shown a networking effect, as the consumers use its own network to broadcast the brand content, using also the tools available in the platform as tagging friends in online post to share and invite other consumers to participate.

### **Intensive communication**

The members are responsible for spreading updates and information about the brand. Indeed, through communities, social networks provide new ways of reaching out and engaging with their members and/or with a brand (Cova, 2008). For example, at May 07 2014, 10 days before the countdown ends, 42.175 stories were share for the Nutella® Stories campaign by the consumers. At May 25 after finishing the countdown, there were 65.180. The traffic registered on the different platforms show how conversation between the company and the consumers has increased during the launch of both initiatives.

### **Active engagement**

The strongest affirmation of brand loyalty occurs when customers are willing to invest time, energy, money or other resources into the brand beyond those expended during purchase or consumption of the brand. In this case, customers themselves become brand ambassadors on behalf of the brand, communicate about the brand and strengthen the brand ties of others (Keller, 2012). Both campaigns have shown how Nutella consumers have decided to join the Nutella community, visit brand-related platforms, participate in open discussions and choose to invest time producing their own material to promote the brand, exchange correspondence with the company and other brand consumers. The activity generated during the launches and duration of both campaigns, have shown an increase of traffic of the platforms and willingness to engage in other activities not related to purchase.

### ***Negative effects over the brand***

No negative effects have been identified related directly with Nutella brand. Some people have focus on share with the community negative comments about the healthiness of the components of the product’s recipe, including details on the ingredients and asking for changes in the recipe for a more “natural” or “healthy” product. “*Try to transform the Nutella in a*

*product as natural as possible and you'll be perfect"* Simone. 22.09.13. *"I would like to read the label "no hydrogenated fats and no palm oil" very harmful to your health!!!"* Anto. 20.10.13. some others have share opinions about price of the product (e.g. *"I was disappointed in the prices of jars of Nutella as it is an advertising promotion was necessary to lower the prices"* Roberto. 06.10.13. The brand did not remove any negative (or positive) comment from the platforms, and people responsible for social networks at Ferrero gave answers to questions and negative comments.

The use of the different platforms (website and social networks) and understanding of the dynamics of the community may be a challenge for consumers, specially when the campaigns are launched and people is not familiar with the mechanisms of participation. For example: For the Nutella® Sei Tu campaign, consumers constantly ask questions via Facebook about how to get the personalized label even when the company explained through the website and the Facebook app.

## **Conclusions**

This study had two main purposes, to understand how brand collaborate with consumers to co-create the brand experience and analyse the role of design during this process.

The analysis of a case study where a brand with a strong identity as Nutella becomes involved in a brand co-creation process have showed first that the company should design a set of strategies and different elements to enable collaboration between consumers and the company. There were necessary technological resources to build platforms, apps, websites, and social networks profiles to create a strong brand community. Both campaigns gave a more participative role to consumers, to upload content, share ideas, invite more members to join the community and interact with the brand, which differs of the passive/receptive role of consumers to more traditional brand communication strategies.

All elements of the strategies from physical to intangible aspects were articulated with the shared objective of involved as many people as possible in the initiatives developed by the company. Design played a relevant role, as all initiatives were reflected in the different aspects of the brand identity (physical, personality, culture, relationship, reflection and self-image).

As a result positive effects on the brand community were generated, included Attitudinal attachment, Sense of community, Intensive communication and Active engagement, which suggest that the brand co-

creation strategies developed by the brand allowed results related to the higher levels (last steps) of the Customer-Based Brand Equity (CBBE) Model.

### *Future development of the research topic*

Brand co-creation is a relatively new topic, which can be explored in the future from different perspectives. One could study how brand co-creation approach affect the internal organization of the company, how designers, marketers and managers change internally in terms of roles, tasks, objectives when they follow a strategy of brand co-creation. It would be also interesting to study once the companies get big amount of data from consumers, how this information is translated in valuable information for produce not only brand content, but also new products and services. It is also important to understand, once the campaigns finished how companies continue to engage consumers in a relationship of “daily co-creation” and maintaining two-way communication without losing consumer interest and willingness to participate, even when there is not an specific event or activity promoted by the company.

As one of the main limits of the empirical study is generalization of results, a future research should be the study of other illustrative examples of brand co-creation with consumers in different settings, in order to validate the positive effects and relevant aspects of design, which have been identified during this study.

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# The Impact of Animated Promotional Character Design on Brand Attitude

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*The purpose of this study is to determine the crucial design features, functions and narrative for animated cartoon promotional characters (ACPCs). Previous research has demonstrated that animated characters which companies use to represent their brands can be effective in gaining and holding consumers' attention. They can be treated as a communication tool which can provide value for brands. However, most relevant research was conducted decades ago and focuses on TV advertisements. It has not discussed the effect of ACPCs towards customers' brand attitude and has not examined the design process for promotional characters. In addition, there is little relevant research into digital media advertisements even though online advertising is growing. Research is therefore needed into the development of online animated characters which can effectively and ethically promote brands to customers. This exploratory and descriptive research includes a literature review and in-depth surveys with customers to identify their perceptions to the design components of ACPCs which can influence attitudes towards brands, and to assess whether or not digital media is an effective platform for ACPCs to promote brands.*

**Keywords:** Promotional character, brand recognition, promotion strategy, digital media

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## Introduction

A brand's promotional character may be real or "a fictional, animated being or animated object that has been created for the promotion of a product, service, or idea" (Phillips, 1996, p. 146). Callcott and Lee (1995) came up with an AMOP framework for defining promotional characters. They reviewed over 700 advertising promotional characters and summarised four main characteristics to describe promotional characters which included: the physical *Appearance* of the characters, the *Medium* they appear in, whether they are advertising *Origin* or non-advertising characters, and whether they are a positive or passive *Promotion* of product. Active characters have actions to speak for a product while passive characters are more symbolic. In order to consider the effect of promotional characters on customers' brand attitude, based on the AMOP framework, the author has classified promotional characters in this research, in the active *Promotion*, advertising *Origin* and animated *Medium* group, which is called animated cartoon promotional characters (ACPCs).

The animation industry world market is positive, developing and sustainable (Chen, 2012; Research and Markets, 2013a). In modern society, thanks to the rapid advancement of technology, computer animation has developed rapidly and it is available to a wider audience. Moreover, cartoon and animation series now are no longer a media only reserved for young children. In the last century, cartoons and animations were aimed at children aged nine and below (Chen, 2012; Research and Markets, 2013). However, more recently animation organisations have been designing animated productions for entertaining both adolescents and adults such as *Corpse Bride* (2005), *Ponyo* (2008), *The Princess and The Frog* (2009) and *Coraline* (2009) which generated internationally big box office returns from adults (Beck, 2009) (See Figure 1, 2, 3, 4). Due to the fact that animated cartoon characters are not limited by boundaries of countries or age, potentially they can quickly create and maintain a positive impression with foreign audiences. Furthermore, animated cartoon characters are no longer just actors in animated entertainment films and programmes. An additional role for them is to promote the animation commercially or even help other industries by acting as a promoter in an advertisement.

*The Impact of Animated Promotional Characters Design on Brand Attitude*



Figure 1 Corpse Bride. Source: fanpop.com (2012)



Figure 2 Ponyo. Source: Disney.wikia.com (2013)



Figure 3 The princess and the frog. Source: Zmblackhistorymonth2011.blogspot.co.uk (2011)



Figure 4 *Coraline*. Source: fanpop.com (2013)

Previous research has demonstrated that animated characters which companies use to promote their brands appear to have a good chance of gaining and holding consumers' attention (Baldwin, 1982; Callcott and Lee, 1994). Callcott and Lee (1994) found that consumers noticed and watched advertisements featuring animated promotional characters more than other advertisements. Therefore, many companies employ promotional characters to differentiate their brands and create a personality for the product that connects with consumers on an emotional level (Theresa, 2003). The biggest benefit is the animated promotional characters can be "controlled in ways that human endorsers cannot," (Stafford et al, 2002). However, most of the research in this area was conducted decades ago and focused on TV advertisements in a domestic context (Robinson, 2007). There is little relevant research into digital media advertisements featuring animated characters in an international context (Garretson et al, 2004) even though online advertising is growing (New Media and Market, 2013). The most relevant research is Phillips and Lee (2005), who analysed the Internet's use of promotional characters on 36 corporate websites. Unfortunately, they found that advertisers were not taking full advantage of animated promotional characters usage on the Internet. Research is therefore needed into the development of virtual online characters which can effectively influence customers' purchasing behaviour. The paper describes an initial pilot study for a PhD investigation which looks at the design methodology for ACPCs. The objectives of this paper are not only to conduct a critical literature review but also to propose hypotheses and to provide evidence for the initial study of the PhD research. This paper will question whether ACPCs can affect customers' attitude towards brands and will look at their key design elements.

## **Theoretical Background and Conceptualisation**

### *Employing Animated Cartoon Promotional Characters in Brand Design*

Research in advertising, indicates it would be worthwhile to develop brand cartoon promotional characters for establishing customer loyalty on certain products and services (Lawrence, 2003; Lu, 2009; Macklin, 1994; Palmer and Carpenter, 2006). Employing cartoon promotional characters as a brand strategy has been used for decades to build brand awareness and customer loyalty (Berry, 1973; Fischer, 1991; Lawrence, 2003; Macklin, 1994; Palmer and Carpenter, 2006; Robinson, 2007). Those researchers have investigated this topic from several points of view and levels. They have mainly focused on the relationship between brand recognition and customer loyalty of different age groups (Fischer, 1991; Robinson, 2007), promotional characters and brand attitudes (Mou and Jeng, 2008; Page and Brewster, 2007), visual cues and brand memory (Berry, 1973; Macklin, 1994), animated stories and brand loyalty (Lawrence, 2003; Lu, 2009). Although there are an increasing number of studies which concentrate on the analysis of cartoon promotional characters, some researchers and marketers still question the effectiveness and helpfulness of cartoon characters on marketing promotion (Han, 2011; Weber et al, 2006; Zhang and Lee, 2010). Han (2011) points out that a great number of virtual characters have practically little function, which are unnecessary for promoting brands to customers and they also have some important limitations. Although these characters are cute and popular, a wide range of customers may not be attracted by them. Weber et al. (2006) also argue that the potential customers who are interested in these cartoon promotional characters are probably only children. Nevertheless, the author challenges this opinion; although there are many studies which look at the effect of ACPCs on children and demonstrate the efficient on children's brand identity, the influence of ACPCs on older people can not be ignored. Garretson and Niedrich (2004), for example, believe that cartoon promotional characters can develop adult customers' trust on brand attitude. Furthermore, as has been reviewed earlier, cartoon characters and animation films now are not just exclusive products for children. Numerous adolescents and adults are also interested in cartoon characters. It is reported that almost half of internet users who age 18 to 49 years old watch or download animation or cartoon entertainment films online (Madden, 2007). That is to say, animated characters have the ability to capture

people's attention, which may depend on the design of characters. Similar with cartoon characters, the attraction of ACPCs with customers and subsequently their purchasing behaviour may depend on whether the characters are popular. Thus, the following hypothesis is posited:

**Hypothesis 1: There is a positive relationship between popular ACPCs and brand attitude.**

### *Factors that Influence ACPCs' Popularity*

Previous studies show that personality is a crucial dimension which can communicate emotion to audiences (Andrews, 2005; Han, 2011; LeBel and Cooke, 2008; Lu, 2009; Patterson, 2013). Callcott and Phillips (1996) argue that promotional characters which do not have personality are safer for companies, due to the fact that they do not offend any customers. However, those characters without personality do not help customers memory and recall. ACPCs therefore can only positively affect customers' purchasing behaviour if they can not attract them and the character's personality is key to this. Successful promotional characters such as *The Meerkat Aleksandr Orlov* and *Tony the Tiger* both have a vivid personality (See Figures 5 and 6). *The Meerkat Aleksandr Orlov* is the promotional character of a UK price comparison website *Compare the Market.com* and has 822.100 Likes on their Facebook page up to May 2014. Due to the advertising campaign of the Meerkat character, *Compare the Market.com* became the third largest price comparison website in the UK (Digital Art, 2009). He has a complete back-story for creating and building him as a Russian-born multi-talented meerkat (Patterson, 2013). The design team created an autobiography for the meerkat in order to communicate his human like life and personality to customers. *Tony the Tiger*, the sustainable cartoon character was created in 1950s and has been used for differentiating the breakfast cereal brand Kellogg's Frosties for generations, and is known for uttering the slogan "They are Gr-r-reat!". The design and product team gave *Tony* a human personality (Heintjes, 2012). They also introduced *Tony's* families to make customers perceive him as a real with a lively life. As evidenced by numerous previous studies, characters need to be personified to facilitate the relationship with customers (Lu, 2009; Luo et al, 2006; Miles and Ibrahim, 2013; Phillips, 1996; Zhou, 2005, Zhou, 2010). Due to the human nature, as Guthrie said, "We are people. We know a lot about ourselves. And we often make sense of other things by viewing them as people too " (Guthrie 1995, p.129). No matter if promotional characters

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are animals or non human like characters, personification can be one of the most effective individual factors in creating personality and increasing an ACPCs' popularity. Customers can emotionally respond to promotional characters with a vivid personification and translate this emotion positively to the brands. Popular promotional characters therefore need to have an identified personality. Hence, the hypothesis is presented below:

**Hypothesis 2: Personification will favourably affect ACPCs' popularity.**



Figure 5 Meerkat Team. Source: Comparethemarket.com (2013)



Figure 6 Tony the Tiger. Source: Brandingbricks.com (2012)

Many researchers also state that a customer's loyalty can be cultivated by nostalgia which is developed from a brand's narrative (Callcott and Phillips, 1996; Garretson and Niedrich, 2004; Lee, 2012; Neeley et al, 2000). One of the most useful functions of promotional characters is to rekindle a customer's childhood memory of the brands (Neeley et al, 2000). Customers may trust a brand due to the fact that they knew it when they are young. For example, a retired man said, he liked the Keebler brand because of its character *Keebler Elves* (See Figure 7) which he treated as a comfortable old pair of clothes (Callcott and Phillips, 1996, p.76). Garretson and Niedrich (2004) verify that many organisations have reintroduced their past slogans and promotional characters to make customers recall brands have been part of their lives for years (p.27). Based on these researchers' opinions, the author will also investigate the function of nostalgia on promotional characters and its effect on customers' attitudes. Consistent with previous studies, the following hypothesis is offered:

**Hypothesis 3: Nostalgia will favourably affect ACPCs' popularity.**





*Figure 7 Keebler Elves. Source: Playbuzz.com (2013)*

### *Changes to Advertising with Digital Media*

No matter what the objectives are in promoting brands or advertising products for companies, choosing the appropriate mediums and platforms for showing them to audiences is a fundamental dimension. With the development of advanced technology for digital media, whether to focus mainly on traditional media or digital media platforms has become an issue for companies in order to effectively promote their brands. Based on a Mintel report (2009), an increasing number of potential customers are spending more and more time online. Consequently, companies can now use online media as an advertising channel to connect with a mass market of customers efficiently. However, a majority of researchers claim that traditional media such as TV and radio are still popular and are still the key channels to promote brands (Faughnder, 2014; The Business of Being Social, 2013; Verlee, 2011; White, 2012). Nevertheless, with the recent advances in media technology, digital media platforms may be more attractive than traditional media for teenagers and young adults. Instead of old media, they prefer to use innovative and interactive platforms for entertainment or work. It is reported that fewer young adults use traditional TV sets though they are still interested in watching TV shows. Instead of traditional channels, they prefer to use computers, tablets or smartphones to watch them (Mintel, 2012). Therefore, digital media advertising will be paid greater attention by more and more young people. Moreover, Nairn and Dew (2007) propose that online platforms help to save the time of customers' in making a buying decision. People view a product advertisement online interactively and may then purchase the product in

seconds or minutes. In comparison, they may purchase it in days or weeks if they view the advertisement on TV. In the other words, this new medium can encourage them to engage immediately with the product or brand. Furthermore, unlike traditional media, the Internet connection and digital media make it possible to attract people around the world so digital media advertising is able to obtain more profit in less time (Butterfield, 2012). The author expects therefore that the digital media platform can favourably affect customers' attitude towards brands in combination with ACPCs, and thus proposes the following hypothesis:

**Hypothesis 4: Digital media has the potential to be an important platform for ACPCs promotion.**

## Primary Methodology

This study involved using a questionnaire to identify customers' attitudes towards cartoon characters and ACPC in different age groups. The literature indicates that the sample size should be 10 to 15% of the total population. However, it is not feasible to survey all people in the world (Moore, 2006). Thus, the non-probability (non-random) sampling method was selected for this investigation. Based on Cooper and Schindler (2003), a non-probability sample can be employed when a large population is required. The researcher aimed to collect 200 surveys using Google Documents which is able to collect data world wide. The email to promote the questionnaire included a link to the Google Documents which is a cheaper, and it is a more convenient approach than traditional paper questionnaires. Snowball sampling is a good method of a non-probability sampling procedure which can be used in online social networks (Leroy, 2011). It is an effective platform to gather more respondents of specific groups which is useful to compare the attitudes towards ACPC in different age groups. The questionnaire is available from:

[https://docs.google.com/forms/d/1\\_046J3vC\\_FhlanYeo07YuBGgbcNgl4H2sNf-vXJkr58/viewform](https://docs.google.com/forms/d/1_046J3vC_FhlanYeo07YuBGgbcNgl4H2sNf-vXJkr58/viewform).

In fact, the author has collected 284 surveys which were completed by different age groups as follows:

Table 1 Information on participants' age (Zhao, 2014)

Age of Participants	Number of Participants
Under 12 years	41 participants
13-19 years	54 participants
20-35 years	61 participants
36-50 years	40 participants
51-65 years	47 participants
66 years above	41 participants

210 questionnaires were collected online from Google Documents. Participants were briefed explanations that the author was interested in customers' opinions about the most crucial elements of ACPCs and their media using behaviour. However, in order to find more respondents who are in 51-65, 66 above and under 12 age groups, hard copy questionnaires have been used. The author obtained their parents' consent for the participants who were under 18 years old.

This project used Excel and SPSS to analyse the data. The participants were asked several close-ended questions about brand attitude, promotional characters and media using behaviour. The type of questions included both single-choice questions and multiple-choice questions. Participants were not only asked the questions which involved ACPCs *Personification* and *Nostalgia*, but also relating to *Simple*, *Colourfulness* and *Cuteness*. In addition, a five points Likert scale was developed for questions about the media platform that people normally discover new products, and about how frequently they use various digital media and traditional media platforms.

## Results of Pilot Study

The participants were asked two questions to find out the relationship between purchasing behaviour and ACPCs. One of them was a hypothetical question about purchasing two alternative products which had similar quality and same price but different brand identity. The vast number of participants (95%) chose the product with a good visual brand identity. 47% of them selected the one in which the brand could be recognised by the participants. 30% of them chose the one which looked attractive and 18% of them said they would purchase the one which had advertising campaign. Hence, a brand's visual identity is an important factor for stimulating buying

activity. In order to determine whether the use of ACPCs is an efficient strategy to promote brand visual identity, another question asked about brand association and a brand’s visual identity. Table 2 below illustrates which visual identity may be the most attractive for brand association.

Table 2 Different age people’s attitude towards brand visual identity (Zhao, 2014)

			Which of the following do you always associate with a brand?				Total	
			Logo	Real Spokesperson	ACPC	Product Features		
Age	-12	Count	12	11	36	13	41	
		% within Age	29.3%	26.8%	87.8%	31.7%		
	13-19	Count	23	25	38	9	54	
		% within Age	42.6%	46.3%	70.4%	16.7%		
	20-35	Count	49	25	28	30	61	
		% within Age	80.3%	41.0%	45.9%	49.2%		
	36-50	Count	25	21	15	13	40	
		% within Age	62.5%	52.5%	37.5%	32.5%		
	51-65	Count	20	19	10	21	47	
		% within Age	42.6%	40.4%	21.3%	44.7%		
	66+	Count	12	32	22	1	41	
		% within Age	29.3%	78.0%	53.7%	2.4%		
	<b>Total</b>		Count	141	133	149	87	284

Percentages and totals are based on respondents.

Table 2 shows people from different age groups' attitude towards brand visual identity. Although the ACPC option had the highest percentage (149 out of 284), due to the similar number with other selections logo (141 out of 284) and real spokesperson (133 out of 284), the total count did not display the most effective visual identity strategy. Nevertheless, based on the detailed results which showed different age groups' opinions, the most attractive brand identity for each age group can be seen. 87.8% participants who are under 12 years old were more interested in ACPCs while older people's interests decreased with age. Related to their attitudes on animations, 53.7% of older people who were more than 66 years old also paid more attention to ACPCs than other adult groups. Moreover, it is worth noting that 80.3% of participants aged 20-35 years and 62.5% aged 36-50 years thought that the logo was more associated with a brand. This indicates that it might be effective to employ or combine the graphic version of a brands' ACPC with its logo. To sum up, an ACPC can be an effective strategy for visual identity and can form a positive brand association. As a consequence, the questionnaire results seem to support the author's hypothesis that there is a positive relationship between popular ACPCs and brand attitude.

Table 3 Different age group's attitude towards ACPC (Zhao, 2014).

What kind of ACPC do you like?		Age						Total	
		-12	13-19	20-35	36-50	51-65	66+	Count	%
Cute	Count	28	28	28	22	17	30	153	53.9%
	% within Age	68.3%	51.9%	45.9%	55.0%	36.2%	73.2%		
Simple	Count	20	40	35	27	26	13	161	56.7%
	% within Age	48.8%	74.1%	57.4%	67.5%	55.3%	31.7%		
Native	Count	4	3	3	3	6	24	43	15.1%
	% within Age	9.8%	5.6%	4.9%	7.5%	12.8%	58.5%		
Foreign-er	Count	3	3	11	3	6	0	26	9.2%

	% within Age	7.3 %	5.6 %	18.0 %	7.5 %	12.8 %	0.0 %		
Colourful	Count	20	8	12	5	12	0	57	20.1 %
	% within Age	48.8 %	14.8 %	19.7 %	12.5 %	25.5 %	0.0 %		
Humorous	Count	29	26	23	21	21	27	147	51.8 %
	% within Age	70.7 %	48.1 %	37.7 %	52.5 %	44.7 %	65.9 %		
Similar to you	Count	20	6	2	2	0	32	62	21.8 %
	% within Age	48.8 %	11.1 %	3.3 %	5.0 %	0.0 %	78.0 %		
Nostalgia	Count	19	28	24	20	27	37	155	54.6 %
	% within Age	46.3 %	51.9 %	39.3 %	50.0 %	57.4 %	90.2 %		
Good Story	Count	7	13	11	10	3	9	53	18.7 %
	% within Age	17.1 %	24.1 %	18.0 %	25.0 %	6.4 %	22.0 %		
Personification	Count	19	44	23	25	17	9	137	48.2 %
	% within Age	46.3 %	81.5 %	37.7 %	62.5 %	36.2 %	22.0 %		
Edutainment	Count	3	2	7	1	3	0	16	5.6 %
	% within Age	7.3 %	3.7 %	11.5 %	2.5 %	6.4 %	0.0 %		
Relate to Product	Count	4	0	13	4	4	10	35	12.3 %
	% within Age	9.8 %	0.0 %	21.3 %	10.0 %	8.5 %	24.4 %		
Trustworthy	Count	4	3	7	1	5	10	30	10.6 %
	% within Age	9.8 %	5.6 %	11.5 %	2.5 %	10.6 %	24.4 %		
<b>Total</b>	Count	41	54	61	40	47	41	284	100 %

Percentages and totals are based on respondents.

In order to find whether people of different ages have distinctive opinions on ACPCs' features and qualities, the researcher listed various characteristics of ACPCs and asked participants to select (See Table 3). All of these features have been investigated in previous studies and have been confirmed to have a positive effect on branding. However, it seems that there has been no comprehensive survey with customers to ask them what kind of ACPCs they like in terms of design options. These options cover various characteristics of the ACPCs' design which includes appearance, personality, narrative and function. For example, whether an attractive ACPC needs a simple appearance; should it have a native or foreign nationality; and is it similar to customers in personality or appearance.

In terms of overall results five features, *Simple* (56.7%) ranked in the top five ahead of *Nostalgia* (54.6%), *Cute* (53.9%), *Humorous* (51.8%) and *Personification* (48.2%) were far more popular than other characteristics such as foreign appearance (9.2%), however, participants in different ages had their individual preferences. In the teenagers' group, a majority of participants (81.5%) and most (62.5%) middle-aged people who were 36 to 50 years old chose *Personification*. 57.4% of participants who were from 51 to 65-year-old age group considered *Nostalgia* as a core characteristic for successful ACPCs. Notably, a great number of people (90.2%) who were aged 66 above believed *Nostalgia* was the most important characteristic for them. Consequently, H2 and H3 were supported by the results.

With regards to the hypothesis of whether digital media has the potential to be an important platform for ACPCs promotion, 81% of all respondents reported that they use digital media everyday and 61% of participants use television everyday. It was also shown that they did not use other traditional media frequently. Most people also discover new products on digital media (website: 78%, social network: 58%, mobile: 47%) and television (55%). As has been noted in the literature review section, people's media habits had been changing greatly from traditional media to digital media. Therefore, H4 was supported that the digital media platform can be an important channel for ACPCs.

## **Evaluation**

This pilot study has attempted to explore (1) the positive relationship between popular animated cartoon promotional characters (ACPCs) and brand attitude which may influence buying behaviour; (2) factors that influence ACPCs' popularity and (3) the potential of digital media platform

for ACPCs. Based on the primary research, all of the hypotheses seem to be supported. Strong visual identity such as provided by popular ACPCs can definitely affect customers' brand attitude. In addition, drawing on customers' opinions, *Personification* and *Nostalgia* are the most crucial characteristics for the creation of effective ACPCs. As Neeley et al. (2000) claim, reminding customers' of their childhood memory of brands can affect their buying decision over a long period. Customers may buy a brand due to the fact that they know it from when they were young. The study also provides some empirical evidence that digital media has the potential to be an important platform for ACPCs promotion. People's media using behaviour has been changing and taking advantage of this change by using ACPCs in combination with digital media as a promotional platform could be have great potential for companies to promote their products.

### *Contributions and Implications*

This pilot study is part of the researcher's PhD study which aims to create an integrated design method for ACPCs. This initial study will be used to help develop the design framework. The results of this pilot study offers evidence which seems to disagree with some earlier researchers' arguments. Some researchers claim that virtual characters for promoting brands are useless (Han, 2011; Weber et al, 2006; Zhang and Lee, 2010). They believe that a wide range of customers may not be attracted by them and that only children may be interested in these cartoon promotional characters. However, based on this research, many young, middle aged and elderly people are attracted by ACPCs. This result shows the potential of employing ACPCs to positively affect customers' brand attitude and thus potentially purchasing attitude.

The findings of this study also provide empirical evidence for previous hypotheses. A great number of respondents reported that they use digital media everyday and also discover new products through digital media. Relying on a previous study, Liu (2012) proposes that there seems to be some similarities between cartoon characters and network. Both cartoon characters and the Internet have the natures of surreal creativity, fashion and entertainment. Digital media can be a main channel for presenting ACPCs. Furthermore, numerous researchers have proposed that the perceived personification of promotional characters can affect customers' brand attitude (Andrews, 2005; Han, 2011; LeBel and Cooke, 2008; Lu, 2009; Patterson, 2013). This study backs up these propositions which found that most customers prefer ACPCs with personification. Moreover, this study



presents customers' attitude in different age groups towards popular ACPCs who are in different age groups. The findings demonstrate the popularity of ACPCs' within each age group of customers. Although most participants who are 66 years old and above may not be interested in *Personification*, the findings reveal that *Nostalgia* is a very important characteristic in ACPCs for them. An additional finding is that besides *Personification* and *Nostalgia*, there are other important elements can affect the success of ACPCs which are *Cute*, *Simple* and *Humorous*. These features will be investigated in the future research.

## **Limitations and Suggestions**

The limitation of this research is that the sample of 284 subjects was relatively small. In order to understand customers' attitudes better, investigation needs to be extended to more participants. In addition, this study only employed the questionnaires research method in terms of collecting information about customers' buying behaviour. Their actual purchasing behaviour in relation to ACPCs was not recorded as evidence for the research. Thus, in the further study, it would be useful to conduct observations into customers' purchasing behaviour and buying decision in real life.

This research mainly focuses on the impact of *Personification* and *Nostalgia* features on the popularity of ACPCs among customers' attitudes. These two characteristics are perceived important by participants, and obtained the highest ranks in the results. In conclusion, ACPCs with these two features could therefore be popular promoting visual identity for companies which in turn may affect customers' purchasing behaviour. Moreover, this study identified that people in different age groups had diverse opinions on types of visual identity and ACPCs. However, in order to extend the hypotheses which have been proposed, these findings need to be analysed in depth. Future research might also examine the impact of different features of ACPCs on different age customers' buying behaviour in more detail. Hence, an assessment can then be provided in terms of which kind of features of ACPCs would be the most crucial to different age groups.

With regards to the digital media platform for ACPC promotion, this study has determined that digital media can now become a core platform for people to find new products. Future studies will dissect which types of digital media platforms should be the most appropriate channels for promoting ACPC therefore positively affect customers' purchasing decision.

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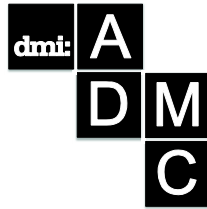
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## Materiality, Design and Brand Management

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*Despite the fact that in recent years design management has become strategic for companies there's lack of research about the intersection of processes of new production creation and brand management activities. Our research addresses this gap through a longitudinal case study of an International leading furniture manufacturer. We have focused our study in processes of new product creation and explored how design management impacts the managerial understanding about brands. Our study suggests that product design strongly affects how brands are envisaged and managed in the company. These findings challenge the dominant idea of the necessary subordination of design management activities to the higher level of brand management strategy. Our case shows that design management and the design of products also impact brand management activities and this influence should not be disregarded. We believe that a deeper and finer-grained knowledge about this line of inquiry is valuable to advance the understanding on how materiality is intertwined with brand management activities.*

**Keywords:** brand; design; management; materiality; product

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## **Introduction**

The evolution of competitive dynamics in an increasing number of industries has directed practitioners' and scholars' attention to design management processes (Ravasi & Stigliani, 2012). Moreover, the rise of branding in contemporary societies has influenced this interest on design and its organizational management (Borja De Mozota, 2003; Julier, 2006). It has been argued that a good integration between design and brand management should exist (Beverland, 2005; Borja de Mozota, 2003; Kreuzbauer & Malter, 2005; Svengren-Holm & Johansson, 2005). According to Beverland (2005) the existing literature about design management and branding generally remains vague, diverse in its recommendations, and dominated by practitioner insights. Exceptions include, for example, Karjalainen and Snelders (2009) study of how companies strategically employ design to create visual recognition for brands; Person, Snelders, Karjalainen and Schoormans (2007) analysis of product styling; Stomppf (2003) article on brand identity and product design and Montaña and Gúzman (2007) model of brand design management.

In their recent comprehensive review of the literature on product design in the domain of business studies, Ravasi and Stigliani (2012) stress the lack of research about how design outcomes can affect organizations, namely members' conceptualization of their organization. Our research addresses this broad gap, focusing in particular in processes of new product creation and brands. Thus, the purpose of our research is to explore how product design processes influence brand management activities. To this end we have developed an in-depth case study of an Italian furniture manufacturer, present in the market for more than eighty years, where the corporate brand is also the brand of the products.

Our study suggests that product design processes strongly affects how brands are envisaged and managed. These results challenge the dominant perspective on many studies about the management of brands and new product creation (e.g. Montaña & Guzmán, 2007) that highlight the subordination of design management processes to the higher level of brand management strategy. Although our findings should necessarily be regarded in the specific setting of our case study we believe that our reflection unveils broader relevant implications.

The structure of this paper is as follows: in the next section we will briefly characterize the evolution of the design management and brand management fields. After explaining the methods employed we present the findings of our study. In the following section we discuss these findings and

relate them with other works. We finish this article with the conclusions and our view about future research.

## Related literature

Design management can be defined, in a simple way, as the managerial activities that optimize design processes (Chiva & Alegre, 2007). Managing design might imply different types of processes and outcomes, namely products, services, communications, environments and interactions (Cooper, Junginger & Lockwood, 2009). The historical evolution of design management can be analyzed in three phases (Cooper et al., 2009). First, around 1960s design management started being regarded in the context of manufacturing, whereas the main concern was the management of issues directly related to the product management processes. Broadening the scope of activity to include concerns with marketing and branding, characterizes the second stage of evolution. Although it continues to exist product centeredness, the concept of service design starts taking shape in this phase. Finally, in the third stage, the setting for the practice and research of design management becomes the organization and society at large. Design management is currently 'changing its course from one of designing as managing to one of managing as designing' (Cooper et al., 2009).

Our research is focused on design management processes related to new product creation with a particular interest in the influence of these processes on branding. Brands have their roots in the 19th century, when they originally served as a guarantee of origin and quality, differentiating otherwise equivalent commodities from one another (Coombe, 1998). Through their legal protection, such marks of liability would allow the producer's 'reputation' to reliably attach to commodities, guiding consumers as they navigated the market. By the 1920s, it was recognized that the trademark could be taken as a surrogate for an absent producer and the trademark became an asset in itself (Schechter, 1927).

Nakassis (2013, p. 117) argues that since the 1980s the brand has become 'a form of value addition that derives profit not from its commodity vehicles but *through* them—more precisely, through the ways brand image (and the premiums it extracts) commodify access to brand imaginaries (as mediated by moments of purchase) through a continual relationality with, or leasing of, the brand'. The author (2013) further states that the purpose of a brand as the identifying part of a product has been left behind and that



nowadays brands stand above the products or services they help identify. Nakassis perspective on contemporary brands resonates with the traditional view of brands as something added to products that has been ever present in the marketing literature (e.g. Kotler & Keller, 2006). Brands are often represented as self-valuable objects separate from products, 'floating signifiers' or 'self-referential signs' (Beebe, 2004, p. 626).

Manning (2010, p. 36) suggests that product and brand form a privileged doublet, expressed in popular marketing mantras such as 'a product is made in a factory: a brand is bought by a consumer'. The author (2010, p. 36) further explains: as 'mantras such as this show, the definition of brand develops over time by a kind of mystical *via negativa*, defining itself not so much by saying what brand is as what it is not: the product.' The opposition brand/product condenses an ontological opposition between immaterial/material, form/ function, distinctive/descriptive, decorative/functional, symbolic/technical and so forth (Manning, 2010). This dichotomic view of brands and products has been widely dominant, although a few authors have been alerting to the risk of downplaying the complex interplay of materiality and immateriality in the contemporary functioning of brands (e.g. Manning, 2010; Moore, 2003; Santos, 2013; Karjalainen and Santos, 2014).

## **Methods**

We have developed an exploratory case study with a qualitative approach (Yin, 2009; Piekkari & Welch, 2011). The paper is based on a longitudinal study at the Italian furniture manufacturer Cassina. The company is a leading firm in international contemporary furniture design, producing chairs, tables, upholstered items, beds and containers. The case was purposively chosen for its informational richness, and due to the opportunity we gained to accede the day-to-day life of the organization and product creation processes. One of the authors is a practitioner researcher within the firm.

The empirical material of the research results from an ethnographic inspired process of research that lasted over 18 months. We consider that this was the appropriate approach according to the exploratory and open-ended nature of the study. The main technique employed was non-participant observation, and the notes gathered constitute the main bulk of the empirical material set. Observation procedures generally addressed the daily life of the organization and included an extensive attention to

processes of new product creation. Semi-structured interviews with the Brand Manager were also developed, as well as informal talks with stakeholders at all levels of the organization. Interview transcripts, field notes and copies of documents compose the empirical material upon this article was developed. The fieldwork took place at the company headquarters.

We regarded the collection of empirical materials as an open process, where we have followed the most promising paths of inquiry within the purpose of our research (Alvesson & Kärreman, 2007; 2011). The process of collection of empirical material and the analysis of the existing theory was highly iterative throughout the research (Alvesson & Sköldbberg, 2009).

### *Research setting*

Cassina is a furniture manufacturing company, producing chairs, tables, upholstered items, beds and containers. The company was founded in 1927 and the corporate brand is also the product's brand. The firm has a strong heritage and this is one of the distinctive features of its brand. This legacy has been characterized by (1) production excellence (both artisanal and industrial tradition and know-how manufacturing process: wood, upholstery, leather); (2) culture: it was at the origins of design, created the iMaestri collection, linked to the modern movement and supported by the 'educated classes'; (3) explorative character: history of talent scouting, provocations and looking for new endeavors. Cassina is part of the Poltrona Frau Group since 2005, an Italian group of furniture manufacturers that also has the brands Cappellini and Pelle Frau. However, the company continues to operate in its own facilities and has its own management, although reporting and following the strategic guidelines of the Group. The product portfolio of Cassina includes world classics from great architects such as Le Corbusier, Gerrit T. Rietveld, Frank Lloyd Wright, Charlotte Perriand or Franco Albini. More recent collaborations were developed with Mario Bellini, Vico Magistretti, Piero Lissoni, Philippe Starck, Jaime Hayon and Gaetano Pesce, among others.

The Division Manager of the company is also the Brand Manager - in fact, this is the formal title in the Poltrona Frau Group organizational structure. Besides managing the overall business of the company, the Brand Manager overviews and directs all that is involved in terms of brand and design management processes. The firm has an open approach to the creation of new products, involving external partners, usually designers but also architects. The entire portfolio is the result of such sort of

collaborations. The design management processes are coordinated at the internal Research and Development (R&D) center, although always followed closely by the Brand Manager.

## **Findings**

In Cassina there is not an internal formal documented process of product creation with clear established phases. Usually the process starts with some sort of characterization of needs identified by the Brand Manager, alone or together with the sales force or other internal stakeholders. The identification of needs emerges through the spotting of opportunities in the market or through processes of reflection about new products, from different and varied reasons: sales performance, customer feedback, will to propose new products to enrich the portfolio, among others. This initial phase of identification and reflection about the possibility of launching new products is always intertwined with analysis of the current portfolio of products. Also, design features, materials and function of the products are present from the outset of initial reflections and internal informal talks. In fact, there's a continuous internal openness to discuss and think about new products and this future oriented proactive thinking is part of the daily life of the company.

Also on-going is the Brand Manager's analysis of the work of designers and architects, as well as trends, in a broad sense, in the marketplaces. New product creation always involves scouting external talents to work with. Once again, there's no documented formal procedure to start a process of new product creation, rather this happens from the organic confluence of different goals, identification of designers, and the need to comply with deadlines in terms of the presentation of new products in fairs like Salon di Mobile. Direct contacts with designers push the process to a new stage where more concrete discussions start to emerge in regard to what to create. Initial talks with external collaborators are led by the Brand Manager, as well as the first exploratory discussions. On a subsequent stage, the external designer actively collaborates with the R&D internal team, responsible for elaborating prototypes and supporting the designer's view. However, the work is always developed as a close collaboration, instead of being solely directed by the designer intentions.

Cassina's Brand Manager is the main steward of the brand and is in charge of driving its management through its own personal understanding of the brand and of the products, as well from its strategic intent while

managing the business. However, internal stakeholders have their own understanding of the brand and actively discuss their views with the Brand Manager and external designers. This is particularly evident in the R&D team, which gathers experienced professionals, some of them working in the company for many years, and quite used to reflect about the brand and new products.

Different stakeholders' understandings about the brand and the product portfolio can be regarded as a boundary space from where discussions are built in processes of new product creation. External designers are guided by their own interpretation of managers' discourses as well as by their interpretation of the company's current product portfolio and product heritage. The talks with the Brand Manager and members of the R&D revolve about the brand but usually in terms of product design.

Product creation processes progress with meetings with designers, Cassina's Brand Manager and the R&D team. In these interactions products are constantly mentioned as a way to discuss, argument, compare, agree and advance the creative process. Meetings with new designers usually require more discussions about the intended view of the brand and how to materialize this view; while discussions with designers that have worked before with Cassina are more fluid and the new product itself is more central in the conversation, although also constantly referred in relation with an idealized view of the brand. No matter the case, materiality is central to the discussions, even when discussing what the brands stands for and how it should be articulated in new products. Examples and metaphors about the brand revolve around Cassina's products and their material features. Also, we have often observed that historical pieces of the product portfolio are used during product creation meetings as a reference to explain either specific design characteristics, or a particular intention for the new product. This practice of bringing an existing product to the current conversation is a way of concretizing a specific brand aspect that is regarded as central to the new product. The brand is described with the products and the products are described as being the brand.

Product creation unrolls as a collective effort and physical prototypes connect practices, understandings and prospective oriented views of the different persons involved, across space and time. From a certain moment on meetings start revolving only around prototypes, where the external designers and Cassina's internal stakeholders advance the process with an hands on approach attitude – discussing and negotiating the right shapes, proportions or level of comfort demanded by the specific concept envisaged

for a particular product. In these meetings the brand continues to be continuously invoked and it becomes evident that previous and current products of the company help define what is intended the brand to stand for.

## **Discussion**

Previous studies in the broad business studies domain have been departing from the assumption that product design should logically be subordinated to the company and brand strategic needs: ‘If design is guided by the brand, it can serve as the cohesive factor for all elements that configure a brand experience and represent an unequivocal source of differentiation’ (Montaña & Gúzman, 2007, p. 829). This mechanistic view of design as operationalizing a higher strategic intent is challenged by our case study findings.

In the Cassina setting, the design of different products of the brand’s portfolio influences how the brand is envisioned and thus, as a consequence, impact the brand and design management practices (see figure 1, below). As referred earlier, Cassina’s physical products are always brought to the design processes of creation of new products. Current and historical products are inseparable of how the brand is regarded since they help define what the brand is.



*Figure 8 - Product design and brand management interplay. Source: Authors*

Cassina’s products, more than being open to embody the brand, strongly influence how the brand is conceptualized and prospectively envisaged. As Olsen (2013, p. 192) proposes: ‘persistency of things makes the past present’. Cassina’s product design has been historically influencing how the brand has been regarded. Views that emphasize physical or conceptual separability of brand and product are in conflict with contemporary aesthetic ideologies among designers, who seek to blur those same

boundaries between form and function (e.g. Dinwoodie, 1997). In the Cassina product design management processes this is particularly evident.

Moore (2003, p. 332) stated that 'commodities are not just typically material and objectual, nor are they accidentally so—they are tangible and material things in their very essence.' The author (2003) argues that it is precisely the products' tangibility and materiality that makes it possible for them to be the vehicles of an added value. Physical products are not fixed and closed, on the contrary they are open to gain agency (Latour, 2005; Law, 2004), become intertwined in networks of relations and be interpreted in different ways across space and time.

## Conclusions and future research

Our research findings, although necessarily pertaining to our specific case study, show that the product design processes may help define the conceptualization about brands. These results suggest the need to challenge the idea that brand strategies should simply drive processes of new production creation, and more generally, design management activities. We propose that the managerial understanding about brands might be significantly influenced by the materiality of products and we consider that this is a relevant perspective beyond the case study and the business setting we have explored. A deeper and finer-grained knowledge about how product design impacts brand management is valuable for the theory and practice of design management activities.

These findings contribute to the emerging broader discussion on the relational materiality of social life (Law, 2004; Latour, 2005) and, in particular, to the recent reflections on a semiotic relational perspective of brands (Manning, 2010; Moore, 2003; Santos, 2013; Karjalainen and Santos, 2014). We expect that our work can stimulate further enquiries related to this stream of research.

Exploring the line of inquiry proposed in this article is also valuable, in our perspective, to advance the managerial understanding on the relation between design and brand management activities. We suggest further exploring the ways design may come to affect brand managers and other stakeholders' conceptualization about the brand and the consequences of this influence.

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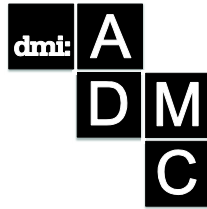
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# Luxury Product Design and Brand Differentiation of Emerging Luxury Brands: a Conceptual Framework Based on Perceived Value

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*The boom of international luxury consumption and the change on the function of fashion have been also impacting significantly on the traditional luxury industry. The luxury market may be seen as becoming a relative mass market and more complex than ever before. Except for those famous and historical ones, many new entrants became leading luxury brands. The purpose of this paper is to propose a conceptual framework of luxury product design and brand differentiation of emerging luxury brand on perceived value. In order to further develop and understand the nexus between luxury goods and brand differentiation of emerging luxury brand, this paper (1) defines luxury and emerging luxury brand, (2) reviews the theoretical basis of luxury goods, brand differentiation, perceived value of luxury goods and consumption, (3) frameworks the nexus between luxury product, brand differentiation and consumption, and (4) conducts an exploratory case study on Korloff, a niche and independent French-based emerging luxury brand, to modify the conceptual framework. This paper will be qualitatively and descriptive. An emerging luxury brand is defined as a brand providing luxury goods in or above intermediate level of luxury goods products hierarchy and was also established in or after 1970s.*

**Keywords:** *luxury, emerging luxury brand, perceived brand difference, brand differentiation*

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## **Introduction**

The luxury goods market has been expanding on a worldwide scale since the early 1990s. After influenced by the Global Financial Crisis in 2008 and 2009 (Bain & Company, 2008), it recovered and regained its outstanding performance with two-digital growth when entering into 2010 (Bain & Company, 2010). The increase of the use of new luxury (Silverstein and Fiske, 2003) and increasing consumption of luxury goods by lower classes of society in most countries (Nueno and Quelch, 1998) are two drivers of international luxury consumption growth. Consumers buy more luxury goods today than before for different reasons, which could include a desire to emulate the lifestyle of the richest or the social class immediately above them (O'Cass and Frost, 2004; Amaldoss and Jain, 2005), the excellence of the products (Kaferer and Bastien, 2009), or needs for uniqueness and self-monitoring (Bian, 2010). Economic growth and emerging young consumers are brand and fashion conscious (Morton, 2002; Bryck, 2003). They prefer brands with an identity based on values through which they can express their individuality to differentiate them from others (Azuma, 2002; Parker et al., 2004) and have a need to bolster their self-image (Knight and Kim, 2007). Accordingly, the luxury market may be seen as becoming a relative mass market, which not only includes members of the wealthiest social class, but also those who belong to more modest classes (Yeoman and McMahon-Beattie, 2006; Nueno and Quelch, 1998), and more complex than ever before.

The boom of international luxury consumption and the change on the function of fashion have been also impacting significantly on the traditional luxury industry. Some long-lasting manufacturers of traditional industry goods became outstanding luxury brands, like Jaeger-LeCoultre, as well as some famous haute-couture houses and accessory manufactures. There are also some designer brands that have been considered as luxury brand such as Emilio Pucci. Except for these famous and historical ones, many new entrants became leading luxury brands, like Giorgio Armani. While the market for luxury goods and services obviously represents a significant business opportunity, a review of the literature relating to the subject reveals a number of issues. However, the main stream of current research is mainly based on the long-lasting luxury houses and lack of the discussion on emerging brands which no matter as the product itself or branding are obviously different.

Among them one important issue is discussion on the luxury perception (for example, Berthon et al., 2009; Dubois et al., 2001; Heine and Phan, 2011; Kapferer, 1997, 1998; Keller, 2009; Nueno and Quelch, 1998; Vigneron and Johnson, 1999, 2004), for a brand must be perceived as different in order to win market share (i.e. customers must have a reason to start buying the brand) (Romaniuk et al., 2007). Undifferentiated new entrants are supposed to be most likely to fail because no customers should be motivated to buy them (Davidson, 1976). A meaningful perceived difference provides buyers with their reason to purchase and be loyal to the brand (Aaker, 2001; Kotler, 1994). Consequently, creating perceived brand difference is critical to emergence of a brand.

The purpose of this paper is to propose a conceptual framework of luxury product design and brand differentiation of emerging luxury brand on perceived value. In order to further develop and understand the nexus between luxury goods and brand differentiation of emerging luxury brand, this paper (1) defines luxury and emerging luxury brand, (2) reviews the theoretical basis of luxury goods, brand differentiation, perceived value of luxury goods and consumption, (3) frameworks the nexus between luxury product, brand differentiation and consumption, and (4) conducts an exploratory case study on Korloff, a niche and independent French-based emerging luxury brand, to modify the conceptual framework. This paper will be qualitatively and descriptive, because qualitative phenomenological research looked to an interactive relationship as giving form to a reality that was perceived, mediated, and interpreted through human beings (Mantz, 2009). Nancarrow, Brace, and Wright (2001) contended that qualitative research was useful for delving into matters —largely unobservable, such as consumer attitudes, values, knowledge, personality and satisfaction (p. 56).

### *Definition and Typology*

The concept of 'luxury' exists since a long time and has been aspired by many for ages. In the popular sense of the word, 'luxury' is something related to indulging in self-pleasure and something which is not a necessity (Ghosh and Varshney, 2013). Sombart (1913, 1922) in his famous book 'luxury and capitalism' introduced two aspects of luxury regarding subjective evaluation of "the necessary", quantitative and qualitative, which can be, and in most cases are combined. Quantitative luxury is synonymous with prodigality, while qualitative luxury is the use of goods of superior quality. He also characterized 'luxury goods' as 'refined goods' derived from the concept of qualitative luxury (p.59). 'Luxury is also a swerve positioned

with respect to a norm, a rule, a law which change from society to society and era to era, thus, luxury is always relative and impossible to define it without situating it in time and space' (Sicard, 2013:25). She summarized three directions of the swerve: upward (direct descendant of court society); laterally (difference instead of superiority) and downward (association with some sort of transgressive behaviour: an obscenity, a misdemeanour and an indecency) (Sicard, 2013:27-31). Berry (1994) categorized luxury goods as sustenance (food and drinks), shelter (accommodation), clothing (apparel with various accessories) and leisure (holiday, etc.). Because of the obvious different features of each category, the emerging luxury brand in this paper mainly indicate the brand that provides refined clothing including not only apparel but accessories like bags, jewelries, etc.

Scholars also discussed the history and nature of luxury (Sombart, 1913/1922; Berry, 1992) and its social function and purchasing motivation (Sombart, 1913/1922; Laveleye, 1889; Veblen, 1898; Leibenstein, 1950). Since last century the debate on luxury extended to modern luxury and ancient luxury, or new luxury and old luxury. Berg (2012) pointed out that in sociological theories new luxuries were created out of the division of labour and the expansion of commerce; old luxuries conveyed excessive displays with large bodies of retainers. Luxury goods are the main body of the debate on luxury over centuries. However, recently 'new luxury goods' have drawn attention of researchers in marketing and management of luxury (for example, Silverstein and Fiske, 2003; Truong et al., 2009; Granot, 2013) and Silverstein and Fiske (2003) defined them into three major types: accessible super-Premium products, old luxury brand extensions, and masstige goods. The concept of new luxury brand was introduced to differentiate those brands that provide new luxury goods away from traditional luxury brands. Consequently, on the contrary to new luxury or accessible luxury, the discussion on 'true luxury' or 'absolute luxury' is rising (Ghosh and Varshney, 2013; Chevalier and Mazzalovo, 2012). 'Absolute luxury' targets the rich (Chevalier and Lu, 2010) and performs the basic function of reinforcing the social stratification first observed by Veblen (Kapferer and Bastien, 2009).

On the other hand, in market place there are some luxury brands like Dolce & Gabbana and Hublot which neither provides the three major types of new luxury like Coach, nor is similar as traditional luxury brand, such as Louis Vuitton. However, there is no clear definition of this kind of luxury brand which cannot be defined either only by its brand contents or established time and no research distinguish the traditional luxury brand,

new luxury brand and emerging luxury brand, although they are also included in some research as luxury brand. Alleres (1990) builds on the dimension of socio-economic class in the context of luxury goods and sees it as a hierarchy consisting of three levels based on the degree of accessibility. This hierarchy is comprised of three levels: products that are extremely high-priced which offer the owner exceptional social prestige; luxury products attainable by the 'professional' socio-economic class in the intermediate luxury level and the accessible luxury level where luxury products that are attainable by the middle socio-economic class who are implicitly perceived as trying to achieve a high social status by their purchase behaviour (Figure. 1). Therefore, in this research emerging luxury brand indicates a brand that provides luxury goods in or above intermediate level. Moreover, the established time is also a key criterion to define an emerging luxury brand. In the literatures on luxury history, 1970s is usually mentioned and considered to be important in world economy and is also a turning point for luxury industry. By the 1970s, in more affluent societies, the material economy and positional economy were running in parallel (Hirsch, 1977). Since then the economy of conspicuous consumption become more apparent. Thus, an emerging luxury brand also refers to a brand providing luxury goods in or above intermediate level of luxury goods products hierarchy and was also established in or after 1970s.

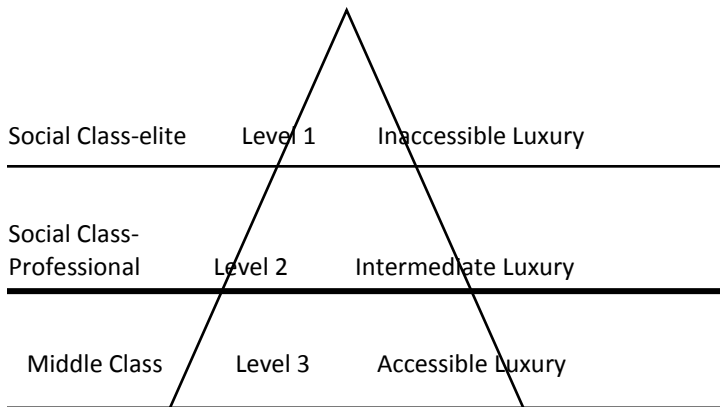


Figure 1 A Hierarchy of Luxury Goods Products (Alleres 1990)

## **Literature review**

As researchers explained the product is not simply a commodity defined through its function, nor does it simply have an added symbolic dimension. Brands are a new axis that connects production and consumption with each other (Kornberger, 2010, p.12) and units of social consumption (Zaltman, 2003: 227). Brands are interfaces: they mediate between production and consumption and stand for industrial production of differences (Baudrillard, 1970/2003) and a hegemonic vehicle for endless diversity (Askegaard, 2006). From the view of Maslow's hierarchy of needs, brands become an extension of the self, present value which is a statement to others as well as an expression of inner, true self (Kornberger, 2010, p.9). The want-satisfying powers of commodities depended on their qualities and on the nature of the wants they served. Products are designed to match needs; brands are created to produce desire (Morgan and Trentman, 2006; Slater, 1997). The product turns out to be nothing but the material extension of the brand (Askegaard, 2006:100), thus, we cannot discuss product without brand. When a product-commodity becomes a brand, its use value is supplemented by a number of further associations (Danesi, 2006: 3, 21).

P1: Perceived brand difference is conceptualized into two types of attributes: product-related attributes and non-product-related attributes.

### *Brand differentiation and perceived value*

Differentiation is regarded as one of the core principles of marketing theory and practice (Romaniuk & Gaillard, 2007) and it makes the brand an imperfect substitute with other brands so that its customer base is more secure. The differentiation has also to be perceived by customers as different (Ries and Trout, 1986) and must be valued (Carpenter et al., 1994). This valued difference does not have to be a material product feature. Rather, it may be symbolic, emotional, or even quite trivial (Romaniuk & Gaillard, 2007). When market researchers and academics examine a brand's differentiation, they typically analyse brand image data deliberately looking for differences in the way consumers perceive brands (Romaniuk & Gaillard, 2007).

On the other hand marketers and researchers introduced perceived value, which is a specific inference-making mechanism based on consumers' intuitions of market efficiency (Chernev & Carpenter, 2001). This concept was recognized as one of the most significant factor in the success of an

organization and as a very important source of competitive advantages for the firm (Sanchez-Fernandez & Iniesta-Bonillo, 2006). This kind of consumer value is extremely important for luxury houses. Researchers (for example Keller, 1986; Berthon et al., 2009; Brakus et al., 2009; Vickers and Renand, 2003; Vigneron and Johnson, 2004; Gofman et al., 2010; Kapferer, 1998, 1999) endeavour to exploring the key factors or dimensions of perceived value of luxury products and brands. The study on key luxury dimensions is an important aspect of managing luxury brands as it serves as a focus for attention and effort (Walley et al., 2013).

### *Models of dimensions of luxury products and brands*

Researchers defined dimensions of luxury products and brands in a semiotic way. An initial review of describing luxury products and brands is listed in Table 1. It indicates that findings of the studies have little in common with each other.

Table 1 Review of brand luxury dimensions.

<b>Keller (1986)</b>	<b>Functional</b>	<b>Experiential</b>	<b>Symbolic</b>			
<b>Vigneron and Johnson (2004)</b>	Conspicuousness	Uniqueness	Quality	Hedonism	Extended self	
<b>Berthon et al. (2009)</b>	Functional	Experiential	Symbolic			
<b>Brakus et al. (2009)</b>	Behavioural	Feelings	Cognition			
<b>Vickers and Renand (2003)</b>	Functionalism	Experientialism	Symbolic	Interactionism		
<b>Gofman et al. (2010)</b>	Design	Style	Experience	Emotions	Exclusivity	
<b>Heine and Phan (2011)</b>	Price	Quality	Aesthetics	Rarity	Extraordinariness	Symbolic meaning
<b>Reyneke et al. (2011)</b>	Modern	Classic	Post-modern	Wabisabi		

*Source: Walley, K., Adams, H., Custance, P., Copley, P. and Perry, S. (2013). The key dimensions of luxury from a UK consumers' perspective. Marketing Intelligence & Planning. Vol. 31 No. 7, pp. 823-837; modified by author.*



Luxury is considered something exclusive by most studies, however, there is not much agreement in respect of the terms that the researchers use to describe the dimensions and the typologies ranged from three dimensions to six dimensions. In addition, most of them are derived from the consumption motivation of luxury brands, so personal perception can be found in almost them (Keller, 1986; Berthon et al., 2009; Brakus et al., 2009; Vickers and Renand, 2003; Vigneron and Johnson, 2004; Gofman et al., 2010). Besides, Reyneke et al. (2011) proposed AO framework for luxury wine brands as gift from ontological and aesthetic perspectives while the research of Gofman et al. (2010) took not luxury products but premium as their object. Heine and Phan's (2011) study is the only one that is conducted on the perception of luxury product not including personal perceived value. In this research product-related attributes are only discussed based on Heine and Phan's (2011) dimensions and non-product-related attributes may include the personal and social items.

### *Defining the perceived brand difference construct of emerging luxury brand*

Product-related attributes are classified into 6 dimensions: price, quality, aesthetics, rarity, extraordinariness and symbolic meaning (Heine and Phan's, 2011). There is no doubt that price is one of the most important indicator of conspicuous products, however, some researchers consider that perceived expensiveness contributes to exclusivity (Verhallen and Robben, 1994; Groth and McDaniel, 1993; Vigneron and Johnson, 2004; Gofman et al., 2010) which is also a key factor on uniqueness together with scarcity/rarity (Vigneron and Johnson, 1999, 2004). Moreover, 'extraordinary' is noted as resulting 'only' from a different design or construction, thus, it overlaps the certain contents of either 'rarity' (Heine and Phan's, 2011) or 'exclusivity' (Vigneron and Johnson, 2004; Gofman et al., 2010). Therefore, we added the factor 'exclusivity' into product-related attributes instead of 'extraordinary and price'.

P1a: Quality of luxury goods is related to perceived brand difference of emerging luxury brand.

P1b: Exclusivity of luxury goods is related to perceived brand difference of emerging luxury brand.

Luxury products are by definition not ordinary, but rather a rarity (Kisabaka 2001, p. 96). The Latin etymology of luxury means difference,

departure, deviation (Kapferer and Bastian, 2009; Catry, 2003). When they buy luxury products customers distance themselves from the mass and from one another through the emotional value of acquiring well-crafted and rare objects (Catry, 2003). In the context of luxury consumption, scarce and exclusive brands enhance a unique self and social image (Snyder, 1992; Snyder and Fromkin, 1980) and emerging luxury brand itself represents niche and scarce compared to traditional luxury brand. It is the initial factor that associates consumers with uniqueness (Catry, 2003; Vigneron and Johnson, 2004; Groth and McDaniel, 1993).

P1c: Scarcity/rarity of luxury goods is related to perceived brand difference of emerging luxury brand.

Almost all researches perceive aesthetics as a distinct characteristic of luxury products. In comparison to the other characteristics, aesthetics were mentioned most often by scholars. In 1997 Kapferer stated that luxury defines beauty and is art applied to functional items. Aesthetic product design is one of the most important strategies of manufacturers of luxury products to differentiate themselves from mass market manufacturers (Kapferer 2001, p. 321). Aesthetics is a fundamental dimension of luxury (Holbrook and Hirschman, 1982) and aesthetic objects have a more sensorial attraction (Genette, 1997). Individual pleasure and satisfaction are prime motivating factors in their consumption and even if the product's utilitarian and functional dimensions figure in the perception process; the symbolic, subjective dimension plays the leading role. (Filser and Bourgeon, 1995) (Cited at Lagier and Godey, 2007).

P1d: Aesthetics of luxury goods is related to perceived brand difference of emerging luxury brand.

Consumer use symbols to distinguish products and make choices, since one object can be symbolically more harmonious with consumer goals, feelings and self-definitions than another (Dolich, 1969), but they may also try to integrate the symbolic meaning into their own identity. People regard their possessions as part of identity (Belk, 1983/88). Only those products or brands symbolized as being similar to the self concept will maintain or enhance the self. Consumers will match the perception of luxury product with their own personality or identity unconsciously.

P1e: Symbolic meaning of luxury goods is related to perceived brand difference of emerging luxury brand.

### ***Consumer's need for uniqueness (CNFU) and luxury consumption***

Douglas and Isherwood (1979) explained the consumption is driven by social motives which are shaped by culture. Leibenstein's (1950) famous research differentiated luxury consumption into 'bandwagon' (social taboos), 'snob' (exclusivity or difference) and 'veblen' effect (conspicuous consumption). The bandwagon effect refers to "the extent to which the demand for a commodity is increased due to the fact that others are also consuming the same commodity" (Leibenstein, 1950: 189). In other words, the bandwagon effect reflects the tendency to conform to social norm (Tsai et al., 2013). The snob effect refers to "the extent to which the demand for a commodity is decreased owing to the fact that others are also consuming the same commodity (or that others are increasing their consumption of that commodity)". It reflects the desire to be special and to differentiate oneself from the group (Leibenstein, 1950: 189). The Veblen effect stands for conspicuous consumption, through which consumers openly display wealth to signal social status. Consequently, the Veblen effect occurs when consumer preference for a commodity increases as its monetary value increases. The Veblen effect is related to the snob effect, but the Veblen effect focuses on product expensiveness and the connoted high-status symbol, whereas the snob effect is primarily based on individuality, uniqueness, and exclusivity (Tsai et al., 2013).

P2a: The snob effect on luxury consumption increases as the perceived brand difference increases.

P2b: The bandwagon effect on luxury consumption decreased as perceived brand difference increases.

P2c: The Veblen effect on luxury consumption increased as the perceived brand difference increases.

In the research of consumer behaviour, consumers with a high need for uniqueness tended to adopt new products or brands more quickly than those with a low need for uniqueness (Miremadi et al., 2011). Some psychological literature suggests that people with a high need for uniqueness will seek non-traditional and self-differentiating products (Griffiths and Zimmer, 1998). Individuals with a high need for uniqueness are more apt to adopt new products than individuals with low need for uniqueness (Snyder 1992; Lynn, 1991). Consumer's need for uniqueness

(CNFU) is an important construct when considering consumers' snob luxury preferences. Tian et al (2001) argued that all individuals desire to be unique to some extent, but they also want to belong to social groups. In luxury consumption, when they purchase luxury goods, consumers consider snob effect and bandwagon effect at the same time.

P3: The tipping point of the perceived luxury brand difference is determined by the weight of consumer's need for uniqueness and similarity over which purchase intention will decrease sharply.

## Conceptual framework

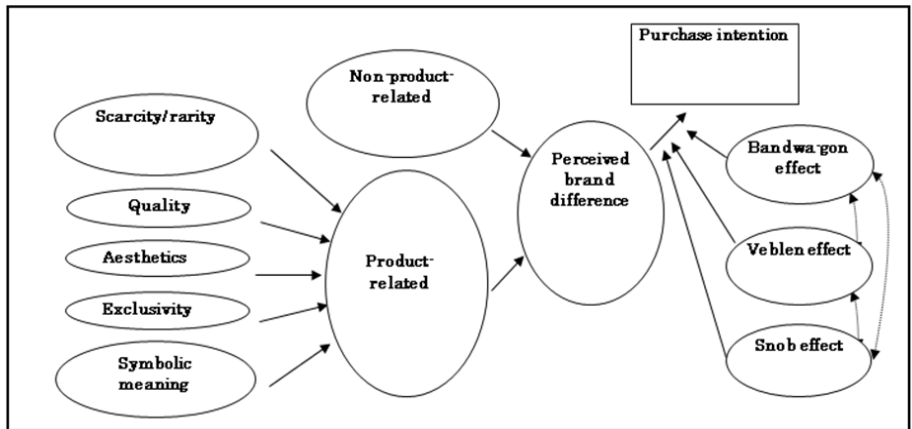
Combining all the five product-related attributes: quality, Exclusivity, scarcity, aesthetics and symbolic meaning with control variables: bandwagon effect, snob effect and Veblen effect, the current study proposes a conceptual framework that integrates different perspectives of perceived brand difference. This framework explains different types of product-related attributes of perceived brand difference of emerging luxury brand and purchase intention. A diagram showing this overall conceptual framework is shown in Figure 2. In this framework the plain lines indicate the primary causal relations and the dashed lines indicate the interaction effects.

Luxury companies ensure scarcity through limiting production, innovating product features, constraining virtual supply and relying on information communicated to customers (Catry 2003). The luxury industry has always been familiar with natural shortage and actual scarcity makes luxury products exclusive. Besides, luxury good's sense of scarcity has, in many cases, been a matter of continuous investment in innovative product features, such as Vuitton's first waterproof canvas handbags; Burberry's hardwearing, water-resistant yet breathable fabric. Techno-rarity is often reserved for top of the lines, promoting brand image and exclusivity. If not motivated by natural components or technological innovation, scarcity may be managed through limited editions. This has been the rule in the artistic world for original works, prints and reproductions. Moreover, luxury firms have tended to rely on the information communicated to customers rather than on physical supply limitations (Catry 2003).

Superior quality is a key attribute of emerging luxury brand. It relies on a series of criteria such as expertise of manufacturing, workmanship, features, service, value and durability, etc. And the aesthetics of luxury products

comply with the taste of the upper class, which represents the cultural relativity of luxury (Kapferer 2001, p. 322). Heine and Phan (2011) state the taste of upper class and aesthetic design contribute to perceived aesthetics. In addition, Lagier and Godey (2007) emphasized the selection and evaluation criteria of luxury products like comparison of object with norms, with social and historical references; its understanding, its interpretation with regard to precise and specific attributes, its display setting, its price, its financial value, and so on (Colbert, 1993).

Brand exclusivity is the positioning of a brand such that it can command a high price relative to similar products (Groth and McDaniel, 1993:11). Finally, the symbolic meaning of luxury products is highly influenced by their brands (Meffert and Lasslop, 2003; cited in Heine and Phan, 2011) and luxury products need to comply with worldwide and the tastes of their target group to symbolize something (Heine and Phan, 2011). Because the symbolism of luxury products refers to a large extend to human values and lifestyles (Kapferer, 2001).



*Figure 2 Integrated conceptual framework of perceive brand difference and purchase intention of emerging luxury brand*

### *Exploratory case on Korloff*

Korloff is a French jewellery brand established in 1978 by a Parisian designer, Daniel Paillasseur, who used to be an art dealer before starting his jewellery business. At the very beginning, he only dealt with precious gemstones until he got the 421-carat rough black diamond, Korloff Noir. The

first Korloff store was opened in 1979 and when entering into 1980s the shop was named after the black diamond 'Korloff'. Korloff began as one boutique is now a global brand in over 70 countries, via more than 50 Korloff PARIS boutiques, and discovered in more than 500 select retailers spanning from Paris to Tokyo. Today, the brand remains an independent and family managed company under the second generation leadership of Olivier Paillasseur who continues in the footsteps of his father. Its product line expanded beyond diamond and jewellery collections into timepieces, high jewelry, writing instruments, fragrances and couture since 1990s. Jewellery and timepieces are their main products which take up about 80% of the sales. Korloff is a typically independent emerging luxury brand with the entry price of the time piece over €2,000 which is almost 4 times of that of Tissort. Thus, Korloff as an independent French luxury house satisfies all the requirements of an emerging luxury brand.

A qualitative research interview seeks to cover both a factual and a meaning level (Kvale, 1996) and the interviewer can pursue in-depth information around the selected topic (McNamara, 1999). Unstructured interview is used in studies that require only textual data and in studies that require both textual and numerical data; and it can be utilized to develop formal guides for semi structured interviews (Bernard, 2006). Consequently, this exploratory case study was conducted in two phases: unstructured interview and semi-structured interview. The unstructured interview was done in October 2013 in Tokyo. We interviewed a Japanese consultant of Korloff who has been servicing Korloff for over 20 years. During this phase, we discussed the key successful factors of Korloff and some general information about its brand identity. Three key words were summarized from the interview to describe how Korloff differentiated itself from other brands and led to its success. One is "innovation" which includes innovations in design, craftsmanship, techniques, etc, which formed today's Korloff style with specific shape and colour. The next one is "PR event". Through a series of PR events in 1990s, an impressive brand image was built up in France which stands for richness and exclusivity. Catry (2003) demonstrated in his rarity research that physical rarity, technology innovation and information-based rarity such as events can increase the rarity of a luxury brand and make consumers feel it more unique. Finally, "Internationalization" is the last key word. According to the interview, 1980s and the early 1990s was the golden time of Korloff brand expansion. The overall revenue grew in an astonishing speed thanks to the global economy prosperity and two digital growth of Japanese economy. However, the

global expansion is a result from the economy growth and brand differentiation strategy. The results support some part of our proposition 1. Thus, in order to gather more information from the managerial view, a semi-structured interview was conducted to the CEO of Korloff in March 2014 so as to modify our proposed conceptual model. We checked relevant product-related attributes that contribute to Korloff's success in brand differentiation (see Table 2).

*Table 2 Product-related attributes that contribute to Korloff's success in brand differentiation*

Attribute	Factor	Description
Scarcity	Technological scarcity* Natural scarcity Limited edition	Korloff cut (patent)* High inlaid technology Innovation in material, technology, design, etc.
Quality	Craftsmanship	High inlaid technology
Aesthetics	Unique design Aesthetic product Symbolic design*	Quite different from other brands in colour, shape Unique design in Lyon style Unique and aesthetic watch and jewellery Square shape in Korloff cut, ring, pendant*
Exclusivity	Price	Entrance price: €2200~ Limited edition: €24,000~
Symbolic meaning	Brand logo, style, design	Symbolic design stand for richness, elite and uniqueness Brand logo appeared in PR events
Note:* highly differentiated <span style="border: 1px solid black; padding: 2px;">New factor</span>		

The results support our conceptual model and show that there is a strong interaction among each attribute as well as the factors. For example, the creation of Korloff cut increases brand scarcity, exclusivity as well as aesthetics. Additionally, one new factor, brand symbolic design, was found

and positively related with symbolic meaning. And in this case, the technological scarcity and symbolic design have a high contribution to Korloff's perceived difference. The scarcity is positively related with Exclusivity especially when the limited edition has a special price. As mentioned above "PR event" is a key factor of Korloff's success and it is the main communication tool of diffusing the information on tradition, ethics (non-product-related attributes) and also expressing its aesthetics, symbolic meaning and exclusivity of Korloff. The product-related attributes are related to non-product-related attributes (story, tradition, etc.) for Aesthetic and symbolic meaning.

Thus, the conceptual framework was modified as below (Figure 3):

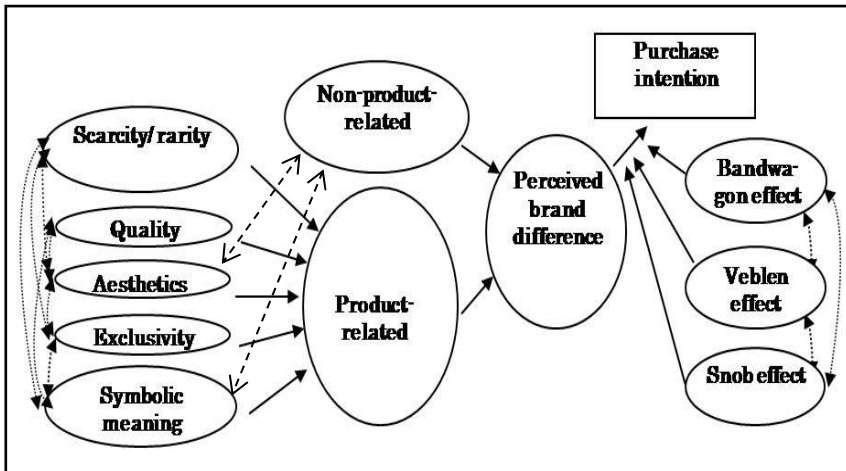


Figure 3 Modified conceptual framework of perceive brand difference and purchase intention of emerging luxury brand

## Conclusion and future direction

Based on extant literature this exploratory study defines emerging luxury brand as a brand providing luxury goods in or above intermediate level of luxury goods products hierarchy and was also established in or after 1970s. Under this definition, this paper also presents a comprehensive conceptual framework that illustrates the nexus between product-related attributes and brand differentiation of emerging luxury brand based on perceived value. The product-related attributes include quality, Exclusivity, scarcity, aesthetics and symbolic meaning with high interaction among one another.



Besides, technological scarcity and symbolic design have a high contribution to perceived brand difference and in the case of Korloff. The product-related attributes are related to non-product-related attributes for Aesthetic and symbolic meaning

However, this research is qualitative and descriptive and mainly based on literature review and interview to Korloff, thus, the accuracy of defining emerging luxury should be discussed on large brand data base. Furthermore, the non-product-related attributes are not studied yet. In the future study it should be done to complete the conceptual mode. Finally, this conceptual model needs checking in a scientific way to clarify the relationship and interaction among each attribute and factors.

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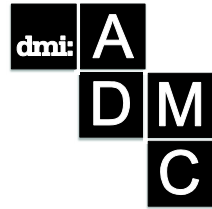
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## Brand of Products and Brand of Signs: how to manage this relationship in fashion through corporate archives

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*In the fashion industry, brand has always been a competitive paramount. It has a real value as a strategic asset with which the company ensures a continuous competitive advantage over competitors and thus the perception of consumers. The construction of the brand recognition scenario represents the ideal place able to offer a view of all the tinged values inspiring the products/lines/categories proposed by a company. Within this scenario, not only the fashion retail system becomes the narrative context of the brand where designing spaces, displays and interactions we connect the distributive strategy to the product/stylistic strategy and the communication strategy; but also the corporate archives are progressively assuming this role and functions, offering peculiar solutions.*

*The paper aims to explore the brand recognition strategy, mediated by design and related to the brand heritage, reading the corporate archive not only as a self commemorative intent and consolidation of the corporate image, but as active resource continuously integrated in the brand identity construction.*

**Keywords:** Brand Recognition, Heritage, Retail Design, Brand Experience, Corporate Archives

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## Brand of Products and Brand of Signs

In the current competitive environment, fashion enterprises implement investments in the intangible resources which can provide innovation of meaning (Buchner, 2003; Celaschi, 2009; Csikszentmihalyi, 1981, 1991; Kotler, 1988; Krippendorff, 1989, 1990, 2006; Verganti, 2002), now necessary to differentiate their products and production processes.

The value chain tends, more and more, to a new shape and dimension within which the success factors can be identified in knowledge management, the ability to anticipate, define and view market trends and the ability to create relational exchange with end users. With the recognition of *knowledge economy* (Rullani, 2004), enterprises enhance the sensorial, communicative, emotional and relational qualities fundamental to the construction of the Brand Image. Within brand policies, the *cultural dimension* of an enterprise is increasingly linked to the amount of value and symbolic assets incorporated into the overall *product offering* of the company. The final product is the result of a multi-dimensional process simultaneously engaging in technological, physical, informational, scientific, social, cultural, and artistic relationships, which determine its nature and specificity.

Therefore, the change resides in those elements that directly affect the processes, relationships and interconnections between the different actors in the economic system. A space in which the concept of *company product* now also includes knowledge, services and experiences as economic value (Iannilli, 2010; Sacerdote, 2006; Valdani, et al., 2001). In particular, new growth and development paths are not identified with the production of new knowledge but rather with the *dissemination* of the one already existing in the increasingly broadening areas of use (Rullani, 2004).

While Kotler (1988) defined brand as ‘a name, term, sign, symbol or design or combination of them, which is intended to identify the goods of one seller or group of sellers and to differentiate them from those of competitors’ (Kotler, 1988, p.463), it is now possible to broaden this definition to include, as a characterizing element, the unique mix of physical attributes and intangible values that constitute the DNA of the company. The brand today is no longer seen only as logo, communication or image projection, but as the set of values that characterizes the company, expressed through a precise *brand strategy* (Aaker, 1991; Kapferer 1992) and a know-how that serves as an invaluable wealth of knowledge to preserve and communicate as *company heritage*. A company’s know-how – interpreted as its heritage– can represent an important channel for product



innovation. As evidenced in the case studies later reported, company archives have become a knowledge asset for the study, understanding and development of new creative and production processes. The stimulation of these dynamics in the Italian scene is of strategic importance for the support of the global competitiveness of its national economic system. The products of made in Italy –arisen from a certain supremacy linked to the design and which have established themselves not so much for radical innovation, but rather for the innovation of the functional, aesthetic and relational qualities– had an international *cultural* impact: furniture, clothes, sports cars have been exhibited in museums around the world and recognized as part of a unitary culture. As a brand of inter-sectorial quality, made in Italy has been a strong distinguishing element for domestic products, regardless of the different product categories, conveying *de facto* a homogeneous system of values to international markets, though rarely in an explicit, coded, and designed way. The maturity of the main Italian industrial sectors, the acceleration of *technological obsolescence* processes, the market saturation, the increasing global competition and the changed socio-political balance are just some of the critical conditions which have heavily affected Western countries in particular. In such conditions, the ability to continuously fuel one's competitive advantage, pursuing sustainable development patterns on a social and economic level, is an on going challenge, in which an important role could be played by the adoption of a more conscious strategy of promotion of the production and material culture developed by made in Italy enterprises.

Companies would thus benefit from the strategic revaluation of company archives as places within which new areas of meaning and relationship between the different users can be ignited. First recognized for their historical, cultural and artistic value (Amari, 1997; Negri, 2003), museums and company archives are now more strategically (Gilodi, 2002; Baia Curioni, 2005) and experientially interpreted. This paper precisely highlights a new interpretation of the company archive as an active force in building *brand recognition* as well as the ideal setting for the transfer and implementation of knowledge.

## **Fashion archives as a living cultural heritage**

Over the past decade many companies in the Italian fashion industry – and more generally industries with high cultural and symbolic value products - have increased the policies aimed at the enhancement of their

brand patrimony through the organization or the optimization of their heritage system. In particular, the cultural spaces of the company, in their various forms and extensions, are gradually assuming the role of important *network* for the activation of social, economic and entertainment relationships, as well as of places necessary for the *visualisation* and *representation* of the values of the enterprise and of the socio-territorial system of which it is part. These values are now identifiable not only in the material product, but also in the concept of *made in Italy* which the company has, at some point, begun not only to recognize, but also to *produce as living cultural heritage*.

The issue of recognition of a brand with a specific territorial context has become a priority for luxury companies in Italy where the strength of the broader national brand contributes to strengthen the brand equity of the companies (Aaker, 1991) and at the same time to build value during the internationalization process. As their prerogative, Italian brands trigger very close relationship strategies between local identity and their own system of values. The concept of *authenticity* (Gilmore & Pine, 2007), and therefore of attributability to a given territorial identity, has become the prerogative for the construction of new consumer experiences. We can see how, to differentiate and make products recognizable among others, it is necessary to raise the degree of emotional involvement between company and consumer, thinking not only about the product but also about the lifestyle scenario. Operating on the meaning of values that the fashion system can generate requires to operate on the construction of *scenarios of meanings* where products are presented exclusively linked to a discussion broader than the aesthetic-formal one, i.e. highly cultural and social.

Italian companies show an increasingly stronger connection to the intangible values related not only to their brand identity but mainly to the manufacturing skills, often hand-craftsmanship, that characterize their brand equity, becoming linguistic elements of brand recognition on an extra-national level. In this sense, the enterprise's heritage becomes a priority resource to be preserved and enhanced and a tool capable of conveying the dialogue with the public through communicative and relational tools in *experiential* contexts underlying the narrative of the enterprise.

If we consider the archives, museums and foundations of major fashion brands, such as Gucci, Salvatore Ferragamo and Gianfranco Ferré, we immediately realize the cultural relevance of these spaces. Established for the preservation and safeguard of the historical memory of the figures and

artefacts that played a central role in the transformation processes of a country's material and social culture (Amari, 1997), they have evolved from *museum spaces* to *spaces of experience* to adapt to completely different economic context and values.

The experience is not intended as an instrumental act, i.e. as channel, medium and expedient, but represents the *reason* for and the *sense* of experiencing. Such experience – globally undertaken in its different dimensions (material, emotional, problematic, cognitive, organizational, relational) – is proposed to be properly lived: *living cultural heritage*.

The territorial context as *image*, as *iconic sign*, welcomes different interpretative paths by the public who *welcomes* and *integrates* narratives, images, and memory as necessary systems to set *new discourses*. While the collected material is part of the social and material history of a specific production or territorial context, the intertwining of symbolic and material stories becomes an inexhaustible source for new design stimuli, within a space which could be called *augmented*.

The concept of experience as *living cultural heritage* occurs through spectacularization and emotional involvement, paving the way for participatory forms of communication which exceed traditional exhibition practices. An attitude deeply rooted in the Italian fashion system, in which the construction of brand scenarios elaborates on the intangible assets of the company, produces spaces in which the emotional experience activates those sensorial-memory processes needed to remember that brand, among others.

## **The new role of fashion archives into company strategies**

As argued so far, the contemporary scene has pushed companies of the fashion system in the paradigms of knowledge (Rullani, 2004) and hypermodernism (Codeluppi, 2009). As argued so far, the contemporary scene has pushed companies of the fashion system in the paradigms of knowledge (Rullani, 2004) and *hypermodernism* (Codeluppi, 2009). If on the one hand the symbolic and intangible value related to production contexts connotes the value system of the goods, on the other hand the offer saturation limits and somehow prevents the consumer from understanding and communicating this new category of goods, which appears more and more *abstract* and *elusive* (Codeluppi, 2012).

As Severino argued in *Heritage Marketing* (2007), we are witnessing a phenomenon of 'temporal reversibility' which contrasts the relentless modernism to trace a dimension of cultural heritage that seeks to investigate the origins and history of a company weaving past with present and trying to outline a system of values based on the authentic redefinition of the identity of that very company. Such process of *neoarchaism* – as defined by Morin (1987), directed toward a return to origins, as a 'manifestation of modernism, of avant-gardism' (Morin, 1987, p.176) – aims to find the meaning of existence and legitimize its authority in a market increasingly contaminated by contrasting and fragmented languages.

In this complex landscape, the past is fuelled by a new contemporary perspective (Fiorani, 2006) and becomes the engine that allows the enterprises of the fashion system to implement a diversification policy, therefore emphasising their brand equity, by informing their own collections and productions with an original, authentic and highly-differentiated cultural content (Vacca, 2013). This cultural heritage is interpreted through a contemporary vision of the market, hybridized through innovative methods and processes and revived with unexpected values and languages, producing a positive feedback in the *post-modern* consumer (Fabris, 2003), now a conscious figure who does not look at objects for their material value but as a product-sign of social and cultural systems (Rullani, 2004).

This new syncretism, that reads the past not as a nostalgic memory but as a tool for the settling and systematization of memory and production knowledge (Vacca, 2013), has generated a growing attention to the preservation and enhancement of the historical archives of companies and their translation in processes of creative and production development. The archive is then seen as a means for the rebuilding and activation of the enterprise's memory which underlines the set of social, cultural, scientific, and production relations, transforming and constantly redefining the concept of archive itself, not as a permanent system but as a dynamic process of enterprise knowledge.

*The question is to know how an object in a space can become a telling trace of an existence, as inversely an intention, a thought, a project can leave the personal argument and become visible outside of himself in his body, in the means it builds for himself. (Merleau-Ponty, 1965, p.329)*

To *archive*, in fact, means to carefully "store" and "preserve" the memory through a wide range of products and documentations that

reconstruct the reality not only of the company but also of the production territory of which it is part, 'as if history were the guarantor of the quality/originality of the product' (Montemaggi, 2007, p. 82). It stands as an objective testimony that - through patents, sketches, technical sheets, prototypes, photographs, and advertising campaigns - is not only a support to the collective memory but can generate economic benefit when this heterogeneity of materials is converted into complementary forms of knowledge enhancement such as museums and documentation centres (Bonfiglio-Dosio, 2003). The product is thus enriched with a wider values system, becoming a sign and witness of histories and lives which become more substantial with the passing of time, testifying for its authenticity and becoming synonymous with uniqueness and quality. The value of the archive is therefore ascribable to a dual dimension: the *objectual* and the *processual*. While it leads to the emphasis of an iconographic dimension of goods and objects which have stood the test of time, with unaltered sign value (*objectual dimension*), it also underlines a new discursive practice which through verbal and linguistic formulations is able to underpin and translate the brand's legacy in a new expressive identity which gains its substance from the past and is presented through new codes to the present (*processual dimension*).

### *The objectual dimension of archives*

Many companies of the fashion system, but also of other productions, looked to historical archives as a possible tool to strengthen their corporate identity and corporate image by "staging" the production process that, from research to conceptualization of the product and from production to communication of the collections, is able to emphasize the intrinsic meanings and the material culture of the companies themselves.

The archive becomes a strategic asset for the exploitation of knowledge, turning into a design tool focused on the visual coding of the referenced cultural roots and the traditional knowledge embedded in the product. The fascination of the brand is emphasized by the uniqueness of the brand's heritage that materializes through iconic products and a "musealization" logic. The spaces of dialogue with the public are company museums clearly aimed at presenting the product as a project but mainly as a process by identifying the set of cultural, historical, and social factors that have characterized the brand identity and can offer an important reinterpretation of the company's distinctive codes. The product becomes a symbol and it is

represented as an art installation or celebratory or exhibition of the company's heritage.

Paradigmatic is the case of **Salvatore Ferragamo** ([www.museoferragamo.it](http://www.museoferragamo.it)) for transforming the corporate heritage linked to the figure of the craftsman and designer Salvatore Ferragamo through the iconic dimension of the shoes he designed and patented in the period between 1920 and 1960. The flagship store in Florence located in Palazzo Spini Feroni, which has been the administrative headquarters of the maison since 1938; it also holds the monographic museum focused on the figure of its founder, 'The Dreams Shoemaker' (Ricci, 2000), which through a series of thematic exhibitions rereads Ferragamo's activity through the technical capabilities and quality designs, emphasizing the iconic dimension of its production and enhancing brand awareness. The direct contact between past and present results in interesting visual analogies that reconstruct a generative path which - through design, patents, the continuous contact with contemporaneity and the artisanal/innovation expertise of Ferragamo footwear - is projected onto contemporary collections through the recoding of the value systems of the products.

In the *objectual dimension*, the ability to overcome the logic of the museum becomes the stage on which to perform the set of territorial and production links and the narrative that emerges, legitimizing the production capacity of the company but also its identity of memory. It is now assessed how the components of narration, storytelling and experience are highly effective design tools. When applied to the environments of culture and of the company's celebratory identity, they become strategic for the interaction with the emotional sphere of the user.

### *The processual dimension of archives*

The company archive is characterized by a vastness and diversity of products that, being often accessible only to insiders, represent the historic core of the company and the materials therein preserved become a cultural heritage that can stimulate design inspiration and give creative and productive continuity to the new collections of products. For this reason, we are increasingly witnessing the acquisition of entire archives by companies who understand the inestimable value of a company's memory and then encode it in completely new creative and production processes. If properly catalogued and interpreted, archival materials can indeed generate design and creative value, understood as a company's ability to transform their

wealth of experience and their historical and iconographic memory into innovative ideas and activate unexplored knowledge itineraries.

Eminent is the example of **Vincenzo Zucchi Spa** ([www.zucchi.it](http://www.zucchi.it); [www.zucchicollection.org](http://www.zucchicollection.org)), one of the most important Italian textile manufactories, which has understood the importance of company's heritage as knowledge tool, employing it in different ways in its production. Operating holding company of the largest Italian group of home textiles, it owns one of the most important collections in the world of blocks for hand printing on fabric, purchased in England in 1988 and then turned into a Museum: *the Zucchi Collection of Antique Handblocks*. This extraordinary collection celebrates the mastery and inventiveness of skilled English, French and Austrian craftsmen who are part of textile history and counts 56,000 hand-printing blocks, which correspond to approximately 12,000 patterns, created between 1785 and 1935, recording the evolution of fashions and styles of the textile industry. *The Zucchi Collection of Antique Handblocks* includes a vast array range of styles and patterns, from the most classical to the early artistic avant-gardes of Art Nouveau and Art Deco, and is divided into six major categories: paisley, floral, ornamental, pictorial, abstract and geometric (Mocchetti, 1991). This archive serves as a value generator for the production of the company which has a home collection designed by Marta Giardini, the *Zucchi Block*: a modern interpretation, through digital printing, of the graphic or figurative designs drawn from the old printing blocks in the Museum. The company also began working on integrating a dedicated consulting service with materials from its archive for designing, drawing and defining patterns with a be-spoke approach aimed at the complete satisfaction of the final customer, oriented not only to textiles but integrating its expertise in other sectors (wallpaper, wood, furniture, etc). The printing block, now universally recognized as the distinctive feature of the company, also becomes a narrative element within the company's commercial spaces to establish a close bond between *the Zucchi Collection of Antique Handblocks* and the product thus emphasizing the corporate perception and company values.

In the *processual dimension*, the archive therefore becomes an active tool that can generate value for the enterprise by widening its know-what in the proposition of new textile collections. They draw from the past but look at the present and contemporaneity, proposing a design approach and creative know-how without resorting to the simple reiteration of styles from the past.

## Possible tracks for making archives a real knowledge asset

As previously stated, company museums and archives are an instrument of both self-celebration and consolidation of the corporate image because they provide the company with the role of 'active cultural entity, as the company's culture becomes the collective culture' (Gilodi, 2002, p.10).

Yet, they are at the same time active resources which, if properly and continuously integrated in the production and design processes, contribute to the construction of the company's identity, strengthening Brand Recognition. While there is a wealth of memory to be preserved, on the other hand the endorsement and presentation of this knowledge continually redefines the identity of the company which is thus able to identify new channels of contact with the end consumer through meaningful semantic elements, directed toward the support of its 'cultural positioning' (Rindova & Ravasi, 2008).

A strategy oriented toward Brand Heritage and mediated by design - understood as a mediator of knowledge, skills and needs (Celaschi, 2008a, 2008b) - is then able to build a strong Brand Recognition through three possible paradigms that make heritage a real asset of knowledge for the enterprise:

- **Heritage into product's iconization**, incorporating the cultural roots in an iconic product that conveys fascination for the brand.
- **Heritage into space's narrative**, transposing the narrative heritage in the retail space as a tool for the linguistic expression of brand identity.
- **Heritage into process's theatricalisation**, presenting the know-how as the characterizing process and nature, highlighting the uniqueness and quality of the product itself.

### *Heritage into product's iconization*

The product becomes an absolute icon incorporating brand identity itself. The implicit and intangible value is generated through a process that removes the object-symbol from its common use, accenting its role as sign and witness of brand heritage. This process of spectacularization focuses on the product and rebuilds around it the distinctive values of the brand, emphasizing its persistence over time. This is the case of **Fendi**: to celebrate the fifteenth birthday of the Baguette ([www.baguette.fendi.com](http://www.baguette.fendi.com)), the maison's iconic accessory, it conceived a traveling event that led to the



opening of pop-up stores in the most innovative concept stores in the world, such as Colette in Paris, Maxfield in Los Angeles, 10 CorsoComo in Milan, Dover Street Market in London and Tokyo, eventually giving rise to a "Baguette Mania."

Another example is **Max Mara** which created "COATS! 60 years of italian fashion" ([www.maxmarafashiongroup.com/it/coats](http://www.maxmarafashiongroup.com/it/coats)), a traveling exhibition designed by architects Migliore and Servetto as a journey in the history of Italian fashion through the coat, Max Mara's iconic garment. The narrative is divided into different thematic areas that intertwine the different historical and cultural eras of the company, connecting them with each other and with their contemporary contexts: the birth of the group (1950s and 1960s), the link with the publishing world (1970s), creativity (1980s), photography (1990s) and industrial production (2000s). All through the eyes of the model 101801, the brand's icon-coat which was made even more contemporary and current by the stylistic interpretations of several world-renowned artists.

### *Heritage into space's narrative*

The space becomes a narrative vehicle through which the brand history is told, reflected in the employed layout, intercepting the new paradigms of contemporaneity. This is the case of the **Pirelli PZero** flagship store in Corso Venezia in Milan ([www.pirellipzero.com/it/flagship-store](http://www.pirellipzero.com/it/flagship-store); [www.fondazionepirelli.org](http://www.fondazionepirelli.org)), where you can breathe the design culture which spans the worlds guarded by Pirelli. An industrial installation that recalls the aesthetics of a factory where rubber acts as leit-motif through the space and creates a visual connection among the company's heritage and the new collections of clothing and objects which employ PZero's know-how. An active and dynamic space that highlights the industrial and technological core of the enterprise. A completely opposite case is the concept / flagship store **NonostanteMarras** in Milan ([www.antoniomarras.it](http://www.antoniomarras.it)), in which the reference to the tradition of hand-made blends with the identification codes of the brand Antonio Marras. An ancient and "charmingly neglected" aesthetic, characterized by peeling walls and meticulously-selected antique furniture. The collection of dresses is placed among numerous objects from vintage markets that are collected and sold in the store. This pervasive space, characterized by installations halfway between art and design, defines the lifestyle of the Marras client and emphasizes the characterizing poetic language of the brand.

### *Heritage into process's theatricalisation*

The bond with the brand's area of origin and the direct connection with the manufacturing processes related to a know-how ingrained in the culture of that territory is the setting from which the narration of brand heritage starts. The values associated with the processes become predominant over the aesthetics of the product itself and are legitimized by the continuous link with industrial and artisanal skills that determine the production identity as a factor differentiating it from similar productions.

This is the case of **Brunello Cuccinelli** ([www.brunellocucinelli.com](http://www.brunellocucinelli.com)) who gave birth to a new entrepreneurial dimension in which the quality of a product is significantly determined by the workers and the love and passion they embed in their work (Cuccinelli, 2012). For this reason, both human skills and the territory must be preserved to continue generating value. This creates the cultural system called "Foro delle Arti": a theatre, an amphitheatre and a philosophers' garden used for concerts and events. All structures were built with the company's profits, reinvested to redevelop the old Umbrian village Solomeo which also houses the "Scuola dei mestieri", founded by the same entrepreneur to embrace the disciplines, like mending and re-looping, which reflect the invaluable know-how characterizing the quality of cashmere and of Cuccinelli products.

Another example of geographical valorisation is also provided by the **Fabbrica Lenta in Bonotto** ([www.bonotto.biz](http://www.bonotto.biz)), a textile mill founded in 1912 in Molvena (Vicenza, Italy) which is now a vertical full-cycled industry, employing about two hundred craftsmen. The mission is to reevaluate the weaving techniques of proto-industrial machinery to rediscover the culture of the manual work, leading the company to produce less products but of very high quality. An avant-garde approach that has been able to merge the industrial component with craftsmanship through a production of textiles "made as art." A eulogy to slowness: the return to the origins and to development of the area guarantees the contemporary translation of a historical memory that can generate culture and identity.

The aspect that emerges from these three trajectories of heritage is a system typically inherent to Italy which sees the link with the territory as the identifying and differentiating factor, understood as material knowledge and as cultural heritage to emphasize and transfer as a positive and qualifying value. The concept of heritage in this context therefore becomes an effective knowledge asset for a fashion enterprise because it is capable of reinforcing the brand equity of the enterprise through greater

competitiveness and becomes the foundation for its recognition and one of the reasons of the company's success.

## Conclusions

The enhancement of the cultural system of the company, meaning the ability to store and reproduce intangible resources over time (Vicari, 1991), then corresponds to the need to create new surfaces of connection with the different stakeholders. Connections that can be interpreted as communicative and relational tools, but also as co-producers of value. When properly exploited, company archives can trigger important processes of hybridization, becoming a design and creative resource for the initiation of new processual values.

If the production of information, knowledge and services is the backbone of the economic activity, especially for enterprises with a strong cultural and symbolic vocation, it can be stated that the heritage space of a company testifies its still-unexplored potential also for what concerns the enhancement of brand identity. For example, it can create strong synergies on the cultural capital, present in the company's archives and museums and in the retail spaces, even in relation to internationalization policies, in which the processes of identification with the brand are not always smooth and immediately assimilated. And this is even truer for the products of the fashion system. The new sales formats and concepts are increasingly dependent on the *continuous innovation* of the commercial offer: events, presentations, *in-store* promotions and new forms of communication in the territory, such as temporary shops that lead to experimenting new and different ways to communicate with different audiences.

In this context the value of the archive understood as *living cultural heritage* can become a real generator of knowledge, which – through appropriate oriented systems of knowledge *dissemination* – appears capable of triggering fundamental innovation processes. The context of company heritage seems to face a double challenge: on the one hand there is the responsibility to preserve, protect, promote, and enhance the testimonies of an immensely valuable past, on the other hand there is a need to view the archive as living cultural heritage, an economic asset to all effects, to employ for economic and educational benefit.

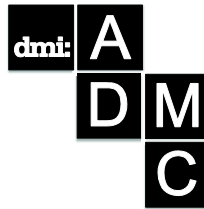
**Author's notes:** *The paper is the result of common research and findings, nevertheless, sections 1, 2 and 5 were edited by*

*Valeria Iannilli, sections 3 and 4 were edited by Federica Vacca. The case studies presented are the result of research studies and projects undertaken in recent years by the research group Fashion in Process, part of the Design Dept. at Politecnico di Milano [www.fashioninprocess.com]. In particular, the case study of Vincenzo Zucchi Spa was investigated and analysed during the research project "FABRICthinking" (February/April 2014) while the case studies of Antonio Marras, Bonotto and Brunello Cucinelli resulted from the PhD thesis of Federica Vacca ["Design on the tread of tradition", unpublished doctoral dissertation (2008), PhD in Design 21 Cycle Ph.D, Design Dept., Politecnico di Milano, Milan, Italy]. Regarding the literature on Italian corporate museums compare [http://www.museimpresa.com/].*

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## Designing Channels for Brand Value: Four Meta-Models

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*Channels are becoming an increasingly important area for companies to innovate, specifically as they provide direct points of contact with their customers. However, little is known in regards to multi-channel strategies that embody strategic brand values and how customers experience these channels collectively. The purpose of this paper is to investigate how organisations configure multi-channel strategies to communicate their brand value and experience to their customers. Data was collated from sixty companies through a content analysis methodology within the retail sector. Results uncovered commonalities through the identification of four meta-models surrounding common brand values, intended emotive experience, individual channels and the customer segment. These meta-models are titled: High Quality, Trust, Convenience and Community. This research also presents implications of a multi-channel design tool based on findings from this study to help reinforce company brand values and design an overall connected customer experience.*

**Keywords:** Content Analysis, Channel Relationships, Brand Value

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## **Introduction**

Businesses are always seeking a competitive advantage. Therefore, it is increasingly common for innovative, forward thinking companies to break the mould of traditional business methods. Channels are becoming an increasingly important area for companies to innovate (Musso, 2010) including channel relationships, as well as, changes in structure and the creation of new channels. However, these channel innovations bring new challenges in regards to experience management. As customers have different motives (such as recreational orientation, convenience orientation, independence orientation, delivery-related risk aversion and product and payment related risk aversion), it is important for retailers to manage the experience across varying channels using common processes and leveraging information given by the customer (Schröder & Zaharia, 2008; Musso, 2010).

Many forward thinking retailers, such as Starbucks and Victoria's Secret, aim to provide an engaging experience across channels (Verhoef, Lemon, Parasuraman, Roggeveen, Tsiros & Schlesinger, 2009). The experience involves both the customer's response to the retailer (cognitive, emotional, social and physical responses), as well as elements controlled (service, retail atmosphere, price) and uncontrolled by the retailer (influence of others, purpose of shopping) (Verhoef et al., 2009). This includes the entire customer purchase and brand experience, which encompasses multiple channel experiences.

Branding literature suggest that strong, positive emotional connections with a brand equates to a loyal customer (Pine & Gilmore, 1998, Mattila, 2001). Since its discovery, designers have sought to design experiences to foster these positive emotional connections. Although not an exact science, this is usually done through understanding users and understanding the customer process pre, during and post interaction with a company (Morrison & Crane, 2007).

The design and management of channels produces ripe opportunity to strengthen brand recognition and create a loyal customer base. It is the proposition of this research that designers are especially equipped with the skillset to capitalise on such opportunities.

Current literature and industry evidence shows that designers are capable of designing products, services and experiences that embody the brand values of a firm. However, present literature does not examine the design process of multi-channel strategies that embody the brand values of a company. This research aims to explore this gap by investigating a range of

companies' channels using a content analysis technique to create a channel analysis framework. An emphasis was placed on the design impact within these organisations and multi-channel strategies. Successful companies were those who were able to provide a brand experience that reinforces the brand value throughout its key channels. A multi-channel design tool is presented to aid companies in the design and management of channels, specifically, the seamless translation of a brand value through a multi-channel strategy.

## **Multi-Channel Customer Experiences**

Hoffman and Bateson (1997, p. 6) suggest, "when a consumer purchases a service, he or she purchases an experience". The main concept that lies at the core of design is user experience, expanding beyond usability and requires treating the user holistically as a feeling, thinking, active person (Jordan, 2000). Desmet and Hekkert (2007) distinguished three components of product experience, as aesthetic pleasure, attribution of meaning and emotional response, which are the feelings and emotions that are elicited. In comparison, multi-channel customer experiences, include the interaction between the customer and the channel, which may include interaction with employees (in store) or via technological platforms (social media). Both design and multi-channel strategies require a holistic understanding of the user to elicit an experience.

The design and management of a company's channel is an opportunity to strengthen brand recognition and enhance customer loyalty through these emotional experiences. A loyal customer can only be developed if a company can build emotional connections, in addition to positive attitudes and behaviours (Shoemaker and Lewis, 1999, Mattila, 2001).

However, as customers engage with many channels at once, thought should be directed to the development of an overall channel experience. Customers often interact with both, physical and digital channels through the engagement with a company. Most notably, online purchases are one of the most rapidly growing forms of shopping, with sales growth rates that outperform buying through traditional retailing channels (Levy & Weitz, 2001). This environment is leading to the rapid market entry of new experience brands, developed through the innovative use of web technology and leading to an increasing variety of customer experiences (Nunes & Cespedes, 2003).



The pre and post experience strategies of these channels are less in the domain of an experience designer, however, designing the customer experience has been the subject of design research. The pre-experience stage focuses on managing brand messages and the product or service's core customer while the post stage focuses on reaffirming brand messages and making the customer return. The experience stage is the most vital and susceptible to the influence of a designer. The goal is to create what Pine and Gilmore (1998) refer to as a "sweet spot" or by Csikszentmihalyi (1997) as "flow" allowing customers to be immersed in the experience. Designers create this though influencing both the physical and relational aspects of the experience (Pullman & Gross, 2004). However, generally a designer has more control over the physical aspects such as colour, space and function, with only limited control over the relational or emotional side. This is commonly due to the intangible and unpredictable nature of these elements.

## **Understanding the True Value of Branding**

Branding no longer revolves around only adding value to an offering, but represents and promotes a lifestyle and culture to the customer (Fan, 2005). This increasing sophistication reflects changes in the business environment, particularly channels and the integration of customer insight, in regards to creating value (Knox & Bickerton, 2003).

Company brand perceptions have the ability to influence their customer's experience (Verhoef et al., 2009), purchase behaviour (Fitzsimons, Chartrand & Fitzsimons, 2008) and a customer's post evaluation of the shopping and purchasing experience (Ofir & Simonson, 2007). When brand perceptions are engaged prior to the purchase process, the customer purchase experience can also be influenced. However, it is also important to consider what influence branding has on the customer purchase process over a period of months and years. Brand loyalty is said to have a key influence on this process, as it indirectly links brand trust and the influence of branding on the purchase process (Chaudhuri & Holbrook, 2001). Brand loyalty represents a measure of attachment that a customer has to the brand, reflecting the likelihood of engagement in the experience, leading to recurring purchase (Ghodeswar, 2008). Keller and Lehmann (2003) propose that the customer mind set is the key driver of brand performance. If the customer is engaged in the experience and brand over recurring engagements, it has the potential to have a significant affect on the

perception of the brand (Verhoef et al., 2009). However, with the growing amount of product, service offerings and channels, companies are faced with the challenge to unify their brand value across multiple channels in a way that is consistent in engaging their customers.

## Current Multi-Channel Strategies

As with brands and company operations, the perspective of channels and their management is shifting towards a more customer centred approach. Traditionally, the focus of channels has been on the functions performed by a company's distribution system. This is the interdependent organisation's (manufacturers, wholesalers, distributors, retailers) process of making an offering available to the customer (Coughlin, Anderson, Stern & El-Ansary, 2001). However, this traditional view of channels is shifting due to emerging perspectives that involve value-adding chains to a larger network of customers. Emphasis is now on channels being the point of conception, promotion and delivery of positive customer and brand experiences (Gundlach, Bolumole, Eltantawy & Frankel, 2006).

Multi-channel strategies and experiences have become a standard approach to reach customers (Verhoef, Neslin & Vroomen, 2007). This approach spans many industry segments such as, retail, travel, banking and technology (Kumar & Venkatesan, 2005). However, this has not always been the case. Traditional multi-channel strategies were developed from market segmentation with companies targeting a certain channel to retail their product or service to a particular market segment. Another company would choose a different channel to appeal to a different customer and so forth (Nunes & Cespedes, 2003). Until recently a customer would stay with one channel (e.g retail store) until the purchase was made. However, today's customer is routinely channel hopping, opting for a multiple-channel experience, which is largely driven by online stores (Nunes & Cespedes, 2003). This has been notably driven by the popularity of online shopping and the transparency of company information, as customers can search for information at one channel, purchase at the next and retrieve the product at another channel (Dholakia, Zhao & Dholakia, 2005; Magnini & Karande, 2011).

Operating multiple channels, digital and physical, allows a company to cater to the differing and evolving purchasing motives of its customers (Schröder & Zaharia, 2008). The key issue for a company is how it can best fulfil its customers needs by offering different channels to engage and

purchase. Furthermore, it is important to know how customers behave and their motives to design a relevant brand and customer experience across these channels (Schröder & Zaharia, 2008). Lee, Chung and Nam (2013) discuss the wide range of designable factors (touchpoints or channels) within the service industry. Which include the need to harmonise physical commodities, virtual interface and service personnel. Other models include the “Design Touchpoint Wheel” (Voss & Zomerdijk, 2007). However, the role of design in the creation of a multi-channel strategy is still emerging as a field of research.

## **The Position of Design in Multi-Channel Strategy**

Traditionally design has been employed by businesses to create an artefact or type of outcome based on marketing research to enhance product development and sales. It is only in recent history that the use of design at an organisational level has been investigated. Coincidentally, design has long expanded from designing products by venturing further into the coordination and managing of experiences, services and even brands in relation to their customers. Examples of this include Wuts, Person, Hultink and Brands (2012), who in the context of video game design created a comprehensive framework for the translation of a brand into digital media. This framework outlines a strategy to translate the values of one brand into one specific media. Furthermore, Karjalainen and Snelders (2010) reinforce brand recognition by exploring case studies involving the translation of brand values into the design of physical products. Examples of brands that do this well include Caterpillar, Volvo and Nokia (Karjalainen & Snelders, 2010), as their products successfully reflect the company’s brand value. These two examples demonstrate the opportunities and position for design in the establishment of brand value through products, as both outline the successes and failures that designers have had in the translation of brand values into products. Designers are equipped with skills such as prototyping, visualisation and the mind set to see problems as opportunities for the invention of new alternatives. Prototyping and visualisation are cornerstones of the design process (Evans, 2011). Evans (2011) outlines that designers use these skills to conceptualise and communicate the future in a variety of ways and at a range of levels to develop, refine and communicate versions of the future. These visions of the future provide organisations with mechanisms to develop an understanding of the potential viability of new products and services.

# Methodology

## Research Design

The aim of this research was to identify how different retail companies design multi-channel strategies to communicate their individual brand value. For this study, a content analysis methodology and investigator triangulation analysis technique was used to decipher channels strategies of sixty companies. These companies were selected from the retail industry and other selection criteria included the number of employees, age, and location. These criterions were deliberately pre-defined to ensure the selection of a broad spectrum of companies of varying channel maturity. The research process was separated into two phases, with four distinct stages (Figure 1).

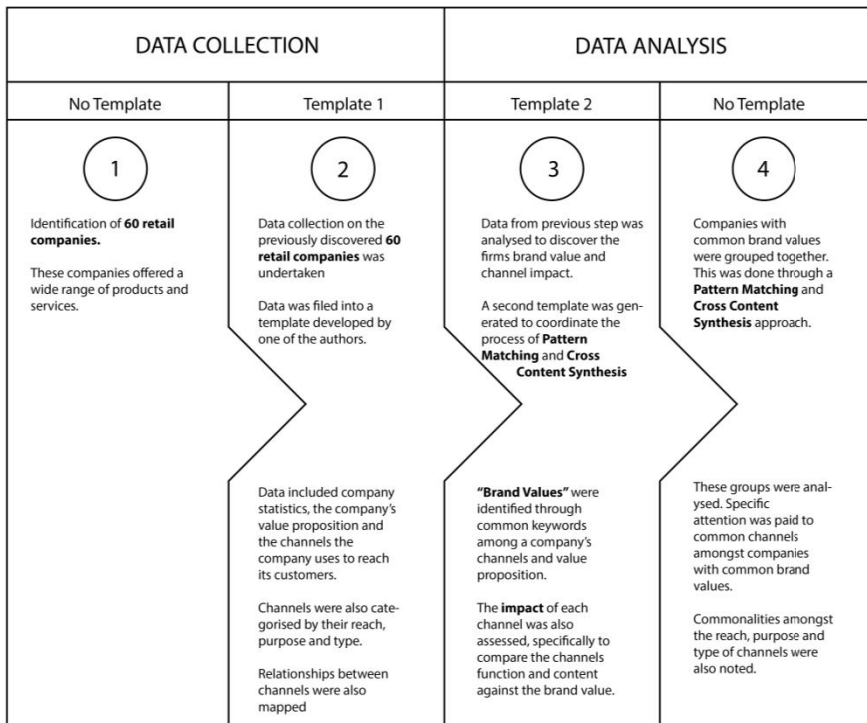


Figure 1 Research Approach

There were two main advantages of using this approach. Firstly, the use of data triangulation allowed for greater accuracy of information despite limited access to official company documents. This was due to investigation of a wide variety of third party sources. The use of this technique was based on Begley's (1996) research on data triangulation. Secondly, the use of multiple investigators, particularly in the analysis of secondary sources proved vital in understanding the common meaning among sources. This was based on Denzin (1978) and Thurmond (2001) belief in the use of multiple investigators for confirmation purposes.

### **Stage One – Data Collection 1**

Stage one involved the identification of sixty retail companies. These companies offered a wide variety of products and services. The identification of these firms came from a pre-existing criterion developed by the research team. Criteria included company size, age, business model, industry and channel use. Key criteria involved the need for companies to have a wide range of physical and digital channels. The size of companies related to the number of employees ranging from under 50 to 10,000+ employees. Age of the company was in reference to when it was established, with the oldest company established in 1884 and the youngest in 2012. All companies were B2C companies and were purposively sampled to provide a range of companies within the retail industry.

### **Stage Two – Data Collection 2**

Stage two involved collecting basic information on the firm (i.e. age, size), their customers, company value proposition and the channels the company uses to get to their customers via third party sources. The research stage also involved labelling each channel by its type, reach and purpose (Figure 2). This information was then mapped onto a predesigned data sheet developed by the research team, which illustrate channel relationships and customer interaction (Figure 3).



Figure 2 An example of a channel within data collection from stage two. The symbols indicate that it is a digital channel, its key purpose is revenue, information and support and has worldwide reach

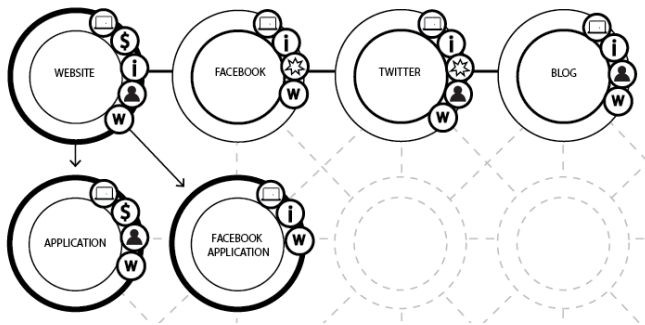


Figure 3 This figure shows the previous channel now in conjunction with other channels this particular business uses. The diagram suggests that the digital elements are the most important elements to this firm and they function to push the user towards their application, the main revenue stream of the company.

### Stage Three: Analysis 1

All sixty companies were assessed in regards to how well (coded as design impact) each channel represented their main brand value to the customer segment (Figure 4). This was approached by investigating each channels emotive purpose and content in relation to its brand value and customer relationship. This was achieved through a cross-content synthesis technique triangulation approach (Begley, 1996; Kolbe & Burnett, 1991) to discover common channel functions to communicate company brand values.








Brand	Brand Values	Channels	Design Impact	Channels	Design Impact
 <b>Company:</b> Mattel <b>Location:</b> California, USA <b>Industry:</b> Consumer Products (Toys)	- Playful, Wonder - Enhancing the lives of children - Caring - New and Old - Trust, Safe  Brand Values diluted by its portfolio of smaller brands, each have their own identity  - Wonder and Playful  - Classic and New Entertainment  - Safe, fun experience		<b>Notes:</b> - Really just a portal to their smaller, owned brands and corporate investor website		<b>Notes:</b> - Direct interaction with customer and users. - Better emotional connection through product launches - Fun and safe environments
			<b>Notes:</b> - Conveys the right information about the brand, but doesn't instill it in the channel Info based, little interaction with traditional customer		<b>Notes:</b> - Little to do with products but brand values comes through. Philanthropy, Caring, Trusting, Happy all ad to the brand
			<b>Notes:</b> - Information heavy - Does not get brand values across well. No toys, wonder, playfulness		<b>Notes:</b> - Brand gets lost in the store - "Toy Store" values are somewhat universal. Still retains many Mattel values

Figure 4 An example of Stage 3: Analysis 1

### Stage Four: Analysis 2

Stage four involved the cross-comparison of all company results from stage 3. This was done by grouping companies with similar brand values. This analysis led to four key themes and the creation of the four meta-models. This grouping allowed the researchers to see not only common channel choices within the themes, but also common trends in the channels type, purpose and reach. Giving insight into how companies use one or two common channels to translate their brand value.

## Results

These four meta-models consist of a common brand value and intended emotive experience. In each meta-model, multiple individual channels are used to convey this to the desired customer segment (seen in figure 5-8).

### High Quality

High quality brands centred their channel strategy on their key offering, in most cases a physical product. Furthermore, each company used their channels to design a high quality environment to support this key product. This usually involved a compelling physical presence through a brand-aligned store, matching partner relationships, accurate and targeted communication strategies and the creation of a sub community surrounding that core product. The emotive experience of exclusivity was portrayed

through the creation of this sub community. Figure 5 outlines the most common individual channels found in companies displaying the band value of high quality and emotive experience of exclusivity.

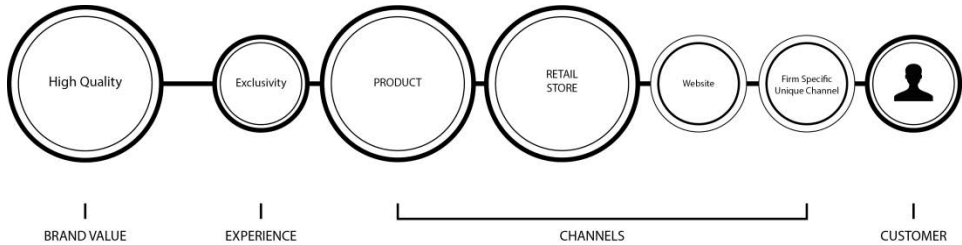


Figure 5 High Quality Meta-model

Companies with the brand value of high quality focused heavily on two key channels. One consisted of the company's product offering (e.g. electronics, fashion or food items), the other was point of sale through a physical retail store. Along with these two key channels, two supporting channels such as, advertising, pop up stores or partnerships were found.

Bang and Olufsen, Kate Spade, Zara and Nespresso are examples of companies using this meta-model. Bang and Olufsen and Kate Spade created the experience of exclusivity through their retail stores and products by sparsely locating their physical retail stores through leading capital cities with a high price point of their products. Due to this, many customers may feel excluded or limited to the purchasing process highlighting the emotive experience of exclusivity to those who can. Retailer, Zara's exclusivity is created through both company driven and customer driven trends. The retail stores are more accessible and products are available at a lower price point, yet exclusivity is solely created through product availability. As the company produces only a small amount of each item and limits its shelf time.

Nespresso on the other hand, operated on the other end of the spectrum. Their products are high quality within their market, yet still affordable, mass produced and attainable for most consumers. Interestingly, they are able to create exclusivity through high profile advertising and capturing customers into a company/product system. A sub culture has also emerged surrounding the purchasing and consumption of its products. Retail stores, known as *Nespresso Boutiques* invite coffee lovers to experience the 'art of espresso' (Nespresso, 2014). First purchasers



gain exclusive membership into the Nespresso club, which is required to purchase products online and keeps track of all products purchased in store.

Through aligning the three key channels, product, point of sale and a website or firm specific channel, to promote the brand value of high quality, it enables users to have a greater experience of exclusivity.

### *Trust*

Key channels found in the meta-model of trust were the company website, multiple product lines and third part retailers with supporting channels such as expos, theme parks and corporate sponsorships.

The emotive experience of the meta-model trust was developed through the company's rich history, tradition or story, and through consistent product or service performance.

Toy companies, Lego and Mattel as well as established alcohol manufacturer, Jack Daniels used traditional channels such as toy expos, theme parks and associated corporate sponsorship respectively to communicate with their consumers. These channels were chosen and designed to achieve brand recognition, as well as, awareness to previously earned trust. This was particularly important for these product-centred companies, where most of their trade was conducted through third party retailers.

The channels used by these brands had little to do with earning revenue; as there are no "call to action" or direct sale message in these channels. These channels were purely designed to reiterate the product and company's story. The design elements in these channels were generally emotive, had little to do with actually selling the product while heavily pushing a lifestyle surrounding consumption or use. Through aligning the key channels, website, product (linked to third party retailers) and a sponsorship/lifestyle channel, it was found to enable customers to develop their own experience of trust with the brand, through the history, tradition and story.

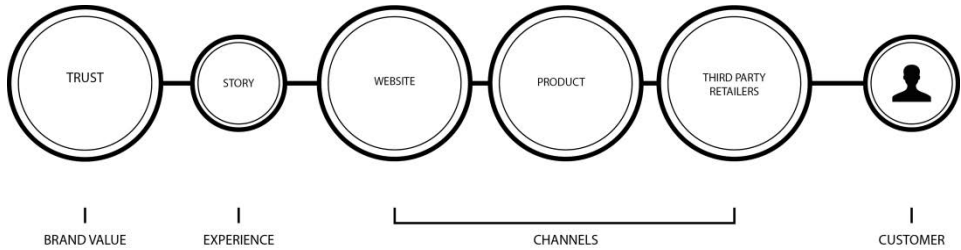


Figure 6 Trust Meta-model

### Convenience

Convenience brands use one key channel as the main method of interaction, while supporting channels provide cost and time saving methods of engaging customers to funnel them to the key channel. In the retail sector, convenience brands were found to be predominantly digital companies such as Netflix, Trivago and Webjet. These companies often have no physical channels and reached their customers through their website, as well as social media, advertising and customer support. Due to being digital brands, these companies also have fewer channels.

In the meta-model of convenience (Figure 7), channels aimed at providing tailored methods for the customer to interact with the company, as well as directing customers to their website as a point of sale. Through extending the brand through complimentary channels, convenience is provided to the customer, reinforcing the brands value.

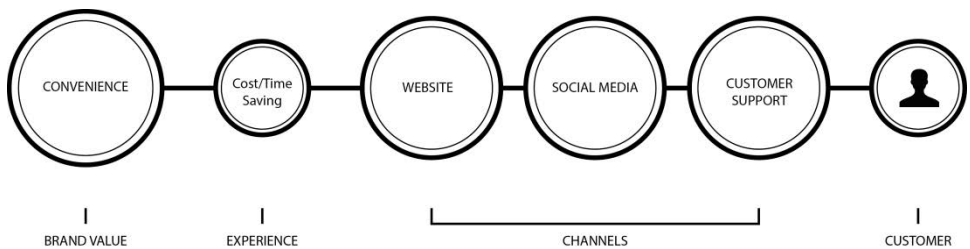


Figure 7 Convenience Meta-model

However, the design impact of the brand value convenience was found to misalign to the original emotive experience intended in the key channel, by attempting to service all possible channels of reach rather than focusing on aligning each of their channels to their brand value and emotive experience.

The brand value of convenience is driven by the emotive experience of cutting time and cost savings for the customer and revenue for the company. Customers perceive these brands as convenient due to their affordability and ability to suit their lifestyle. While on an organisational level, it provides brands with a method of connecting and engaging with customer's lifestyles and driving revenue through their core channel.

An example of this is Netflix a company in the music and video industry, which aligns their website to their brand value, as the core channel providing the main product service offering. Although it is important to align this core channel with the company's brand, it is also critical to align supporting channels to effectively funnel users. Trivago an online travel company misaligns their social media across several regional accounts and platforms, due to irregular posting and also very limited interaction with users. This limits the ability for the channels to engage with their users and lead them back to the website. However, in contrast, Webjet, a similar travel company connects with users on several of these social media platforms through engaging regular posts allowing users to stay connected to travel specials as they go about their day. Webjet also utilises email and online chat as an effective method of support, accessible as users are interacting with their website.

Through aligning the three key channels of convenience for digital retailers; website, social media, customer support to promote this brand value, it enables users to have a cost and time saving experience with the brand. There is greater need to aligning these channels in order to portray convenience, as customers should be efficiently funnelled to the source of revenue efficiently.

### *Community*

It was found that the meta-model of community was often perceived as a local brand, despite being global. To achieve this local brand perception, organisations were found to employ channels such as; physical stores or website, social media and blogs, as well as local support (Figure 8).

Community brands included companies operating in both the digital and physical spheres. However, while physical brands are more prevalent, they also provide support through complimentary digital channels. Community brands were found to include Whole Foods Market, Zipcar and the digital company Threadless.

Physical companies often had their key channel as the physical store, connecting with the community through local community foundations and

programs, customer service as well as social media, websites and blogs. The perception of being a local company (even though all are global) is seen, as they are able to connect to smaller communities through support channels.

Digital community companies use their website as their key channel and offer smaller support channels through blogs, forums, competitions and social media. Rather than creating a physical community these companies aim to create digital communities.

Both physical and digital companies reach out and support local communities, providing a personal and local approach. Supporting channels that also aligned with the brand value of community included localised programs, ethical policies, employment opportunities, services and providing unique support based on current needs.

Whole Foods Market, a health and environment focused supermarket, align their local support channels such as foundations and local donations to the brand value of community. This is done through linking to charitable efforts and promoting community and educational involvement, providing unique support to each local community that Whole Foods has a physical store, as well as global support. Further, they encourage local involvement through their digital newsletters and blogs, reinforcing their mission and creating transparency through blogs from owners, executives and users. Essentially, they create a business about people and further align all of their channels to the brand value of community, allowing a consistent message, heightening the customer's experience. Whereas Zipcar, a car sharing company, aligns their website as their core channel. This allows users to stay connected and access the various touch points of the brand, while also being convenient to use. Zipcar also aligns their social media platforms with this brand value, through allowing interaction and also engaging content.

However, Threadless an online community focused clothing retailer, misaligns their social media through not encouraging users to interact with the brand and rather using the platform as a promotional tool. Through not interacting or engaging with customers, rather just linking them to their website, they are in effect "funneling" the potential community to their website community, which has been aligned.

These brands focus on supporting their customers, enabling them to feel as though they are apart of a community.

To provide the experience of support, brands have to engage with customers and provide the crucial human front to the company that customers connect with. As the company connects with customers through

these channels, the brand value of community is formed by localising and engaging support.

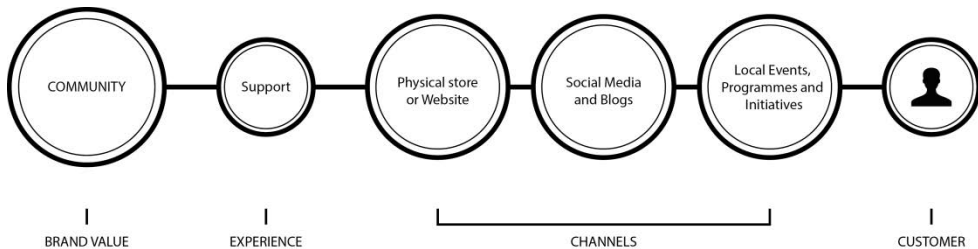


Figure 8 Community Meta-model

## Implications

By operating multiple channels, digital and physical, a company can cater to the differing and evolving purchasing motives of its customers (Schröder & Zaharia, 2008). However, it is important to know how customers behave and their motives in order to design a relevant branded customer experience across these channels (Schröder & Zaharia, 2008). Companies should question their multi-channels strategy, asking if the experience across these channels aligns to their brand value. At present, there is little literature investigating how design can be used to satisfy this objective, yet design as a field has been successful in understanding emotions elicited throughout the customer experience.

The findings from this research include four meta-models, outlining trending brand values communicated through multiple channels to create an emotive experience for the customer.

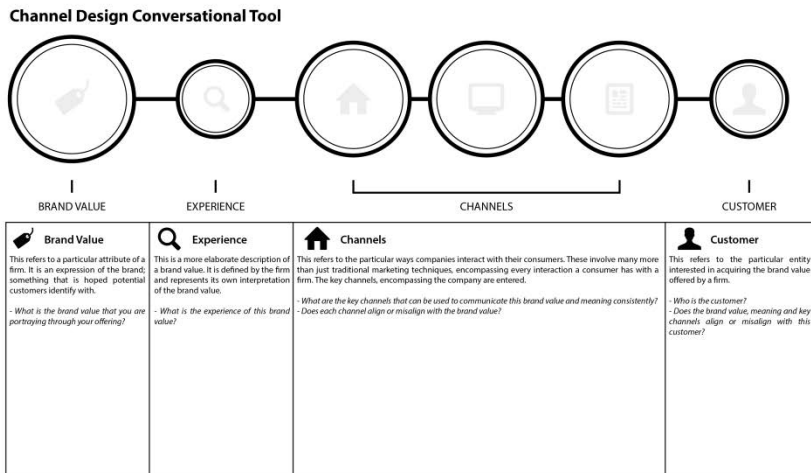
An outcome of this process has generated a multi-channel design tool (Figure 9). It is envisaged that the tool will provide opportunities through visualising the process, allowing channel selection to be considered in relation to the brand value, experience and customer.

Through the use of the tool, companies can test if their brand value is being correctly communicated through existing channels to their intended customer. To use the tool the company must first identify the brand value that they embody or wish to portray through their offering. The experience of this brand value can then be interpreted further through analysing what the brand value means. Referring back to the example of the high quality meta-model the brand value is further defined through the emotive

experience of exclusivity. The key channels used to reach the customer can then be identified. Through designing and assessing each element in the tool, companies can quickly prototype and evaluate alternative multi-channel designs that cannot only reach their customers but connect with them.

It is anticipated that this tool will start the conversation and to help create consistent and seamless translation of a brand value from the company to its customer, across a variety of channels. The advantages of this approach allow firms to play off the strengths of individual channels and to understand the larger customer channel experience.

Figure 9 Multi-Channel Design Tool with Prompts



Furthermore, the authors believe this tool is only the first step and could also be adapted to other business situations. As new channels emerge and multi-channel strategies become more complex the challenge is in maintaining and managing this experience. However, strong, positive emotional connections with a brand experience can equate to a loyal customer. It is the proposition of this research that designers are especially equipped with the skillset to capitalise on such opportunities, by connecting with customers and understanding and providing an emotive experience.

In conclusion, a limitation of this study is the nature of the secondary data sources employed. While this research is able to provide a broad

overview, it is however unable to reveal the underlying company motives for the observed patterns. Intended further research will assess primary data sources to compare such findings.

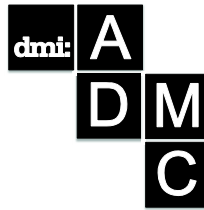
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## Luxury and Ignorance

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*The label 'luxury' evokes vague and often unknown qualities that give a product or service the capacity to command a substantial price premium. Hence, in this paper, I will argue that a core component of luxury is ignorance, or the unknown. This paper will provide a systematic examination of the place of ignorance in the design, promotion, and consumption of luxury goods and services. In so doing, a typology of ignorance of relevance to luxury will be developed which will be of value to producers, promoters, and consumers of luxury. Understanding the place of ignorance in the field of luxury will give those engaged in the design, promotion, and consumption of luxury a deeper appreciation of the meaning of luxury, specifically in terms of the unknowns that constitute an inherent element in all that is classified as luxury.*

**Keywords:** *Luxury; Ignorance; Knowing; Design; Promotion; Consumption*

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## **Introduction**

The market for luxury goods and services is expanding rapidly. For instance, the global luxury goods market was valued at more than €200 billion in 2012 and is expected to reach €250 billion by 2015 (Bain & Company, 2013). On the one hand, the demand for luxury goods is growing quickly as incomes rise in the advanced countries and as the middle classes of emerging countries expand. On the other hand, the label of luxury is being attached to an increasing number of goods and services. The extension of the term begs the question of what is actually meant by luxury and exposes its ambiguous nature in the contemporary context. The label 'luxury' evokes vague and often unknown qualities that give a product or service the capacity to command a substantial price premium. Hence, in this paper, I will argue that a core component of luxury is ignorance, or the unknown, and that ignorance has a place in the design, promotion, and consumption of luxury.

Much attention has been devoted to developing understandings of the place of expert knowledge in the production of luxury artefacts (Ricca and Robins, 2012; Tungate, 2009) and knowledge of the management of luxury brands has grown rapidly in the past decade as the increasing number of books in the area attest (e.g. Hoffmann and Coste-Maniere, 2012, 2013; Kapferer and Bastien, 2012; Chevalier and Mazzalovo, 2012; Okonkwo, 2007). In contrast, the role of ignorance has been ignored. Yet, luxury is often marketed through the promotion of mystery and vague and ambiguous references to undefined but somehow exclusive qualities. The place of ignorance in the field of luxury is not confined to marketing and consumption; it is also evident in the experimentation and exploration that is necessary in the design and development of new luxuries.

Following an examination of the contemporary meaning of luxury, drawing on a critical engagement with the work of Berry (1994), this paper will delineate the role of ignorance in the fields of luxury design, promotion, and consumption. This will be achieved through the application of a typology of ignorance, recently advanced in the field of organizational studies (Roberts, 2013), as a lens of analysis. Hence, this paper will provide a conceptual contribution to understanding of the relationship between luxury and ignorance through a systematic examination of the place of ignorance in the design, promotion, and consumption of luxury goods and services. In so doing, a typology of ignorance of relevance to luxury will be

developed which will be of value to producers, promoters, and consumers of luxury. Understanding the place of ignorance in the field of luxury will give those engaged in its design, promotion, and consumption a deeper appreciation of the meaning of luxury, and, particularly, the unknowns that constitute an inherent element in all that is classified as luxury.

## Defining and Knowing Luxury

### *What is luxury?*

In popular discourse, luxury is often associated with expensive elegant and refined products and services of the highest quality. Additionally luxury is related to excessive quantity and viewed as superfluous or unnecessary or an indulgence. In his highly influential book on *The Idea of Luxury*, Christopher J. Berry (1994) provides a detailed exploration of luxury and defines it as the opposite of necessity, in that it is distinct from basic needs, which are non-intentional and universal. Therefore, for Berry luxury is the object of wants and desires. Yet, he goes on to argue that luxuries must be the object of socially recognized desire, and, as such, they are believed capable of giving pleasure rather than merely relieving pain.

What is clear from Berry's (1994) analysis is that luxury cannot be objectively defined because it depends on cultural, social, and individual meanings. Goods which may be regarded as socially non-necessary may be 'needed' by an individual either in a specific instrumental sense or because they are the object of intense desire (i.e. psychologically necessary) or intense identification (e.g. cherished objects). Consequently, not all unnecessary goods or services are luxuries to everyone.

Conspicuous consumption (Veblen, 1899), which is so often associated with luxury goods and services, can be interpreted as the instrumental consumption of luxury with the purpose of signalling status. Hence, some consumption of luxuries may actually be necessary for individuals to maintain their social position. In such cases, the consumption of luxury can be a necessity in which case it is no longer a luxury. For Berry (1994, p. 41), then, '*luxuries are those goods that admit of easy and painless substitution because the desire for them lacks fervency*'. They therefore have a high cross elasticity of demand because they are easily replaced by substitutes. Luxuries also have a high income elasticity of demand, so as incomes rise above an amount required to satisfy basic needs the demand for luxuries grows by a higher proportion than the rise in income.

In contrast to Berry (1994), Armitage and Roberts (2014) offer an alternative definition of luxury goods and services inspired by Marcuse's (1964) critique of the minority of the elite who irresponsibly follow their economic desires or 'false' social needs. Hence, Armitage and Roberts define luxuries 'not as painless substitutes lacking fervent desire but as alienating surrogates saturated with the urgent sense of a life determined by external forces, and consequent lack of control or authenticity and oneness with ourselves.'. Highlighting the complex nature of luxury, Armitage and Roberts go on to note that:

*The irregular meanings of luxury goods and services are now more willingly comprehended as the necessary perception and manifestation of a diverse range of interpersonal yet relative conceptions of human existence across different worlds and spheres from bottled water and high fidelity music to live-in domestic servants and personal financial brokers. We are brought consequently to a many-sided and discursive model of luxury as unnecessary, conducive to enjoyment and ease, costly, difficult to acquire, extravagant, and to the debates this in turn inexorably produces. (Armitage and Roberts, 2014)*

From a business and marketing perspective Chevalier and Mazzalova (2012, p. xviii) argue that a luxury product must meet three criteria. Firstly, it must have a strong artistic content; secondly, it must be the result of craftsmanship; and, third, it must be international. The link between art and craftsmanship and luxury is not new. Works of art and the products of craftsmanship normally require high levels of skill, time and expensive materials. Hence, their consumption has been the preserve of wealthy individuals and institutions. Nevertheless, changing income levels and techniques of production have made these products increasingly available to a wider range of individuals since the late 20<sup>th</sup> century. Chevalier and Mazzalova's (2012) suggestion that for something to be a luxury it must also be international is very much a consequence of globalization in the latter part of the 20<sup>th</sup> century. It is also embedded in a business perspective on luxury which is concerned with market size and expanding geographical reach of brands as a means to produce sustainable profits, especially among the large luxury sector conglomerates like LVMH, Kering, and Richemont.

If luxury is international, it must be recognized as such in various different locations and different cultures. This suggests that there is a homogenizing process. Yet if luxury is socially constructed and we live in a

diverse social world, how can luxury be recognized as such across the globe? The international recognition of items as luxury occurs among a global elite who have more in common with one another than they do with their fellow compatriots. A wider population aspires to join these elite and they satisfy these aspirations by imitating their consumption behaviour.

Luxury has also been classified in terms of its accessibility by Danielle Allèrès' (1990) who identifies three levels of luxury, namely, inaccessible (exclusive unique items), intermediate (expensive replicas of unique items), and, accessible (factory produced and in large production runs). In the contemporary era, we are seeing a democratization of access to luxury, with the proliferation of terms like, new luxury, mass luxury, and masstige. According to Kapfere and Bastien (2012), this is the result of, on the one hand, the efforts of traditional brands to trade up, and, on the other hand, the drive for profits among luxury brands by offering products and services to a wider market. Such changes also reflect the fragmentation of the production process, such that the design of goods and services may involve significant artistic inputs and craftsmanship, but the final products and services can be mass produced without any loss of quality. Moreover, globalization has given rise to highly profitable niche luxury markets that can be reached through the Internet and social media platforms (Anderson, 2008) as well as in the transit lounges through which the wealthy pass en route to their next destination. Regional and national niche luxury markets can now be aggregated into highly profitable global markets in which producers are able to gain economies of scale, yet because their products are distributed across the globe, they remain relatively exclusive.

The meaning of luxury varies through time and space, and across economic, social, and cultural contexts. For instance, in 1900, a telephone would have been a luxury, but today it is a necessity in most parts of the world. Additionally, the possession of an Internet-connected computer may be regarded as a luxury in present day least developed countries, yet this is seen as a necessity in advanced nations. Moreover, the meaning of luxury has become stratified reflecting a hierarchy of luxury. In this short paper, it is not possible to explore luxury from the perspective of all these different times and locations or across all economic, social, and cultural contexts. Consequently, luxury in this paper is viewed from the perspective of an individual in an advanced market.

### *Knowing luxury*

Given the changing nature of luxury, how do we recognize luxury goods and services? How do we *know* luxury? How do we distinguish it from standard or premium goods and services? Does the addition of the label 'luxury' transform a produce into a luxury? Visiting coffee shops like Caffè Nero in the UK you may consume a 'luxury scone' with your coffee – but to what extent is the scone a luxury? Or, is Andrex® Touch of Luxury, the most luxurious product in the Andrex toilet tissue range, really luxury? According to the marketing information, the Shea Butter 'enriched sheets, scented inner core and luxurious dark brown packaging are designed to give you a fabulous feeling.'<sup>11</sup> What this product description captures is an important element of luxury – 'feeling' and this is not merely the feel of the tissue on the skin, it is much more than this. The feelings that luxury brands seek to evoke in their customers are emotional – senses of deserving and the desire to fulfilling dreams (Kapferer and Bastien, 2012). While expensive toilet tissue may be within the reach of many people, the high end products of luxury brand companies are promoted as items that we should aspire to own. While we might not all be able to afford such products we can all appreciate the quality and craftsmanship that goes into their production.

The luxury label is being adopted as a marketing tool for an increasing number of products. Whilst simultaneously, traditional luxury producers are extending their reach into wider market segments. So, how do consumers know luxury? Marketers stimulate false desires in consumers based on the promise of some ephemeral quality labelled 'luxury'. From the perspective of a producer or marketer the label 'luxury' offers an opportunity for product differentiation, and, thereby, the opportunity to increase revenue by securing larger market share through differential pricing.

Because there is a high level of ambiguity and uncertainty in relation to what luxury is, knowing luxury is open to manipulation. Consumers need support in differentiating luxury from premium and standard products and services. Thus, consumers are willing to accepting the opinion of luxury 'experts'. Consumers give way to the authority of the companies and their retail staff – who 'really' know the products and their 'authentic' luxury qualities. Consumers put their trust in brand names and their reputations. It

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<sup>11</sup> Description available at:  
<http://www.waitrose.com/webapp/wcs/stores/servlet/ProductView-10317-10001-61019-Andrex+shea+butter+toilet+tissue+%289+per+pack%29.html?storeId=10317#.U24MBVehzaY>  
(accessed 10<sup>th</sup> May 2014).

is for this reason that luxury goods and services normally have a strong narrative that can imparted to potential customers the luxury characteristics including quality, rarity, heritage, timelessness, and, so on. There is no need to provide all the technical details, rather the story itself is what is important, because it speaks to the emotions of consumers and feeds the desire to possess the luxury good or service in order to be part of the story. Hence, luxury can provide a sense of belonging and identity, a sense of history, heritage, and an association to revered qualities that are embedded in the brand narrative. In the individualized society, people look to consumption for their sense of identity but in the advance societies the choice can be paralysing (Bauman, 2001). Hence, stories that link into an historical trajectory provide a promise of security. Buying into luxury is buying into well established and long sought after way of living – a way of living that has a past and a future trajectory.

Knowing luxury through an appreciation of the expertise and craftsmanship that goes into the production process (Ricca and Robins, 2012) is not always accessible to consumers. This type of knowledge requires time to acquire an appreciation of the materials and techniques involved in the production process. In contrast, the presentation of the key features of the luxury in story form gives customers quick access to understanding the product or service. Through a well-constructed narrative, a product can gain all the attributes required to become desirable and a symbol of luxury to many consumers. Such heritage stories are presented to potential customers through a wide range of media from television, newspapers, magazines, and the Internet and social media platforms. In this way, the false desires identified by Marcuse (1964) are stimulated in relation to the need to possess and experience luxury products and services.

Yet, the heritage narratives developed by luxury companies are open to embellishment, and, consequently, do not always represent a 'true' rendition of the history of a product or service. The stories associated with a luxury are open to multiple interpretations, as is the meaning of luxury. In this sense, there are ambiguities associated with luxury and unknowns. It is, therefore, necessary to recognize the role of ignorance in the field of luxury.

## **Ignorance and luxury**

Prior to exploring luxury's relation to ignorance, it is necessary to consider briefly, what the term ignorance means. Drawing on Roberts (2013), a typology of ignorance is outlined below. This typology provides a



lens through which to analyse the relation of luxury to ignorance. As a core component of luxury, in the form of unknown and vague qualities, ignorance has a place in the design, promotion, and consumption of luxury.

### *Ignorance*

Ignorance is usually defined as a lack of knowledge or information (*OED*, 2003: 862). If knowledge is defined as 'justified true belief', ignorance can be viewed as the absence or distortion of justified true belief. One might then argue that ignorance is the absence of empirically valid knowledge. However, as Smithson (1989) notes, the adoption of this approach requires established criteria for absolute knowledge or truth, yet knowledge may be socially constructed, so truth, and the absence of truth, depends on a given perspective or system of belief. Hence, like knowledge, ignorance may be socially constructed.

Related to ignorance is the condition of being ignorant, that is, of lacking knowledge. To be ignorant is also associated with being rude, discourteous, or stupid. A person with no knowledge may be referred to as an ignoramus. Moreover, to ignore refers to a failure or refusal to notice something or someone.

Of course, any attempt to gain an appreciation of ignorance is dependent on knowledge of its existence. Ignorance may take the form of a *known unknown* or an *unknown unknown* (Gross, 2010; Proctor, 2008; Witte et al., 2008). Ignorance, as *known unknowns*, denotes knowledge of what is known about the limits of knowledge; there are certain things that we know that we do not know. Ignorance, as *unknown unknowns*, refers to a total absence of knowledge, such that we are not aware of our ignorance. *Unknown unknowns* are completely beyond anticipation, and, as Gross (2010) notes, the revelation of such ignorance can be a source of surprise. Even so, experience tells us that in the future some unknown unknowns will be revealed. Both known unknowns and unknown unknowns derive from an absence of knowledge.

Other types of ignorance also warrant consideration. Ignorance can, for example, result from ignorance about knowledge, which gives rise to *knowable known unknowns*, *unknown knowns* and *errors*. A *knowable known unknown*, which Congleton (2001) calls rational ignorance, differs from a known unknown in that it is knowable given sufficient motivation and resources to acquire it. *Unknown knowns* refer to things that we do not know that we know (Witte et al., 2008). They include the tacit knowledge that individuals are not always aware that they possess (Polanyi, 1967).

Unknown knows denote ignorance of existing knowledge rather than ignorance itself. Such ignorance does not prevent the use of the unknown knowledge. *Errors* arise from distortion, founded on confusion or inaccuracy, or incompleteness, based on uncertainty or absence (Smithson, 1989). Errors can occur because of the limited cognitive capacity of humans (Simon, 1955).

A further type of ignorance emerges from the refusal to recognize knowledge or its unconscious suppression; this includes *taboos* and *denials* (Witte et al., 2008). A *taboo* is socially constructed ignorance in the form of a social prohibition or a ban on certain knowledge, perhaps because it is viewed as dangerous or polluting. For instance, knowledge of the 1989 student led protests and subsequent massacre in Tiananmen Square are taboo in China. *Denials* represent the ignoring or repressing of knowledge that is too painful to know or that does not fit with one's current understandings of the world. Knowledge that does not correspond with one's existing cognitive frameworks creates a degree of dissonance, which can challenge understanding. Tolerating such cognitive dissonance through denial is a common response and is sometimes referred to as wilful ignorance or wilful blindness (Berry, 2008; Heffernan, 2011). The loss of a loved one can initially evoke such ignorance.

Ignorance also arises from the conscious suppression of knowledge through *secrecy* either by individuals or by organizations (Proctor, 2008). Ignorance arises for individuals and organizations when they are subject to the secrecy of others. Certain types of secrets may be socially sanctioned, such as those arising from the individual's right to privacy. Hence, ignorance can also be identified with *privacy* - the ability of an individual or group of individuals to restrict access to, or information about, themselves. Unlike secrecy, privacy is multilateral in nature and it is enshrined in the laws of many countries and in the United Nation's Universal Declaration of Human Rights. Existing and evolving social and cultural practices together with information and communication technologies also determine patterns of privacy. For instance, the disclosure of private information about celebrities by members of social media sites like *Twitter* and *Facebook* is currently testing the enforcement of privacy laws.

The types of ignorance detailed in this section can exist at various level from the individual to the organization and beyond to society as a whole. In the discussion that follows, attention is focused on ignorance at the level of the organization and the individual.

## Luxury's relation to ignorance

Having examined ignorance it is now possible to consider how ignorance and luxury relate to one another. In particular, ignorance is explored from the perspective of the organization producing and promoting the luxury product or service as well as from the consumers' point of view. In the subsections that follow, the forms of ignorance identified in the previous section are considered from the perspective of the design, promotion, and consumption of luxury. In this way, a typology of ignorance relevant to the luxury sector is constructed (see Appendix 1, Table 1).

A core component of luxury is ignorance, or the unknown. Ignorance in the form of ambiguity and ephemeral qualities has an important place in the promotion of luxury products and services. Moreover, luxury is constructed not only in terms of a physical item or context for a service but also as an idea, as a way of consuming, and, as a way of being. This ontological aspect of luxury, while it is employed in the design and promotion of luxury is not well appreciated by the growing number of consumers of luxury. Hence, many consume luxury in ignorance, happily absorbing and acting on the information disseminated by the luxury companies through their sales force, and websites as well as through their engagement with media, from mainstream television and newspapers to specialist outlets, such as, *The Financial Times'* monthly magazine *How to Spend It* and *The Telegraph's* bi-annual magazine and website *Telegraph Luxury*. While the absorption of such information gives consumers some appreciation of luxury, this appreciation is superficial and derives from codified forms of knowledge. The tacit elements of knowing luxury are more time consuming to acquire as they involve learning in practice. Many consumers remain ignorant of the tacit dimensions of luxury.

### *Creation and Design of Luxury*

Ignorance in the form of *unknown unknowns* is a feature of the process of creativity and innovation (Roberts, 2013). A luxury organization may discover the existence of prior unknown unknowns through, for instance, the recruitment of staff with knowledge sets that are new to the organization, the acquisition of new equipment, R&D, the purchase of business services, interaction with customers and suppliers, and the actions of competitors. Indeed, external actors, like competing luxury organizations, may actively construct unknown unknowns for their rivals by disseminating false information about their intentions or by restricting the circulation of newly acquired knowledge. Recognizing that a luxury organization is

exposed to unknown unknowns can stimulate speculative thinking with the aim of transforming them into known unknowns. Techniques that can be used to expose such ignorance include scenario planning - also known as scenario thinking or scenario analysis, which involves combining the known and the unknown to produce a number of internally consistent scenarios of the future incorporating a wide range of possibilities (Shoemaker, 1995). Similarly, foresight studies and trend forecasting, by anticipating the future, also seek to uncover existing unknowns (Loveridge, 2009; Raymond, 2010).

*Known unknowns* drive creativity in all parts of the luxury organization. Ignorance may not only stimulate the search for new knowledge, but surprisingly the lack of knowledge, *unknown unknowns*, can also be an important element in facilitating the creativity of groups within the organization. This is because the naivety and innocence of the young or those inexperienced in a particular field of expertise can be important forces driving forwards the boundaries of knowledge. The development of new ideas and products often requires creators to 'think outside the box', hence ignorance of the box, in terms of existing knowledge in a particular field, can enhance creativity (Roberts and Armitage, 2008). Luxury companies often engage with artists and search for new talent with the aim of stimulating ideas for new products.

For a luxury organizational *knowable known unknown* refers to ignorance that the organization is not motivated to overcome through the expenditure of the necessary resources. The choice regarding the acquisition of knowledge about knowable known unknowns will depend on the costs and benefits involved and the organization's strategy. Where a knowable known unknown becomes of significance to the organization's activities, an investment will be made in acquiring the appropriate knowledge whether through learning, staff recruitment, R&D or the purchase of knowledge embedded in capital equipment or business service. Such ignorance reflects the knowledge priorities of organizations. Importantly, within organizations, knowledge and ignorance will be unevenly distributed. Consequently, knowable known unknowns can be sustained within, or confined to, parts of the organization through the process of specialization and coordination. In this way, the organization is able to economize on the cognitive resources employed in the creation and design of new luxury goods and services.

*Unknown knowns* denote knowledge that is unrecognized in the luxury organization. For example, they may be embedded in tacit routines (Nelson and Winter, 1982). Ignorance in the form of unknown knowns may also

underpin creativity. The importance of unarticulated knowledge in the form of intuition, for example, is a key element in the act of creation (Koestler, 1976). Thus, acknowledging and valuing unknown knowing in the form of instincts, intuition and insights unsubstantiated by evidence has a role in the management of this type of ignorance about knowledge.

Organizational *error* signifies ignorance arising from the bounded rationality of individual organizational actors and the limitations of managerial attention (Simon, 1955, 1973). Hence, limited cognitive capacity, combined with the nature of human cognition, creates scope for organizational error (Berry, 2008; Harvey et al., 2001). Rapidly and perpetually changing environments stretch the organization's cognitive resources, thereby increasing the capacity for organizational error. Organizational error can often be traced to the actions of individual organizational actors or a failure in organizational systems (Roberts, 2013). For all companies errors can be highly damaging to reputation. For luxury companies, even more so, as their value is so much aligned to intangibles arising from reputation and the perceptions of customers. In the car industry, for instance, errors are giving rise to a growing number of recalls of vehicles, which are damaging in themselves, but they pre-empt more significant damages arising from fatal accidents caused by manufacturing and design errors. Even luxury car manufacturers must recognize errors and recall cars. For instance, in February 2014, Aston Martin recalled 17,590 sports cars due to a problem with the accelerator pedal, which risked the driver being unable to maintain speed or accelerate thereby increasing the risk of a crash (*The Telegraph*, 2014).

*Taboos* can be exploited or taken into account in the design of luxury goods and services. It is, for example, common for hotels to remove the number 13 from the list of floors. In a globalized world, the designers of luxury need to take into account a wide range of taboos that may influence the consumption patterns of the intended consumers of new luxury goods and services.

*Denials* are evident in the creation and design of luxury when there is a refusal to recognize major changes in the business context, which require the adoption of new business models. For instance, many luxury companies have been slow to integrate online shopping and social media into their activities and, as a result, they miss the opportunities to learn about their consumers and to employ such information in the creation and design process. Those companies that have taken up the opportunities are able to take a lead in terms of responding to and adapting to customer needs.

*Secrecy* is vital to luxury organizations in relation to the creation and design of new products and services. Indeed, where products are technologically sophisticated then companies may use trade secrets as well as protecting their knowledge through the Intellectual Property Rights (IPR) system. In this way, companies either keep their competitors ignorant or control the use of their proprietary knowledge. Secrecy and denial are also evident in luxury companies' efforts to maintain ignorance of the production process. For instance, the separation of design from production enables manufacturing to occur through outsourcing to low cost locations, with a final element of the production process occurring in the home country the labelling can reflect the final production stage and therefore implies that products are fully produced in the home market (Thomson, 2007).

Finally, *privacy* can be a vital element of the design of products, especially when they are bespoke. Keeping the confidence of consumers is a vital element in the service accompanying the design, production, and delivery of luxury services. In particular, Ultra High Net Worth individuals (UHNW) treasure their privacy.

### *Promotion of Luxury*

In the luxury sector, the promotion of products and services is more subtle than that found in traditional sectors. Passive advertising is rarely used by luxury companies, which prefer to actively engage their customers. According to Kapferer and Bastien (2012, p. 258-9) luxury communication tends to occur in a number of ways. Firstly, by communicating with existing clients to induct them into the brand family; secondly, through whisper communications, which involves VIP events; third, through song communication, which involve Public Relations (PR), larger events, shop window displays and targeted digital methods; finally, with small amounts of highly impactful advertising.

By focusing on communication methods such as restricted events, PR, sponsorship of cultural and charity events, luxury companies create and maintain a mystery around their products and services. Buying the product allows customers to buy into a luxury brand club. The promoting of luxury can exploit the consumers' exposure to *unknown unknowns* by playing on potential risks, uncertainties and insecurities to which they are exposed.

For luxury companies, *known unknowns* exist in relation to how customers will react to promotional activity. A known incompleteness of knowledge can lead to the outsourcing of exposure to such ignorance through the employment of specialist advertising and marketing firms, or

can direct the development of such skills internally. For the many small family owned luxury companies the outsourcing of promotional activity can reduce exposure to such *known unknowns* and *knowable known unknowns*.

Luxury goods and services have certain qualities that are not necessarily explicitly articulated in promotional activity. This *unknown known* aspect of a luxury may feature in promotional activity because it is open to multiple interpretations and therefore helps to ensure that a product or service is attractive to a wide market. Furthermore, promotional activity often focuses on the aesthetics of the product rather than the technical detail. For instance, the luxury mobile telephone supplied by Savelli is described on the company's website as:

*The jewel of tomorrow. Created specially for women. Imagined by Alessandro Savelli. Bringing together technology and elegance. Revealing something truly new... White diamonds, exquisitely set. Sculpted rose gold, hand-polished to perfection. Ultra-Bombé sapphire crystal, stunning in its clarity.*<sup>12</sup>

Claiming to be exceptional in every detail, the website gives very little technical information about the phone, yet it includes a video of almost 1 minute entitled Jardin Secret, starring the model Julia Restoin Roitfeld. This video focuses on conveying the pleasure, even ecstasy, which a woman can expect to gain from possessing the Savelli mobile phone. No information about the telephone is conveyed. Indeed, the phone is not even visible for much of the video, which concentrates close-up on the visual expressions of the model as she looks into the camera, admires herself in a mirror or closes her eyes and touches her hair as she apparently revels in the sheer bliss of fondling the Savelli phone.<sup>13</sup> Somehow, this phone will give you pleasure and make you happy. But, how?

The promotional activity appeals to the desires of consumers. By providing minimal information but simultaneously suggesting that the produce holds potential for happiness and fulfilment, in a way that allows the customer to fill in the detail of the desired emotions, the promotional techniques of luxury companies maximize their impact. Through the injection of ambiguity into promotional campaigns, the company appeals to a wide range of potential customers who interpret the communication in their own way. The promotion of vague nebulous qualities allows for

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<sup>12</sup> <http://www.savelli-geneve.com/en/savelli/> (accessed 11/05/2014).

<sup>13</sup> <http://www.savelli-geneve.com/en/savelli/mood/> (accessed 11/05/2014).

multiple interpretations by customers. In this way, the communication strategies of luxury companies involves providing only minimal hard information, the rest is suggestive and designed to stimulate positive emotions.

By playing on the ephemeral and ambiguous aspects of luxury products and services, luxury companies create and employ ignorance as a strategic ploy. Moreover, they exploit the ignorance of customers. While there are many sophisticated consumers of luxury products and services, the rapid growth in the market in both national and international markets results in a growing number of customers who look to the luxury companies and their retail staff as well as media outlets to inform them of the standing of various luxury products and services. Many customers are aware of their own ignorance and are keen to learn from the luxury suppliers. Companies are in a position of authority over such customers and can exploit the ignorance of customers in their promotional activity for their own benefit.

Ignorance in the form of *errors* may be evident in the use of inappropriate promotional activity for luxury goods and services. While often promotion is discreet, some luxury companies do use celebrities to endorse their products. The use of celebrity endorsements can be an error when information, of which the company was ignorant, about the transgressions of the celebrity becomes known. For instance, when the celebrity golfer Tiger Woods' extramarital affairs became known to the public in 2009 his sponsor, the luxury watch company Tag Heuer, suspended the use of his image and later withdrew its sponsorship (*The Telegraph*, 2011).

Promotional activity can exploit the *taboos* that characterize customers' behaviours. In cultures or countries where ostentatious displays of wealth are taboo, promotion may focus on discreet luxury items that are promoted as better value and longer lasting than non-luxury alternatives. For instance, a luxury watch can be passed down through generations. In addition, there are taboos in relation to luxury promotion itself, for instance, in some sectors the display of a price tag would be very much taboo, as would the use of traditional advertising.

The refusal to recognize ineffective or damaging promotional activity is an example of ignorance in the form of a *denial*. Moreover, luxury is often presented as exclusive and promotional methods seek to perpetuate this even though luxury goods and services are widely available to those who can afford them. Yet the promotion of luxury as exclusive seeks to deny the reality that luxury products can be purchased at outlets like the *Chic Outlet*



*Shopping*<sup>®</sup> Villages, which offer a collection of luxury brand outlets in 'village' settings with discounts of up to 60% on their previous seasons' collections.<sup>14</sup> Similarly, the promotion of European luxury through an emphasis on production in Europe can be evidence of companies engaging in *denial* and or *secrecy*. For while some luxury companies are open about the production of their goods in low cost countries, like Hermès which acknowledges its use of low cost labour in Mauritius to hem scarves by hand, others deny the use of low cost labour from the far East. Thomas (2007) documents examples of the production of luxury goods in China and the efforts of luxury companies to conceal this practice. For instance, concealment practices include hiding the 'Made in China' label, or by passing provenance laws by having products 90% completed in China and finished in Europe thus allowing a 'Made in Italy' label to be attached to items largely made in low cost locations. Thomas (2007) also documents the practice of Italian luxury leather goods produced by Chinese owned factories employing illegal Chinese labours in Italian towns such as Prato with its long history of producing leather goods for brands like Gucci and Prada. Clearly, this is not the story that luxury companies wish to promote. Rather they promote the idea of leather goods produced by European crafts people working in small workshops located in Europe. In recent years, luxury companies like Prada have begun to be more open about their global production, indeed, even making an asset of production in a variety of locations (Tokatli, 2014).

In addition to secrecy regarding information about production, secrecy may be used in promotional activity to encourage interest in a new product or service. An element of mystery is important for many luxury goods and services – this requires a degree of holding back information. It is important that customers wait for their luxury good or experience; the waiting increases the desire and anticipation and enhances the exclusive character of the luxury (Kapferer and Bastien, 2012).

Finally, promotion may involve confidential one-to-one communication with clients. For instance, in the provision of information about new financial services to UHNW individuals, privacy is paramount and, in this way, the promotion of such services involves ignorance arising from the need for confidentiality and absolute privacy.

The promotional activities of luxury companies do involve ignorance in all of its various forms. Luxury companies are exposed to ignorance in their

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<sup>14</sup> <http://www.chicoutletshopping.com/en/company/about-us> (accessed 11/05/2014).

promotional activities and they also purposely exploiting the ignorance of their customers in such activities by restricting information about the true conditions under which some products are produced and by developing narratives that perpetuates the ignorance of customers.

### *Consumption of Luxury*

Luxury consumers may have *unknown unknown* desires that are triggered by the promotional activities of luxury promoters. The exposure of unknown unknowns is unexpected and can create surprise for luxury consumers. The development of new produce and services can satisfy desires that consumers had never contemplated.

Consumers may be aware of their ignorance of certain aspects of luxury, that is, they are aware of *known unknowns*. Rather than seeking to overcome such ignorance, consumers rely on luxury companies to provide evidence of, for instance, the authenticity of luxury goods and services. Heritage stories and indicators of quality are employed by consumers as a means to validate the luxury status of goods and services, and thereby compensate for their ignorance about the luxury goods and services that they consume.

Ignorance in the form of *knowable known unknowns* can be overcome by consumers through, for example, the participation in educational programmes and private study concerning particular luxuries. However, consumers are often time poor and therefore they seek to buy the services of experts rather than specialize themselves. After all, it would be difficult for a consumer to have knowledge about every aspect of every luxury product or service that they consume. Consequently, consumers are happy to remain ignorant of some aspects of luxury. For example, to desire and appreciate a fine timepiece it is not necessary to fully understand the mechanics that ensure accuracy and longevity. Rather, most consumers are happy to put their trust in a reputable luxury brand, safe in the assumed knowledge that the product is of the standard that can be expected of luxury.

Ignorance in the form of *unknown knowns* may underpin a consumer's desire for a luxury good or service. Customers desire something because they feel or believe that it will give them something, for example, pleasure. However, consumers are not always able to articulate how the product will fulfil their expectations. Their feelings may be difficult to express explicitly, nevertheless, they may be based on tacit knowing, including, for instance,

an implicit understanding of what gives them personal happiness or fulfilment.

For consumers ignorance in the form of *errors* may be revealed when they purchase something yet find that it has no value to them after the initial purchase. Such errors can occur because of the false desires experienced by consumers resulting from exposure to the promotional activities of luxury companies.

Ignorance in the form of *taboos* may influence the consumption of luxury in various ways. At a general level, excessive displays of wealth may be taboo and therefore impact on the type of luxuries consumed, perhaps leading to a tendency towards discreet luxury. More specifically, taboos may reveal themselves in preferences for certain colours rather than others, certain styles of dress, and so on. Luxury wines and spirits, for instance, like all alcoholic beverages are taboo in Islamic states, yet this does not prevent their discreet consumption in such countries.

*Denial* reveals itself in the form of wilful ignorance on the part of consumers regarding how luxury goods and services are produced. Consumers' desire for the product allows them to ignore the negative side of luxury goods produced through outsourcing contractors in sweatshops in low cost locations, where health and safety regulation can be far from adequate. Moreover, consumers ignore the dark side of luxuries that require precious metals, minerals, and diamonds (e.g. 'blood diamonds' for jewellery and 'conflict minerals' for mobile telephones).

In recent years, consumers have become more knowledgeable about the ethical and quality issues of outsourcing and are demanding products produced in Europe or USA.<sup>15</sup> There are exceptions, such as Prada, the Milanese fashion house, which according to the FT.com (Sanderson, 2013) reported in its prospectus to its 2011 IPO that it made about 20 per cent of its collections in China and it also uses manufacturing in Turkey and Romania. This choice did not appear to impact negatively on its sales, which increased 29 per cent in 2012 driven by sales to Asian consumers at home and Chinese tourists shopping in Europe (Sanderson, 2013). In the case of Prada, such is the consumers desire to have Miuccia Prada's designs, that they willing ignore the location of production.

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<sup>15</sup> In addition, the rising number of Chinese consumers, who perceive Chinese or Asian produced goods as inferior (no matter what the reality is) to European products is driving the trend for luxury production to return to the home countries of companies.

*Secrecy* can be an important requirement for the satisfactory consumption of luxury. For instance, anonymous buyers and collectors of art enjoy their purchases in secret locations. Moreover, many UHNW live on private estates hidden from the public eye and enjoy holidays on exclusive island retreats. Secrecy and privacy are intimately connected for many consumers of luxury. While conspicuous consumption is associated with some sections of the luxury market, for other sections consumption involves privacy, for instance, private jets and yachts. Escaping from the public gaze can in itself be a luxury, one that necessitates the ignorance arising from secrecy and privacy.

## Discussion and conclusion

Although the market for luxury is growing rapidly, the nature of luxury remains poorly appreciated. By taking an ignorance perspective on luxury this paper has highlighted important qualities of luxury, in particular, concerning its design, promotion, and consumption. The unknown is a core component of much luxury for most consumers. We are all subject to bounded rationality (Simon, 1955) and we must therefore make choices about what knowledge to acquire and process. Knowing every detail of a range of luxury products is beyond the cognitive capacities of most individuals. Hence, luxury consumers rely on the authority and reputation of luxury companies to inform their purchasing decisions. But as we have seen in this paper, ignorance is not merely confined to consumers. Luxury companies are both exposed to ignorance and they employ ignorance in their promotional activities. Through the deployment of promotional activities that enhance mystery and ambiguity, companies ensure that they appeal to the widest audience. The promotion of luxury employs ignorance to present qualities that are open to multiple interpretations. Consumers are left to fill in the gaps – to identify the potential satisfaction of their own individual desires in the seemingly luxurious exclusive products and services to which they are exposed.

Understanding the role of ignorance in the design, promotion, and consumption of luxury offers valuable insights into the development of luxury brands. Through an application of a typology of ignorance, this paper has begun to uncover the role of ignorance in the design, promotion, and consumption of luxury. The paper offers a conceptual contribution to understanding of the relationship between contemporary luxury and ignorance through a systematic examination of the place of ignorance in the

design, promotion, and consumption of luxury goods and services. The typology of ignorance of relevance to luxury presented in this paper captures the role of the unknown in key areas of luxury production and consumption. As such, it offers valuable insights for producers, promoters, and consumers of luxury.

As this paper has shown, ignorance warrants further consideration among scholars, practitioners, and individuals engaged with luxury. Ignorance is poorly appreciated in the field of business. Nevertheless, there is growing interest in this emerging field (Roberts, 2013). The characteristics of the luxury sector make it a valuable context within which to study the management of unknown, and, particularly in relation to the fields of design, and promotion. In addition, explorations of ignorance and consumption offer value within and beyond the field of business. For practitioners, acknowledging the potential value of ignorance in relation to luxury paves the way for its active management. Knowing what is not known can be as important to organizational performance as knowing what is known. Different types and sources of ignorance require different management approaches that themselves offer scope for diverse outcomes. An awareness of the various types of ignorance provides the first step towards the development of techniques to manage the unknown. For consumers, an awareness of how their own ignorance may be exploited or managed by luxury companies allows them to strengthen their power in the consumer-producer relationship. Recognizing ignorance is, in the Socratic tradition, a form of wisdom – a form of wisdom that is surely of value to all involved in the luxury sector.

# Appendix 1

Table 1. Types of Ignorance of Relevance to Luxury. Source: Developed from Roberts (2013).

Source of Ignorance	Type of ignorance	Design (organizational)	Promotion (organizational)	Consumption (individual)
Absence of knowledge	<b>Unknown unknowns</b>	Ignorance that is beyond anticipation. <i>Such ignorance offers surprise in the design process.</i> Companies may purposely employ staff with different sets of knowledge and a complete lack of knowledge in the field of production can stimulate creativity when it is combined with the knowledge of other members of a creative team.	The promoting of luxury can exploit the consumers' exposure to unknown unknowns. Playing on potential risks, uncertainties and insecurities to which the consumer is exposed.	Consumers may have unknown unknown desires that are triggered by the promotional activities of luxury promoters.
	<b>Known unknowns</b>	A known incompleteness of knowledge, which can lead to the outsourcing of exposure to such ignorance through the employment of design consultancies, or can direct research, development and design efforts.	Known unknowns exist in relation to how customers will react to promotional activity. A known incompleteness of knowledge can lead to the outsourcing of exposure to such ignorance through the employment of specialist advertising and marketing firms, or can direct the development of such skills internally.	Consumers may be aware of their ignorance of certain aspects of luxury. They therefore look to luxury companies to provide evidence of authenticity. Heritage stories and indicators of quality are employed by consumers as a means to validate the luxury status of goods and services, and there by overcome their ignorance.

<p><b>Ignorance about existing knowledge</b></p>	<p><b>Knowable known unknowns</b></p>	<p>Knowledge that is not central to the organization's core competencies. Access to such knowledge can be outsourced to save on the organization's cognitive resources. For instance, many luxury companies outsource business services like advertising and legal service.</p>	<p>Knowledge that is not central to the organization's promotional activity. Where such knowledge is important for promotional activity it may be developed through investment in relevant staff or gained through outsourcing activity. For instance, many organizations outsource business services like advertising and legal service.</p>	<p>There is knowledge that consumers could develop about luxury, e.g. through the participation in educational programmes. However, consumers are often time poor and, therefore, they seek to buy the services of experts rather than specialize themselves.</p>
	<p><b>Unknown knowns</b></p>	<p>Unrecognized tacit knowledge, such as that embedded in routines and practices. We often know more than we can articulate – such knowledge may be evident in intuition, instinct, and business hunches that may only be recognized when they lead to creative design solutions.</p>	<p>Luxury goods and services have certain qualities that are not necessarily explicitly articulated in promotional activity. This element may feature in promotional activity because it is open to multiple interpretations and therefore helps to ensure that a product or service is attractive to a wide market. For instance, the unspoken qualities of the Savelli mobile phone in its promotional video.</p>	<p>A consumer's desires may be underpinned by unknown knowns. Customers desire something because they believe that it will give them pleasure but they don't know how it will do this. Feelings may be difficult to articulate but they are based on some form of knowing, e.g. intuition.</p>

	<b>Errors</b>	Mistakes caused by human error or systems failures. Design errors may result in product failures with major consequences for a luxury company's reputation. For instance, Aston Martin is recalled 17,590 sports cars due to a problem with the accelerator pedal in 2014.	May be evident in the use of inappropriate promotional activity for luxury goods and services. Often promotion is discreet. The use of celebrity endorsements may be an error when information about their transgressions comes to light.	Consumers may purchase something and find that it has no value to them after the initial purchase.
<b>Ignorance from suppressing knowledge</b>	<b>Taboos</b>	Organizational cultures can enforce certain behaviours and knowledge to the detriment of others making some behaviours or knowledge taboo. Some luxury companies have very specific customer service processes which may at times stifle new approaches.	Promotional activity can exploit the taboos to customers. And there may be taboos in relation to luxury promotion, for instance in some sectors the display of a price tag would be very much taboo.	Cannot contemplate the purchase of certain things because of social taboos. In the field of luxury this might be connected to excessive displays of wealth in some countries/cultures.
	<b>Denials</b>	The refusal to recognize major changes in the business context, which require the adoption of new business models. For instance, many luxury companies have been slow to adopt online shopping and social media as a form of promotion, allowing those, like Burberry, that have fully engaged with the possibilities offered by the Internet, to establish a lead in these areas.	The refusal to recognize when a promotional activity is ineffective or indeed, having a negative impact.	Denying the reality behind the production of luxury products. For instance, industrial accidents, sweatshop working conditions, blood diamonds, and environmental damage.



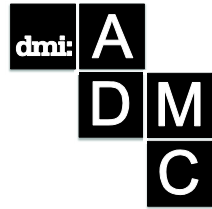
	<p><b>Secrecy</b></p>	<p>Secrecy in the design and development of new products and services is often vital for competitiveness. IPR can be used to suppress the use of design knowledge by competitors. Trade secrets may be an important element in a company's IPR protection strategy. IPR infringement is an important challenge for many luxury companies. Secrecy in the production of products necessary to maintain exclusivity for customers.</p>	<p>Secrecy may be used in promotional activity to encourage interest in a new product or service. An element of mystery is important for many luxury goods and services – this requires a degree of holding back information.</p>	<p>Purchase and consumption of luxury may occur in secret. For instance, anonymous buyers and collectors of art, island retreats, private estates etc.</p>
	<p><b>Privacy</b></p>	<p>In the luxury sector organizations may design products or services in a bespoke manner for specific individual or institutional customers. Confidentiality agreements with employees, customers and suppliers to maintain the aura of exclusivity and craftsmanship, or to protect customers and employees and suppliers.</p>	<p>Promotion may involve confidential communication with clients. For instance, in the provision of information about new financial services to UHNW individuals.</p>	<p>Much luxury consumption involves privacy, for instance, private jets and yachts.</p>

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# Product Design Requirements for Effective Heritage Branding: visual consistency and visual contemporaneity as links to the past, present and beyond

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KAIST

*The recognition of the value of heritage branding has increased the demand for understanding what is required of product design in heritage branding. This paper presents two significant factors in heritage product design: 1) visual consistency as a link to the past; 2) visual contemporaneity as a link to the present and beyond. The research identifies the effects of these factors on customer's product evaluation. The findings of the research include: 1) higher visual contemporaneity in a heritage product design results in better product evaluations, 2) higher visual consistency in a heritage product design results in better product evaluations when a customer is familiar with the brand and its heritage, 3) combinations of high visual consistency and high visual contemporaneity and a combination of low visual consistency and distinctively high contemporaneity resulted in better product evaluations. Based on the findings, the paper proposes design requirements in terms of visual consistency and visual contemporaneity for brands with a strategic intention to carry out heritage branding successfully by means of design.*

**Keywords:** *Heritage branding; design requirements; visual consistency, visual contemporaneity*

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## Introduction

### *Definition of Heritage Branding*

During recent years, more and more brands have appealed to their heritage in the market. Those brands may have noticed that the heritage of a brand plays an important role and adds value in the eyes of consumers (Urde, Greyser, & Balmer, 2007). Existing studies have established that a brand with a heritage stood for authenticity, credibility and trust, and could provide leverage for that brand, particularly in global markets (Aaker, 2004; Wiedmann, 2011; Wuestefeld, Hennigs, Schmidt, & Wiedmann, 2012).

To be a heritage brand is, rather, a strategic choice. A company or product with a heritage is not necessarily a heritage brand and having a heritage does not in itself create value (Hakala et al., 2011). A heritage brand has an organizational belief that its history is important and value-positions itself based upon its heritage over a long period of time, supported by customer-based beliefs (Urde et al., 2007; Hudson, 2010; Rindell, 2013). Therefore, to be a heritage brand requires an intentional and deliberate activation of brand heritage, which scholars refer to as 'heritage branding'.

Heritage branding, however, is different from retro or nostalgic branding. It is seen by many scholars as a distinct concept. Firstly, heritage branding is rooted in a brand's history and cannot be copied while retro branding is a marketing and advertising tactic that any company – even with a new brand – can apply (Hakala et al., 2011). Secondly, heritage brands and retro/nostalgic brands have different attitudes towards the time dimensions. Heritage brands embrace the past, the present and the future and try to keep a brand relevant to the present time, while retro or nostalgic brands have reference only to the time and events in the past, focusing on rehashing the "good old days" (Balmer et al., 2006; Wiedmann et al., 2011, 2012; Rindell, 2013)

### *Heritage Branding and Product Design*

Urde et al. (2007) listed a brand's track record, longevity, core values and use of symbols as brand's heritage quotient (HQ). Hakala, Lätti, and Sandberg (2011) developed this list proposing that brand heritage consists of the consistency and continuity of a company's core values as well as the history, product brands and use of symbols (Fig. 1).

*Product Design Requirements for Effective Heritage Branding: Visual Consistency and Visual Contemporaneity as Links to the Past, Present and Beyond*

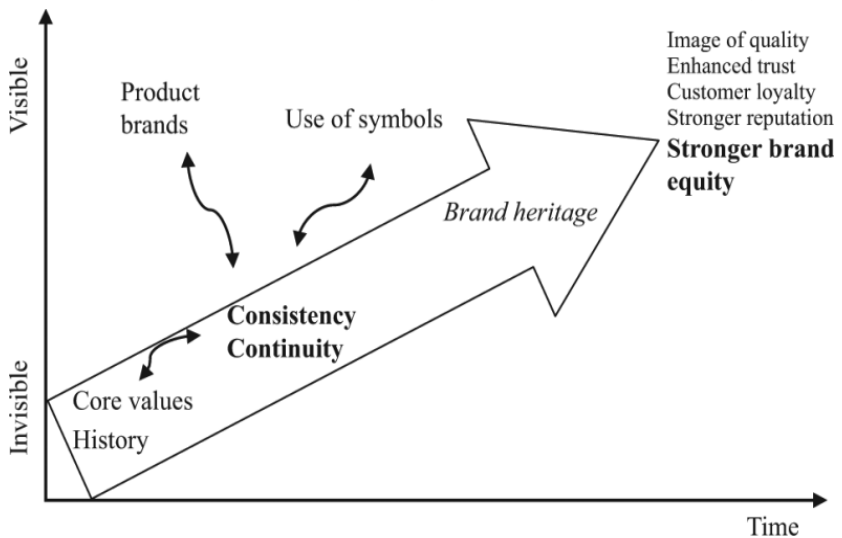


Figure 1 Elements of brand heritage. (Source: Hakala et al., 2011)

Fig. 1 summarizes activating process of brand heritage. Among many interpretations suggested in Fig. 1, this study pays particular attention to the fact that the product brands take a role in visualizing a brand’s core values and history continuously and consistently over time, contributing to an activation of brand heritage. Consequently, design of product brands has a significant role in heritage branding since a product design is a reification of a brand’s core values and an aggregate of layers of a brand’s histories. Urde et al. (2007) support this argument asserting that product design is one of the principal vehicles for activating a brand’s heritage. Being one of key elements that represent and convey to the end customers a brand’s identity, product design is a helm to strategically control heritage branding.

The two axes of the graph in Fig. 1 imply two requirements for pulling a brand to stronger brand equity: a ‘consistent visualization’ of core values and an ability to ‘keep up with time’. In this regard, this research addresses two key ‘linkages’ of the current product, manifested in the design of the product: visual consistency as a link to the past and contemporaneity as a link to the present and beyond. This approach also resonates with the inherent concern of the heritage brand with not only the past but also the present and beyond, as recent studies have addressed. Since very few

studies deal with conditions and drivers of brand heritage, as well as its effects on consumer behaviour (Wiedmann et al., 2011) — and even fewer investigate the effect of design factors in heritage branding — looking at the effects of these two factors of product design on consumers' perception of the product would be a meaningful step for a better understanding of heritage branding.

### *Research Aims and Methodology*

The first aim of the research is to empirically measure how contemporary a heritage product design is visually perceived or which time period it is perceived to belong to and its effect on the evaluations of a heritage product. The second aim of the study is to identify the effects of visual consistency of a heritage product design. The research is intended to be helpful for brands with heritage that want to deploy effective heritage branding by suggesting strategic implications in terms of applications of visual consistency and visual contemporaneity in a heritage product design.

Research methodology includes survey and correlation analysis to investigate the effects of visual consistency and visual contemporaneity on customer's product evaluations. Besides the two factors, brand familiarity was also measured and analyzed since it is proven to be influential on customer's product evaluation in many studies and it is assumed to affect the relationship between visual consistency/contemporaneity and product evaluation. Regression analysis and cluster analysis were additionally conducted to see strength of explanation of the relationship or to find any tendency which cannot be observed from correlation analysis.

### *Automotive Design and Product Brand*

The study uses automobiles as stimuli products. The automotive industry, a giant industry with a long history, is one of the industries that most actively utilizes heritage branding in the market. For this reason, selecting heritage designs with a variety in consistency and contemporaneity would be easier with the automotive industry than any other.

Many of the existing studies on heritage branding refer to the 'brand' as the company since early researchers saw heritage branding from a corporate marketing perspective (Aaker, 2004; Urde et al., 2007). However, the term 'brand' is used in this study to denote a 'product' with regard to the automotive industry. This is because car manufacturers often exercise heritage branding for particular car models (e.g. Fiat Cincequento) and/or



deploy different heritage branding strategies for different models (e.g. Volkswagen Golf vs. New Beetle).

Examples of heritage automobiles which successfully link to the past with visual consistency and to the present with visual contemporaneity are often observed. Richness of examples signals that studying automobile cases would derive rich findings and suggestions with the possibility of applying it to other product categories.

The paper consists of the following sections: (1) discussion of the key concepts, including visual consistency, contemporaneity and product evaluation criteria; (2) pilot study and its findings with implications for the design of the main survey; (3) the main survey results and discussion; and (4) conclusions.

## **Visual Consistency and Visual Contemporaneity in Heritage Product Design**

### *Visual Consistency: Link to the Past*

A number of existing studies on branding strategy have established that consistency and continuity in product design over time are critical for effective communication of a brand (Park, Milberg, & Lawson, 1991; Person, Schoormans, Snelders, & Karjalainen, 2008). In general, visual consistency in product design refers to how visually consistent a product is with the rest of the product range or product portfolio of a company (synchronic). In contrast, visual consistency in heritage design refers to how visually consistent the current product offering is with the visual heritage of the product, i.e., the visual consistency of the current product with the original product and/or its visual elements (diachronic). In heritage brands, consistent use of design and symbols diachronically can bring coherence to a brand's identity by associating it with the past, which makes consumers easily recall and recognize it. Therefore, diachronic visual consistency of the product in heritage branding is a link that connects the current product to its past and visualizes its heritage.

There have been several attempts to distinguish some ways to plant visual consistency in a product design in order to carry a brand's identity. Crilly (2005) and Karjalainen (2007) differentiate explicit and implicit visual references. Explicit visual references are design features that are implemented by designers with the intention of being immediately recognized. On the other hand, implicit cues can be embedded subtly to

refer to a product's characteristics, such as safety or dynamism embedded in Volvo cars (Karjalainen, 2007). Supposing this distinction would also generate meaningful difference in heritage branding, visual consistency was approached in the two different notions of the pilot study: explicit visual consistency and implicit visual consistency.

### *Visual Contemporaneity: Link to the Present and Beyond*

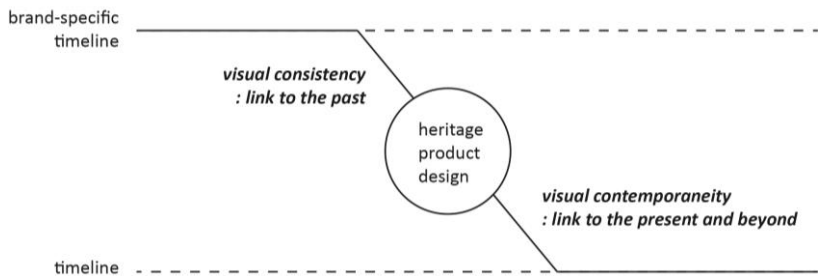
As well as a link to the past, the importance of linking the heritage product design to the present is also recognized by many. Wiedmann et al. (2011), Urde et al. (2007), Aaker (2004) and many other researchers have asserted that heritage brands should have a heritage to help to make a brand relevant to the present and the future. Managers and designers of strong heritage brands today face the challenge of marketing a brand's heritage in a way that brings out its historical reliability but does not make it become outdated for the consumers (Hakala et al., 2011).

The efforts of some of the major heritage brands today to project their current product offerings as not only retaining the 'character' and what the heritage stands for, but for also being thoroughly 'modern' or 'contemporary' testify to this. In the United Kingdom's brochure of Volkswagen's New Beetle and Mini Cooper, which are two representative automobile models of heritage branding, their pursuits of achieving both visual consistency and contemporaneity are presented in parts of their marketing slogans, such as 'even icons have to evolve to remain true to themselves', or, 'Sometimes a huge step forward offers a great view of the past'.

In summary, heritage product design should take into account that making a brand relevant to contemporary life is as important as reminding the customer of the glorious past of the brand. The notion of 'contemporaneity' is proposed in this research to represent the relevance of the current product offering to the contemporary life to act as a link to the present and beyond as a counter-concept to visual consistency. As such, the scale of measurement for visual contemporaneity of heritage products should extend beyond the point of how strictly 'contemporary' a product looks, since the contemporary life reflects and projects visions of the future. Also, the semantic interpretation of visual contemporaneity includes 'modern', 'new' or 'up-to-date', since the term 'contemporaneity' is used in a broader sense than the dictionary definition, 'belonging to or occurring at the same time, age, period.' (Smith, 2006).

## ***Two Linkages in Heritage Product Design***

The two linkages that this research focuses on are presented in Fig. 2. The two timelines are not on one straight line but on different parallel lines because they are implying different contexts: The upper one is brand-specific chronological timeline, while the other one is a timeline of our living world. A link to the past and a link to the present here are not zero-sum concepts to each other. That means that heritage product design can have a strong link to the past and a strong link to the present at the same time.



*Figure 2 Visual Consistency as a link to the past and visual contemporaneity as a link to the present and beyond*

## ***Product Evaluation Criteria***

Since the main focus of the research is to investigate the effect of visual consistency and contemporaneity on product evaluation, it is necessary to determine product evaluation criteria. The product evaluation criteria for the study are chosen after reviews of existing marketing studies. Particularly, existing product evaluation criteria on visual domains were reviewed. The four chosen criteria are: visual attractiveness, perceived quality, perceived value to price of a product and customer's willingness to buy (Dodds, Monroe, & Grewal, 1991; Peracchio & Tybout, 1996).

While perceived quality is evaluated more directly from the visual impression that a customer gets from the product design, perceived value requires a more complex thinking process. Value is an abstract concept highly interrelated and frequently confused with the concepts of quality, benefits and monetary and non-monetary prices. Some researchers statistically proved perceived value to be negatively related to price

(Zeithaml, 1988; Dodds et al., 1991). Therefore, in this study, there is a given boundary between visual attractiveness, perceived quality and perceived value, purchase intention, where customers start to impute quality on the basis of factors besides visual design, such as price, image, practicality or fitness for purpose.

## **Pilot Study**

### *Overview*

Prior to the main study, a pilot study was conducted to test the stimuli composition and formulate effective survey questions for the main study. A total 126 participants (age = 25; 70% women) answered on 7-point Likert scales for brand familiarity, perceived visual consistency, perceived visual contemporaneity, and product evaluation criteria.

### *Survey Design*

Initially, 30 cars currently in production with heritage origins were collected, from which three cars sharing a customer base in South Korea were selected for the study in order to reduce an influence of a customer's demographic profile on evaluations. These were: Mini Cooper, Volkswagen Beetle, and Fiat Cinquecento (500).

The first survey question asks about a participant's familiarity with the car brands. For measuring visual consistency, stimuli consisting of images of the original and the current models of the three heritage automobiles were provided. Both implicit and explicit visual consistency perceived between the original and current designs were accessed separately through two propositions; "The exterior design of the two cars share one or more specific visual features", and "The exterior design of the two cars share similar atmosphere in general". To measure visual contemporaneity of the recent models—out of 20 adjectives gathered from product semantics studies (Karlsson, Aronsson, & Svensson, 2010; Jiao, Zhang, & Helander, 2006)—three adjectives with a temporal sense ('modern, new, up-to-date') were given to be scored on the scale. Lastly, the four product evaluation criteria were scored on the current car designs: 'The exterior design of this car is visually attractive to me', 'I think the quality of this car is good', 'I think this car is valuable regarding the price' and 'I will consider buying this car if I'm buying a car of this price range'. Post-survey qualitative questionnaires were given at the end of the survey to identify any difficulties understanding the concepts or the survey wording.

### ***Results and Implications for Main Study***

The results showed that there was a correlation between visual contemporaneity and product evaluation ( $r = .43, n = 378, p < .05$ ) and between explicit visual consistency and product evaluation ( $r = .32, p < .05$ ). There was no significant correlation between implicit visual consistency and product evaluation.

According to the result, brand familiarity showed a strong correlation with product evaluation ( $r = .47, p < .05$ ) affecting the relationship between visual consistency and product evaluation. This leads to a conclusion that brand familiarity should be controlled to see the true effects of visual consistency on product evaluation. Another way to handle this would be to consider brand familiarity as a third independent variable. In that case, a dynamic that brand familiarity creates in the relationship between the other independent variables (visual consistency and visual contemporaneity), and the dependent variable (product evaluation) should be analysed.

The responses to the post-survey questionnaire revealed some critical issues. Many respondents had difficulties understanding the meaning of implicit visual consistency or distinguishing it from explicit visual consistency. This difficulty was predictable because implicit visual consistency and explicit visual consistency were not two separate concepts, but were rather, interchangeable. The split between the two concepts was originally suggested for designers rather than customers so that the difference can be hard to grasp for the respondents. Thus, the notion of 'visual consistency' in this research has been narrowed down to indicate explicit visual consistency, which is perceived and recognized immediately from the perspective of customers.

The adequacy of the measurement method of visual contemporaneity was also reconsidered. From the answers of the post-survey questionnaires, interpretations of the adjectives appeared to differ among respondents. Some interpreted the meanings of the three adjectives as 'belonging to the future far from the present', while others interpreted them as 'up-to-date to the mainstream standards of the exact present time'. Therefore, instead of scoring on adjectives, a more neutral, comprehensive scale for measuring visual contemporaneity of a product design was designed. In the main study, participants were asked to mark where each car seems to belong on a timeline, which is actually a 7-point Likert scale with extended arrows on both sides. Point one is marked as 'belongs to the past'; point four as 'belongs to the present'; and point seven as 'belongs to the future'. In this

way, participants can easily and intuitively connect the temporal sense of the product on a scale in terms of its visual design.

The other critical problem was that the small variance between the scores for the three heritage automobiles prevented richer findings from emerging. Three automobiles had too-narrow spectra of visual consistency and visual contemporaneity, despite the differences generated from the respondents. This issue is resolved in the main study by increasing the number of stimuli automobiles and their spectra. In addition, automobile models with no heritage were also collected as a comparison group to make it possible to investigate any heritage design-specific phenomenon.

## Main Study

### *Overview*

In the main study, a total of 50 participants answered the survey (age = 29.27; SD = 10.42; 69% women) on 16 cars, both online and offline. All participants were examined not to be extremely interested in automobiles by being filtered with car-information-searching time a week. Survey data were analysed using statistical analysis software, SPSS.

### *Selecting Stimuli*

A total of 16 automobiles were gathered as survey stimuli. They were automobiles categorized as subcompact cars in the American market, a city car and supermini in the British market, and A-segment mini cars and B-segment small cars in the Euro market segment.

As mentioned previously, the 16 automobiles consisted of two different groups: eight cars from the heritage group and the other eight from the non-heritage group. The heritage group consisted of cars whose first generations began to be produced more than 30 years ago, such as Volkswagen Beetle, Fiat Cinquecento, Honda Civic, Mini Cooper, Toyota Corolla, Ford Fiesta, Volkswagen Polo and Suzuki Alto. The selection of the eight heritage cars as visual stimuli for the survey reflected a spectrum of visual consistency; for example, Volkswagen New Beetle and Mini Cooper show comparatively higher visual consistency between their original models and the current models while Honda Civic and Toyota Corolla show lower visual consistency through evolutions over time. In fact, the low consistency of the Civic and Corolla suggest that they may not deploy heritage branding although they have heritage as previously discussed. The non-heritage group consists of cars, which were just launched as brand-new models: Peugeot

208, Audi A1, Opel Adam, Toyota Aygo, Citroen C1, Citroen DS3, Toyota iQ, and Volkswagen Up.

All 16 stimuli images were given with cars that were white or silver in colour without a logo on its front to prevent, as far as possible, colour or brand preference from affecting evaluations. The survey respondents were only provided the automobile models' names, such as 'New Beetle' or 'Adam', not the car manufacturing brands' names, such as 'Volkswagen' or 'Opel'.

### *Measurement and Analysis*

For the heritage group, images of both the original and the most recent model were provided to access perceived visual consistency between them. Respondents were given the sentence, "I feel the exterior designs of the two cars look similar." Participants' familiarity with the history of the car models was measured with the sentences "I've known the car on the left before" and "I know the historical background of this car model". For measuring visual contemporaneity of both the heritage and non-heritage group cars, a timeline described in the previous section was given with a question: "To which period do you think this car design belongs? Mark on the timeline below." Respondents' product evaluations were collected with the same questions as in the pilot.

All respondents' scores on 7-point scales for brand familiarity, visual consistency, visual contemporaneity and the four product evaluation criteria for the eight heritage automobiles as well as the scores for visual contemporaneity and the four product evaluation criteria for the eight non-heritage automobiles were recorded and analysed both separately and together in SPSS.

## **Findings and Discussion**

### *Comparison between Heritage Group and Non-heritage Group*

The result of correlation analysis is shown in Table 1, and the 16 automobiles are positioned on diagrams with an average score of visual contemporaneity as the value of x and an average score of each evaluation criterion as the value of y in order to observe the tendencies intuitively [Figure 3].

Table 1 Pearson correlation coefficient between visual contemporaneity and evaluations

Correlation coefficient		Visual attractiveness	Perceived quality	Value to price	Willingness to buy
Contemporaneity	Heritage	.64**	.60**	.41**	.43**
	Non-heritage	.63**	.42**	.38**	.49**

As shown in Table 1 and Figure 3, there are correlations between visual contemporaneity and all four evaluation scores in both the heritage and non-heritage groups. Meanwhile, no significant distance between the heritage group and the non-heritage group was found in the correlation coefficients between visual contemporaneity and product evaluation criteria. The result means that a car which seems to belong to the right-hand side of the timeline looks visually more attractive, of a better quality, a better value for the money and more desirable to a considerable portion of customers, regardless of whether or not it is a heritage product.

In Fig. 3, the heritage and non-heritage automobiles are distributed irregularly on the x-axis, regardless of group. This is interesting, because it might be assumed that the current models of the heritage group could be perceived as being somewhat less, not more as shown in the analysis result, 'contemporary' because of visual consistency with the original design.

This could be interpreted that the manufacturers of the heritage group cars do actually utilize contemporaneity as an important heritage design device to be up-to-date with contemporary designs, not to be perceived as being outdated as previously discussed (p.6). Also, this means that whether an automobile is a heritage product or a non-heritage product does not affect how contemporary the customers see the automobile as being.

On the other hand, R-square values of the evaluation criteria in Figure 3 show that the variances in visual attractiveness ( $R^2=.75$ ) and perceived quality scores ( $R^2=.86$ ) are more strongly explained by scores of visual contemporaneity than the variance in value to price ( $R^2=.58$ ) and purchase intention ( $R^2=.14$ ) scores are. The reason why there are more outliers in the latter two criteria might be, as discussed above, the perceived ratio of value to price and the willingness to buy are determined by the combined effects of other factors such as price and brand name (Dodd et al, 1991).



*Product Design Requirements for Effective Heritage Branding: Visual Consistency and Visual Contemporaneity as Links to the Past, Present and Beyond*

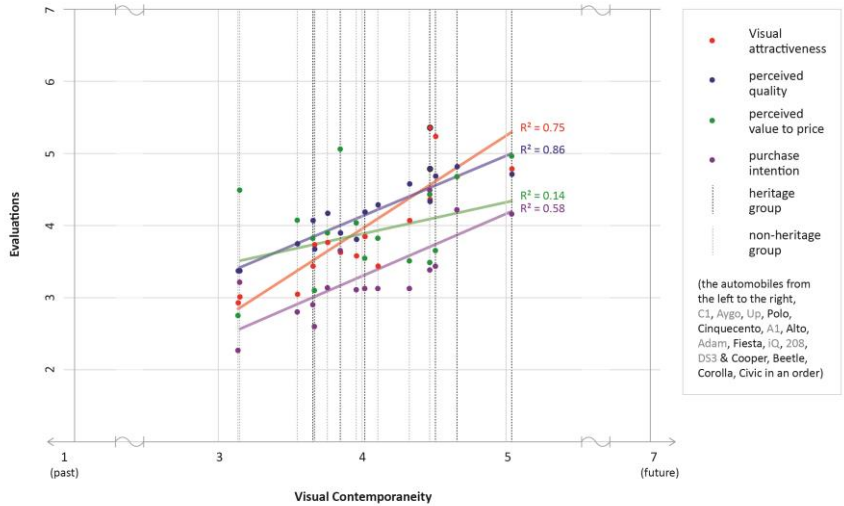


Figure 3 The 16 automobiles on visual contemporaneity-evaluation coordinates

***Heritage Automobile Group (with Brand Familiarity Controlled)***

Partial correlation analysis was used to explore the relationship between visual consistency and four evaluation factors while controlling for brand familiarity.

Table 2 Pearson correlation coefficient (with brand familiarity controlled)

Correlation coefficient				
	Visual attractiveness	Perceived quality	Value to price	Willingness to buy
Consistency	.23**	.08	-.08	.05
Contemporaneity	.64**	.60*	.41**	.43**

As seen in Table 2, among four evaluation factors, only visual attractiveness has a correlation with visual consistency ( $r=.23$ ,  $p<.05$ ). This result means that higher visual consistency with an original design could result in more visual attractiveness of the design of a new model to the

customers but doesn't affect a customer's perception of quality and value to price or their purchase intention.

There were correlations between visual contemporaneity in the heritage group and all four evaluation criteria. The automobiles with heritage whose designs are more contemporary were visually more attractive to customers and were perceived to have higher quality and value. Customers are also likely to buy heritage automobiles with more contemporary designs.

*Heritage Automobiles Group (According to Brand Familiarity)*

Samples were divided into a high-familiarity and low-familiarity groups according to the mean value of the brand familiarity scores and analyzed separately to demonstrate how brand familiarity affects the result. Then, the relationship between visual consistency and evaluation were investigated using Pearson correlation coefficient analysis in each group.

Table 3 Pearson correlation coefficient

Correlation coefficient		Visual attractive ness	Perceived quality	Value to price	Willingne ss to buy
High- familiarity group	Consistency	.40**	.30**	.06	.23*
	Contemporanei ty	.49**	.41**	.23*	.25*
Low- familiarity group	Consistency	.20**	.03	-.10	.01
	Contemporanei ty	.68**	.67**	.47**	.51*

As illustrated in Table 3, the result shows that correlations were found in the high-familiarity group between visual consistency and three of the four evaluation criteria; visual attractiveness ( $r=.40, p<.05$ ), perceived quality( $r=.30, p<.05$ ) and purchase intention( $r=.23, p<.05$ ). In contrast, the visual consistency in the low-familiarity group has a weak correlation only with visual attractiveness and shows no significant correlation with the other three criteria. This implies that customers who are more familiar with the original design and the historical background of a heritage car considered visually consistent automobiles more attractive, of a better quality and more desirable. Conversely, for customers with less familiarity, visual consistency with an original design scarcely affects the evaluation of an automobile.

With regard to visual contemporaneity, there were positive correlations with four evaluation factors in both groups. Compared to the high-familiarity group, respondents of the low-familiarity group showed stronger correlations between visual contemporaneity and the four evaluation criteria. This means that visual consistency and visual contemporaneity have, more or less, an even effect on the product evaluation in the high-familiarity group, while visual contemporaneity is a more important factor than visual consistency in product evaluation in the low-familiarity group. This implies that heritage products have an extra device – visual consistency in addition to visual contemporaneity – to positively impact customers' product evaluation in the high-familiarity group. However, a low familiarity of the brand and its heritage seems to make a heritage product behave just like a non-heritage product, stripping it of the extra device thus denying the very positive effect for which heritage branding aims: benefitting from visual consistency with their heritage. The findings suggest that promoting awareness of the original design and its heritage to the customer is a critical factor in benefitting from visual consistency in heritage branding.

### *Clustering Heritage Automobiles*

To investigate automobile-specific tendencies which cannot be observed from the previous results, the eight heritage automobiles were positioned on a diagram [Figure 4] with the average scores of visual consistency and visual contemporaneity as x and y coordinates, respectively. The radii of the circles with four different colours represent four evaluation scores (red - visual attractiveness; blue - perceived quality; green - perceived value to price and purple - purchase intention). Further interpretations were made for visual attractiveness and perceived quality of automobiles in Figure 5, since the scores for value-to-price relationship and willingness to pay can be influenced by other factors such as price and fitness for purpose as it is discussed above.

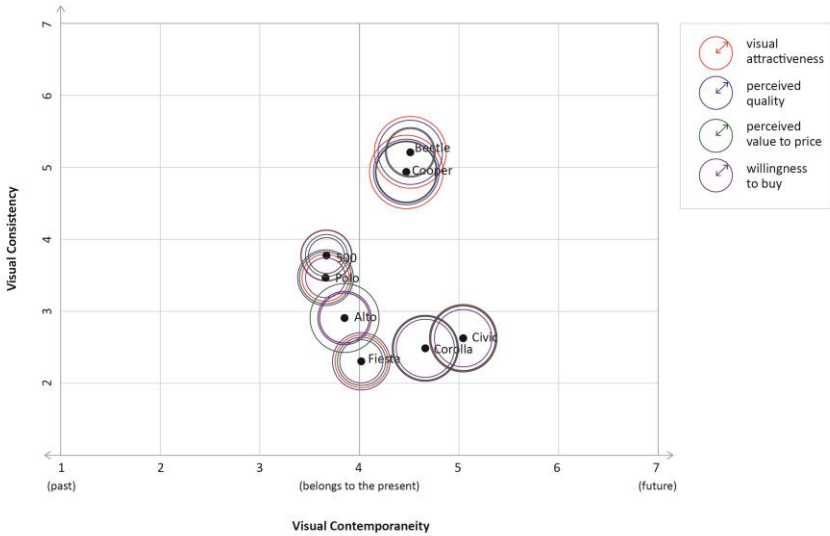
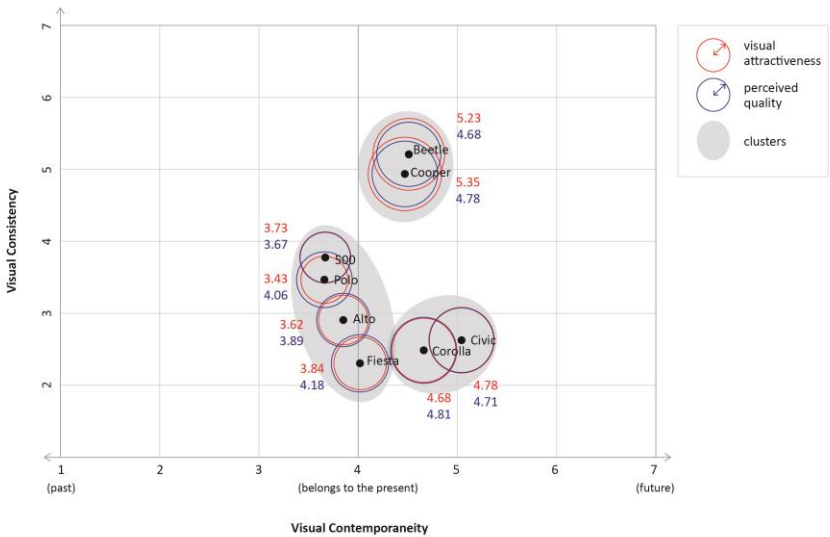


Figure 4 The eight heritage automobiles on visual contemporaneity and visual consistency coordinates and their four evaluation scores



*Figure 5 The eight heritage automobiles clustered by their visual contemporaneity and visual consistency and their evaluation scores for visual attractiveness and perceived quality*

As a result of cluster analysis with visual consistency and visual contemporaneity scores as factors, the eight historical automobiles are divided into three clusters.

- A - Beetle, Mini Cooper
- B - Civic, Corolla
- C - Cinquecento, Polo, Alto, Fiesta

Cluster A automobiles maintain high visual consistency and are in the second order in terms of visual contemporaneity. These cars received the highest scores in visual attractiveness and perceived quality. The automobiles in Cluster B received the highest scores on visual contemporaneity and the lowest average scores on consistency. These cars received scores as high in perceived quality as Cluster A automobiles and got the second-highest scores for visual attractiveness. In Cluster C, scores for visual consistency of the cars vary between 2.31(Fiesta) to 3.78 (Cinquecento). However, they all received comparatively low scores on visual contemporaneity around and below 4 points, which means they seem to belong to the past or the exact present time, at best. They received the lowest scores both on visual attractiveness and perceived quality among the three groups.

The three clusters may signify three different design strategies of automobile brands with heritage. Mini Cooper and New Beetle seem to strategically deploy “heritage branding” as discussed in the beginning of this paper. These automobile brands keep high consistency in and also attain a high level of contemporaneity in their product designs and make them visually attractive to customers. On the other hand, Civic and Corolla deploy different strategies for the same purpose. Although these two car brands have significant heritage, they embrace more radical changes in product design bearing the loss of connection to their past designs, resulting in their belonging to the mainstream trends with a high level of visual contemporaneity. Cluster C neither kept visual consistency to speak of nor made their looks contemporary and they received comparatively inferior evaluations from the respondents. It would be worth investigating each automobile individually in Cluster C due to the variety of visual consistency within the cluster.

## Conclusion

Major findings of the research include:

- It was established from the literature that becoming a 'heritage brand' is rather a brand's strategic choice, requiring active and intentional 'heritage branding'.
- Visual consistency and visual contemporaneity were found to be two significant factors in heritage product design.
- Visual consistency acts as a link to the past and visual contemporaneity acts as a link to the present and beyond in heritage product design.
- Whether it is a heritage product and or non-heritage product did not affect the customer's perception of visual contemporaneity.
- Regardless of the existence of heritage in a product, more contemporary-looking designs received better product evaluation from the customers.
- Higher visual consistency of a heritage product design resulted in a better product evaluation provided that the customer is familiar with the brand and its heritage.
- A low familiarity of the brand and its heritage seems to make a heritage product behave just like a non-heritage product.
- There are various combinations of levels of visual consistency and visual contemporaneity among existing heritage automobile designs. Among those, a combination of a high consistency and a high contemporaneity were positively evaluated by the customers. The combination of a low consistency and a distinctively high contemporaneity was also highly evaluated.

The product design requirements for effective heritage branding could be identified based on the findings of the research.

Firstly, contemporaneity in product design was found to be a quality that helps the product to be evaluated favourably, even in heritage branding. A product design should look contemporary: this creates a visual connection to the present and beyond which is perceived to be more attractive, of a better quality and a better value for the money, and desirable to the customer.

With a good level of visual contemporaneity secured, it is possible to control visual consistency in a product design according to the brand's strategy and value positioning. A heritage product design can opt out of keeping a high level of visual consistency with the original design. It is

possible that a product design with a low visual consistency still remains attractive and is perceived to be of a good quality by maintaining a high visual contemporaneity, although this approach is not considered as 'heritage branding'. On the other hand, a brand can benefit from the effects of heritage branding by keeping a high visual consistency in a product design with its original design. In this case, promoting the awareness of the original design and its heritage among customers is a significant factor in making the perception of the current product more attractive.

### *Limitations and Further Studies*

Visual contemporaneity and visual consistency of a product could be assessed on a more specific level of product design factors, for example, shape, texture or colour for more detailed suggestions of design requirements suggestion. Also, it could be studied more attentively about how people perceive a temporal sense or similarity in a product design with the help of other academic fields, such as cognitive psychology.

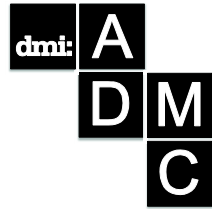
As survey and analysis were conducted on a design of a product as a brand in the study, it would be meaningful to further investigate relationships between variables at a corporate level. In this case, measuring methods of the propositions should be reconsidered.

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# Unravelling the Secret of Successful Brand Extensions: a case study to explore consumer response

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*In this paper we try to disentangle the design of successful brand extensions and test this with two case studies. Earlier research revealed that typicality and novelty are related to the aesthetic preference of products. Despite the fact these two predictors are also each other's suppressors, the equilibrium of both will determine aesthetically preferred products. When dealing with brand extensions we assume this effect is even bigger. We discern two approaches to explain this process. On the one hand the new product category with respect to the known brand can be seen as the novel experience of the design. On the other hand, the consumer can be familiar with the archetypical forms of a product category (typicality) and consider the branded product design as the novel experience. The outcomes show that typicality and novelty are jointly effective in explaining the aesthetic preferences of consumers for some product categories and that the appreciation of novelty for less typical designs is reinforced by the context they are presented in.*

**Keywords:** brand extensions, typicality, novelty, branding, design

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## Introduction

The Maya principle as stated by Loewy (1951) has a major impact on the appreciation and acceptance of the design of new products. When a product sparks novelty, people are more attracted to it. On the other hand consumers also need to be familiar with the product category to accept the new product as a credible one. So the product design has to have a certain amount of novelty and typicality to become interesting for the consumer.

Hekkert et al (2003) proved that both features together have a positive effect on aesthetic preferences. For brand extensions this process is even more relevant. The recognizability of the core product is really important, but there also have to be a familiarity with the design characteristics of the brand (Mulder-Nijkamp & Eggink, 2013a). So the brand ensures the typicality and the new product for the brand takes care of the novel aspect. On the other hand this process can also take place the other way around. The consumer can be less familiar with the brand, and more with the core product category. The novelty in this case is than the novel experience of the brand. The reciprocity between these two mechanisms takes place in a split second and also plays an important role in the acceptance of an extension. Based on the above considerations we hypothesized that a successful brand extension incorporates both mechanisms. Therefore the hypothesis of the joint influence of typicality and novelty related to aesthetic preference as discussed by Hekkert will be tested for brand extensions. In a first case study this hypothesis was partially confirmed. In a second case study the effect of the environment is taken into account to test the two different mechanisms of perceiving the brand extensions.

This paper is part of our research into the design of brand extensions, which is aimed at supporting designers in the process of designing successful products.

## Brand recognition

Designing for brand recognition is almost fully embedded in our society as a strategic asset. When the functional characteristics of products are the same as well as the price, the aesthetic expression of the product is used to differentiate from its competitors (Cooper & Press, 2003; Kotler, 2000). Consumer choice of products is based on products with added value which satisfy both emotional and functional needs (Creusen & schoormans, 2005).

Branding is one of the most commonly used methods to increase the aesthetic expression and to create recognisability among consumers

(Kapferer, 2008). According to Zajonc and Bornstein the positive affect also increases with repeated unreinforced exposure and thus familiarity of a stimulus (Bornstein, 1989; Zajonc, 1968). When consumers are more familiar with a certain brand and its visual expression, it is more likely that those consumers remain faithful to the brand. Therefore it is really important to distinguish yourself as a brand from your competitors with a consistent and recognizable portfolio. Through this design consistency, a brand can develop a solid base to create new recognizable products (Karjalainen, 2007; Karjalainen, Heinio, & Rahe, 2010)

Even more important is the incorporation of the core values of a brand (Karjalainen & Snelders, 2010). In order to be recognized by the consumer brands use brand names or logos and specific product design characteristics. When these explicit design characteristics are frequently used in the product portfolio they can therefore be easily recognised. On the other hand the design of a product also acts as a carrier of various symbolic meanings. These meanings are a result of experiencing all the explicit design characteristics together in the complete product. The separate design characteristics will build up to a total image, which will evoke certain associations. These associations are often referring to the brand values of a company and the proper translation of these values into explicit designs is crucial for a company to develop a strong brand (Karjalainen & Snelders, 2010).

## **Brand extensions**

For brand extensions this process is even more complex. The design language of a brand cannot literally be translated for a brand extension, because the products that are to extend the brand are mostly from a complete different category, with specific, commonly used design features. So the extension has to be a good representation of the brand and at the same time has to retain recognition to the product category. For example a bike from Ferrari has to be accepted as a product that is close to the core concept of a bicycle, but also has to share a certain amount of its design language with the Ferrari cars. The focus of our research is to support designers in this complex process to design successful brand extensions.

## Framework

To assist the designer in taking the right decisions when translating a corporate identity into a form language, a Brand Translation Framework was developed (Mulder-Nijkamp & Eggink, 2011; Mulder-Nijkamp & Eggink, 2013a, 2013b). This framework (figure 1) helps the designer to focus on the most important values of the brand, and the way they can be translated into the design and styling of new products in such a way that consumers will recognize the brand and its associated values more easily.

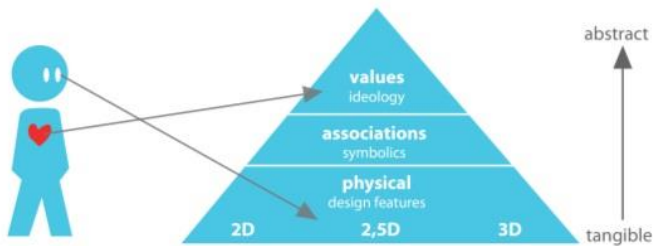


Figure 1. Brand translation Framework

The framework starts with analysing in which way the specific design characteristics of the brand refer to which core values of the brand. The translation of the more tangible features towards the more abstract values can then be done by referring to first and second order associations (Krippendorf, 2005). When analysing the brand by ordering associations, designers will become more aware of the most important values of the brand.

We introduced the framework in an elective master course ‘Graphic language of Products’ of our curriculum Industrial Design Engineering. This course is a 10 week project of 5 ECTS, aimed at defining brand identity and translating those identity into new products, where the students work in couples. The goal of using the framework was to see if young designers can work with the model and to see if the students succeeded in designing more recognizable products. In figure 2 an overview of the framework is shown, filled in by a student couple, analysing the brand Lamborghini. The students made an analysis of the brand according to the three levels of the framework, starting with defining the physical features of the brand on top (level 1). Subsequent the students derived first and second order associations (level 2) from the visuals of the brand and at last they combined

*Unravelling the Secret of Successful Brand Extensions:  
a case study to explore consumer response*

the wordings of the second order associations into groups that together form a certain keyword which refers to the core values of the brand (level 3). It should be noticed that the students are challenged to make their own observation from the product portfolio of the brand and define the three core values that suits the brand the best in their vision. In fact this could be different compared to the values of the brand.



Figure 2. (vice versa) Brand Translation framework for the brand Lamborghini [made by Kyan Kuiper and Haske Rasser]

For two years now, the students are using this version of the framework. From the results it seems that for brand extensions it is quite important that consumers are able to recognize the core product of the extension, besides using characteristic features of the brand. For example, in figure 3 two bicycle designs for the brand Ferrari are shown. It is obvious that the concepts both make use of characteristic features of the brand. However, the designs are completely different. The design of the group at the right (figure 3b) has focused more on using the specific characteristics of the shape of the Ferrari F458 into the design of the bike. They copied the lines of the car quite literal. The design of the group at the left side (figure 3a)

focuses more on the associations with the brand (power, Italian tradition, and a purebred racing pedigree). To retain the Ferrari-feeling they translated the remarkable air intake into the bike concept, as well as the rims of the car. So the students who designed the left bike are using all levels of the brand translation framework instead of the right design which only uses the physical characteristics of the brand. Earlier research showed that a successful brand extension is using all levels of the Brand Translation Framework (Mulder-Nijkamp & Eggink, 2012; Mulder-Nijkamp & Eggink, 2013a).



Figure 3. (a) Design of a Ferrari bike focusing on the values of the brand [Gerrit Witteveen and Richard van Schouwenburg] (b) design of a Ferrari bike focusing only on the characteristics of the F458 [designed by Mark Koenderink & Frank Egberts].

The pitfall of the design of the group at the right side is that they got lost in copying the features of the car into the bike. They forgot to take a step back and get an overview of the complete product and therefore failed to integrate the core values of Ferrari. The other important aspect of their design is that the bike is not very recognizable as a stereotypical bike.

## Typicality and Novelty

Consumers prefer an optimum between innovation and categorization (N. Crilly, J. Moultrie, & P. J. Clarkson, 2004) as explained in the MAYA

principle which was coined by Raymond Loewy (1951). As argued before, especially for brand extensions it is important to pay attention to the recognition process of the consumer.

As stated by Hekkert et al (2003) the aesthetic preference will be determined by the joint influence of typicality and novelty.

*“Typicality and novelty are not to be conceived as opposite poles of one and the same continuum, although a high (negative) correlation will often be found” (Hekkert et al., 2003, p. 112)*

When the design of a product seems to be more novel, consumers are more unsecure about the performances, therefore designers have to create a certain amount of recognition in the product to counteract this effect. But when the design has a strong resemblance with the same category of the core product, the reaction of the consumer can be more disappointed. At the same time the visual similarity of products determines the categorization of the concept. If the design differs a lot from the stereotype-product, the consumer will not recognise the function of the product anymore and can't categorize it.

It seems at first hand that those two principles are linear related to each other. If a product is more typical, it is less novel and vice versa. This seems to be a logical explanation, but on the contrary there are also products that exist of a combination of those two mechanisms.

For example, the lamp in Figure 4 is a new interpretation of a classic baroque lamp. So the form of the lamp refers to associations with the baroque style characteristics which are familiar to consumers and the use of transparent shiny polycarbonate evokes the novel experience of the lamp even as the construction of the foot, which exists of three plains creating a three dimensional form.



*Figure 4. The Bourgie table lamp from Kartell expressing 'typicality' and 'novelty' at once*

We assume that for brand extensions these mechanisms are also really important. In fact there can be two approaches to look at this process. On the one hand the new product category with respect to the brand can be seen as the novel experience of the product. The extension is not common for the usual product portfolio of the brand and therefore refers to the term 'novelty'. The counteracting effect is the implementation of well-known brand characteristics in the extension, which will take care of the 'typicality' effect. The brand familiarity emphasizes the recognition of the brand and its reliability and therefore compensate the effect of the novel experience.

On the other hand the consumer can be more familiar with the archetypal forms of a product category compared to the brand. In other words the product is categorized and recognized like a certain archetypal form (typicality). Meanwhile the consumer considers the extension of the brand as novel experience with respect to the product category.

Take for example the brand extension of a Lamborghini bike. When placing the Lamborghini bike in a bike shop, the novel aspect will be the fact that there is also a bike with a Lamborghini design in the assortment. When we place the same bicycle in a Lamborghini showroom, the novel aspect will be that Lamborghini also designs for another product category.

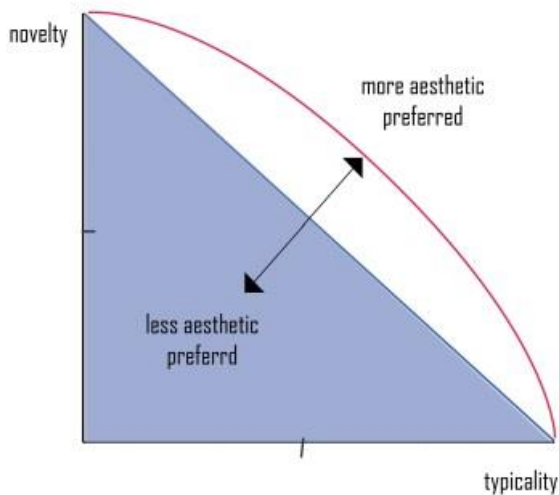
We used the theory of Hekkert et al (2003) to disentangle the design of successful brand extensions. Based on the above considerations our hypothesis implies that the joint influence of typicality and novelty is also positively related to aesthetic preference for designing brand extensions. To test this hypothesis a case study with two different sets of brand extension



designs was executed. In the first instance we'd like to prove that the theory of Hekkert et al. is also applicable on brand extensions. Subsequently we would like to refine the results and take a closer look at the two approaches as described above.

### *Case Study 1*

In study 1 we tested the joint influence of typicality and novelty for brand extensions. The relation between novelty and typicality on the one hand and aesthetic preference on the other hand was investigated in a test with bicycle and helmet designs (concepts of the students of the master course). Conform the joint influence of typicality and novelty we expect that the more aesthetically preferred designs are above the typical negative correlation line (distributed along the red line in Figure 5) and the less aesthetically preferred products are on the line or beneath the line (blue area). Especially the optimum of both mechanism, more to the centre of the graph where the distance between the blue and the red line will be larger, will lead to more aesthetically preferred products.



*Figure 5 Schematic overview of the hypothesis*



Figure 6. Stimuli of study 1 (a) 3 bicycles for Ferrari (A,B,C) and 3 bicycles for Lamborghini (D,E,F) (b) 3 helmets for Lamborghini (A,B,C) and 3 helmets for Mini (D,E,F)

### Method

The two different product categories were rated by 21 respondents. They all had to evaluate 6 bicycle designs and 6 helmets designs (figure 6). The respondents were asked to arrange the designs on typicality, novelty and aesthetic preference by placing them on a line with on the one hand the term “not typical” or “does not look like a archetypical bike” and on the other hand, “typical” or “looks like a archetypical bike”. The selected designs cover a wide range of typicality and novelty. On a big screen, life-size pictures of the six designs were shown (Figure 7).



Figure 7. Set up of test situation

### Results

As was to be expected the ratings for typicality and novelty showed a high negative correlation for both the bicycles and the helmets. The Pearson correlations were respectively  $-.96$  ( $p < .01$ ) and  $-.90$  ( $p < .05$ ).

Both the correlation between the mean typicality and mean preference score (.30) and the mean novelty and mean preference score (-.023) does not reach statistical significance ( $p > 0.05$ ) which is comparable to the study of Hekkert.

As stated by Hekkert et al, looking at the high negative correlations between typicality and novelty, either of these variables may have functioned as a suppressor variable with respect to the relation between the other one and aesthetic preference. When we performed a correlation analysis where the effect of novelty was partialled out, this is true. The suppressor effect is even larger than found by Hekkert et al. The correlation of typicality with the preference of the products is 0.94 (with significance is  $< 0.05$ ) when we controlled for the influence of novelty. The mean originality scores correlates with the mean preference controlling for typicality with  $r = 0.935$  and a significance of  $p < 0.05$ . The same tests applied to the helmets showed another picture. There is no significance between the mean typicality and mean preference when partialing out for novelty and vice versa. The partial typicality/mean preference correlation was .836 and for novelty/mean preference it was .872. Both  $p \geq 0.05$ .

At last a regression analysis was made to determine how much variance in the ratings of the dependent variable "aesthetic preference" can be explained by typicality and novelty. It seems that for the bicycles the influence of the predictors of typicality and novelty showed a significance compared to aesthetic preference ( $p < 0.05$ ). For the helmets there is no significance for this relation ( $p > 0.05$ ). The analysis revealed that typicality as well as novelty explained 89% of the variance in beauty ratings of the bicycle.

The graph in figure 8 shows the ratings of the bicycle designs with on the horizontal axis "typicality" and on the vertical axis "novelty". According to this graph our hypothesis is that the bikes above the line are arranged as more aesthetically pleasing than the bikes on the line. When we compare those results with the aesthetic preference rates (figure 9), it is obviously clear that the designs B, D and A are judged as the most beautiful designs. Bike C scored the lowest, followed by bike F. The standard deviations of the ratings of bike E are very high. Some of the people judged the bike as too extreme, others really liked the novel aspect.

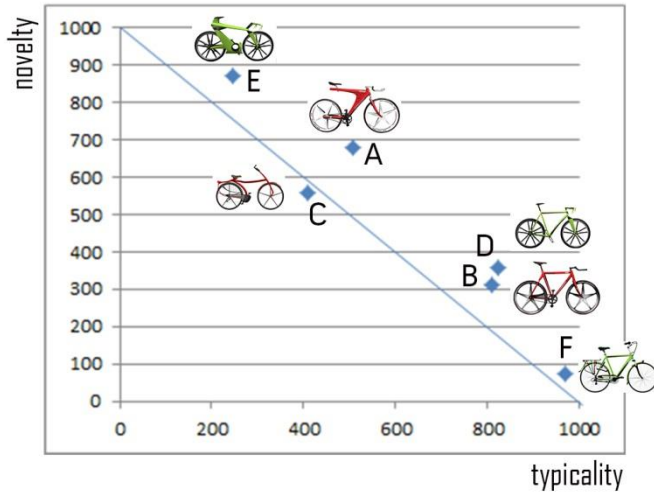


Figure 8. Typicality (looks like an archetypical bike) versus novelty (looks like a novel design of a bike) plot for the 6 bicycle designs.

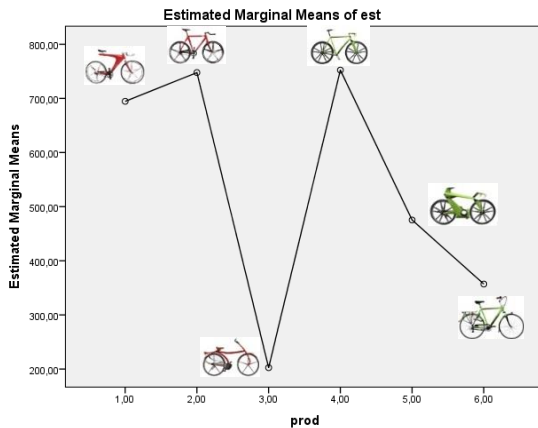
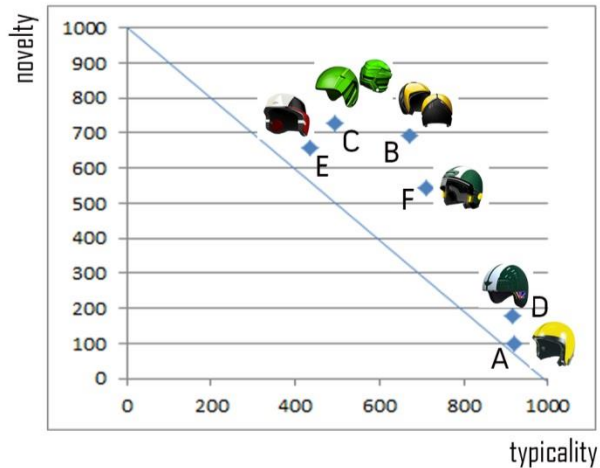


Figure 9. Mean values for aesthetic preference of the bicycle designs

In figure 10 the results of the helmets are plotted with on the horizontal axis “typicality” and on the vertical axis “novelty”. The graph shows that all results are plotted above the blue line. According to our hypothesis the

helmets C, B and F should rate higher according to aesthetic preference because of the combined influence of the two mechanisms typicality and novelty.



*Figure 10. Typicality (looks like an archetypical helmet) versus novelty (looks like a novel design of a helmet) plot for the 6 helmet designs.*

When we compare the results with the aesthetic preference rates, it shows that helmet B is rated as the far most beautiful helmet conform our hypothesis. The results show also that helmet C is not rated very high, against our expectations. A closer look at the standard deviation explained that there is lot of disagreement about this helmet. Helmet E scored also really low (with the highest standard deviation of all helmets). Helmet A is rated with the lowest 'aesthetic score', with a very small standard deviation.

It is also remarkable to see that the helmets are mainly positioned at the right side of the graph, while the bicycles where spread over the complete graph. There are almost no helmets which are rated as more novel. In the discussion we will discuss these outcomes.

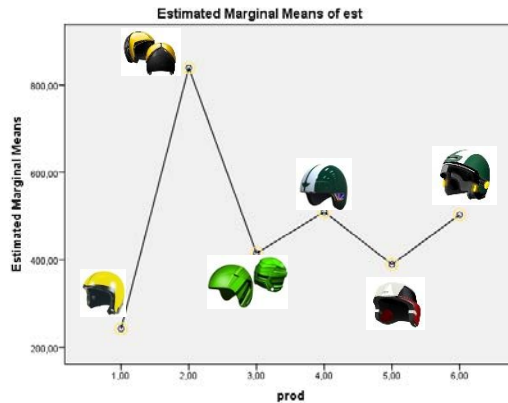


Figure 11. Mean values for aesthetic preference of the helmet designs

### Discussion case study 1

The results show that the hypothesis that was visualized in figure 5 is correct for the product category of the bicycles, however not for the helmets. It seems that the hypothesis can be true, but is dependent on the type of products. As we compare the results of the helmets according to the bicycles, it seems that the helmets are rated as more typical and less novel. This could be explained by the difference in the dominance of the archetypical shape of bicycles versus helmets. After the test the respondents were asked for which product category it was more easy to judge the designs. 17 of the 21 respondents indicated the bicycles as more easy to judge, because the designs varied more and it was easier to determine the extremes. Comparing with the stimuli of Hekkert et al. (Teakettles, Cars and Telephones) it shows that those three product categories are less stereotypical compared to the helmet. this assumption can be explained because a helmet is a product that has to fit around the head and therefore is automatically tended to be less novel. When we take a closer look at the results of the beauty ratings of the helmets this case seems more complex. The differences of the originality of helmet E (figure 12a) varied a lot between the respondents, it has the highest standard deviation. Some of the respondents rated the helmet as old fashioned and discussed the resemblance with retro motor cycle helmets (called 'pothelm' in Dutch) as shown in figure 12b. The same 'problem' even sometimes occurred when respondents were rating the bicycles. Bicycle C was judge as a bike that

looks like an old fashioned specimen from the nineteenth century in contrast to others who judged the bike like really innovative (figure 13).



*Figure 12. (a) the design of helmet for the brand Mini (b) a retro cycle motor helm called 'pothelm' in Dutch*



*Figure 13. (a) the design of a bike for the brand Ferrari (b) Michaux "boneshaker" ca. 1870*

In other words; some of the designs evoke an effect that does not correspond with the designers' intent.

There are also other factors that could influence the outcomes but are not discussed in this paper in detail for example the relatively small amount of respondents, the use of stimuli created by students and the observer characteristics such as the expertise level. Nevertheless, the statistical results of the ratings of the bicycle case study are significant.

### **Conclusion case study 1**

The results show that the hypothesis of figure 5 is correct for the bicycles, however not for the helmets. The more appreciated bikes are placed above the lines. There is an optimum line as visualized in figure 5

where we can predict the outcomes of the more aesthetically preferred designs. Therefore we could say that the aesthetic preference based on the joint influence of typicality and novelty is true for this product category in case of brand extensions. For helmets the hypothesis is not significant, which seems to be due to the more archetypical product category. In order to say more about this effect we need to test more product categories.

Elaborating on the research of Hekkert et al. we can say that to create a successful brand extension, it is important to create a product that has to look like the product of its category (typicality) and on the other hand has to maximize the novelty aspect.

The results also showed that the judgment of novelty in the case of brand-extensions is not without difficulty. To unravel the mechanism behind the appreciation of novelty in brand extensions, we performed a second case study where the influence of the context was taken into account.

### *Case study 2*

There are two mechanisms that can occur when watching a brand extension like a bike from Lamborghini in a specific context.

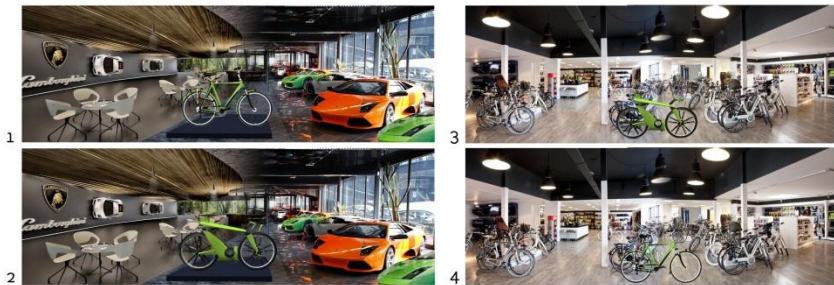
On the one hand the new product category with respect to the brand can be seen as the novel experience of the product. The familiarity with the brand characteristics of the brand (typicality) has to compensate the effect of the novel experience. On the other hand the consumer can be familiar with the archetypical forms of a product category (typicality) and considers the extension of the brand as a novel experience with respect to the product category. Take for example the brand extension of a Lamborghini bike. When placing the Lamborghini bike in an bike shop, the novel aspect will be the fact that there is also a bike with a Lamborghini design in the assortment. When we place the same bicycle in a Lamborghini showroom, the novel aspect will be the fact that Lamborghini also designs for another product category. When the outcomes of the novelty ratings of the two designs are the same, there is no difference in judging the objects even by placing them in a specific context. We assumed that the more typical bike of Lamborghini in the more typical context (bike shop) will be rated as less novel. All the other bikes will be rated as (more) novel. When the Lamborghini bike in the bike shop is rated as more novel compared to the same bike in the Lamborghini showroom, than we could say that the influence of context will reinforce the effect of the recognition of brand characteristics with a specific context perceiving novelty in a product.



To be more specific, we assume that the bike in context 4 (figure 14b) will be rated more novel than the bike in context 1 (figure 14a), because the novelty in context 1 is provided by the environment, in contrast to the really typical bike shop in context 4. The second assumption is that the bike in context 3 will be rated as more novel than the bike in context 2, because the physical brand characteristics (forms/lines, colours etc.) of the product show more contrast in the design related to the context. According to the integration of the product with the context we assume that bike 4 is more integrated with the context than bike 1 and Bike 2 is more integrated than bike 3.

### **Method**

We asked 59 first year students of our curriculum Industrial Design Engineering to judge two different bike designs in a specific context. They were asked to rate the novelty on a likert scale from 1-7. We made 4 different surveys were the respondents were asked to rate only two different bike designs (1&3, 2&4, 1&2 or 3&4).



*Figure 14. Stimuli of case study 2 (a) two designs of Lamborghini in a Lamborghini showroom (b) two designs of Lamborghini in a bike shop*

In the survey, the respondents were told to rate a brand extension (a product for a specific brand), the exact product and the context were not explained to the respondents. We also asked a second control question were the respondents has to rate (from 1-7) to what extend they thought the bike fitted into the context.

**Results**

The outcomes show that the respondents do not differ a lot between the context pictures 1 & 4. The bike in context 1 is rated just slightly higher ( $M_1=2.0$ ) compared to the bike in context 4 ( $M_4=1.96$ ), but the standard deviation of context 4 is lower ( $SD_1=1.13$ ;  $SD_4=0.73$ ) (figure 15). In contrast, the bike in context 3 is scored as more novel ( $M_3=5.3$ ;  $SD_3=1.06$ ) compared to the bike in context 2 ( $M_2=4.6$ ;  $SD_2=1.32$ ). So we could say that when the product is not really integrated with the context, this has a bigger effect on novelty than placing a more novel product in a context where the product and the context are more integrated (context 2).

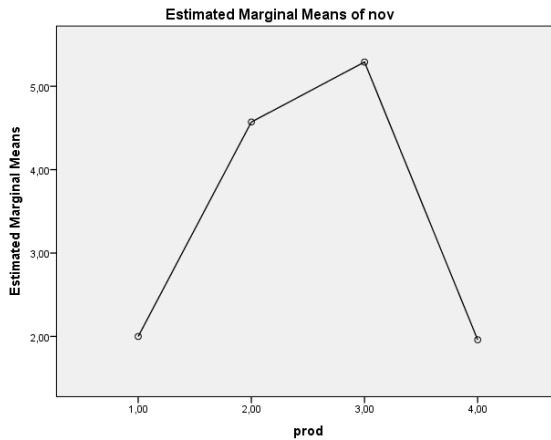


Figure 15. plot of mean results for novelty

The outcomes of the second question about integration of the product with the context (consensus) reveals that the bike in context 2 ( $M_2=4.6$ ;  $SD_2=1.55$ ) is more merged with its environment compared to bike in context 3 ( $M_3=2.6$ ;  $SD_3=1.54$ ). The bike in context 4 ( $M_4=5.8$ ;  $SD_4=1.33$ ) is more integrated with the context compared to bike 1 ( $M_1=3.0$ ;  $SD_1=1.64$ ).

**Discussion case study 2**

The outcomes of the integration of the bikes with the context showed that the bike in context 2 is more merged with its environment compared to the bike in context 3. So the effect that people experience the Lamborghini brand as provider for the novelty aspect with the bike in the bike shop as provider for the typicality aspect seems stronger than vice versa (the bike in the Lamborghini showroom as provider for novelty, with the Lamborghini

brand as provider for typicality). The outcomes for novelty reveal the same effect: the “Lamborghini-bike” in context 3 is rated relatively more novel than the “bike-Lamborghini” in context 2.

*Table 1 Outcomes of mean ratings for novelty and integration with context (consensus) arranged for the different surveys*

**Descriptive Statistics**

Mean		context				
	survey	1,00	2,00	3,00	4,00	Total
novelty	1,00	1,8000		5,6000		3,7000
	2,00		4,5714		1,9286	3,2500
	3,00	2,2857	4,5714			3,4286
	4,00			4,6364	2,0000	3,3182
	Total	2,0000	4,5714	5,2581	1,9600	3,4576
consensus	1,00	2,9000		2,5000		2,7000
	2,00		4,5714		5,7857	5,1786
	3,00	3,0714	4,6429			3,8571
	4,00			2,7273	5,7273	4,2273
	Total	2,9706	4,6071	2,5806	5,7600	3,8475

However the results of context 1 and 4 did not match our hypothesis, as the bike in context 1 was not rated as more novel than the bike in context 4. The effect of the typical bike seems to overshadow the novelty aspect, we assume that this is because the bike design is too common.

There are also some other restrictions to this case study. The outcomes of the mean scores of novelty and consensus can also depend on the sequence of showing the pictures. In table 1 the different surveys are shown related with the mean scores of novelty. The outcomes show that the novelty of bike 3 ( $M_3=5.6$ ;  $SD_3=0.94$ ) is almost 1 point lower in survey 4 ( $M_3=4.6$ ;  $SD_3=1.03$ ) compared to survey 1. So the respondents in survey 1 first rated the more typical bike as less novel with context 1, and after that bike 3 was rated as even more novel, in comparison with the respondents of survey 4, who started with bike 3. This means that we also have to test for the inverse of all the combinations.

The other restriction is that this second case study is only tested among first year industrial design students, so the results do not cover a wide range

of people. Although the respondents could be designated as more experienced with respect to adequately perceiving the designs of products.

## General Conclusion

Starting point for the research in this paper were our previous findings, that to create an optimal brand extension, designs need to use all levels of the brand translation framework (Mulder-Nijkamp & Eggink, 2013a, 2013b). In this paper we hypothesized that besides this, a successful brand extension depends on the joint influence of typicality and novelty as also stated by Hekkert et al. The first case study confirmed that to create a successful brand extension, it is important to create a product that has to look like the archetype product of its own category (typicality), and on the other hand has to maximize the novelty aspect. Although it should be mentioned that the number of individuals surveyed was small, the results of the casestudy indicate that the successfulness of brandextensions is also determined by the two mechanisms.

The second case study was partially successful in determining which of the proposed mechanisms defined the appreciation of novelty among the respondents. The “Lamborghini-bike” is rated relatively more novel than the “bike-Lamborghini”, however the reciprocity of both mechanisms was not confirmed. The outcomes did show that the appreciation of novelty for less typical designs is reinforced by the context they are presented in. It seems that the appreciation of novelty of the respondents is strengthened by an environment that does not match the product.

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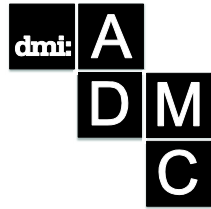
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## Craft Brewery Brands: self-awareness through performance

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*New principles emerge, with brands, innovation and design being driven by passion and meaning. Companies strive to resonate with consumers, tapping into culture, myths and ideologies, but also move to becoming “citizen artists” who inspire people. Design may play a central role in this, materialising values and interpreting meaning. A product category that is seemingly localised, socially engaged, and value-oriented is craft breweries. These are often small-scale and use traditional approaches to brewing, emphasising craftsmanship and quality, based on an often rebellious but playful nature, challenging the status quo, while having a passion to learn. We aim to understand how to develop brands based on own passion and principles, while being open to influences in society. What is the role of design when establishing a craft beer brand? We conducted a comparative case study using interviews, site visits and extensive desktop research. The results are compared through a framework seeing identity as a self-image that is embodied, performed, interacted and re-negotiated in an ongoing process. Both cases actively use design and engage with their audiences, but do so with different agendas: preserving and perfecting traditions, or playfully creating new brews and scenes.*

**Keywords:** Design, branding, craft brewing, Nøgne Ø, Mikkeller

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## 1. Introduction

As the conference title *Design Management in an Era of Disruption* suggests, we live in an era of disruption. In design, branding and innovation management, new principles are emerging that could help us to navigate changing circumstances. These are principles such as the importance of being driven by passion and meaning (Florida, 2002), constantly engaging with change (Neumeier, 2009), and that what you share is what you are (Leadbeater, 2009). Innovative processes open up (Christensen, 2003), and new structures emerge in market-oriented companies which suggest a flattening and reversing of the organisational pyramid, placing customers at the top (Grönroos, 2007). Designers take on roles as facilitators, opening up applications of design thinking outside the design community (Norman & Verganti, 2014; Carlgren, 2013; Johansson-Sköldberg, Woodilla & Çetinkaya, 2013; Kimbell, 2011, 2012; Hobday, Boddington & Grantham, 2011, 2012).

In branding, there is a shift away from mind share branding, which suggests that “the brand must own a simple, focused position in the prospect’s mind” (Holt, 2004, p. 15), towards an approach that is sensitive to the culture and the world of the consumer (Beverland, 2009; Holt, 2002; Holt & Cameron, 2010). Holt suggests that brands need to take an active role and behave as “citizen artists”. Being citizen artists, leading brands go beyond feeding on established culture to also nurture and inspire individuals. He suggests that companies need to identify cultural myths and ideologies that resonate with customers. An ideology is presented as concepts that can be conveyed in various ways, and experienced through layers of cultural expressions (Holt & Cameron, 2010). This view moves away from the idea of a brand as a single message to a layered concept that is manifested in a wide range of activities experienced with all senses and engaged in society.

However, in Holt’s proposed theories the role of products is minimal. Beverland builds on Holt’s concept of citizen artists, but suggests that: “at the end of the day, your brand is only as good as the products or the services behind it” (Beverland, 2009, p. 180). He further introduces the idea that building authentic and culturally sensitive brands also means embracing a tension between coherence and change (Beverland, 2009). As design is an important tool to make brands concrete, alive and meaningful (Abbing, 2010), it could also possibly play an important role in mediating tensions that may arise when developing a brand concept.

While much branding literature that comes from management or marketing has adopted a profit-driven focus (e.g. Kapferer, 2004;

Samuelsen, Peretz & Olsen, 2007), this paper seeks to contribute to a value-centred approach for the customers, the company and society in general. Principles and meanings are central in design discourses, and also have an important role in building brands. Just as vital to the brands are corporate values and beliefs (Aaker & Joachimsthaler, 2000). However, the quest for meaning is often presented as a means to increase company profit, and not an end that is important in itself.

Building value-centred brands that can grow in parallel with societal trends brings a holistic approach to management. This emphasis on values beyond mere financial results suggests that companies will have the opportunity to align brand values with organisational values, thereby performing their brand not only through promotion, but all of the activities they engage in. Aligning corporate strategy with the marketing concept of the company has earlier been seen to be very powerful in companies like IKEA (Porter, 1996). The next stage will be to move away from superficial added values or a brand story to engaging with something as simple yet powerful as building a business based on a passion or principles.

### *1.1 Craft breweries*

Craft brewing is a relatively new sector in Northern Europe, characterised by localised, socially engaged, value-oriented businesses. The attitude in this category can be described as playfulness accompanied by a passion to learn, engaging breweries and their brewmasters as well as devoted fans and followers.

These breweries are mostly small-scale and use traditional approaches to brewing, emphasising craftsmanship and quality. Craft breweries have often been owned independently, with the brewer taking a central role. The craft brewing community started with microbreweries, but an increasing number of companies in the category have now grown beyond the “micro” level. The category is in transition, providing research opportunities concerning startups as well as the mechanisms that come into play when companies grow.

With craft beer, advertising can backfire, or may simply not be possible due to legal restrictions (as in several Nordic countries) or limited budgets. A trend in pubs selling craft beers is to not add any of the companies’ marketing material (pump clips and similar) and to only communicate what the beer is about through the name of the beer and the stories provided by the bar tender. Major players in the category, such as the Scottish beer brand BrewDog, are rapidly expanding despite limited training in marketing

or management (Smith, Moulton, Burge & Turnbull, 2010). A rebellious nature, challenging the status quo, together with the demanding environment in which these brands are created, make craft breweries ideal cases to explore new branding principles and the role of design when establishing a brand.

## 1.2 Aim

The aim of our study is to understand how to develop a brand that is based on one's own passion and principles while being open to influences in society. We seek a way of looking at brands where the company – or the corporate – strategy is aligned with the brand strategy. The focus is on the role of design when establishing these brands. Branding in small and medium-sized enterprises (SMEs) and entrepreneurial marketing are considered under-researched (Boyle, 2003; Merrilees, 2007; Spence & Essoussi, 2010). We would like this paper to contribute to the understanding of how SMEs without large marketing budgets can work to establish their brands. The goal is to compare two craft breweries and answer the question: *What is the role of design when establishing a craft beer brand?*

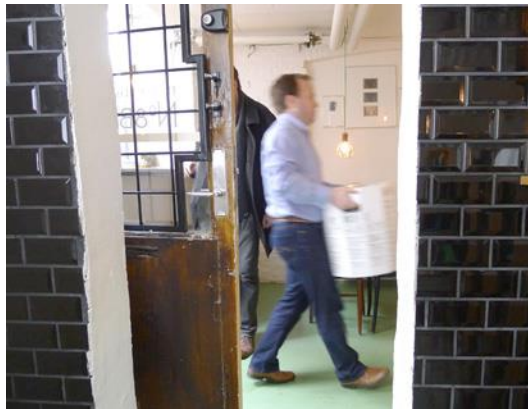
## 2. Method

We conducted a comparative case study (cf. Yin, 2013) looking at two Scandinavian craft breweries: Nøgne Ø Det kompromissløse bryggeri AS in Grimstad, Norway and Mikkeller ApS in Copenhagen, Denmark. These both have strong narratives and skilfully use design elements to communicate who they are and what they are about. Both companies are involved in staging events and experiences people can participate in. Moreover, they seemingly aim beyond short-term profit, seeking to establish relationships and grow the community. Both are Scandinavian craft breweries, but there are striking contrasts in how they have been set up and organised.

Nøgne Ø was established in 2002 in the small southern Norwegian coastal town of Grimstad. It is currently perceived as one of the major players in the category, and also a success story in terms of brand and finance (Berglihn, 2014). In 2013 Hansa Borg, the largest Norwegian-owned brewery company, bought a majority stake in the company. Nøgne Ø started to build their brand before there was an established culture around craft breweries in Norway, and had to take the lead in establishing this culture. It has invested in brewing facilities and has an expressed goal of developing the best beer (K. Jikiun, personal communication, 13 May 2014). We interviewed the sole remaining of the two founders of the company, the

Head of Marketing and the designer behind the company profile. We also conducted extensive desk research, including blogs, news material and social media activity.

Mikkeller was established in 2006, and is a so-called “gypsy” or “phantom” brewery that does not have its own production facilities, but produces its beer with other breweries. Mikkeller consciously use designers to create a diverse range of expressions. In this case we interviewed the Operations Manager, two of their bar managers, a blogger, as well as bartenders and brewers from the partner breweries. We conducted field research in Mikkeller pubs in Copenhagen (Vesterbro and Nørrebro) and in Stockholm (see Figure 1), attended a collaborative brew project (at The Earl of Essex pub in London), and also conducted extensive desk research, including the brand’s social media activities and external bloggers.



*Figure 1 Participatory observation at Mikkeller Vesterbro: researchers on beer keg-carrying duty. Source: Authors*

In addition, we also visited numerous pubs and off-licence shops that served Mikkeller and Nøgne Ø beers.

To analyse the cases, we first developed the *Becoming a Brand* framework (see Figure 2), which aimed to highlight different perspectives while sacrificing some details to make our model applicable to small-scale organisations. It was grounded in an ambition to reconcile different perspectives on “brands” further described in the following section, and recursively elaborated in the analysis and in exercises with students and

entrepreneurs. The framework was adapted following insights gained during field studies.

We then used the model to compare and contrast the two cases with respect to the physical manifestations of the brands, the activities in which they engage, their collaborations and learning with others, and their self-awareness.

### 3. Analysis

#### 3.1 Four facets of identity

The framework consists of four basic facets and ongoing learning in a changing context.

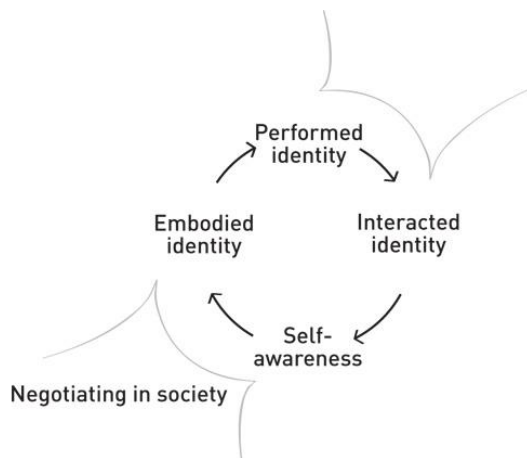


Figure 2 *Becoming a Brand framework. Source: Authors*

#### **Facet one: Self-awareness – Being**

In building a brand, knowing who you are, what your values are and what your vision is have been identified as being of key importance (Olins, 2005; Aaker & Joachimsthaler, 2000). We have named the first facet of our framework *Self-awareness*.

The lack of a record of products, projects and so on leaves space for interpretations. When establishing a new company, establishing exactly what your values, your vision or your philosophy are can therefore prove



daunting and challenging. Two joint entrepreneurs may find that although they share the same vision, their values may conflict. Another challenge is that it can be difficult to separate yourself as a person from the business.

### **Facet two: Embodied identity – Stating**

As brands are intangible and even ambiguous as a concept, design and physical manifestations have been identified as important mediators in communicating what a brand is about (Karjalainen, 2004; Stompff, 2008; Abbing, 2010). It has been claimed that being distinctive through all the senses contributes to customer loyalty (Lindstrøm, 2005).

We have labelled the second facet of the framework *Embodied identity*, referring to tangible/concrete representations of the brand and how these are manifested in the products through shapes, colours, textures or sounds and so forth.

Design plays a role in shaping all of the “touch points” a brand has with the customer (Wheeler, 2006), and the result of all these forms a basis for the company’s creation of awareness around its brand. Similarly, both explicit and implicit design cues can be powerful signatures that trigger the idea of the brand (Karjalainen, 2004), and styling may serve as a strategic tool (Person, Snelders, Karjalainen & Schoormans, 2007).

### **Facet three: Performed identity – Doing**

Identity is not just about values or physical manifestations. Rather than simply broadcasting a message to a passive audience, brands perform and bring alive values and embodiments, creating opportunities for stakeholders to experience events and interact actively with the brand (e.g. Deighton, 1992). In bringing the company’s intent alive, everyone in the organisation needs to be part of the act (Pine & Gilmore, 2011). The third facet of our model is therefore *Performed identity*.

The global advertisement agency Leo Burnett (2013) introduced its “humankind” strategy in 2009, communicating that brands need acts, not ads. This represents a shift from building brand awareness through advertising to focusing on how the company is behaving and which activities it is using to engage with its customers. However, performance in this framework goes beyond the mere “added value” activities, and does not distinguish between products, advertisements, events or other activities that the company is undertaking to perform the brand.

#### **Facet four: Interacted identity – Interacting**

A brand interacts with a wide range of stakeholders (Wheeler, 2006). People (customers, potential customers, business partners and others) engage with the brand and exhibit a range of behaviours. The fourth facet is therefore *Interacted identity*.

These interactions shape the brand to some extent, reflecting a symbolic interactionist perspective on identity: “What the individual is for himself is not something that he invented. It is what his significant others have come to see he should be, what they have come to treat him as being” (Goffman, 1972, p. 327). Interactions become part of changing the company and informing who it is. The actors’ interpretation of activities, the level of engagement and interest give an indication to the company of what the company is and could be about.

Diverse actors imply variety in the meanings created, which may call for values and identity to be explicit in order to provide coherence and structure. These interactions cannot be controlled, but the company can inspire, facilitate and monitor them. Whether or not it conducts active monitoring, a company is likely to get feedback on its products and actions. Over time, experiences of how the company is treated contribute to its heritage, shaping further actions.

#### **Facet five: Negotiating in society – Growing and Evolving**

Neither industries, customers, employees nor society are static, and in a sense, brands constantly change. In our framework, we suggest an ongoing dynamic with respect to the four facets introduced above. The fifth facet is therefore *Negotiating in society*.

We suggest that all activities within an organisation, informal or formal, will be influenced by changes in society. At the same time, companies also shape society.

Depending on the company’s strategy, new activities may be planned to nurture the dialogue. The dynamic is affected or made relevant by changes in society that may be understood through analysing major drivers of change (e.g. political, economic, social, technological, environmental and legal) or through identifying cultural myths and ideologies (Holt, 2004). How the company responds, interacts or facilitates changes in the community will tell the story about who it is, and who it would like to become.

### 3.2. Analysis through the lenses

Analysing Nøgne Ø and Mikkeller through the *Becoming a Brand* framework reveals striking differences in who they are, and how they embody their identities, perform and interact. Table 1 summarises our findings, which we will then elaborate.

Table 1 Understanding Nøgne Ø and Mikkeller through the five facets of the *Becoming a Brand* framework

Facet and key questions	Case 1: Mikkeller	Case 2: Nøgne Ø
1. Self-awareness (Being) a. Who are we? b. What is our passion? c. What are our principles and attitudes? d. How are we changing?	a. “Gypsy” brewers and artists b. Creation, innovation and experimentation c. Engage with other high-level creators d. Constantly changing based on multiple sources of inspiration	a. Uncompromising artisans and missionaries b. High-quality beer c. Teach people to enjoy good beer, “our customers need to be flexible” d. Increasing knowledge about craftsmanship and how to teach people about beer
2. Embodied identity (Stating) a. How are we recognised? b. Which cues give us away?	Name Logo A playful profile, often with a twist, emerging Sometimes the man with the black hat (“Henry”), sometimes the old logo with the founder’s face Playful names “Scandinavian” look and feel in the bars Sometimes “bizarre” and experimental taste combinations	Name Bottles Labels Logo “Pure” beer
3. Performed identity (Doing) a. What are our activities? b. What is unique about how we perform?	Festival (Copenhagen Beer Celebration) Tap takeover Being the “gypsy” brewer – constantly on the move Co-brewing Respond to all	Devoted and passionate about brewing High attention to quality Offer a sophisticated product with high quality Home brewing kit Being personable when

	<p>approaches</p> <p>Opening bars</p> <p>Developing a large number of new and creative recipes</p> <p>Beer festivals</p> <p>Small beer bottles</p>	<p>people approach them</p> <p>Sharing knowledge and being open</p> <p>Contests/competitions</p> <p>Beer festivals</p>
<p>4. Interacted identity (Responding)</p> <p>a. Who is interacting with us?</p> <p>b. How are they interacting with us?</p> <p>c. Which stages of the product life cycle do the external actors engage with?</p>	<p>a. Other breweries, top restaurants, art and design companies, other high-profile Scandinavian companies, hipsters, “female craft beer drinkers”, the curious and innovators</p> <p>b. Co-brewing, bloggers, email interaction with product information</p> <p>c. Product selection (due to the range of products), consumption</p>	<p>a. Passionate and devoted customers</p> <p>b. Own fan club, “Friends of Nøgne Ø”, co-brews (until recently)</p> <p>By accepting Nøgne Ø’s role as “the expert”</p> <p>c. Different opportunities based on the level of engagement: consume product, brew your own product, promote the product, engage in in-house product development, engage in brewing communities, Recently also added “regular” customers, who are less flexible about the peculiarities of craft beer (e.g. yeast sediments and perceived impurities)</p>
<p>5. Negotiating (Growing and Evolving)</p> <p>a. How does the context change? (Political, Economic, Social, Technological, Environmental, Legal)</p> <p>Why are we relevant?</p> <p>b. Which cultural myths and ideologies are relevant in the company’s context?</p>	<p>a. Increased interest in craft brewery brands</p> <p>People seek “quality products” = “quality experiences”, seeking “authentic” and “local”</p> <p>Express yourself through connoisseurship</p> <p>b. Being a rebel?</p>	<p>a. Increased interest in craft brewery brands</p> <p>People seek “quality products” = “quality experiences”, seeking “authentic” and “local”</p> <p>Express yourself through connoisseurship</p> <p>“Nordic” trend</p> <p>DIY trend</p> <p>Craftsmanship.</p> <p>b. David and Goliath?</p>

### **3.2.1 Self-awareness: Being the ideas and dreams**

The awareness of who the company is takes two different paths. While Nøgne Ø seems to have had a clear and strong self-awareness from the very beginning, the Mikkeller brand appears less explicitly defined, yet very self-aware.

In the Nøgne Ø case, the self-awareness has been represented from the outset through the strong personality of the founder, Kjetil Jikiun. Inspired by quality beer and brewing, his mission is to establish a quality beer culture in Norway and to produce the most exquisite beer. The company started with a strong vision of a change it would like to see in society, and a belief in making this change itself. Nøgne Ø has become a missionary on a quest to increase awareness and knowledge about craftsmanship and quality beer.

The Mikkeller brand is layered. The “gypsy” brewer who travels around the world is an important part of who it is (Schøn, 2009). In our research, we identified drives for creativity, curiosity and experimentation, and that Mikkel Borg Bjergsø, Mikkeller’s founder, played a central role in defining what the brand is about. In its attitudes and behaviour, Mikkeller does have a mission, but is in a sense more similar to an artist constantly changing and evolving based on multiple sources of inspiration. This leads to engaging with other high-level actors, such as Michelin-starred restaurants or a design company recognised for its minimalistic design. When explaining what Mikkeller was about and how they perceive working within this brand, two of the employees interviewed for this study separately used the metaphor of a “rock band” (M. Lindberg, personal communication, 9 April 2014; J.G. Alsing, personal communication, 9 and 10 April 2014). There is an interesting contradiction in how it presents itself: the brand should both be “punk and rock’n roll and brutally serious at the same time” (Schøn, 2009). What Mikkeller is and what it is seeking is less explicit and formalised. When we asked for design briefs, documents or similar materials, the response was that all these were inside Mikkel’s head.

### **3.2.2 Embodied identity: Manifestation of who you are**

The Nøgne Ø case is a textbook example of how brands are developed from an explicit self-awareness of values to communicating these ideas to other actors through various cues. Mikkeller, on the other hand, represents a new approach where coherence is sacrificed in order to allow playfulness and content variation.

In the case of Nøgne Ø, the designer Tor Jessen joined the company before the product was launched on the market, giving him an opportunity

to set the brand and design development agenda. He was paid in shares, which also meant he took ownership of what was created. From the very beginning he told the founder that while Jikiun's expertise was crafting beers, his was design.

The name "Nøgne Ø – Det kompromissløse bryggeri" (literally "Barren Island – The Uncompromising Brewery", "Barren Island" being taken from Henrik Ibsen's poem "Terje Vigen", set close to the Nøgne Ø brewery) came after a longer process: "we sought a distinctive name, something that was possible to make a profile of that was the opposite of what was in the beer community" (T. Jessen, personal communication, 25 April 2014).

Like others in the craft beer community, Jessen saw Nøgne Ø's products in the context of fine dining, rather than parties and alcohol consumption. Seeking to communicate this level of sophistication with the beer label, he enjoyed working with the "Ø" (see Figure 3).



Figure 3 Logo and trademark, Nøgne Ø, Det Kompromissløse Bryggeri AS.  
Source: Nøgne Ø, design by Tor Jessen

It was perceived as a strange and Norwegian character, which attracted attention, but also demanded extra effort from international customers. In defining elements representing Nøgne Ø, the bottle also played an important role. Aiming for a unique and pure profile, they decided to go for the 0.5l bottle (see Figure 4).

Initially the founder disliked the logo. In his own words, the design almost made him cry (Jikiun, personal communication, 13 May 2014). Jikiun's attitude later changed, and he came to appreciate that the modern, clean design provided a completely different profile to others in the

category. The comparatively high price of this beer internationally and the emphasis on its high quality also matches the unusual “look and feel” of the design.

Design plays an important role for Nøgne Ø, although in our interview Jikiun felt that the product would always be the most important part of the company for him. However, a good-quality product alone would not be enough to gain recognition.



*Figure 4 Selection of Nøgne Ø beers. From left: Pale Ale, Wit, #100, Brown Ale, Two Captains, Holy Smoke. Source: Nøgne Ø*

Mikkeller’s Operations Manager, Jacob Gram Alsing, stated that “design plays a major role in building this brand” (personal communication, 9–10 April 2014). Using the Mikkeller office in Copenhagen to illustrate his point, he explained that the company’s founder, Mikkel Borg Bjergsø, could not work in an environment where he did not appreciate the aesthetics. The office was decorated in strong colours with purple and pink dominating, and contained Danish-design furniture, such as Verner Panton’s colourful and formful shapes (see Figure 5).



*Figure 5 Mikkeller office in Copenhagen. Source: Authors*

The Mikkeller bars also expressed the brand's distinctiveness. These were not designed following rigid design guidelines, but based on two criteria: Scandinavian design, and the idea that new bars should contain elements from the first bar at Vesterbro in Copenhagen (J. Alsing, personal communication, 9–10 April 2014).

Mikkeller works with a range of designers. With over 600 different labels in various styles, it is no small task to go through them and identify what the Mikkeller brand is about, but a closer look at a selection of bottles revealed a pattern in the embodied identity, conveying who it is and how it is represented (see Figure 6).

The confidence of this small craft brewing company seems to be increasing. The early labels exhibit little coherence, but a few signature elements. A sketch of the founders and the Mikkeller name appear consistently. The colours are initially more conservative and closer to the





*Figure 6 Mikkeller, variety of expressions. Source: Authors*

aesthetic usually found in the beer category, with dark-coloured labels, images of ingredients or other references to the category. An interesting change happens when one of the founders leaves the company, which is also expressed by one of the labels, where the image of this founder is literally carried out and replaced with a man in a black hat – “Henry” (see Figure 7).

“Henry” starts to appear on many of the labels, and increasingly becomes one of the signatures and embedded identities of the Mikkeller brand. He was designed by the Philadelphia-based designer Keith Shore, who initially started to work for Mikkeller as a freelancer. In 2013 Shore became part of the Mikkeller staff, overseeing all the design of its labels, with the title of Art Director. After Shore’s introduction, the labels also become more colourful (see Figure 8).



Figure 7 Left: One of the founders is carried out. Right: Mikkel Borg Bjergsø and “Henry”. Source: Authors, Mikkeller

The Mikkeller brand is also manifested in its sometimes “bizarre” and experimental taste combinations. Seeking to create a different experience than the other players are offering, they can be defined as much by what they are not as by what they are.



Figure 8 Left: Mikkeller bar, Stockholm. Top right: Example of Keith Shore’s design. Bottom right: Colourful examples of Mikkeller labels. Source: Authors, Mikkeller

### **3.2.3 Performed identity**

In both brands, the organisational structure and attitudes towards brewing play an important part in how they perform their identity and develop the brand.

Nøgne Ø challenges itself with new brewing processes and continuous enhancement of its skills. Engaging in processes that involve a high level of craftsmanship is at the heart of what it does. After succeeding in making a beer that has been recognised worldwide for its quality, Nøgne Ø started to make the Japanese fermented rice drink sake (see Figure 9). This is considered a complicated process, and was seen as important in the organisation maintaining its innovative spirit (T. Young, personal communication, 14 November 2013).



*Figure 9 Sake production at Nøgne Ø. Source: Nøgne Ø*

Nøgne Ø is explicitly value-driven, and has defined a value brief it willingly shares with its employees and others. However, the founder of the company also found that the larger it became, the more challenging it was to perform according to set values, and this has been a constant concern in the day-to-day operations of the business.

When first launching its product, Nøgne Ø appeared different, which was part of its aim. Sharing information about its brewing processes and

teaching people how to brew have been important aspects of performing its identity. Openness and transparency are key values in the company.

Mikkeller's organisation is set up to brew with others, and experimentation through testing new recipes plays an important part of performing the identity. A willingness to offer a different experience to those it is collaborating with was evident in our interview with Thomas Schøn, the Web, Sales and Relations Manager and while observing the brewing process in the London brew pub The Earl of Essex (see Figure 10). When brewing in the USA, it did not opt for an American-style beer, but one that was Belgium-inspired. In the UK it brought in an American-style beer it had recently learned to brew in the USA.



Figure 10 Mikkeller brew day at The Earl of Essex, 8 March 2014. Top left: Beer Geek Breakfast bottle from Mikkeller. Top right: Thomas Schøn and the hops. Bottom left: The Earl of Essex bar. Bottom right: hops. Source: Authors

Mikkeller is a strong example of “performing a brand identity”. The company's employees even used the metaphor of “rock stars”. Mr Bjergsø

served the role of the lead singer, and the development of this brand was dictated by him. At the same time, the staff also expressed freedom in their own defined roles.

Mikkeller also literally puts on a show through the Copenhagen Beer Celebration festival, where a chosen group of brewers and their followers from around the world can attend events and enjoy the latest brews. The company also arranges “tap takeovers” – events at bars where Mikkeller’s staff visit and serve a selected range of products – on a regular basis.

Mikkeller values openness and taking time to engage with people. It also found tensions between being a small organisation and the high level of performance required (J.G. Alsing, personal communication, 9 April 2014).

### **3.2.4 Negotiated identity**

Nøgne Ø and Mikkeller have different ways of negotiating their identities, although both have decided not to be dictated by customer demands and interest.

Nøgne Ø’s attitude to negotiation is noticeable in the name “The Uncompromising Brewery”. When it comes to the product, there can be no compromise. The quality of the beer is also what others outside the Nøgne Ø company saw as key assets of the Nøgne Ø brand. “An exquisite beer” was the common answer from patrons when we asked around in bars about perceptions of Nøgne Ø. Josh Smith from the blog *The Evening Brews* in London described Nøgne Ø beers as “very Scandinavian”, using locally sourced ingredients and Norwegian names, which for him signalled that they were proud of their origin (J. Smith, personal communication, 20 March 2014).

The founder did not see the importance of changing in response to customers’ demands. On the contrary, he expected Nøgne Ø’s customers to be flexible. Those interested and willing to learn about “exquisite” and pure beer would be interested in Nøgne Ø. This interest includes understanding why there are sediments in a bottle of Nøgne Ø ale (see Figure 11), and not complaining that this is an “impurity”, as some novice customers may do.

Shortly after the Nøgne Ø brand was established, the fan club Friends of Nøgne Ø was founded. This network helps to sustain motivation and also a willingness to adhere closely to the ideals in the organisation and be true to its standards.



Figure 11 The ale Nøgne Ø #100, which leaves yeast sediment in the glass. Source: Authors

Mikkeller seems to be particularly well set up to evolve through collaborations, continuously expanding its collaborations with other breweries around the globe, top restaurants, art and design companies and other high-profile Scandinavian companies.

Mikkeller's playful attitude also seems to attract a different audience than traditional ale drinkers. London bartender Jimmy Hatherley described its followers as "local hipsters", "open-minded beer geeks", "female craft beer drinkers" and "innovators" (personal communication, 11 March 2014). He also described Mikkeller as akin to a forward-thinking media and design company.

Mikkeller has gained attention in the media because of its strong stories around the beers (Weiner, 2014). However, it has also experienced the challenge that how they are presented is up to the journalist (Schøn, 2009).

Although Mikkeller's identity seems less explicitly defined, all the people we talked with responded similarly in terms of what Mikkeller was about: being different and being innovative. It is the performance rather than the embodied identity that is driving who Mikkeller is and what it is about.

### 3.2.5 Negotiating in society

There is an increased interest in craft brewing, and it seems like this trend has yet to peak (*The Economist*, 2014). The people we asked who engaged with this culture saw "quality products" as "quality experiences". The customers were seeking a more "authentic" and "local" experience.

Another trend that is important for craft breweries is the increased focus on locally sourced food and quality food experiences.

The two brands were informed and led by similar trends, but there were also individual differences. The opportunity to buy your own home-brewing kit from Nøgne Ø responds to the DIY trend, while the playful and artistic identity of Mikkeller, with a constant new range of products, inspires curiosity.

The culture is still young, and there were indications that these brands, having started from very open, engaging and passionate starting points, are also suffering tensions as they grow. In Nøgne Ø's case, its story has been one of David against the corporate Goliaths, while it now has an incumbent position in the craft beer community in Norway and has been partly taken over by the largest Norwegian brewery corporation (Bakke, 2014). Mikkeller is also suffering from growing pains. Its "rock band" image will not accommodate growing beyond being a small group, and it is now approaching the size of a decent orchestra. These are only a few of the challenges that appear when companies grow.

## **4. Discussion**

Our research aim was twofold. Our main focus was the role of design when establishing a craft beer brand, but furthermore, we wanted to develop our understanding of how SMEs without large marketing budgets can work to establish a brand.

Craft breweries reflect many of the principles mentioned in the Introduction. They are driven by passion, constantly engage with change, and have an open, collaborative profile, actively engaging with multiple actors in society, including restaurants, bloggers, the media and design agencies. They nurture the culture around their craft beers, which may be a central factor in their rapid growth and evolution.

The differences between how these two companies use design elements boil down to one focal point: the interest and value the founders see in design, as well as their engagement with designers early on in the process. Jikiun had an established connection with a childhood friend, Tor Jessen, who was trained in industrial design and took part in setting up Nøgne Ø. He was given a mandate to communicate through a bold, distinctive style. This is in line with what the design literature suggests when building a brand and keeping it coherent. Bjergsø enjoyed different expressions and also identified a range of designers he was curious to work with, meeting Keith

Shore, whose style over time has become part of the embodied identity of Mikkeller. This embodied identity seems to be emerging from the various offerings it is producing. Nevertheless, design is at the core of what the organisation does, and Mikkeller is in some ways closer to the type of organisation seen in high-end fashion brands than a classic brewing company.

The level of cultural engagement goes deep in both cases, but the different stories of these two brands show that no single model fits all. The Nøgne Ø case suggests one message that is communicated through touch points. However, this should not be compared with the concept of “mindshare” branding mentioned in the Introduction to this paper. The brand is driven by a passion for craftsmanship, not added or constructed through advertising. The message becomes that of an exquisite beer and what it takes to be “the uncompromising brewery”. Performance within the organisation becomes what the brand is about.

The Mikkeller case offers valuable lessons, illustrating a brand possibly based on a less explicit starting point, but steeped in experimentation and a willingness to learn, leading to self-awareness. This brand is highly content-driven, and closer to those of music labels than an ordinary brand in the craft brewing category. For companies like this, signifiers such as how they approach us, how they serve beer or design elements still need to be coherent in order to be recognised. Yet the principles also need to be flexible enough to allow the company to tell new stories.

Both of these cases are success stories, although they have chosen to organise their manufacturing and organisations differently. An interesting observation about these two brands and what makes them different is how important the organisational structure is in defining what the brand becomes.

The *Becoming a Brand* framework developed to analyse these cases proved helpful, although the cases also show that a framework should not be used to dictate how to build a brand, but can help to clarify and provide questions as well as answers in an ongoing dialogue.

In building brands, the facets and associated questions in the *Becoming a Brand* framework can be used diagnostically – assessing “what is” – thereby identifying what the company is and providing a holistic understanding. The framework can also be used prospectively, addressing the issue of “what could be”.

While analysis may require attention to be directed to one issue at a time, growth and evolution require a brand to expand within all the



different domains. Building a brand with limited resources requires efficiency. By not seeing branding as detached, but as an integrated part and a goal for all of its activities, companies can maximise their effort and create strong brands that feel authentic as well as relevant.

In this paper, the emphasis has not been on the product or service, but on the embodied and performed identity. When we began this research, we had the idea that products could be part of the embodied identity. However, it became evident, particularly in the Mikkeller case, that the products could also become part of the performed identity. Not solely emphasising on the product or service, but focusing on performance, may shift focus to creating valuable experiences and meaningful activities for all actors engaging with the company and the brand.

However, the cases also revealed challenges. Both companies seemed concerned by tensions that arose in staying true to values while expanding and evolving, and saw challenges in maintaining focus on the reasons for being in business in the first place and not becoming overly preoccupied with finances. Being transparent, engaging and interacting with people who approach them with questions takes time. The short-term financial side of the business suggests focusing on a small amount of what is developed, while the long-term perspective of recruiting new audiences and expanding skills calls for new – ideally, challenging – products.

An intriguing avenue for future research is the fact that these breweries co-produce products. By brewing with others who share the same passion for the beer, they are interlinked, moving questions about brand development from an individual company towards a cluster or network.

## **Concluding remarks**

We were initially intrigued by the craft breweries' attitudes and passion. They seemed to offer a far more innovative, playful and meaningful approach to business than other companies. We therefore hoped to use these two cases to explore the concept of citizen artist brands.

The emphasis in branding and design discourses is often on identifying and meeting expectations to create superior products. What we learned from Mikkeller and Nøgne Ø is that being a citizen artist and creating devoted customers is not about adapting to customers, but about engaging in interactions and pushing boundaries to learn, about being skilful, passionate and devoted, thereby inspiring people and enriching the culture one is part of.

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**Section 1c: Design Management and Artistic  
Interventions**

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# Editoria: Design Management and Artistic Interventions: Art, Fashion, Games and Service Design

Antti AINAMO, Kirsi NIINIMÄKI, Marja SOILA-WADMAN, Lisbeth SVENGREN HOLM and Clemens THORNQUIST

Design is now widely recognized as an effective facilitator for innovation and strategic thinking – especially since the growing legitimacy and diffusion of the term “design thinking” around the change of the millennium. When emphasizing innovation and strategic development, to some extent it seems, however, we believe that this may have been overly at the expense of the aesthetic and artistic part of the design process. Consider, for example, that in contrast to industrial design, fashion design rarely has had any problem to be accepted as a core function in fashion business, also not the artistic side of fashion design. Despite this, fashion design was long neither empirically nor theoretically a focus of design management research, often based on the industrial design process. Only now, a recent interest to enhance the value of art in design has led to a growing interest in a stream of research of fashionista-style and other artistic interventions in design management. Design management research has now begun to discover how creative and artistic interventions as a strategic tool in organizations are effective to handle the complex, chaotic and interactional environments in the global competition. It was with this background that we called for papers where design and artistic interventions, fashion management, and other fields of design, have been investigated in a business context.

Ulla Johansson Sköldberg and Jill Woodilla in their paper “Mind the Gap! Strategies for bridging artists and organizations in artistic interventions” discuss the gap between artistic logic and economic logic, which often can lead to frustrations and frictions when artistic interventions to facilitate innovations are applied to organizations. One issue that is critical to these kinds of “interventions” is what happens once the artists have left. The authors argue that bridging the gap by some kind of intermediary is in the core of the process in order to ensure that the ‘tools gained’ will be used after the artist has left. Their study included three Swedish artist or designer



led facilitating organizations, which used different processes to encourage disruptions for development. While the processes are similar in their intentions and ways of dealing with issues that arose within the organizational target group, they differ in the time and conditions offered to the artists/designers. Establishing a curator to facilitate the process where the status of the artist's perspective would therefore be important if the organization should be beneficial.

Another approach is to be found in the paper "Innovation through Dumpster Diving?" By Oriana Haselwanter. She points at a gap between the theory and practice of artistic interventions. Through looking at dumpster diving activities as means to open up and create change in perspectives among a dozen employees in a large scale engineering company, she bridges this gap by showing how a short term bodily learning process can induce new perspectives or new methods concerning creativity and innovation. Here, dumpster diving, as an artistic intervention, questions the employees' status quo, provoking changes in their behaviour by confronting them with unusual or unorthodox worlds that in turn can lead to alternative ideas and solutions.

In contrast to industrial design, the field of fashion rarely has any problem to argue for the importance of design, also not the artistic side of fashion design. The issues for research in fashion industry has rather highlighted sustainability issues and emphasized the need for more innovation and to re-define fashion as such. It seems therefore that fashion and design management has found a common interest in service design. Even if this has not about sustainability Erik Hansen-Hansen's paper of the development of luxury fashion "Flagship Stores as Fashion Service Design" shows an interesting case for how service design can be applied in the fashion context.

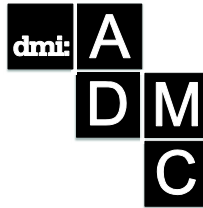
Kirsi Niinimäki, and Maarit Aakko investigate in their paper "Creative Control on Sustainable Fashion" on practice based design and management strategy in the fashion industry. The paper focuses on examining how design thinking applied together with a creative control can create creative power for transition towards sustainable practices in fashion at the same time as it benefits design and manufacturing. The studied cases represent such strategy formulation that is based on experienced understanding of the fashion industry and fashion-related business thinking.

Also Kozlowski, Bardecki, and Searcy focus in their paper "Sustainable Fashion: a Re-conceptualization of the Role of Fashion Design" on the emerging role of design in driving innovative solutions for sustainability. A design-

driven innovation and user-centred approach is in the centre while developing a sustainable fashion system. This paper contributes a conceptually driven argument, how lessons learned from Nike and the Nike+ pss are influencing consumer behaviour and lifestyle change.

The emergence of new markets and design fields, like for instance gaming, shows how new questions about how new design can spawn new kinds of relations between consumers, either on a consumer-to-consumer basis, or mediated through the marketing mediary. In the paper “Post-Industrial Design for Consumption” Ainamo, Su and Lehtonen discuss these kinds of dynamic relation between designers, executives and consumers in the context of on-line consumer tribes. While various kinds of “consumer tribes” have begun to be mapped in marketing literature, open questions have remained as to the extent that designers and executives have discretion in terms of how to be or not to be a member of one or another consumer tribe, in particular when the offering is an on-line one, and whether this discretion is the same or different depending on whether one is a designer or an executive. The authors conclude their paper with implications for design research, marketing research, and forms of social life in postmodern communities.

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# Mind the Gap! Strategies for bridging artists and organizations in artistic interventions

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*As part of efforts to increase innovation, artistic interventions with similarities to design thinking interventions have become increasingly popular. An important aspect of an artistic intervention is the facilitation or bridging process that links the organization, the artist or designer, and the target group. This process is at the core of the relationship, essential for avoiding frustrations and frictions that easily emerge in the communication processes between the different worlds or logics of the artist (artistic logic) and the target group (economic logic), and for ensuring that the “tools gained” continue to be used in the organization after the artist has left. We present a study of three Swedish facilitating organizations with different processes, SVID ([www.svid.se](http://www.svid.se)), TILLT ([www.tillt.se](http://www.tillt.se)), and SKISS ([www.konstframjandet.se/projekt/skiss](http://www.konstframjandet.se/projekt/skiss)). Our research included interviews with representatives of the different organizations. We discovered that while the processes are similar in their intentions and ways of dealing with issues that arose within the target group, they differ foremost in the time and conditions offered to the artists/designers. We discuss the resources required for the different approaches and reflect on implications for new producers of artistic innovations*

**Keywords:** Artistic intervention; facilitation process; intermediary organization.

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## Introduction

Artistic interventions in organizations (AIO), defined as “various activities that bring people, products, and practices from the world of the arts into organizations” (Berthoin Antal, 2012), are becoming an increasingly common occurrence, especially in Europe. The aim of such interventions is that the dominant economic logic of members of the organization should be disrupted by artistic logic. The economic logic of practice, or the norms, values and unwritten laws underlying individual actions, is characterized by an explicit market orientation, with output produced with the primary intention of exchanging the output on a market. The artistic logic of practice, conversely, is marked by the desire to produce *art for art’s sake*, to contribute to the greater good (Bourdieu, 1990; Eikhof & Haunschild, 2007). The disruption, bringing an artist’s open process to idea generation and concept development, is supposed to be good for aiding organizational and individual development, and for innovation work, relating to the fuzzy front end of the innovation process. Our research has shown that for the disruption to be fruitful for the purposes decided in the situation, an intermediary is necessary to facilitate the confrontation of the two logics so one logic does not dominate the other, and creative practices may become part of the repertoire of social practice of organization members.

The term intermediary can apply to both an organization that has facilitation of artistic interventions as its purpose, and to an individual who acts in this function in establishing and conducting the intervention. Here we refer to the organizations as *intermediaries* and the individuals as *facilitators*, although they may use different terms themselves. In this paper we present findings from interviews with facilitators from three Swedish intermediary organizations, complemented with previous knowledge from in-depth research by one of the authors (Johansson Sköldbberg, 2014). Our aim is to describe, compare and contrast the different facilitating processes to demonstrate how disruptions at different levels may be encouraged for development purposes or overcome when they hinder the process.

The paper proceeds in five sections. After placing the study within previously published research, a short methodology section introduces the participants (the individuals and their organizations) and our research process. Quotes from the interviews are used to present our findings and in the discussion that follows we examine strengths and weaknesses in the various structures and processes. Finally, we conclude that an intermediary helps create desired disruptions of the type artists desire, with a minimum of unnecessary ones that can easily happen. We provide practical

suggestions for others who may wish to work with artistic interventions in organizations.

## Literature about artistic interventions

Artistic interventions encompass all activities where artists engage with the world outside the art sphere for purposes that often focus on societal or organizational benefits, but also can focus on mutual development. These engagements frequently, but not necessarily, occur outside the artists' usual venues of studio, museum, gallery, theatre, and the like. Interactions may occur in the public arena or community, or as in our interest, in a public, private, or non-profit organizational context. An artistic intervention is an experience through direct involvement with an artist or artistic process, or through viewing and reflecting on a piece of art. The focus is not on the art form itself, but on the process of engagement and subsequent outcomes at the individual, group, organizational, or societal level. The discourse of artistic interventions draws from the arts, management, and practice.

Artistic interventions as a pure artistic act, but with the aim to influence the broader society maybe labeled “socially engaged art practice” (Kester, 2013; Lacy, 20010; Thompson, 2012) whereas artistic interventions in organizations (AIO) – our concern in this paper – most often focus on what is good for the organization. When studied by management researchers, artistic interventions become part of a broader discourse of Art & Management, frequently based in the metaphorical conceptualization of the ‘art of management’, or how managers or organizational members are engaging with the arts through art-perceiving or art making (cf., Barry, 1996; Hatch, 1998, 1999; Hatch & Yanow, 2008; Vail, 1998). A second related discourse is that of aesthetics of organizations that originated in the 1990s with important early contributions by Strati (1992, 1996, 1999), Linstead & Hopfl (2000), and Guillet de Montoux (2004). In general, these scholars theorized organizing using an aesthetic lens – considering the senses, feelings, touch, smells, sights and sounds -- rather than discussing interventions. Other influential contributions drawing attention to the potential of the arts in business have come from Edgar Schein’s (2001) reflections on the role of the arts in business and Nancy Adler’s (2006, 2011) call for artistic processes to be used in management and leadership. Recently, the journal *Organizational Aesthetics* (<http://digitalcommons.wpi.edu/oa/>) has become a critical center for work focusing in general on art and management (c.f.,

*Mind the Gap! Strategies for bridging artists and organizations in artistic interventions* [www.artofmanagement.org](http://www.artofmanagement.org)) and aesthetics of organizational life, including artistic interventions.

Many current researchers on artistic interventions in organizations place its inception in the in corporate art collections (cf., Jacobson 1994, 1996), or in Xerox PARC, when co-located engineers and new media artists influenced each other's work (Harris, 1999). Darso (2004), provided a comprehensive review of studies of artists working in business settings as catalysts for change, while Schiuma (2011) discussed *Arts-Business Initiatives* that have the potential capacity to boost business performance.

During the 21<sup>st</sup> century, the growth of artistic interventions in organizations has been aided by the presence of intermediary organizations such as Tillt ([www.tillt.se/in-english/](http://www.tillt.se/in-english/)) in Sweden, and Arts & Business in the United Kingdom ([www.artsandbusiness.bitc.org.uk](http://www.artsandbusiness.bitc.org.uk)), although other smaller, organizations exist, primarily in Western Europe, coordinated through Creative Clash ([www.creativeclash.eu](http://www.creativeclash.eu)). The work of these organizations is documented through expert reports, with descriptions of the purpose of interventions, the intermediary organizations established to facilitate the process, and an "evaluation" of results achieved, bearing in mind that the report's unstated mission is to justify the funding and prepare the ground for future applications. While every artistic intervention is unique, taken together, the expert reports provide a general depiction of the process (cf., Berthoin Antal, Inlesia & Almondoz, 2011; Ingelia & Almondoz, 2009; Grzelec & Prata, 2013; Knell, 2004, Barry & Meisiek, 2004; Schiuma, 2009; Stockhill, 2009; Vondracek, 2013). None provide details of an actual intervention; these can be found in researchers' ethnographic accounts (cf., Brattström, 2012; Jahnke, 2013).

Accounts of successful artistic intervention in organizations have been published as case studies in professional journals, highlighting various intervention contexts and benefits for management (e.g., special issues of *Strategic Management Journal*, 2005, 2010). Books written for practitioners by professors from the Harvard Business School, link creativity to jazz 'jamming' (Kao, 1996), and explain artists' processes for the benefit of knowledge workers (Austin & Devin, 2003). Academic journal articles provide more critical examination of the practice and links to organizational development and change or other theoretical concepts (cf., Abbott, Kersten, & Lampe, 2006; Barry & Meisiek, 2010; Beyes & Steyaert, 2011; Berthoin Antal 2012, 2013; Berthoin Antal & Strauss, 2014; Berthoin Antal, Taylor & Ladkin, 2013; Meisiek & Barry, 2014; Styhre & Eriksson, 2008). These publications feature diverse examples of artistic interventions in

organizations, based primarily on qualitative research of interventions established through intermediary organizations.

Commenting on the plethora of approaches to reporting artistic interventions in organizations, Berthoin Antal (2013) notes, “future research will need to engage multiple stakeholders (employees, artists, managers, intermediaries, policy-makers).” We respond to the need to engage intermediaries by in-depth interviews of individuals from three Swedish intermediary organizations involved in facilitating interventions. In embracing the term “artistic intervention”, we acknowledge that the competencies of the artist involved may be from either an artistic discipline such as performance, painting, sculpture and the like, or from a design discipline, such as graphic, product or service, since, as we argue elsewhere (Johansson Sköldberg & Woodilla, 2013), the foundation of design education is in artistic processes.

## **The aim of the paper and research methods**

This paper is written within the framework of a larger study of TILLT performed by Johansson Sköldberg in a participant observation lasting a year and a half. Here we compare TILLT’s facilitation process with that of two other producers of artistic interventions to examine ways they deal with similar situations, that is, how to bridge the gap between artists and the work organizations in which they make the interventions. First we briefly introduce the organizations and key participants.

1. SVID (Swedish Industrial Design Foundation [www.svid.se/en](http://www.svid.se/en)) was founded in 1989 to disseminate knowledge about design as a force for development and as a competitive tool. SVID primarily works with designers who have an artistic foundation in their education, but we knew from previous joint research projects that they use a similar facilitation process. We contacted Marie Loft (ML) for an interview about her role as facilitator in earlier joint projects with Business & Design Lab ([www.bdl.gu.se](http://www.bdl.gu.se)) where we were concerned with the “fuzzy front end” of the innovation process.

2. TILLT ([www.tillt.se/in-english/](http://www.tillt.se/in-english/)) is a non-profit organization based in Gothenburg dedicated to producing artistic interventions with the dual aims of organizational development and increasing the field of work for artists. We interviewed facilitator/process leader Roger Sarjanen (RS), who has been active for more than 10 years and responsible for much of the development of the process, and Marie Mebius-Schröderand and Nina Kjällqvist, who became facilitators at Tillt more recently.



### 3.SKISS

([www.cinergy.info/index.php?option=com\\_content&view=article&id=21&Itemid=14](http://www.cinergy.info/index.php?option=com_content&view=article&id=21&Itemid=14)) is not a separate company but a two-year project. This was our choice for a second comparison to TILLT, since only SVID and TILLT are established organizations for artistic interventions in Sweden. We interviewed the project leader for SKISS, Eva Månsson (EM), and one of the artists, Malin Lobell (ML), who was later employed as assistant project leader.

Interviews with the representatives of each organization were conducted in English in December 2013 and lasted between two and three hours. Apart from a few questions prepared in advance we followed Hopf's (2004) recommendations for focused interviews. We later brought Sarjanen (TILLT) and Loft (SVID) together to allow them to discuss and discover differences and similarities in their ways of handling the process. The interviews were transcribed and indexed for themes that were then used to structure our storyline and generate quotes. Our method was mainly inductive, but with some abductive elements.

We present descriptions of each process in narrative form using quotations from the interviews. For brevity transcripts were edited to remove hesitations while the non-native English speaker searched for the appropriate phrase or used a Swedish word that was then translated and checked by others present.

## **Three ways of handling the facilitation process**

The organizations were chosen because they were intermediaries with facilitation processes. However, both the organizations as such and their facilitation processes differed from each other.

### *SVID: An organization that promotes design*

SVID, the Swedish Industrial Design Foundation, presents itself on its website ([www.SVID.se/en](http://www.SVID.se/en)):

*We work to ensure that design is used in all work on innovation and change. Putting the user at the centre of development means that what is offered is fantastic and attractive. It benefits companies, public services, society and Sweden. But above all it benefits the user.*

SVID's portfolio of services promotes good design through maintaining a roster of designers available to work as consultants, sponsoring broad

research projects, and publishing a peer-reviewed journal. During 2004-2006 SVID completed “design for development” with hundreds of projects within 11 different subprograms run by regional offices with contract employees. The program was evaluated by Johansson Sköldberg who found some of the projects and working methods especially interesting, and suggested further research and documentation, which happened several years later when one of SVID’s regional project managers agreed to work with a doctoral research project concerning the role of designers in early stages of the innovation process (Jahnke, 2013). ML was interviewed for our current study on how she worked with the research project.

### **The research project**

Six different companies that had not previously worked closely with designers participated in the research project. The aim of the project was to find out how the designers influenced the innovation process, specifically in the early stages or “fuzzy front end.” The project was funded by VINNOVA, The Swedish Governmental Agency for Innovation<sup>16</sup>, ([www.vinnova.se/en/](http://www.vinnova.se/en/)) and covered the researcher full-time for four years, and the facilitator’s salary and expenses for half time during a year and a half, although she worked for twice as long for the same pay.

The company received some money from the grant to cover part of the designers’ initial work; afterwards they had to pay all costs for the designers. The companies chosen (by ML) were geographically spread out, new to working with a designer, and had different situations. At the start there were six companies, one dropped out and one was sold, so in the end there were four manufacturing companies - of showers, work-wear, flooring, and a centrifugal milk and cream separator.

### **Facilitation process at SVID**

ML and the researcher selected the designers from those in her network or through referrals from colleagues. For example,

*The workwear company wanted a little bit of academic connection, so I called someone at Borås College of Textiles and asked. It’s a little bit of doing research about who can be good as designer, so I wanted a person who had practical skills of course but also connection with the academic field.*

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<sup>16</sup> VINNOVA’s mission: “is to promote sustainable growth by improving the conditions for innovations, as well as funding needs-driven research.”

*Mind the Gap! Strategies for bridging artists and organizations in artistic interventions*  
So then we had the matching situation there with the company and the designers. And [Researcher] and I had done the brief or the questions from the companies. What did they want to do? ... And that changed over the time of course, because as always they got into the situation with one question and they came out with a lot of other results. They changed the brief with time too, because they worked a long time. (ML-12/12/13)

After a day-long start-up conference with all companies and designers participating, the company CEOs took turns to host three similar conferences. At other times there were meetings of just designers, or just companies.

The designers started work in the companies, holding workshops for a year and a half.

*That was the most intensive period when they were doing the real designerly work. ... It was a shock for the designers. ... They had read the brief, this is what they want to explore from the company's side. And then the designers came out and started to work with the question. We want to change this and that. And how do we going do that? They had no response. Because it was a totally empty vacuum in all the companies. They didn't have any processes at all. It was more like they were answering the market.*

*We were totally unprepared for that situation. Because we thought that designers could do this. Or we think of them as very creative persons. And they are, in a given situation together with others [designers]. But not creative in confrontation with people. And not good at working with organizational change or organizational processes. .... So it was a long way to build up confidence between us and between designer and the company. [Researcher] and I had met the companies three or four times. And then the designer came in and it was a new situation. The goal was to come closer to each other so that the company and the employees were feeling good about the situation and they felt they could do something and be a part. And they could push their company and themselves forward to bring more meaning into the situation. So we did a lot of workshops around that.*

The facilitator supported the designer:

*I had to support the designer to come into the situation about working very consciously with the people in the workshop group. ... Sometimes it went well and sometimes we lost each other and I had to step in. So I did a lot of symbolically running between the company and the designers to support the designers, to learn something about how they can work with their tools while thinking about how you reach the person here. Because that person doesn't understand when you say, 'What is the **feeling** when you come into a shower like that?' So you have to think about talking about that in another way. (ML-12/12/13)*

Some projects were successful, for example, at the work-wear manufacturer the project influenced their products and created new product segments. They also created a new showroom and meeting room with whole collections displayed on the wall. Others were less successful, like the one where the facilitator and researcher were never able to build up the employees' confidence in working **with** the designer rather than the designer just telling them what to do, so the company withdrew from the project. And others were in-between, where some of the employees were doing good things, and others could not grasp the difference between short-term thinking and long-term thinking. They thought only of what they must do immediately, and not about building for the future.

### **Facilitator's reflections after the projects**

*I have been thinking about something called pre-design that is part of my work that I do before the project starts. If I had done that work in this project, I could have prepared the company in connection to innovation and organizational change better than I did. Because the pre-design process is like preparing the customer for what they are going to do. And to understand what they are doing. ... It is like being a good design buyer. Because if you're not prepared for the situation you waste the time learning in the situation, you don't have the right competence, you don't put the right questions and you don't have the head and the heart in place.*

*The designers have learned a lot. I think they didn't think about it as easy. They were proud of some things that were really good and*

*Mind the Gap! Strategies for bridging artists and organizations in artistic interventions where the company has had good results. You can count it as a good investment for the company they helped. (ML-12/12/13)*

SVID exists to promote design, so they welcomed the opportunity to be involved in this research project. The facilitator was working in circumstances different from her usual routine, but also had support from the researcher. In this situation the introduction of a designer into a company without previous experience of working with a one created concerns similar to when artists were introduced through TILLT's process, as described below. Although ML used the word "designer" in our interviews, we believe it could just as easily have been "artist."

## *2. TILLT: An experienced intermediary organization*

Tillt's roots date back to the early 19<sup>th</sup> century, when it was founded within the democratic political movement, Skådebanan, aiming for "culture for the people" (Johansson Sköldberg, 2014). The organization's strategy has changed considerably during its existence, and in the last 10 years it has turned from being part of a political movement into an independent non-profit company.

### **TILLT Organization**

According to the website [www.tillt.se/in-english/](http://www.tillt.se/in-english/) :

*TILLT is a producer of ARTISTIC INTERVENTIONS in organisations. An artistic intervention is established when an organisation enters into a COLLABORATION with an artist, such as an actor/director/playwright, visual artist/painter/photographer, dancer/ choreographer, writer/poet, composer/musician or a conceptual artist. The aim of such a collaboration is to CROSS-FERTILIZE the competences of the two worlds: the world of the arts and the world of the organisation. The work of TILLT is focused in two directions; on the one side TILLT focuses on processes of human growth and ORGANISATIONAL DEVELOPMENT – artistic competence as a tool to stimulate creativity, innovation, human development, and more. On the other side, TILLT works for increasing the field of work for artists where new art can be born and NEW ARTISTIC METHODS can be developed.*

The current organization, developed under the entrepreneurship of Pia Areblad, has become the world's largest producer of artistic interventions. They have produced hundreds of different interventions, with more than 80

lasting a year or more. In 2013 TILLT had 16 full-time employees under the CEO and Arebald as Strategist and Lecturer. There were two business support positions (business manager and accountant), a marketing specialist, seven people responsible for coordinating projects, and four process leaders.

Almost 70 artists from different disciplines have completed the formal application process and are available to be employed part time (see roster [www.tillt.se/konstnarer-artister](http://www.tillt.se/konstnarer-artister)).

*After recruiting the artists they have to go through a kind of preparation, I made a folder with all the things the artist needs to know, ... such as group dynamics. (RS-6/12/13)*

### **Facilitation Process at TILLT**

The strategist, marketer or another staff member recruited companies who would like an artistic intervention, then a process leader was assigned. Before matching an artist to a particular project:

*The process leader has been out to the company and had a deep talk about what's going on and listens between the lines, and tries to check out what challenges they have, and what problems there are, and why they want to order this kind of project. And so on. And the same with the artists, you have to get a good feeling of what type of person [is needed]. We use only one artist... It's not important if they are a dancer, choreographer, or painter or writer, it's more like the competence artists have so they can rest in the process. They are not afraid if they don't see what's around the corner. (RS-6/12/13)*

The company always pays (up to over \$50,000) for the artist and some administrative costs, and subsidies from a regional government cover marketing and administration. For EU projects, funding from the EU covers part of the company portion. Members of TILLT's staff who coordinate projects have written a series of expert reports covering important aspects of the "back office" process (cf., Grzelec & Prata, 2013; Ingelsia & Almandoz, 2009, Vondracek, 2013).

Next, the all-important steps of anchoring the project and building trust.

*It's so important with trust building. So after the matchmaking this anchor work has been going on as well at the company to inform the board, inform different groups, the unions. ... And to present the artist*

*Mind the Gap! Strategies for bridging artists and organizations in artistic interventions and to have the first meeting with this project group at the workplace. (RS-6/12/13)*

Then the artist works in the company one day a week:

*A phase of two months with the researching, building this project group strong, and getting to know people and the working place for the artist and vice versa. And build trust and starting to do some small workshops and so on.*

*At the end of these two months they have to make a plan for the rest of the project. What are we going to do? How are we going to do it? When are we going to do it? Everyone's voice is important. ... Every idea is good at first. Then you have to sort it out and see what is not subject for this project, and if you have to address these questions to the right persons in the company to take care of. (RS-6/12/13)*

Now the project work begins in earnest:

*After these first two months you have six months, and you never know what's going to happen. And that is the challenge in the whole concept, not coming in with a fixed box about we will do this. It's a challenge to make people understand and feel the good things about, oh I am going to do something! I can give voice to what I think is interesting, and so on. It takes time. I worked with in a project for 18 months and after about 12 months they said, 'Oh, now we understand, we are in a process.' (RS-6/12/13)*

The facilitator keeps an eye on the project through monthly coaching meetings with the artist and more frequent communication when necessary. He steps in when he senses there may be a conflict, often meeting with "the bosses" to make sure they understand the working conditions necessary for the project's success, or to reiterate the need for an "open process" in which everyone participates and all ideas are considered.

Seminars were held at intervals during the projects so all the participants could learn from each other.

*We had three seminars over the project year, and the kick off seminar was when they had been working for maybe a month. When we had all eight projects starting on the same date, and following each other,*

*the seminars were really supporting the process. Then we had rolling starts, so it could be one project starting in January, another in May, and so on. So we had two smaller seminars then. (RS-6/12/13)*

Ending the project

*At the end of the project they have to make a plan for the future. First they made a plan for the project, then they have to make a plan for the future. It's kind of an evaluation of the project. ... It can be coffee and cakes, or a big show, but it's very important to make it clear that this phase including this project is now over. And now you have to carry it by yourself. And now there is no artist coming next week. (RS 6/12/13)*

At TILLT, the facilitator interviewed had many years of experience, and in dealing with the unique circumstances of each intervention, he kept the company's interests foremost in his mind. He knew that the company was paying for the intervention and the CEO would be speaking about the experience with other CEOs as potential buyers of TILLT's services.

### *3. SKISS: A temporary intermediary organization*

SKISS was a government-funded Swedish project within the cultural sector (as opposed to industrial or service sector). It was run by and financed through "Arbetsförmedlingen" (public employment service), a government body that "matches job seekers and employers"<sup>17</sup>. Since it is in the cultural sector where there are usually more job seekers than jobs, Arbetsförmedlingen often tries to create jobs. In this case the hope was that the project would create some permanent jobs after it ended. This policy is common in Scandinavia, the Netherlands and England, but rather alien in the US where private funds play a similar role.

The SKISS project ran between 2005-2008. It was the brainchild of a politician:

*Unhealthiness [employees' poor working conditions] at the working places was rising and that was a big problem. They [politicians] didn't know what to do. And then she [one politician]) had this vision that*

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<sup>17</sup> "Arbetsförmedlingen is the largest placement service for work in Sweden. Our most important task is to bring together those who have a vacancy to fill with those who are looking for work. By creating meeting places for employers and jobseekers, we contribute to a well-functioning labour market." ([www.arbetsformedlingen.se](http://www.arbetsformedlingen.se))



*Mind the Gap! Strategies for bridging artists and organizations in artistic interventions artists can make a big difference. So she wanted to start a big project, and to hire artists, not just making them work for free but to hire them. (EM-12/04/13)*

In total 56 artistic projects were realized in different workplaces: 30 in Stockholm (20 in first round, 10 in second), and 26 in various regions of the country. Project sites were organizations in the public sector, such as schools, utility companies, elder-care facilities, or public housing management. The size of the organization varied, from 4 or 5 to 2000 people. In most projects the artists were employed half-time for a year and paid by the project, not for the artistic end result. According to one artist:

*You got paid for your work, not the object you're producing. That was important. I think a very important political statement ... that we should be paid for our work and the competence... and it doesn't matter if it's an object or a sculpture or a painting in the end. ... In a way we were working with processes that change minds - changed ways of thinking and reflecting experience the world in a sense. And that's something that you can have in the working places. I mean the artist can come in to that kind of process. (ML-12/4/13)*

The SKISS organization consisted of a steering committee that included an officer from Arbetsförmedlingen and the leader of a research group from Umea University. The full-time project leader, EM, was responsible for conceptual development of the project, budget and obtaining funds from public funding (finance), hiring, training and managing the artists (personnel), communication within the public sphere (public relations), and the development of new projects. She worked alone, with a small amount of administrative help provided by the host organization (Arbetsförmedlingen) and ML, who was also one of the artists. Each project had a contact person who also became part of the SKISS organization.

The project leader was hired in January 2005 and the first group of 20 artists three months later. Artists applied to be included in the project, and were interviewed before hiring.

*We wanted to get a picture of what the artist wanted. Because it was an investigation for the artist. Do I like to work like this and in that case how can I work? And it was a little bit the same for the working places. This was something new for them and they didn't want to say, oh what is artist? He's going to hang a picture on the wall or*

*something? Well we don't know. So it took very many different discussions in this first part. It was also some kind of investigation program [for SKISS]. How can we work with an artist and what does it make to the working place? (EM-12/3/13)*

As a result,

*We were very different kind of artists with different kinds of media, expressions and experience from the field. Some were used to work more with relational aesthetics, others were painters and video artists and sculptures. The oldest one was over 60 years old, the youngest [had just completed] their art education. (ML-12/4/13)*

Before entering the companies the artists completed a two-month training period held at Konstfack, University College of Arts, Crafts and Design, to prepare then “to discuss what is workplace health and why and what we should do.” They had courses in organization theory, visited workplaces, and read and discussed about health. Then the artists themselves chose where they wanted to work. It was their responsibility to find a place that suited them and to convince the organization that their time there would be beneficial.

### **Facilitation process at SKISS**

We view the facilitation process as the way in which the workplace and the artist were coordinated. From this perspective, the artists essentially facilitated themselves and each other. So, for example, the artists needed to find the workplace, introduce themselves, and handle all conflicts that might rise.

The project leader's role

*... was to safeguard the project's budget and funding, to get a good, safe program for the artists. And then try to make good conditions for the artists in the project at the working place - to let the artist choose their own way of working. And try to make it open. I needed clearly to inform the contact persons at the workplace that this was an investigation and the artist had no expectations in the beginning. The artist needed to have a free process to see what will be happening. And then the working place could feel that they had this open process to investigate how they could work in a new way with the artist. (EM-12/4/13)*

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During the initial training period the artists worked in pairs or small groups and they continued this structure to give each other support during the workplace period.

*The way of thinking or solving problems is my way of looking at the world or the society and I want to be a part of the society. And I think a problem in the art world in one way is that we're almost separate.... In contemporary art you're working with issues that are everyday things in a way. Yeah, and then you should be out in everyday things (ML-12/4/13)*

This background meant that it became customary to focus on the artists and their working conditions. The artist left the company at the end of the contract and returned to her or his own practice. The company workers resumed their everyday work – but no one evaluated the SKISS project to see the workplace was less unhealthy. The project leader took another position and the project was not continued.

## Discussion: points of similarity and difference

As our conversations with the three facilitators showed, the intermediary organizations had different roots, purposes and structures, and although the facilitators had similar overall processes, individual approaches varied. We present these points of similarity and difference in two tables.

*Table 1: Facilitating organization differences*

	SVID	TILLT	SKISS
Purpose of intermediary organization	Foundation with many activities.	Non-profit with government support, single purpose.	One-time project.
Overall purpose of project	Research project.	Cultural, partly commercial project.	Unemployment (artists) project.
Project structure	6 parallel projects, running for 3.5/4.5 years (one day/week).	4-8 parallel projects, each about a year.	56 projects in different organizations, each for half year.
Artist /designer involvement	Initial contract of about 250 consulting hours per artist/designer.	Artist employed equivalent to 20% for one year. Worked in company	Half-time salary provided by the project. Worked in pairs and

		one day a week for about 8 months.	took care of the facilitation process themselves.
Payment/ financing of artist/designer	Research project & company each paid 50% of total cost. Most companies funded additional time.	Company paid artist's salary plus large overhead (never specified and not officially accounted.)	Organizations did not pay anything.
Extent of facilitator involvement	Originally 6 parallel projects expected to run for 1.5 year and be administered on half time basis. Took care of all the administration, including selling, external contacts etc.	Facilitator worked with companies and artists. Others from TILLT's administrative structure were selling the projects.	Administered about 20 parallel projects a year. Not involved in selling or specific activities of projects, rather working as a coach for the artists who acted as own facilitator .

Each intermediary organization had a different experience in developing and running artistic interventions, indicating that different structures are possible, and that projects can run for different lengths of time. As a single purpose, non-profit organization, TILLT needed considerable administrative resources to maintain its viability, while SVID's collaboration in an externally funded doctoral research project provided the facilitator with "on-site" support. SKISS, on the other hand, suggests that artistic interventions can occur with a minimum of administrative support.

Table 2: Facilitator process differences

	SVID	TILLT	SKISS
Recruitment of companies	Facilitator recruited company after discussion with researcher. Recruiting seen as benefit to company since they received a subsidy towards the designers.	Special "seller" (recruiter/marketer) approached company and developed relationship and contract, facilitator then took over.	Project leader recruited artists. Artists recruited the organizations.
Recruitment of artists	Facilitator recruited designers in	Selected from database of interested	Formal recruitment process.

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	discussion with researchers.	artists. Formal recruitment process for inclusion in database.	
Process support	Facilitator and researcher worked together.	Facilitator dealt with problems as they arose.	Artists supported each other.
Dealing with problems ("people problems")	Facilitator dealt directly with problems and discussed them with researchers. Assigned a new designer when necessary.	Facilitator talked with management as needed to make sure project was understood within company.	Artist dealt directly with problems as they arose - few lasting problems.
How projects ended	Researcher decided. Facilitator & researcher wrote report.	Employees and artists wrote report guided by facilitator.	Artist left company at end of employment period.
Facilitator view of:			
(a) outcomes for Company,	Met the goal set by the project group. Gained tools for future work.	Better communication, better understanding for each other's different roles at the worksite. Outcomes at individual, group, and organization levels.	Respite from daily work during project workshops.
(b) outcomes for artist	Opportunity to reflect on own competencies.	Benefitted in ways related to why they were motivated to become involved in the first place.	Steady salary. Interaction with members of society. Networking with other artists.
(c) own outcomes	Saw how creative methods can be as strong as technical methods. Developed "pre-design" stage.	To see people become engaged and have many ideas and opinions.	Project leader too busy for self-development.

The facilitator process differences were related to the amount of support provided by the project structure and also to individual facilitator's past experience. With the exception of SKISS, where the project leader could not point to a personal outcome, there were positive outcomes for all the

parties involved. In all cases, we note that goals for providing developmental opportunities for the artists were met in addition to company benefits.

Positive outcomes included:

- For SVID, the project lasted a long time; this is needed for implementing artistic interventions in companies. Clear co-financing arrangements existed between the company and other funding sources. Although the amount provided by the company was relatively small, it ensured commitment to the project.
- TILLT has completed 80 projects and the organization is set up to create opportunities and administrative services for artistic interventions. Projects had strong endings including an event, report and company commitment to continue using “tools gained”.
- In SKISS the artists formed peer support groups. The contract provided half-time work for the artists, which was sufficient time for support groups and plus time for artists’ own development.

Negative points included:

- For SVID this was a one-time research project.
- In TILLT the administrative overhead has become too large to be financially viable.
- For SKISS there was insufficient administrative and financial support to continue with projects.

## Overall evaluation

Both work-places and artists need “disruptions” to enable innovation and growth. By bringing artists into the workplace to share their competencies within an open process, organizational and individual development is possible for all those involved. But “gaps” emerge in the meeting of artistic logic and the technical logic of the workplace, and some type of mediation or facilitation process is needed to bridge these gaps before they become overwhelming chasms. Here the unobtrusive skills of an experienced facilitator are necessary, someone who understands both the artist’s perspective (both ML and RS had backgrounds with artistic training), and the managerial view, including access to senior management (SKISS artists participated in university courses covering organization theory and workplace health, in addition to visiting various workplaces).

Just how much and when such facilitation is needed is difficult to ascertain. Our interviews, albeit limited, suggest that facilitators develop their own methods for working in a given situation, and may exceed the number of hours formally assigned to the project. Experienced facilitators spoke of intuitively spotting warning signals and immediately focusing on how they would handle the situation. Future research should focus on such moments. An alternative route, which we have begun to explore (Johansson Sköldberg & Woodilla, 2014), would be to manage artistic interventions in organizations through a curatorial process. Here the artist's perspective would be at least equally important as that of the organization, the artist would be of higher status within their discipline, and the organization would welcome contributing to the cultural environment of society as well as its own development.

Each of the three artistic intervention projects studied here had a different overarching perspective: SVID by the academic perspective, TILLT by the company's perspective, and SKSS by the artists' perspective. Thus, while our comparisons provide insights into the mechanics of facilitating artistic interventions, the total context must be considered when assigning value to different configurations of intermediary organization and facilitating activities.

## **Summary reflections**

As an outcome of our research, we provide the following suggestions for others wishing to implement artistic interventions in organizations.

First, consider the extent of the artistic perspective desired. If the intervention focuses on the artistic perspective introduced into the company (as in the case of SKISS), the outcomes may be more diffuse and take longer to be integrated into company processes, but eventually be extremely beneficial. On the other hand, if management has a definite outcome in mind before the intervention, then a facilitation process similar to that at TILLT would be most beneficial, so that the organization's interest take precedence over the artistic process.

Second, when selecting an intermediary organization to provide the artist (or designer) to work with employees, consider whose values will be foregrounded in the process. A well-established, single purpose organization such as TILLT first assigns the facilitator when then ensures that company values are understood and that the selected artist will work with these values. Alternatively, if the artist him or herself decides that the company

environment would be accepting of an artistic perspective, then artistic values will permeate the project. As a third possibility, participating in a university research project brings additional benefits of a theoretically-informed holistic approach in which the framing research question determines the value of the outcome.

Whichever route is taken, we believe than engaging in artistic interventions of the form described in this paper brings lasting benefits to all parties involved.

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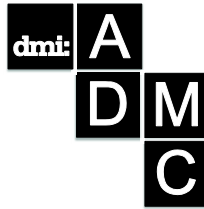
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## Innovation Through Dumpster Diving?

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*In an attempt to deal with today's complex and confusing economical demands, more and more corporations are seeking collaborations with artists. They want to use the artists' creative mindsets and working methods to their benefit – stimulate innovative and creative capacity within the company (Guillet de Monthoux, Sjöstrand, 2003), create fiscal value and an increased competitiveness. So-called artistic interventions can come in many forms and a lot of theoretical texts have been published about these ventures. However, a gap between theory and practise exists and it remains questionable if the writings reflect the real world or are primarily theoretical concepts sometimes focused on positive outcomes alone. More case studies are needed in order to describe effects, impact and relevance of artistic interventions in industrial settings because it remains questionable if they can deliver concrete benefits for the companies – or if they even should. This investigative research project is an ambition to minimize this gap through the empirical research that is behind this paper and contributes with an actual case to this field. The paper highlights what happens if artistic interventions are laid out as temporary, independent provocations. In this case, a project group of a large engineering company was confronted with 'dumpster diving' as a type of provocation initiated by an artist. As a main conclusion of this essay I discuss the term 'artistic provocation' – a variation of artistic intervention. Artistic provocations are short-term activities provoking participants by confronting them with unorthodox worlds. Experiencing these worlds with all senses conveys an understanding on different levels. This arguably leads to a more open attitude and positively influences a learning process, which seems to be indispensable regarding long-term creativity and innovation on workplaces.*

**Keywords:** Artistic interventions, creativity, innovation, provocation

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## **Introduction**

Due to the rising competitiveness, globalisation and complexity of today's society, corporations are faced with manifold challenges today in order to stay profitable. (Adler, 2006) Hence, companies are more and more willing to explore new paths and territories to find innovative ideas serving a sustainable development of their business. New logics are introduced to traditional business operations. One approach to counteract a slow or stagnating development of non-art or non-culture based firms is trying to infuse art and creativity into the company and expose the employees to unorthodox and provoking working processes.

How inspiration from art can show effects to increase creativity in organisations and companies has been of growing interest during the last decades. (Austin, Devin, 2003; Gagliardi, 1996; Guillet de Monthoux, 2004; Ladkin, Taylor, 2010; Linstead, Höpfl, 2000; Strati, 1999) These approaches – here called artistic interventions – are commonly described as processes bringing together the antithetic worlds of organisations and the arts. For example, the aesthetic dimension of the arts has become a role model for leadership and management (Guillet de Monthoux, Gustafsson, Sjöstrand, 2007; Guillet de Monthoux, Sjöstrand, 2003; Hansen, Ropo, Sauer, 2007; Hatch, Kostera, Kozminski, 2005; Ladkin, 2008), should help to create an understanding of organisational structures (Hatch, 1999; Barrett, 2000) or highlight the sensory experiences of the organisation (Gherardi, Meriläinen, Strati, Valtonen, 2013). These artist-company collaborations should then trigger change on different levels. (Schiuma, 2009; Taylor, Ladkin, 2000; Darsø, 2004) It is expected that these projects influence the innovative competence, the creative ability and the capacity of internal teamwork and external collaboration of the employees. Although these assumptions might be partly valid and look nice on paper, proving concrete effects of artistic ventures within organisations is difficult. For art to work its results cannot be pinned down in advance, claim Barry and Meisiek (2010) and in fact, the field of art represents inspiration, imagination and creativity – in other words soft skills that are hard to measure – while economy represents efficiency, rationality and profit. (Berthoin Antal, 2009) Hence, management often asks for hard evidence of creative approaches in an attempt to prove that their investment in these new working methods produces revenue.

In fact, the lack of research in this field is problematic because not only do we know little, what we think we know is quite biased towards a positive view of the phenomenon (Berthoin Antal, 2011) and moreover artistic

interventions seem to be buzzwords (Carlgren, 2009) when it comes to management strategies.

Thus, it seems relevant to critically evaluate creative approaches in businesses. Can these short-term provocations achieve a change of perspective and increased openness and can they have a positive impact on employee behaviour? By investigating this case of a collaboration between an artist and a big international technology based company in Sweden, some answers to these questions are expected to be found. The presented case describes and analyses what happens between the participants of a 24-hour artistic intervention workshop, which was laid out as a temporary, independent provocation.

At the same time, it is worth mentioning that this research case only describes one single intervention and the long-term effects can only be seen in weeks, months and possibly years to come. Hence, this example serves more as a pre-study of a potentially longer research project.

## **Relevance and contribution**

As mentioned earlier, one reason for this research is to immerse in the gap between theory and practise to find possible mismatches and overlaps. Thereby a presumably clearer and more realistic picture of these approaches can be drawn helping practitioners working with these methods in the actual implementation of these theoretical concepts.

## **Theoretical background**

In order to be able to conceptualize the findings of the empirical study, some key issues need to be approached from a more theoretical perspective in advance.

### *Creativity*

Artistic interventions of all kinds are always said to trigger creativity first and foremost. Creativity is a very complex term to define. Working creatively means (amongst other things) not knowing the outcome or result from the beginning – hence being in an open process – having time to work co-creationally and interdisciplinary and making space for trial and error. Creativity also is possibility thinking – it generates associations. Daring to think that everything is possible favours a constant flow of ideas, of which imagination is an important part. (Englund, 2010) Divergent thinking

(Shalley, Gilson, 2004) and process thinking (Hernes, Maitlis, 2012) are other ways explaining creativity.

Kirton (1989) even claims that the capacity to think creatively is common to all people – the major differences lie in the preferred style of expressing it. Hence, basically everyone is creative (DeFillippi & al., 2007; Gagliardi, 1996; Strati, 1999) because everyone is confronted with ideas (creativity is having good imagination or original ideas, states the Oxford Dictionary) and problem solving on a regular basis. So if creativity is defined as the ability to solve problems, then it could be easily argued that everyone is almost equally creative because everyone solves problems every day.

Styhre and Sundgren (2005) point out four different streams of creativity – (1) creative processes, (2) creative people, (3) creative products and (4) creative environments.

### *Innovation*

Creativity is often followed by discussions about innovation. Especially in this case, innovation is worth mentioning, because the brief of the 24-hour workshop included ideas about open innovation (which will be mentioned later on).

The word innovation comes from Latin 'innovare', meaning 'making something new'. Hence, innovation refers to the creation and application of a new idea to create value in a certain context and its goal is positive change, mostly leading to value creation, increased productivity and therefore increasing wealth in economy. (Dutta, Lanvin, Singh, Green, Berthelon, Bindra, 2009) Around the millennium, the discussion of innovation gained a lot of prestige; it was linked to business strategy and became the hallmark of companies in the forefront of the global economy. (Johansson, Woodilla, 2009)

Nowadays creativity-intense professions like design and art are more and more linked to innovation. (Jahnke, 2009) This means that creativity can be seen as an effective and important tool for innovation. (Englund, 2010) One could say that when creative ideas are translated and applied in the right way, they can become innovations, and further, if a person uses and benefits from this innovation, creativity is said to have been profitable. (Ibid.)

'Open innovation' is defined by Chesbrough (2003) as a paradigm that assumes that firms can and should use external as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology. This means that collaboration between internal business units

or between companies and external parties are essential for open innovation attempts to generate new ideas. (Ibid.) Needless to say, to foster open innovation, companies need to be very open with their own ideas, strategies and developments, which requires a lot of trust between the partners. (Ibid.) It seems obvious that open innovation policies and strategies within companies are risky approaches since the ownership of the intellectual property is always questionable and therefore the ownership discussion and all its legal implications gain high importance. Regardless, open innovation projects are more and more established between various companies – again in search for competitive advantage.

### *Artistic interventions*

Artistic interventions – due to their connection to creativity – are often meant to lead to some kind of innovation – at least from a managerial perspective. Berthoin Antal (2009) states that in recent years artistic interventions have developed as a mean by which it is possible to stimulate innovation. (Adler 2006)

Artistic interventions – sometimes also called arts-based initiatives – are commonly described as processes bringing together the antithetic worlds of organisations and the arts. (Berthoin Antal, 2011) Energy is released in form of new ideas, new visions and deeper understandings for what an organisation is doing on an existential or meta-level when the two contrasting logics (the logic of the artist and the logic of the organisation) clash. (Grzelec, Prata, 2013)

Organisations enter into collaborations with artists in seek for inspiration because arts-based methods, thanks to their 'otherness', are seen as stimuli for new ways of thinking and doing things. (Biehl-Missal, Berthoin Antal, 2011) This is what organisations expect from these kind of collaborative projects in order to trigger the innovative competence, the creative ability and the capacity of internal teamwork and external collaboration of their employees.

Artistic intervention can comprise all kinds of artistic expressions – from theatrical workshops, poetry slams, sculpting, conducting, storytelling, photography, filmmaking and painting to choreographic training and much more. (Biehl-Missal, Berthoin Antal, 2011) All human senses (tactile, visual, audio, taste and smell) – also described as aesthetic values – should get activated and stimulate the participants to see more, hear more and experience more of what is going on within and around them. (Berthoin Antal, 2012) These sensual, intangible, aesthetic values can be described as



soft skills. Soft skills are hard to evaluate in a world dominated by quantitative measurable results and deal with emotions, feelings and intuition. These attributes are essential for artists in their way of working and determine their decision-making processes but they are harder to grasp from a pure managerial perspective.

Taylor and Ladkin (2009) identify four different parts how artistic interventions can work regarding soft skills. They exist on their own or in combinations. (1) Skills transfer: Arts-based methods can facilitate the development of artistic skills in a group. (2) Projective technique: The output of artistic endeavours allows participants to reveal inner thoughts and feelings that may not be accessible through more conventional developmental modes. (3) Illustration of essence: Arts-based methods can enable participants to apprehend the 'essence' of a concept or tacit knowledge in a specific situation in a particular way, revealing depths and connections. (4) Making: The very making of art can foster a deeper experience of personal presence and connection.

Darsø (2004) describes three different levels of artistic interventions: (1) The individual, (2) the group and (3) the organisational level. First and foremost artistic interventions influence the individual. (Schiuma, 2009; Berthoin Antal, 2009, 2014) Concerning the (1) individual level, Darsø (2004) presents a model on how art may influence the participants to reflect on their everyday view of the world and thereby develop a deeper understanding of themselves and how they relate to the circumstances surrounding them. This model consists of the following phases: (1) Downloading – the participants see the world in their traditional way. (2) Seeing – the observational phase. (3) Sensing and pre-sensing – developing a reflective mode. (4) Crystallizing – creating a deeper understanding of who they are and how they relate to the world around them.

On the second level – the (2) group level – the participants of an artistic intervention start to spread and share their learnings within a group in the organisation, which facilitates more and different communication. (Berthoin Antal, 2009, 2014)

The (3) organisational level of a company might be affected when the interventions have an impact on the personal and the group level. Then this could lead to an effect that can be related to increased networking opportunities and visibility which might generate strategic interest from other stakeholders. (Berthoin Antal, 2009)

But it has to be noticed here, that it is problematic to really measure and evaluate the impact of creative initiatives because they are complex in

nature, interact with other influential factors and have outcomes that do not always fall within a clear time frame. (Biehl-Missal, Berthoin Antal, 2011) Many other processes going on in the organisation simultaneously definitely influence the employees and therefore the work of the artist.

## Research methods

As Hatch (2006) suggests, I use a descriptive and symbolic-interpretive perspective for this case. I utilize qualitative data collection methods (Hiatt, 1986) such as participatory observations in cross-disciplinary settings inspired by reflective ethnography (Kostera, 2007).

I took part in a 24-hour workshop and use my observations for my sense-making of what happened during this workshop. To analyse this personal data, I took a qualitative, reflexive and interpretive approach (Alvesson, Sköldbberg, 2008, 2009). Also, as suggested by Johansson and Svengren Holm (2008), a narrative (Czarniawska, Sköldbberg, 2003) and ethno-narrative (Hansen, 2006) approach is useful to create a contextual and aesthetic understanding built upon more than just words. This means that I utilize an on-going sense-making process for my own understanding whereby I constantly structure and stabilize my own reality. (Hernes, Maitlis, 2012; Chia, King, 1998) My approach was abductive (Alvesson, Sköldbberg, 2009) in the meaning that certain experiences from the field led to seek literature in order to understand what is going on. Hence, the theoretical and empirical parts are interacting continuously meaning that I analyse the case during describing it.

## The case

As mentioned in the research methods chapter, I will here describe the case in detail and at the same time add observations and reflections that are all part of the on-going analysis.

### *Background*

The involved company

The presented case is a collaboration between some employees of a big company and an artist. The company is an international technology based corporation found in Sweden. It was established in 1876 and has about 110.000 employees worldwide. The employees of several departments of this company had already been in touch with other creative working

methods prior to this intervention. For example, a two-year long global innovation project focused on design thinking approaches, initiated in cooperation with IDEO, was introduced in 2010. So called 'innovation squads' were set up on three different locations of the company in an attempt to introduce the company to more creative working methods in order to reconsider ways of working to be more responsive, faster paced, and more innovative across the board. (Broner, 2013) The innovation squad located in Sweden consisted of three international innovation specialists / design thinking experts who were hired to carry out design thinking efforts, to implement, guide, audit, facilitate, enable and maintain the project. The results and the impact of this team were hard to evaluate, quite appreciated but did unfortunately not lead to a continuing project.

However, the company wanted to explore other creative approaches to stimulate the innovative competence of their workers. Therefore, they collaborated with an artist during a 24-hour workshop.

### *The artist's agency*

The 24-hour-lab was initiated and organised by an organisation establishing artistic interventions in companies. This agency built their business model around connecting artists and companies and acted as matchmakers in that sense. In this particular case, one agent of this organisation was negotiating with a department leader from the engineering company and finally the collaboration was formulated.

### *24-hour workshop*

For the 24-hour lab, a selected group of employees (around 12 people) from different departments of the company were chosen to take part in this experimental workshop that should challenge the worldview of the participants and bring them to the edge of their comfort zone. The 24-hour-lab should provoke this group of people in various ways to stimulate their creativity, their innovative capacity and change their perspectives. In other words – the employees were supposed to leave the convenience and security of their day jobs for 24 hours and got thrown into a world aside from computer screens, steaming coffee, familiar colleagues, regular 'fika' breaks (Swedish coffee breaks) and workflow meetings to engage in an experimental experience they would not forget for some time to come. This lab should function as a first test-round possibly leading to a greater involvement of the artist in the organisation.

The chosen employees were mostly working with engineering or administrative tasks in the company. The workshop should tackle two days of socially responsible open innovation. Three part-challenges were presented. Challenge 1: Dumpster Diver Afterwork – Creating a full-scale dumpstered afterwork menu. Challenge 2: Dumpster Diver Community – Coming up with a solution that serves a mutual partnership between the company and the Global Dumpster Diver Community. Challenge 3: Social Open Innovation – Finding an integrated method for open innovation adjusted to the company with the guidance of ISO 26.000.

The paper will mostly focus on challenge 1 – the Dumpster Diver Afterwork – analysing the artistic intervention laid out as provocation.

### *Dumpster Diving*

The dumpster diving term originates from the best-known manufacturer of commercial trash bins, Dempster, who use the trade name 'Dumpster' for their bins. (McKean, 2005) Dumpster diving is the activity describing the sitting through commercial or residential waste in mostly urban areas in order to find and re-use waste material – often expired or imperfect but still edible groceries but also other materials such as technological parts, kitchen supplies and other goods. This movement is rather new and a reaction to the large amount of wasted items produced by households, companies or supermarkets today. Dumpster diving mostly happens in the evening or during night since the legal implications for dumpster diving are not totally clear. Dumpster diving is a global movement gaining more and more interest from different groups in society and a combination of social critique, sometimes a political statement, environmental self-responsibility and life philosophy.

### *Opening phase of the workshop*

Starting the 24-hour challenge, the workshop members met on a Thursday afternoon at the office and were confronted with the three challenges to be tackled during the next days in three groups of four. The schedule was tight, the time was short.

Most of the people were unfamiliar with each other although they were colleagues. This fact got evident rather early in the process since most of the participants spoke quite openly and freely without much hesitance during the first getting-to-know phase. The artist in charge motivated everyone to come up with a nickname or alias connected to dumpster diving and everybody's own personality. Pia, Olessia, Mike and John turned into

pineapple, potato, passion fruit juice, melon stone, computer trash or lettuce. Most of the people were quite happy to take part in this game but the question of why these names were relevant was asked very early by one of the most engineer driven participants.

After this introductory phase, the first brainstorming session dealt with questions, thoughts and associations about the Dumpster Diving Afterwork. Although these first ideas and thoughts about the Dumpster Diving Afterwork were not taken any further at this point, it was a good exercise to start a reflective process and a discussion which then continued with general questions about dumpster diving since the group was not introduced to this concept beforehand.

### *Confrontation with dumpster divers*

Two young, bearded, casually looking members of the local Dumpster Diving Community were invited to the workshop to answer as many questions as possible from the group, which were stated on post-it notes. An intriguing observation was that most participants stuck their post-it notes very accurately and in one straight line onto the wall. This could have been a reaction to the first person sticking the notes so perfectly onto the wall so that the others followed her routine but it could also be a sign of the engineer-driven mindsets of most participants where structure and accuracy arguably are very common concepts. However, the different preconceptions about dumpster diving became one of the most thought-provoking discussions of the evening, because a lot of misconceptions and stereotypes were revealed. The session even had to be expanded because a lot of questions wanted to be answered and clichés wanted to be explored. Some people had not even heard of dumpster diving before, whereas others were very much influenced by local media and had never encountered dumpster divers in their lives. A lot of people were surprised by the fact that this sub-culture seemed to be so big in Sweden and that one could even create a company and a successful business model out of it which went very much against their preconceived knowledge and understanding.

Interestingly, the two dumpster divers used a very different language compared to the workshop participants with mostly business, administrative or engineer backgrounds, who were mainly dealing with totally different people and concepts on their workplaces. One of the most surprising statements for one of the participants was a specific attitude of one of the dumpster divers. The participant was concerned about the reason for being a dumpster diver and very amazed by the fact that the two present

dumpster divers apparently did not do this ‘to save the world or make any political statement or protest against the establishment’. For the dumpster divers, dumpster diving was basically a way of living, a mental state and a way to react to ‘society’s failings’ without making too much fuss about it. What they really wanted to achieve was to make people aware of this problem and inspire others to follow their example in order to create a change in the long-run. Even if they partly lived from dumpster diving at the moment, their main goal was to abolish dumpster diving naturally due to the lack of existing leftovers and trashed but still edible food. So basically they wanted to end dumpster diving through dumpster diving – a silent rebellion.

The second discussion of this evening was formed around solutions for mutual collaboration between the company and the dumpster diving community. In the brainstorming of one group, ideas circled around very technical solutions (for example smart phone apps) that mainly benefitted the company – but not really the dumpster diving community. Social aspects were hardly considered. The focus was clearly on finance, legal and tax issues, commercialisation, feasibility, net sales, market impact and implementation, practicability and marketing. This might have been due to the fact that all group members (only men in this case) worked with the technical or managerial side of the company in one or another way. At the same time, this was also an obvious sign that they did not yet leave their usual stream of thinking and their thoughts stayed within their known territory.

### *Dumpster Diving Activity*

After this, it was time for the real excitement – the real-deal, the stop-talking-and-start-doing, the get-outside-and-get-dirty, the stepping-into-the-unknown action. It was time for dumpster diving! The company’s employees got out and scabbled in garbage, took what others left behind, explored the boundaries of legality, carried away heavy bags with found goods, got dirty, crawled into unknown territory, stuck their heads in trash cans, got confronted with reality, climbed onto containers, were uncomfortable, surprised, disgusted, moved, cold, touched, amazed and challenged.

Each of the three groups was guided by at least one semi-professional dumpster diver to the most popular dumpster spots all over the city. Everyone armed themselves with torches, gloves, warm jackets, rubber boots, rubbish bags and tried to be as open-minded as possible. Then everyone was released into the night.

The 'men-only-group' was already quite successful at their first location where they found a hidden shed with trash bins. Although the shed was locked, they could squeeze through a narrow opening to get inside the shed. For two guys of the group this really got to be a task and a challenge they clearly wanted to tackle. The atmosphere became were exciting. It felt like being in a detective story where the forbidden and hidden treasure had to be discovered and the heroes of the story could show off their amazing climbing and rescuing skills. Passing cars and people where observed with a hint of anxiety. Clearly, everyone enjoyed this spectacle in the middle of the night and was amazed by what type and amount of thrown-away but still original packaged goods the two found in the shed. Everyone left this first spot with an ambivalent feeling of excitement and surprise but also a discrepancy of doing the right thing on the edge of legality. The next stops were at a lower excitement level and also not as successful. Even shop owners were asked for expired products and production companies were explored. It was apparent that some group members got really exhilarated, did not want to stop this adventure and even grabbed fruit and vegetables out of full bins holding all kinds of mixed and open groceries. Although it was a really cold night, everyone seemed to be enthusiastic and have fun.

Coming back to the company's premises hold a rather substantial surprise for every group. The big dinner / conference table in the office started to flow over with found food collected at the different spots. Bread, apples, tomatoes, potatoes, peppers, mushrooms, corn, leek, lettuce, oranges, onions, cauliflower, pastries, sweets, cans and bottles of all kinds fought for their space on the table.

### *First reflections*

During breakfast (not dumpstered) on the next morning, first conversations about reflections from the previous evening commenced. Comments about the unbelievable vast amount of still eatable food, discussion about the hypocrisy of food production and supermarket offers, the various existing preconceptions and stereotypes about dumpster diving, the obscure policies in politics and law but also the experience to see things with different eyes when getting in touch with a marginal group in society led to interesting insights for everyone individually. Most 'neo-dumpster-divers' wanted to find out more about how much food was actually wasted on a daily-basis and some wanted to introduce dumpster diving as an exercise for kids to teach them the value of food.

### *Dumpster Diving Afterwork*

A delegation of the group was ordered to set up tables with the dumpstered food very publicly next to the company's canteen later on the same day. This action sparked a lot of interest and discussion not only amongst other employees of the company but also at the canteen. Due to this unexpected development and interest, all the lab participants were asked to mingle around the dumpster table, socialise, engage other employees in provoking conversations and approach anyone passing by. At first, this task was hard to fulfil for some because it took a lot of courage to actually approach people and inform them about this unusual initiative – bearing in mind that they were all colleagues and not used to something like this at all. Some said that they felt a bit ashamed but proud at the same time. But everyone seemed to be pleased that this action gained so much attention.

The preparing of the afterwork menu was organised rather differently in all the groups. Some were struggling to come up with a menu (mostly groups with a bigger percentage of male participants who had less cooking experience) whereas others started to arrange different dishes immediately (engaging in various cooking and food preparing tasks quite naturally). Although the cooking facilities were limited at the premises (only knives, cutting boards, plates and microwave oven were available), the 'dumpster cooks' handled these restrictions very well and even tried to look for cooking equipment in other departments in the building. Everyone seemed really motivated, excited and high-spirited. Maybe a sign that their creative capability was already influenced by the experiences on the previous day.

Although time for last touches on food and decorations on each of the group's table was as short as was the time to come up with a final concept and presentation idea for challenges 2 and 3 they were working on simultaneously, all the groups managed their time well. They prepared inviting tables with different dishes from a variety of tastes. Apples, oranges, pineapple and bananas were transformed into fruit salads. Bread, corn, mushrooms, onions and eggs were used to make experimental types of tacos. Potatoes were cooked and presented in little cups. Mashed biscuits and apples became the ingredients for self-made apple crumble. Even Indian, finger and raw food could be tasted. Besides all of this, a lot of food was still left over and presented for the guest to take with them.

At around 16:30 first curious people started to arrive at the location. The invitation for this afternoon stated that not only special afterwork food would be served but also three new concepts for open innovation ideas for



the firm would be presented. The public was asked to act as a voting committee selecting the best project. Each project consisted of the presented idea and the dumpster menu. Every group used visualisations to present their concepts. In their core, the developed ideas did not vary that much from each other and turned out to be quite realistic – again possibly a sign of the business driven background of the workshopers. But the ideas and innovations included a variety of new and unusual aspects which could have been results of the 24-hour-workshop and the dumpster diving activity. The presentations were elaborate, clear and enthusiastic and definitely something the company's employees were used to do.

Most surprisingly, the guests did not seem to have any kind of reservations against the offered dumpster food at all. People mingled, tasted food from each table, voted for the projects by sticking coloured stickers onto a prepared voting system on the wall, talked and had fun. In this respect, the afterwork was really successful.

## **Findings**

### *Questioning stereotypes*

As a first conclusion or reflection, one could say that this 24-hour-experiment brought out a lot of interesting reactions about the current attitude towards the food consumption in our society today but also highlighted a variety of existing preconceptions and stereotypes towards marginal societal groups. This exercise definitely gave an impulse to rethink certain values and assumptions and was food for thought for the participants. The largely engineer and business driven participants got to question their norms and their reality and started to take social aspects into consideration. Through bodily experiences they started to understand and relate to unknown or ignored social challenges and could use them to open up their minds and lose a part of their rigidity.

### *Group dynamics*

It could be observed that the group dynamic within the teams was influenced significantly by the activity they did together. Of course, typical roles in the groups existed as well. Before the dumpster diving activity, scepticism, critical questioning and strong resistance clearly determined the atmosphere. At the end of the workshop great energy, less distance, a higher level of collegiality and a collective problem-solving attitude could be seen. Especially the collaborative cooking and preparing of the dumpster

food and at the same the team-work on creating ideas and concepts for challenge 2 and 3 led to a strong and positive group-feeling.

### *Innovation and creativity*

The creative capacity of the groups certainly increased during the 24 hours. They came up with solutions for challenges 2 and 3. Most creativity was seen while cooking the dumpstered food since the team members were very restricted in cooking equipment and ingredients but managed to create well-prepared meals. If all this was due to a good atmosphere during the whole workshop or the type of activity they carried out is hard to evaluate and hence questions this venture.

The potential for increased innovation competence could be seen at the final presentations of the groups but can probably only turn into long-term effects when these multi-disciplinary groups keep working together, keep working with creative methods and find a ways how to implement their ideas.

## **Analysis**

On a more conceptual level, the 24-hour-lab revealed that in order to open up, be creative and stimulate innovative and creative capacity, pure artistic interventions do not necessarily need to be the only way to go. However, models found for artistic interventions might also work for artistic interventions as provocations – or artistic provocations such as dumpster diving.

Following Darsø's description of the affected individual level of artistic interventions, many similarities to artistic provocations can be seen. Darsø says that art may influence the participants to reflect on their everyday view of the world and thereby develop a deeper understanding of themselves and how they relate to the circumstances surrounding them. (Darsø, 2004) This certainly happened during and after the dumpster diving activity as described in findings but is not really related to art, artistic methods or processes since the dumpster diving exercise can hardly be seen as such.

However, all phases of Darsø's model can be identified in this project. First 'downloading' – the participants see the world in their traditional way. (Ibid.) The group members were mostly rather sceptical towards dumpster diving and asked a lot of questions in the beginning. They felt safe in their known roles and rather defensive against anything new.

During first confrontations with dumpster diver professionals and dumpster diving, they were a bit hesitant and observant – just as described in ‘seeing’ – the observational phase. (Ibid.) But thanks to a good workshop design and a general curious atmosphere they trusted the process and explored the activity themselves.

This led to ‘sensing and pre-sensing’ – developing a reflective mode. (Ibid.) After the task, most of the participants started to reflect, discuss and critically analyse what they did and how this affected them.

Later discussions brought a lot of personal realisations and a deeper understanding of who they are and how they relate to the world around them as defined in ‘crystallizing’. (Ibid.)

How these insights and learnings could then effect the participant’s behaviour could be observed in increased creativity and better group cooperation.

## **Discussion**

### *Artistic provocation*

Opening up groups for seeing things differently, questioning their routines and attitudes can lead to new and unexpected ideas and reflections possibly resulting in some kind of innovative thoughts. But these processes do not need to have a pure artistic character, result in an artistic artefact or be facilitated by an artist. Group dynamics and other organisational and personal influences are equally as important. Therefore, I want to suggest an arguably new term describing a variation of artistic interventions – the artistic provocation. To elaborate on this concept, the two terms ‘artistic’ and ‘provocation’ need to be described further.

My understanding of a ‘provocation’ in this sense is a short or time restricted activity provoking the employees of a company on different levels – such as experienced and observed during the dumpster diving exercise – by confronting them with unusual contexts, unfamiliar worldviews, unorthodox working methods or extraordinary lifestyles. The very nature of this total otherness, which is hard to grasp or relate to in the beginning since it does not fit in ones perspective of the world, often triggers fear and resistance but also curiosity at the same time. It can stimulate self-reflection and self-questioning which are good starting points for introducing creative work methods for example. The provocations can inspire creative thinking since personal principles and viewpoints might be reassessed or at least questioned.

The 'artistic' aspect in artistic provocations deals more with the aesthetic value of such activities. Experiencing this otherness with all senses can be the main cause to really understand and comprehend new or foreign concepts. This could be observed after the dumpster diving exercise for example, when the workshop participants started to understand and less critically judge the dumpster diving movement and even found positive aspects they wanted to promote and incorporate into their lives. After this experience they saw dumpster diving and even their own attitudes with other eyes. They felt, heard, smelled, saw and tasted how it is to dumpster dive and accordingly were affected by it. They started to create a new understanding not only on a theoretical or abstract level but also on a practical and personal one. They learned to understand a new concept with all their senses. Hence, only through experiencing the group members started to understand and open up. This is why a rough sketch of a model for artistic provocation can be outlined and hopefully developed further.

### *Realising – Experiencing – Reflecting – Changing*

Following and analysing the described 24-hour workshop focusing on dumpster diving as a kind of provocation led to the formulation of a rough model for artistic provocations. (1) Realising. Through the confrontation of an antithetical world the participants of an artistic provocation realise their fears, stereotypes and preconceptions. (2) Experiencing. Through experiencing this antithetical world with all senses they start to understand this new world not only on a theoretical but also a bodily level which seems very important for their understanding and acceptance in order to open up. (3) Reflecting. After this, they start to reflect on their experiences in a deeper and more holistic way. (4) Changing. In the best case, participants then are able to open up and use their insights and learnings for a long-term behaviour change to increase their creativity capacity, influence their innovation competence and inspire their surroundings.

## **Conclusion**

Following an artistic intervention workshop facilitated by an artist in a group of 12 employees of a large engineering company in Sweden, laid out as a 24-hour-lab focusing on dumpster diving as a type of provocation, led to the realisation that not alone art or artistic processes necessarily achieve a change of perspective, an increased openness and positively impact employees' behaviour. Artistic provocations can achieve similar things.

Artistic provocations are short-term activities provoking the participants by confronting them with unusual or unorthodox worlds. Experiencing these different worlds with all senses – aesthetic values – conveys an understanding on different levels. This possibly leads to a more open attitude and positively influences a learning process. Through this individual and bodily learning process the participants are likely to be able to implement new perspectives or new methods concerning creativity and innovation more easily.

Concluding, the 24-hour-lab and especially dumpster diving stimulated and provoked a lot of discussions and self-reflection, positively influenced teamwork and creativity. But if the participants can incorporate their learnings into their daily lives inside and outside the company and translate their experiences into meaningful outcomes for their company remains to be explored.

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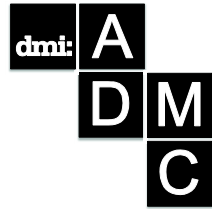
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## Creative Control in Sustainable Fashion

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*Sustainable fashion has been mostly approached by focusing on decreasing the environmental impact of manufacturing, developing eco-materials and improving ethical issues in manufacturing. However, when aiming for sustainability, even more benefit could be gained if sustainable thinking is integrated in the system level instead of being as an add-on to the original product. This paper presents a case study related to design and strategic thinking in small, entrepreneurial fashion companies, those oriented towards sustainability, in which designers often play a significant role in decision making. The study focuses on examining how design thinking applied together with control can benefit design, manufacturing and business practices, and how it can create creative power for transition towards sustainable practices in fashion. The studied cases represent such strategy formulation that is based on experienced understanding of the fashion industry and fashion-related business thinking. Therefore their strategy formulation can be described as “design-driven” and “practice-based”. This study shows that controlling the fashion system through creative solutions provides an opportunity to increase product quality and consumer satisfaction. Creative and strategic thinking based on design practices and implemented by designers can benefit planning, manufacturing and business practices toward increased sustainability. Such approach can be realized in a profitable way and without compromising the quality of design.*

**Keywords:** Sustainable fashion; design thinking; control; design power

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## Introduction

A technological approach has dominated eco-design the last thirty years, mainly focusing on decreasing the environmental impact of manufacturing, developing eco-materials and improving other technical details (Verhulst, Boks, Stranger & Masson 2007). However, Goworek, Hiller, Fisher, Cooper and Woodward (2013) argue that sustainability should be integrated in the system, such as in the garment design process instead of being engineered as an add-on to the original product. Thus, designers should be already included in the planning stage of manufacturing practices, and creative design thinking should guide the entire process (Goworek et al. 2013, p. 389). Based on these ideas, creative thinking and designers' knowledge, i.e. design thinking, could also be utilized in constructing sustainable business models and marketing practice, which engage consumers with more sustainable fashion consumption.

One of the goals of sustainable fashion is to support emotional bonding by designing garments that are aesthetically attractive, gracefully aging, and durable; in other words, to promote slower cycles of fashion. While sustainability-focused fashion, like all other fashion, is still by and large based on the traditional linear system of designing, manufacturing, selling, consuming and discarding, some alternative systems are emerging. In that respect, creative solutions could provide opportunities to challenge the current system and facilitate more sustainable practices.

Fashion designer's knowledge could be integrated already within the company mission, business processes and strategy (Sinha 2000, pp. 37–40). Controlling one's own design, production and business procedures can steer a company towards more sustainable practices (e.g. Aakko 2014) and ensure that production and other processes are actually conducted in ethically and environmentally sound conditions.

This study investigates questions related to control in small, entrepreneurial fashion companies, where the designer is the owner or a principal of the company. In such companies designers are often responsible not only for design, but also for production and business decisions. This study looks at the practice-based strategies by which the companies operate. Moreover, it aims to examine how control over different aspects of the system can benefit design, manufacturing and business practices. In addition, we discuss how tighter control by the designer creates power for transition towards a more sustainable fashion system.

## **Designers in the Fashion System**

### *The Current Fashion System and its Implications*

The current fashion system has its early origin in the two-tiered order of fashion dominated on one hand by made-to-order creations, especially *haute couture*, and mass-produced clothing on the other. Yet, there have always been other levels of couture between these two extremes (Lipovetsky 1987/1994). Similar to the original fashion system, today, the fashion industry also includes different types of production but is significantly dominated by a range of mass-manufactured clothing, especially by “fast fashion” produced by large multinational companies.

Characteristic to the mass manufacturing practices of today are short lead times and efficient, large volume production achieved with the help of low-cost materials and labor often in Asian countries such as China, Bangladesh and India. The fashion industry has notably contributed to environmental problems such as the use of toxic chemicals and generation of high volumes of waste, as well as ethical issues, such as unfair labor practices in the developing countries, including unsafe working conditions, child labor, and unfair wages (Allwood et al. 2006, p. 14; Fletcher 2010, pp. 260–264).

While efficiency and large-scale production may not necessarily cause environmental and ethical problems, the fast fashion business model provides ground for accelerated fashion production, use and disposal, which in turn generate more impact on the environment and play a part in unfair working conditions. Because of their manufacturing practices and business models many fashion companies are able to offer clothing for very affordable prices, which has further created the fast fashion phenomena; this has increased fashion consumption but also decreased the quality of the garments and shortened their lifespan (Fletcher 2010; Niinimäki 2011).

### *Designers’ Role in the Current Fashion Industry*

Since the beginning of the institutionalization of fashion in France in 1868, dressmakers and tailors became couturiers and designers. This was also the beginning of a system where the designer would be the key figure in the production of fashion regardless of the amount he/she participated in the actual designing and manufacturing processes. Similarly today, designer’s role as a creator is central and his/her involvement beyond design varies greatly between different types of companies. While the designer is often emphasized as the unique creator, it should not be forgotten that

fashion is not created only by designers themselves but in collaboration with other fashion professionals and producers. (Kawamura 2005, pp. 57–72.)

It seems self-evident that a fashion designer's job consists of designing garments. Yet, as Pammi Sinha (2000) sums up in her study about the designer's role in the fashion design process, a designer is also a market researcher of visual and qualitative data, an interpreter of meanings and a medium for current moods. Generally a designer also needs to understand what her customer wants, as well as take the social, cultural, economic and political environment into account. (Sinha 2000, p.27.)

In general the design process involves visual research, design development and manufacture. The designers in Sinha's study were all actively involved in the design process up to design development, namely sample making; in some cases manufacturing also influenced parts of the creative phase. According to Sinha, designers' understanding of the consumer needs, the ability to interpret them into desirable design and to communicate this to the sample-makers played a great role in the success of the design. Nevertheless, designers' actual influence on design decisions – about color, fabric, style, conceptual range and manufacturing range – varied greatly in different companies.<sup>1</sup> The designer/owner of a small company employing 3 people interviewed for this study ranked highest in his ability to influence design decisions (Sinha 2000, pp. 27–37).

## **Design and Strategy to Approaching Transition**

### *Transition*

Meadows (2008) argues that the future cannot be predicted but it can be envisioned, and through the reflective process of “systems thinking,” systems can be designed and redesigned according to one's vision. Based on systems thinking and aiming towards the same goals, the transition theory describes how simultaneous processes on multiple levels, involving different social groups/actors, play a role in system innovations. These processes are

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<sup>1</sup> Sinha (2000) interviewed several designers in five companies across different market levels in the UK fashion industry. Designers of each company were asked to indicate how design decisions (about color, fabric, style, conceptual range and manufacturing range) were made and rank them according to how influential they felt their recommendation were to the company. The maximum score was 25 points. Designer E, who was the owner of his own small business, employing 3 people, ranked highest, with 21 points, for his influence on design decisions; designers A (from a company of 70,000 employees) and C (from a company of 210 employees) ranked the lowest. (Sinha 2000, p.35)

also interlinked and reinforce each other. This multi-level perspective proposes that a transition can have influence on the local, national and even global levels. In other words, the transition theory emphasizes global thinking but local action. Additionally, a transition benefits from co-designing and co-learning processes, which both stress people-centered thinking. (Grin, Rotmans & Schot 2010; Geels 2005.) A transition is not a simple and linear process but an open-ended one, constructed through different kinds of actions, experimentations and co-learning. Therefore, small-scale, niche processes in transition towards sustainable society are as valued as large-scale structural changes in the system. (Doordan 2013.)

Many designers feel that because they work in the industrial system, they have limited possibilities to influence sustainability of design (e.g. longevity of a product).

Keeping costs down is also a dominant concern in the apparel industry (Cooper 2013). This influences the choice between more or less sustainable options. If designers want to have a more influential role in transitioning fashion towards more sustainability they could benefit from turning their attention to systems, processes and dominating business models; designers' creativity could also be used towards changes on the system level.

### *Design Thinking and Design Management for Transition*

Utilizing designer's knowledge could be a way for fashion companies to find new methods for more sustainable practices. As Sinha (2000) points out, incorporating "designerly" thinking into organizational strategy is not purely a question of company size or market constraints but also of organizational culture and management. Operating on a small scale has integral disadvantages; yet it allows a lot of flexibility and space for experimentation. Thus, small scale and certain "risk-taking" can provide opportunities to remain innovative in the current business climate. (Sinha 2000, pp. 40–41.)

Design knowledge and design thinking is more of a process for problem solving rather than an end result. Creative design thinking can help companies challenge their practices and focus on innovative ideas when reassessing processes related to sustainable development, such as societal and environmental issues. (Sherin 2013.)

Therefore, design thinking that looks at problems holistically, can be a useful tool in transition. Design thinking is best described as "productive reasoning", combining both practice-based and theoretical knowledge (March 1976, cited by Cross 2007), thus integrating skills and knowledge,

actions and intellectuality (Trotto et al. 2010). It applies empathy and creativity in the problem-solving processes. Design thinking utilizes a human-centered approach and abductive reasoning, suggesting that something may be more than its initial impression. (Cross 2007.)

Cooper, Junginger and Lockwood (2009) argue that in design management the way of “thinking about design” is concerned with a more system-wide perspective, whereas the traditional “thinking of design” focuses more on a singular product. According to them, thinking *through* design changes the perspective and takes into consideration how the business system operates. This can be seen as a strategic approach to design and design thinking, which can aim for a transition and even systemic changes in the industry. While traditional design management has focused on product design and incremental improvements, “design thinking represents a more radical shift in an organizations overall way of doing business.” (Cooper, Junginger and Lockwood 2009, p. 50.) Through this approach, design thinking can enable transformation by design. It can benefit organizations or even societies by focusing on problems with a wide perspective and applying systems level thinking, not only product development. (Cooper et al. 2009.)

### *Crafting the Strategy*

Whittington, Molloy, Mayer and Smith (2006) propose that formulating a strategy could include a practice-based approach. According to them a strategy formulation could be based on three different work processes: strategy workshops, project management of strategic and organizational initiatives, and the creation of symbolic artefacts to communicate strategic change. Whittington et al. see strategy formulation through the lens of “practice theory”, where practical activities are linked to strategizing and organizing. Opposite to a more formal and traditional strategy construction, they emphasize “the importance of hands-on and crafting skills in getting strategy done” (ibid., p. 615). In addition, Whittington et al. point out that practitioners have skills to “renew formal strategy by injecting craft directly into the process” (ibid.). This approach highlights the importance of practice-based knowledge while formulating the strategy, and therefore could be a fitting approach for design entrepreneurs.

Additionally, Mintzberg (1994) suggests that a strategy could be crafted through emerged processes, which then allows practice and strategy work to be intertwined and simultaneous. Moreover, such approach is centered mostly on practicalities of strategizing and organizing; in communication,

coordination and control, and less on research-based analysis and forecasting. Physical objects and artifacts communicate the strategy. According to Whittington et al. (2006), the process needs creative, artful and adaptive skills. This approach to strategy formulation can be applied in design-driven strategies, in other words, strategies based on design practice, design skills and experienced design knowledge.

## **Research Methods**

For this study three fashion companies were chosen that operate on an entrepreneurial base and small-scale (employing 2–6 people), and where the designer has a central role not only in design but also in business decisions. Additionally, each company has made a conscious effort towards deploying more ethical and ecological production processes.

The data of these case studies was gathered mainly by interviews with the designer-entrepreneurs; additional information was also obtained with a questionnaire (Figure 1.) sent via email and from the companies' websites. The aim of the questionnaire was to investigate what elements these companies are able to control within the core functions of their work: design, production, business management/marketing and sales.

Qualitative and descriptive analysis was used for examining aspects regarding control by focusing on questions: What elements are the companies able to control and how do they do it? What do the companies gain from control? What aspects are they still not able to control? The study also touches questions on company's vision and strategy as they are considered to be related to control in an essential way: control can be a part of the strategy by which one aims to reach for an aspired vision.

## **Studied Cases**

### *Case 1: Anna Ruohonen*

Anna Ruohonen is a Finnish, Paris-based fashion designer and a founder of her eponymous clothing label of women's and men's wear. Ruohonen's fashion house, founded in 1999, is a small-scale business with two showrooms/stores, one in Paris and one in Helsinki<sup>2</sup>.

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<sup>2</sup> Anna Ruohonen's atelier has currently six full-time employees in Paris, and one full-time and one part-time employee in Helsinki, Finland.

**CONTROL.** How much control does your company exercise over the following elements?

DESIGN PROCESS	none	some	full	Would like to have more impact
PRODUCT				
· form and aesthetics (=the design)				
· pattern making				
· material quality (e.g. fabrics, seams, finishing)				
· fit				
MATERIALS/FABRIC				
· fabric quality (e.g. fiber quality, color fastness)				
· fabric composition				
· color of fabric				
· structure of fabric (e.g. weave, weight)				

☐  
☐

PRODUCTION PROCESS	none	some	full	Would like to have more impact
· cycle/speed of collections				
· product safety (e.g. chemical residue)				
· working conditions				
· speed of production				

☐  
☐

BUSINESS MANAGEMENT	none	some	full	Would like to have more impact
MARKETING AND SALES				
· pricing				
· customer satisfaction				
STRATEGY				
· business model (e.g. customer target group, managing strategy)				

☐

**DIVISION OF WORK.** How are the operations of the company organized?

OPERATIONS	In-house	Partly in-house, partly outsourced	Outsourced
DESIGN			
PATTERN MAKING			
SAMPLE MAKING			
PRODUCTION			
MARKETING			
SALES			

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Figure 1. Questionnaire on the possibilities to control company's operations.



Everything in Ruuhonen's line is made-to-measure. The customer gets to choose the style and fabric amongst the available choices, and the order is produced according to her measurements taken at the showroom. Almost everything is produced at her atelier; only knitwear is outsourced to a knitwear-studio in Paris.

The label consists of two lines, White Label and Black Classics. The White Label is a seasonal collection, which follows the regular fashion cycle of spring/summer and fall/winter. In contrast, the Black Classics line is a "timeless collection" in which the pieces stay unchanged season after season. The Black Classics collection is on continuous display, and pieces can be ordered throughout the year.

Originally the label operated as most other fashion companies: showing collections to retail store buyers during fashion weeks and producing garments based on the orders the buyers made. However, as Ruuhonen says, this way was very unpredictable. "One season buyers might make big orders, and you sell well and hire more people, but next season the same stores might not buy your collection at all." Also, every season a varying amount of clothing had to be marked down if it was not sold within the current season, and even then some clothing would remain unsold. At the same time, a considerable amount of orders were placed directly by friends and acquaintances; in fact, their support was significant. As the direct orders kept increasing, Ruuhonen realized that this could be an alternative strategy for fashion retail. In 2008 Anna Ruuhonen started her current business concept based merely on direct orders from individual clients.

Producing in-house allows Ruuhonen to have complete control over almost everything regarding her line including design, production, marketing, sales, business management and working conditions. As the company does not produce their own fabrics and trimmings, they are the main elements the company is not able to control. However, Ruuhonen's aim is to use only high-quality European fabrics from natural fibers, such as wool, silk and linen, and they mostly source from mills they have long-term relationships with. Making clothes in-house also ensures fair labor practices in terms of working hours, conditions and wages. According to Ruuhonen, it would be possible to obtain the desired quality by outsourcing production, but since it takes a lot of resources and money to control that everything goes as anticipated, for a small company this system works well.

Quality is an essential element of Anna Ruuhonen's ethos. The quality of garments is ensured through in-house production and thus the ability to control the manufacturing process as much as possible. It allows constant

communication regarding the design and production processes, and enables immediate adjustments. Quality in Ruohonen's line means both material durability and aesthetics that are not bound by trends. "The seasonal trends are not my driving force. My clothing is neither in nor out of fashion," Ruohonen states.

The apparent gain of Ruohonen's system of producing only on demand is that it creates no surplus of unsold garments; this brings both environmental and commercial benefits. As Ruohonen says, "It is hard to predict what customers want. But in our model, we can make what they want. Customers just have to wait a little for that." Additionally, any leftover fabric can be utilized for future orders.

The concept itself also embodies respect towards the clients: all garments are made to measure, which ensures the right fit. As standard sizes rarely fit perfectly, Ruohonen's clients appreciate the possibility of customized garments as well as the individual service.

### *Case 2: Frenn*

Frenn is a Helsinki-based men's wear label founded by Antti Laitinen and Jarkko Kallio in 2013. Frenn designs clothing for the urban working man, with a casual touch. The core of Frenn's clothing is high-quality materials, craftsmanship and tailoring.

The brand's aim is to create comfortable and well-fitted clothing based on long-lasting aesthetics. Through this approach Frenn intends to deepen product satisfaction on consumer's part, thus creating deeper attachment to the garments and therefore lengthen the garments' lifespan. An earlier study has shown (Niinimäki & Koskinen 2011) that deep product satisfaction is a way to extend the use time of garments. On the other hand the most important factors in clothing dissatisfaction are bad fit and low quality (Niinimäki 2014b). The designer Laitinen states that most of the existing mass-manufactured garments have lost the quality of tailoring, which allows Frenn to offer an alternative.

Frenn's garments are manufactured in Estonia<sup>3</sup> and to monitor the conditions of subcontractors and control the quality, they visit the factories periodically. Frenn's fabrics come from EU countries such as Italy, Portugal and Lithuania, and 80% of them have been certified by the Oeko-Tex 100 standard ([www.oeko-tex.com](http://www.oeko-tex.com)), which guarantees that the material is safe for the wearer. According to Frenn, finding high quality fabrics that fulfill

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<sup>3</sup> Estonia is the closest country with an industrial-scale capacity for garment manufacturing.

such criteria is a big challenge. Delivery of fabrics is another problem; sometimes the ordered materials do not arrive on time or at all. This may cause delays or even stop-overs in manufacturing.

Laitinen and Kallio say that the fashion business has a reputation for being “evil.” Frenn aims to achieve the opposite (as suggested already by the company’s name, which comes from the word “friend”). Through the blueprint of Frenn, Laitinen and Kallio want to make a change in the fashion system (Niinimäki 2014a).

Value base is an important grounding for this company and its practices. As stated on Frenn’s website, “humanity, responsibility and individuality” are important values in which the Frenn company and its products are grounded and which they want to inform to their clients. The brand addresses such values by building close relationships with both their producers and consumers, and by making design decisions based on environmentally and ethically better choices.

### *Case 3: Nurmi*

Nurmi is a small-scale fashion label<sup>4</sup> based in Lahti, Finland that consists of men’s and women’s wear and accessories. The label was founded in 2010 by the designer Anniina Nurmi.

Nurmi’s aim is to provide clothing that is as sustainable as possible. All fabrics in the collection are selected according to ecological and ethical credentials. Information about the fabrics and production are kept transparent. Nurmi’s production is done either locally in Finland or in Estonia. The production is guaranteed ethical as it is based on long-term relationships and either ethical certificates or personal visits to the factory.

One of Nurmi’s main goals is to contribute in steering the fashion industry towards better environmental and ethical practices. Nurmi also gives lectures and courses both on organizational and educational levels and keeps a blog, *Vihreät Vaatteet* ([www.vihreatvaatteet.com](http://www.vihreatvaatteet.com)), through which she shares her knowledge about sustainability in fashion to a wide audience.

The blog actually played a significant role in Nurmi’s decision to start her own sustainable fashion label. Nurmi was one of the pioneers of sustainable fashion in Finland, and thus the blog, created as a hobby, gained popularity and inspired Nurmi to establish her own line. As Nurmi reflects, the company formed organically; after the initial idea of a sustainable fashion

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<sup>4</sup> Nurmi currently employs two people full-time and one part-time. The label releases two small collections a year.

label, the vision and the strategy have grown gradually together with her experience.

The cornerstones of the Nurmi label are sustainability and transparency. Therefore, all garments are produced according to considerate environmental and ethical credentials. Keeping the production process as transparent as possible conveys credibility about the sustainable methods employed to consumers. Nurmi also aims to design garments that last. In such way, Nurmi's goal is clothing that "doesn't only look good but is also good from within".

The main strategy for carrying out Nurmi's objectives is through controlling all aspects of the design and production processes. The aim is to do it as completely as possible for a label of this size. As Nurmi says,

*Having such goals [sustainability], it is especially important to be able to prove that the production is factually sustainable and responsible. If I could not control the production chain nor know where the materials come from, it would not be possible. It is the utmost important to keep the control in my own hands.*

Although the selection of environmentally friendly and ethically produced fabrics has grown notably over the past five years, finding good quality materials that meet the right ethical and ecological criteria is still difficult. Available supply and minimum order quantities add to that challenge. In certain details, such as zippers or metal buttons, sustainable criteria is still nearly impossible to reach.

Because Nurmi designs and chooses all the materials herself, she is able to control the design process thoroughly. However, since the production is outsourced, achieving high product quality remains a challenge. According to Nurmi, "it is not easy to find local production sites that fulfill my criteria and produce excellent and consistent quality". In any case, local production would be the ideal; the further the factories are, the more complicated it becomes. As Nurmi says,

*Most of my production is local, so it is very easy: I know who they are and I can go there whenever needed. Communication is flexible. But, the further I have to go, the more time I need for making sure everything goes properly.*

## **Results and Discussion**

### *Lessons from the Cases*

All the studied companies state to have complete control over design. At the same time, all designers wish to have more power to influence on the ethical and environmental aspects of fabric manufacturing. Although all the profiled companies have high standards for design and aesthetics, due to the limited availability of suitable and accessible sustainable materials, the quality of fabrics is not always up the desired standard.

Both Frenn and Nurmi note that finding fabrics that fulfill the criteria of desired quality and environmental standards is especially difficult; the selection of such materials is limited and their delivery is unreliable. According to them, organic cotton is easily available but, diversity being an important aspect of sustainability both companies would prefer to use a greater variety of materials. Frenn uses only Oeko-tex 100 certified fabrics, which is a guarantee for the absence of any harmful substances ([www.oeko-tex.com](http://www.oeko-tex.com)), and increases the environmental control over the product in that way.

Anna Ruohonen's main criterion for fabrics is quality and due to her long business history her relationships with fabric mills are established and stable. Nevertheless, Ruohonen also wishes to have more control over fabrics.

As Porter (2004) notes, one of the early barriers to creating a successful business in an emerging industry is the access to raw materials, while the more mature companies have already overcome this challenge. According to the findings of this study, this is also the case with the emerging companies in fashion that focuses on sustainability.

With the help of in-house pattern making and manufacturing, Anna Ruohonen has complete control over manufacturing and product quality. This empowers Ruohonen to create her own retail system that supports slower cycles of fashion. Additionally, Ruohonen exercises control over collection cycles, and she has found success showing collections on her own schedule. Both Frenn and Nurmi, whose manufacturing is outsourced, evaluate having little control over manufacturing and product quality, and wish to be able to control them more. They also state to have less control over collection cycles.

All the studied companies reported having complete control over their business model and business strategy. Being design-driven companies, all of

them have created their own, unique business models and strategies grounded on sustainable methods and their own value base.

Anna Ruohonen is able to manage customer satisfaction in the most tangible way with her strategy of made-to-measure service. Besides providing well-fitted and high-quality products, Frenn addresses customer satisfaction by having the business grounded on social responsibility (and the aim of creating “a more friendly fashion system”). Similar to Frenn, ethical and environmental responsibility is also at the core of the Nurmi label. Additionally, Nurmi manages customers’ intellectual satisfaction by offering information about sustainability in fashion through her blog and her company’s website; this information is open to anyone, not just to customers, as Nurmi wishes to do her part in building a generally more sustainable fashion industry.

According to Porter (2004), a company is able to differentiate itself from others by providing not only products but also services, even if the product is not superior to that of its’ competitors. Such differentiation, for example offering excellent customer service, creates product satisfaction and brand loyalty among customers. This results in lower price sensitivity, in other words, an opportunity to offer good quality at a premium. (Porter 2004.) Along the lines of Porter, Ruohonen has been able to differentiate her brand and build a profitable company through a business model based exclusively on made-to-measure orders. Such a model provides great example of slow fashion and sustainable logic. Having started as experimentation (as Ruohonen operated her business earlier in a more conventional way), the case of Anna Ruohonen shows how change for sustainability, without losing business competence, is possible.

### *Creating Control*

Based on this study the design-driven control in the fashion system can be examined through the following elements: design, fabrics, manufacturing, business model and customer satisfaction.

Controlling design and aesthetics is the starting point for creative control. Since these aspects are at the core of every fashion designer’s work, they are also fairly easy to reach.

Fabric quality is already significantly more complicated to control. Small companies cannot produce their own fabrics but purchase them from an agent or directly from a mill. Therefore, the possibility to control or have an impact on the quality of fabric and the manufacturing conditions are limited.

To get the best and suitable eco-materials might be difficult for small size companies.

Controlling manufacturing is another essential element to ensure the quality of the product and safeguard the environmental and ethical conditions of manufacturing. This is best addressed with in-house manufacturing.

Also a potential aspect for control is the business model. As seen through this study, the design-driven approach in these small, design entrepreneurial companies has given the possibility for unique business models and strategies.

In this context, the most demanding element is control related to consumer satisfaction. However, control over the previously mentioned aspects, the quality of design, fabrics and manufacturing, and alternative business model, can have an impact on consumer satisfaction. According to this study it is best addressed by providing unique design, high quality products, good tailoring and made-to-measure garments.

Additionally, the more control the company has, the more radical approach it can implement in the business. Control may also support a system level transition towards slower cycles of fashion and more sustainable consumption. Therefore, it can be argued that tight control over a system, in this case a small company within the larger fashion system, can create power for transition.

### *Practice Based Strategies for Transition*

The studied cases support Sinha's (2000) suggestion about the benefits of integrating design thinking within the company mission, business processes and strategy. These cases provide successful examples of how small scale, and even certain "risk-taking" can help to remain innovative in the current business environment (Sinha 2000, pp. 37–40). As in Anna Ruohonen's case, having control over many elements of the business has enabled to realize a vision different from the current system and create a unique strategy towards slower fashion cycles.

The studied cases represent a strategy formulation that is based on experienced understanding of the fashion industry and fashion-related business thinking. This is in line with the strategy formulation proposed by Whittington et al. (2006), which suggests grounding it on practice and injecting craft into the strategy formulation process. The studied companies have constructed their strategies through design practices. Design knowledge, rooted in experience, has been used to create control over

company's practices and products, constructing their own local and micro-level system. Each profiled case has utilized such approach for gaining better control over product quality and sustainability. While doing so the goal has been in transition towards a more sustainable fashion system.

As stated earlier, Cooper et al. (2009) argue that thinking through design, i.e. creative strategic thinking, can offer new perspectives in business systems. This approach can facilitate transition, and even systemic changes in the industry. The studied cases are good examples on how fashion practices combined with an environmentally-oriented value base can create better control over the system, and also create power to transform and lead the fashion system towards sustainability. These cases further exemplify how local action can influence global development, as suggested in the transition theory.

## Conclusions

Many designers and manufacturers would like to integrate more sustainable methods in their products, but the possibilities for making more environmentally and ethically sound choices in the fashion system are still limited.

Although pursuit of sustainability is often driven by designer's personal values, faced by the reality of limited opportunities, a common approach in many such businesses is so called "best practices"; fashion companies choose the best existing environmental and social solutions. Even then, some decisions remain compromises. As highlighted in this study, this is especially the case for small- and medium-sized companies: finding suitable sustainable materials that are available in small amounts and controlling manufacturing while aiming to produce long-lasting, high-quality product and achieve customer satisfaction is challenging.

This study showed how design thinking coupled with control has potential for providing better quality, product satisfaction, transparency, fair working conditions without compromising the quality of design. The cases illustrate how sustainable development with the help of designer's control and power, can be reached in a company.

In such a way, creative and design-driven strategic thinking based on design practices does not only enable better control over the system but also creates power to transform and lead the fashion system towards sustainability.



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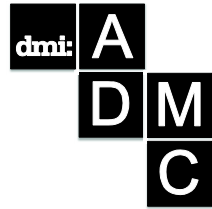
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FRENN: <http://www.frenncompany.com/>  
NURMI: <http://www.nurmiclothing.com/>  
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## Flagship Stores as Fashion Service Design

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*When Louis Vuitton in 1997 did establish an in-house architecture department under the leadership of the American architect Eric Carlson, the company was getting ready for a retail revolution to hit in the beginning of the new millennium: constructions of giant mono-brand stores, the so-called flagship stores; spectacular city monuments that merge architecture, luxury fashion, promotion, art, and shopping. Apart from serving the role as ‘place’ (distribution of products) in the 4 or 7 p’s of the classical marketing, the flagship store is a significant brand communicator, ‘a promotional architecture’ (Steiner, 2000) illuminating the image of fashion companies and their associated high status. Some fashion flagship stores even act as tourist attractions in major cities.*

*In this paper the luxury fashion flagship store phenomenon is analyzed through a variety of theoretical perspectives from marketing, design management, retail, fashion, experience economy, to branding. It is argued that a significant meaning production is going on in the contemporary luxury fashion after the tangible good production, and the flagship store phenomenon can serve as a starting point for the development of a distinct Fashion Service Design. The heavy workload in luxury fashion takes place in the stores and this fact could indicate that the theoretical concepts known from Service Design could serve as beneficial tools for the management of luxury fashion businesses. At the end of the text, classical Service Design concepts like ‘front-stage’ and ‘touchpoints’ are applied - although with some modifications - to the luxury fashion flagship store domain.*

**Keywords:** *flagship stores; luxury fashion; experience economy, Fashion Service Design, art as business, aesthetic values, fashion branding.*

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## Introduction

In 1999 Louis Vuitton erects the company's first free-standing Japanese flagship store in the city of Nagoya, designed by the then unknown Japanese architect, June Aoki. But it becomes Hermès who sets the agenda for the flagship stores phenomenon in Luxury fashion when the company in 2001 opens a 13-story building in Tokyo's Ginza district.<sup>1</sup>

This flagship store has been under construction since 1998, designed by the world-renowned Italian architect Renzo Piano. It has 6,000 square meters of retail space, offices, two storey art galleries where young artists can display their works, and a permanent exhibition of Hermès' products and history. The building is covered with a glass crystal surface that lights up at night inspired by the traditional Japanese paper lanterns.

The year after, Prada follows in the footsteps of Hermès with its 2.137 square foot flagship store in New York (Wilson, 2006), strategically referred to as a Prada Epicenter rather than just 'a flagship store' in order to emphasize the intellectual associations of the fashion brand. This giant store with the price tag of \$ 40 million is designed by Dutch architect Rem Koolhaas and raised on the basis of a building that previously contained the Soho branch of the Guggenheim Museum. The interior now appears with science fiction design and experimental technologies that is meant to enhance the buying experience; including, for example, fitting rooms with glass doors made of liquid crystal; these doors can be made opaque with the touch of a button. Inside the fitting rooms customers are enabled to see them selves dressed in the garments from different angles on a screen via video cameras. The store also has a gallery and a performance space.

In the following years, the development of luxury fashion flagship stores escalates: In 2002, Louis Vuitton opens its first flagship store in Tokyo's Aoyama district, in 2003 Prada opens a flagship store in San Francisco, Louis

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<sup>1</sup> The flagship stores phenomenon did exist before the millennium but not to the same level, expenditure and grandness. Moore and Burt (2001, p. 53) identified the period 1990-1995 as 'the most significant in terms of numbers of fashion retailers entering a foreign market for the first time'. But the authors were analysing fashion retailing broadly, not specifically luxury fashion and flagship stores. Further, the book was published in 2001 and the most contemporary source quoted in the text is from 2000, the beginning of the boom in the luxury fashion flagship store expansion.

Vuitton opens a flagship store in Tokyo's Roppongi Hills, and Dior opens a flagship store in Tokyo's Aoyama district.

The flagship store phenomenon reflects the significance of retailing in the development of the luxury fashion business. A central proposition of this text is to recognize the service processes of luxury fashion as being just as important as the production characteristics (refined products). It is argued that a significant meaning production is going on in luxury fashion after the tangible good production, and the flagship phenomenon can serve as a starting point for the development of a distinct Fashion Service Design.

### *Historical context: The restructuring of the luxury fashion*

Around the end of the 1980s the luxury fashion business was restructured, as the former family-owned and domestically based luxury companies became global corporations traded on the international stock exchanges and engaged with business operations in multiple countries (Hansen-Hansen, 2008).

A noticeable development in the restructuring of luxury fashion has been that the international expansion of the companies took physical form through store openings in the leading metropolises of the World, especially the Capital cities. The stores have the roughly same service and price level, regardless of geographical location. This strategy has enabled a uniform communication to consumers all over the globe: that fashion companies are 'cosmopolitan, successful and available to the world's richest and most beautiful people' (Moore and Burt, 2001, p. 53).

The fashion communication has had a strong, almost universal, global appeal. Fashion companies have been able to reach consumers uniformly across national boundaries largely disregarding local and cultural differences. It is often the same image campaigns that can be seen in Tokyo as well as in Paris. Thus, unlike many other types of businesses that went through an international expansion, the luxury fashion companies has been able to operate with one common global marketing strategy: the standardization of marketing, communication methods, channels, product lines and corporate identity leading to economies of scale.

Strong brand values such as exclusivity, aesthetic design, fashion changes (the constant style changes of products), cosmopolitanism, and the emphasis on female beauty has led to international companies able to capture the interest of consumers across national boundaries and income classes.

Although luxury fashion companies are quite small compared to companies in other industries that have the same global recognized brand names, they have managed to create some of the best-known global brands.

In 2013 the fashion and leather goods business group of LVMH, the biggest luxury fashion group in the world, had revenues of € 9.8 billion with only 32,098 employees (LVMH, 2014a, Fashion and Leather Goods p. 28; Human Resource p. 03). It is close to a third of the employees of the Swedish fast fashion company H&M.<sup>2</sup> This despite the fact that the fashion and leather goods division of LVMH includes 12 world-renowned luxury fashion brands.<sup>3</sup> In 2013 the Luxury Division of Kering Group, one of the biggest luxury fashion groups with 9 luxury fashion brands in its portfolio, had a turnover of € 6.5 billion and employed 19.050 people (Kering, 2014, p. 21).<sup>4</sup>

The strong brand positions have caused a massive global consumer interest in the fashion products thereby incentivizing department stores and multi-brand stores to buy wholesale from luxury fashion companies. The pull effect of the famous fashion companies is so great that the stores have to carry these brands, often at the expense of smaller, local brands (Moore and Burt, 2001, p. 50).

The pronounced communication and media presence, enhanced by the fashion media, i.e. fashion magazines and increasingly the internet media and blogs (Engholm and Hansen-Hansen, 2013), including the unmistakable connection between luxury fashion and the staging of female beauty, has made luxury fashion an important field of interest for hundred of millions, if not billions, of female consumers worldwide.

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<sup>2</sup> In 2013 H&M had 81,099 employees and revenues of roughly € 14 billion (H&M, 2014, p. 58, p. 73). The Spanish Inditex, one of the major fast fashion groups and owner of the brand Zara, had 120.314 employees in 2012 and revenues of € 15.9 billion (Inditex, 2013, p. 3).

<sup>3</sup> The 12 luxury fashion brands under the LVMH Group are Louis Vuitton, Fendi, Donna Karan New York, Céline, Loewe, Givenchy, Kenzo, Thomas Pink, Berluti and Pucci. In addition LVMH also owns related companies in the fields of jewellery and cosmetics.

<sup>4</sup> The 9 luxury fashion brands under the Kering Group are Gucci, Bottega Veneta, Saint Laurent, Alexander McQueen, Balenciaga, Brioni, Christopher Kane, Sergio Rossi, and Stella McCartney.



*Figure 1 Louis Vuitton's flagship store in Paris is strategically located in the tourist district of the Champs-Élysée. With 1800 square meters of space dedicated to shopping, it is Louis Vuitton's biggest store building, and in its own right one of Paris' tourist attractions. There are 7 floors divided into many sections, there are several exhibition rooms showing the historic Louis Vuitton products, a bookshop dedicated to lifestyle, art, travel and fashion, and a gallery of contemporary art at the top floor. The artist Olafur Eliasson designed the elevator as 'a vectored space where the senses become weightless' (Edelmann et al, 2011, p. 157). Source: photo by the author (2012).*

### *From license to Directly Operated Stores (DOS)*

Generally, luxury fashion companies are involved with brand management not garment production. The core competencies are design, communication, distribution and sales (Hansen-Hansen, 2008, p. 198-199). Most luxury fashion companies outsource their production, especially to the Italian textile and manufacturing complex, but there are several brands that produce some of their products in China, for example Burberry, Armani, Celine, and Prada (Thomas, 2007, p. 199-232). Hermès and Louis Vuitton are exceptions, as they produce a large part of their products in-house through their own factories, this is especially the case for their leather goods.

When Burberry Group communicates to potential investors the company describes its 'principal activities' in the following manner: Burberry 'designs and sources luxury apparel and accessories, selling through a diversified network of retail (including digital), wholesale and licensing channels worldwide' (Burberry, 2013, p. 78). Although the design of prototypes and communication as well as control of sourcing are important business activities, it is clearly the retail sales that make up the largest share of the employment activity in the luxury fashion businesses.<sup>5</sup>

Concurrently with the historical restructuring, luxury fashion companies have moved towards vertical integration in the form of increasing control of sales channels. In the 1990's companies such as Dior and Gucci repurchased many of the license rights that had existed around the world, because licensed production was diluting the brand value. It was impossible to maintain global consistency and quality in the products when different manufacturers used the same label on their products (Hansen-Hansen, 2008, p. 186-197).

With license production minimized to specific product categories such as cosmetics and sunglasses, several of the major luxury fashion companies started to alter or optimize the balance of sales channels. Wholesale is typically aimed at concept stores or department stores that control the retail sales to the end-consumer. But luxury fashion companies have increasingly moved towards their own retail, through private ownership of the stores, the so-called Directly Operated Stores (DOS).

The reason for the change to the DOS sales channel is that the fashion companies here can obtain the high profit margins that would otherwise disappear to the department stores as the intermediaries in the wholesale model (ibid). As Bernard Arnault, CEO of LVMH, once put it: 'Luxury goods are the only area in which it is possible to make luxury margins'. Today the leading luxury fashion companies have more retail than wholesale, and in

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<sup>5</sup> In 2013 two-thirds of the workforce in Prada Group worked in sales (Prada, 2014, p. 161), and out of LVMH's total workforce (not just fashion) in the same year, roughly 61% was employed in sales and administration whereas only 12 % was employed in production (LVMH, 2014a, Human Resource p. 03). The figures for LVHM are for the entire group inclusive of the wine and the spirit divisions. The percentage of sales staff for the fashion division will most likely be much higher. Kering Group's statement of operating infrastructure in 2013 showed that 90 % of its physical buildings in the Luxury Division relate to retail sales (Kering, 2014, p. 175).



the annual reports aimed at investors there are clearly a higher emphasis on store openings than on clothing design.<sup>6</sup>

There are several different types of DOS: Shop-in-shop, shops in shopping complexes, hotels or airports, freestanding stores with direct access to the street and flagship stores.<sup>7</sup> Of the numerous DOS's only a tiny minority are flagship stores.<sup>8</sup> On April 2014, the store locator at Gucci's consumer website showed a total of 21 flagship stores in the world (Gucci.com, 2014). Louis Vuitton's store locator showed 15 flagship stores (Louisvuitton.com, 2014).

The difference between flagship stores and freestanding stores is the size and location. There are free-standing brand shops in many high streets in smaller cities.<sup>9</sup> On the other hand, flagship stores are very large freestanding stores characterized by their location in the most exclusive shopping areas in the leading metropolises of the world; they typically have a shop area of 200 square meters to thousands of square meters. They are

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<sup>6</sup> For the tax year 2012/13, the retail of Burberry accounted for 71% of revenue, wholesale 24% and licensing 5% (Burberry, 2013, p. 26), up from respectively 58%, 34%, and 8% in the fiscal years 2009/10, and compared to companies like Gucci and Dior, Burberry is a late bloomer in the optimization of channels. At Christian Dior Couture (the fashion department of Dior) the figures were 90%, 8%, and 2% for the tax year ending April 2013 (Christian Dior Couture, 2013, p. 10). In the annual report it is explicitly emphasized that the company strategy is to increase selectivity by a further reduction of license royalties and wholesale (ibid). Louis Vuitton is renown for a pure DOS retail strategy, Hermès has a mixture of DOS and franchise outlets with a few products sold wholesale, e.g. Hermès perfumes (Hermès, 2013, p. 24).

<sup>7</sup> Shop-in-shop refers to a small, dedicated room or area in a department store decorated with the companies own brand design and controlled by the fashion company. A luxury fashion company pays the rent to the department store, while the fashion company directly employs the store personnel. Another version is a shop-in-shop concept, where the shop is run by the department store but in this case it is not a DOS, the channel is wholesale.

<sup>8</sup> Some illustrative examples of the stores network of the contemporary luxury fashion companies: in January 2014 Prada's network consisted of 330 DOS and 24 brand stores under franchise (Prada, 2014, p. 40). Hermès total network of stores at the end of 2012 consisted of 205 DOS, 118 brand shops under franchise, and a non-disclosed number of specialised stores and airport duty-free stores selling watches, perfumes and tableware (Hermès, 2013, p. 21, p. 65). At the end of 2013 the Luxury Fashion Division of Kering group had a total of 1149 DOS of which 474 was Gucci stores, 221 Bottega Veneta stores, 115 Yves Saint Laurent stores, and 339 stores were spread across the group's other luxury fashion brands (Kering, 2014, p. 21, p. 22, p. 25, p. 28, p. 31).

<sup>9</sup> As example, Gucci, Burberry, Bottega Veneta, Hermes and Louis Vuitton all have freestanding shops on the pedestrian street Strøget in Copenhagen; here Louis Vuitton is 100 % owned by the brand, while the others are run on a franchise basis (LVMH, 2014b, p. 66; Hermès, 2013, p. 65; Trading Group 88, 2011).

status symbols in themselves, and they are preferred shopping destinations for consumers who are looking for the widest range of products and the most luxurious atmosphere.

### *Retail stores and experience economy*

A key factor for the growth of these giant stores is the economic performance of the luxury fashion companies. The major luxury fashion companies have increased their share values on the stock exchanges substantially over the past 20 years, this has enabled them to expand their presence with flagship stores on the most prestigious and expensive big city addresses in the world.

It is very expensive to invest in the construction, development and operation of these megastores. Viewed in isolation, running a flagship store can be a loss-making activity for many years. As a consequence it is becoming more difficult to enter the luxury fashion market for new companies today. It requires a substantial amount of capital, to charge a new brand with the global desire needed through advertising campaigns, catwalk shows and directly operated stores on prestigious locations.

It is striking that there is virtually no new luxury fashion company that has enjoyed worldwide success since the mid-1980s unless it has been in specialized niches, such as the shoe and handbag brand Jimmy Choo. Dolce & Gabbana, established in 1985, is the last global major luxury fashion company to enter the scene successfully and this brand should possibly not even be included in the luxury fashion category. Newer brands such as Alexander McQueen and Stella McCartney are part of the Kering group and they are insignificantly small compared to brands like Gucci, Chanel, Prada, and Burberry.

The luxury fashion company's preoccupation with selective retailing is not only due to the demand for high profit margins; it is also a matter of brand control and development in order to stay competitive. Apart from being a channel used to sell products, the flagship stores serve the function of brand communicators, a promotional architecture showcasing the image and status of the fashion labels (Steiner, 2000). Seductive architecture and window decoration is a kind of street advertising.



*Figure 2 Prada flagship store in the Aoyama district of Tokyo. The so-called Prada Epicenter is a 6-story crystal shaped building designed by Swiss architects Herzog & de Meuron, it was opened in 2003. The price amounted to \$80 million, 'making it the largest Italian investment in Japan since the Second World War' (Aconis et al, 2006, p. 76). According to Herzog & de Meuron, the purpose of the building was 'to reshape both the concept and function of shopping, pleasure and communication, to encourage the meshing of consumption and culture' (Chevalier, 2012: 343). Source: photo by the author (2009).*

Further, there is an experiential dimension to the flagship store. Successful luxury fashion companies have realized that consumer value is more than a question of price. The marketing literature describes value as a total experience it includes product quality, attractive store environment, convenience and good service. It has become 'difficult to obtain a competitive advantages on the basis of price, promotion and store location, [therefore] store environment becomes' an important strategy for market differentiation (Chu and Lam, 2001, p. 107).

Environment is a crucial factor when consumers choose between shops, and it also affects their buying behaviour. Behavioural consumer studies indicate that consumers make 80% of their purchase decisions when they are inside the store examining the products (Ebster and Garaus, 2011, p. 2). A well-designed shop environment with a high service level and attractive products can be an effective way to provide customers with a positive shopping experience.

It is hardly a coincidence that the luxury fashion industry's massive retail activity, in particular, the prioritization of the spectacular flagship stores, has occurred in a period when the modern marketing theory has been preoccupied with the so-called experience economy. In 1999, the two American management consultants, Joseph Pine and James Gilmore, published their influential book *The Experience Economy*.

The central claim of the book is that in a world that has moved away from agriculture, industry and service, the selling of experiences is becoming the dominant economic activity. Consumers don't 'purchase goods merely for their functional use', the 'experiences created during purchase and use' is equally important (Pine and Gilmore, 1999, p. 100).

Companies that want to achieve success 'must realize that they make memories, not goods, and create the stage for generating greater economic value' (ibid). A new intensified focus on the experiential dimensions as market force. The Experience Economy as a business principle is so strong in the period that Marxist-inspired critics warn of a new hyper capitalist economic phase. The commoditization of leisure is the fusion of the cultural and the commercial sphere, 'a world in which each person's own life becomes, in effect, a commercial market '(Rifkin, 2000, p. 7), writes the American critic Jeremy Rifkin.

Pine and Gilmore use the theatre metaphor as a management perspective, everything is centred around the production of interesting, relevant and rewarding experiences on offer: the business environment is a

stage, selling is a theatre, the goods and decor are props, sound and lights are effects, and the staff are actors (Pine and Gilmore, 1999, p. 106-107).



*Figure 3 Exterior and interior details from Dior's flagship store at 30, Avenue Montaigne in Paris. It was here that the French designer Christian Dior opened his first haute couture boutique in 1947, funded by the French textile manufacturer Marcel Boussac. In the same year Dior launched an opulent, hourglass shaped and feminine fashion style named New Look. The 1.200 square meter store is styled in aristocratic luxury decor with stucco ceiling and rococo influenced woodcarving. The historical décor is intensified by wall-high black and white photographs depicting 1950s stylized models in haute couture dresses posing in the same kind of interior. The display cases in the store do not exhibit works of art as in a museum but mass-produced 'fashion matter', especially handbags, shoes, sunglasses and jewellery. Source: photos by the author (2007, 2012).*

The luxury fashion flagship stores are excellent examples of the experience economy. The Ready-to-wear garments shown on display dummies in shop windows and inside the stores are not only on display in order to be sold, they also serve as eye catchers and seductive objects of desire. Along with store design, background music, images of beautiful women, and video screens showing catwalk shows, they create an affective experiential space.

Flagship stores are often minimalist in their décor, in order to enhance the aesthetic appeal of the exhibits they display large open space as seen in art galleries. Further there is a deliberate use of a number of social factors: the doormen dressed in black complete with ear buds are reminiscent of bodyguards protecting someone important or a valuable work of art. The female sales assistants appear beautiful and well dressed in the luxury design of the company. In some Prada stores, it is not unusual that visitors will be greeted with a glass of sparkling wine and small chocolate pieces.

The Shopping experience becomes entertainment, a mini version of the opulent and luxurious environments known from the editorial pictures seen in the fashion magazines. The purposes of the shopping experience transcend the merely mundane acquisition of objects. The customer values (in luxury fashion) are no longer, if they ever were, just a matter of tangible characteristics, e.g. the functional or even symbolic aspects of a dress. Instead the meaning and usage of fashion products should be recognized as composites of complex relations in time and space between people, objects, signs, and organizations (Hansen-Hansen, 2008, p. 201). Seen in this light, the commercial experiential space is more than just an exhibition platform for fashion items on sale; it is just as much an experience tool that creates intangible values in and around the fashion brand. The fashion objects for sale are elements in an on-going production process of consumer desire. Experience design entails much more than design and production of mere objects; it is just as much a matter of production of the very relations that consumers are able to experience through the objects (ibid). Image campaigns, flagship stores, and the real world celebrities wearing luxury fashion are parts in a fashion aestheticization process moving through time and space.

### *The new trinity: architecture, fashion and art*

The flagship stores are today aesthetic urban sculptures in their own rights. In addition to being vehicles for the marketing and sales of fashion objects they act as tourist attractions, and they promote and reinforce the

architects as superstars. Luxury fashion companies have been touted as contemporary patrons of architects; the relationship between Rem Koolhaas and Prada recalls Medici and Michael Angelo, a 'marriage of style and power' (Castle, 2000, p. 58-61).

Names of architects and interior designers are now being circulated in the fashion media next to luxury fashion brands and renowned fashion designers: Frank Gehry, Philippe Starck, Rem Koolhaas, Karl Lagerfeld, Jacques Herzog and Pierre de Meuron, Peter Marino, Giorgio Armani, and Marc Jacobs.

Within architecture criticism the flagship store has been condemned as a kind of modern cathedral. The Austrian architect and critic Dietmar M. Steiner laments the commercialization and the contemporary superficial corporate architecture, which he believes has dissolved the finer purpose of architecture.

We are left with 'entertainment architecture' where cultural monuments, galleries and shops are identical, and where everything is in the service consumption. Today museums are just as much engaged in the sale of books, objects, and posters as with exhibitions. In addition the retail temples of fashion look like museums. As a visitor, 'one sinks into a silent humility of cultural devotion', the purchases 'resembles a rite of confession and redemption' (Steiner, 2000, p. 21). The store 'assistants are untouchable ascetic priestesses who graciously return one's credit card as if delivering the Host after the consecration'; the fashion store is 'a chapel of consumerism' (ibid).

Flagship stores may share a kind of monumentalism with the old church cathedrals, but the former represent a theme being in such a stark contrast to the sacred spaces that the comparison is problematic: The (luxury) fashion store celebrates the female beauty and seduction. The temptress as ideal is far removed from the universe of the church. Although beautiful women never were completely absent in the church, the Judeo-Christian tradition is characterized by hostility to female seductive appearance (Faust, 1980, p. 17).

Display dummies in tempting postures, fetishistic paraphernalia like high heels in rows, video screens showing pretty young women on the catwalk, and logo handbags inside display cases – it resembles much more of the glamorous atmosphere of Hollywood movies and fashion magazines.

Unlike other luxuries, luxury fashion has a unique relation to female beautification (Hansen-Hansen, 2012, p. 616-617): to enhance the attraction of the female consumers and thereby also to strengthen their erotic

capital.<sup>10</sup> From the end of the 19th century, luxury fashion as well as the broader fashion business, took over one of the principal activities of traditional art, the depiction and idealization of female beauty (ibid). Like the Christian religion, the modernist art abjured the traditional female seduction and beauty as banal or even alienating (Steiner, 2001). The commercial fashion media, together with the later Hollywood movies, almost monopolized this classical form of aesthetic work. This is probably enhancing the popular fascination and allure of fashion.

Besides the emphasis on glamour and female beauty, it seems to be the cultural value of the art world that the contemporary luxury fashion is trying to connect to rather than the religious value. The flagship stores have not only copied the art exhibition design in the presentation of fashion products. Increasingly they also serve as a dedicated art galleries beside the store function. The 'exhibited creativity of contemporary art' is used to reinforce the luxury fashion, a 'hybridizing art and fashion' (Lipovetsky and Manlow, 2009, p. 156). The art becomes part of the experience economic tools: 'The artifying' of the flagship stores allow consumers 'to feel unexpected and polymorphous pleasures', to discover 'surprising, strange and unusual works of art', and to enjoy 'the aesthetic delights of the store' while they shop 'in an exclusive context associated with the happy few' (ibid, p. 165).

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<sup>10</sup> The concept of 'erotic capital', as defined by the French sociologist Catherine Hakim, can help to explain the prevailing female consumer interest in fashion. Erotic capital is Hakim's addition to Bourdieu's theory of economic, social, and cultural capital. Erotic capital specifically relates to the opposite sex in all social contexts and it is multifaceted. It concerns areas such as beauty, sex appeal, social charm, social presentation, sexual competence and fertility (Hakim, 2010, p. 500-510). Some of these can be learned, others are innate advantages. Hakim claims that men's demand for sexual activity and erotic entertainment in various forms clearly exceeds women's interest in sex. Feminists have tried to explain this difference with a reference to socially constructed power structures. But according to Hakim, the difference has not disappeared, even as women have achieved economic and social equality with men. There exists an strong asymmetry in the (hetero) sexual economy: sex is widely, cross-culturally and historically recognized as a female resource that is sought after by men, not the other way around (Baumeister and Vohs , 2004). Women do not have an erotic monopoly but generally they have much more erotic capital than men do, and as with the forms of capital that Bourdieu analyzed, erotic capital can be exchanged for other resources.





Figure 4 Life size display dummy of Japanese artist Yayoi Kusama in shop window of the Louis Vuitton flagship store on 5th Avenue New York, August 2012. The decor celebrates the polka dots art clothes and accessories collection, a co-design between Louis Vuitton's then creative director Marc Jacobs and the artist in the autumn of 2012. Source: photo by the author (2012).

The deliberate attempt to connect luxury fashion to the cultural sphere of art can be exemplified through the President of Louis Vuitton Japan, Kyojiri Hata. When the opening of the Louis Vuitton's flagship store in Tokyo's Roppongi Hills in 2003 achieved widespread international media coverage, he declared enthusiastically:

*The Financial Times of London printed an article with a photograph of the store on the first architecture page in its arts section – not the business section. With this, I felt we had successfully achieved a 'fusion of fashion with art' (Hata, 2004, p. 46).*

The relationship between art and luxury fashion is further reflected through the arts sponsorship activities of the fashion companies and through the private art collections of the company heads. Since the early 1990's LVMH has sponsored more than 30 major art exhibitions around the

world (Nayen, 2008). The CEO of Kering Group, Francois Pinault, has one of the world's largest private art collections, in 2006 the British art magazine *Art Review* named Pinault as number one on a list of the art world's most powerful people (*Art Review*, 2006, p. 60-61).

In 2006, LVMH announced its new art foundation Louis Vuitton Foundation for Creation complete with a planned arts and cultural centre being build in the Jardin d' Acclimatation at the Bois de Boulogne of Paris. The building is designed by the world famous architect Frank Gehry and scheduled for completion in the autumn of 2014. Besides the art, the building complex will also house an archive of Louis Vuitton's history. This project is another reflection of the trinity of luxury fashion, art and architecture.

Like architecture and art, fashion also has its own aesthetical manifestations; 'a form of visual art, a creation of images with the visible self as its medium' (Hollander, 1995, p 311). But for many years there has existed a fuzzy relationship between fashion and art on several levels. Art has referenced or commented on fashion just as much as fashion has referenced art.<sup>11</sup> A recent trend in luxury fashion is the direct usage of artists as co-designers, e.g. Yayoi Kusama and Takashi Murakami for Louis Vuitton, or Tracey Emin, who designed the bags for Longchamp in 2004. Through the double signature, this strategy encodes the luxury products with an added cultural dimension, another layer of exclusivity: the designer genius meets the artist genius in the public imagination.

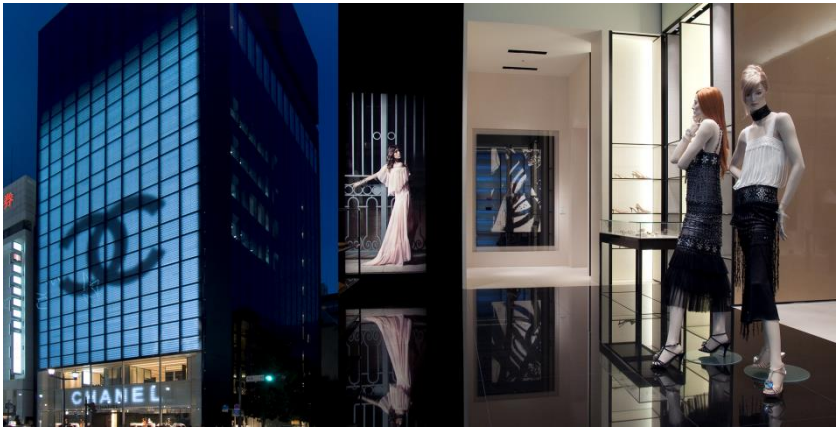
In economic terms art can be perceived as a form of luxury, objects of surplus related to pleasure. Throughout history, powerful patrons have often backed artists, e.g. emperors, kings, merchants, the church and today

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<sup>11</sup> There are artists who use fashion as their art medium, e.g. Sylvie Fleury, Vanesa Beecroft, or Beverly Semmens. Other artists have been criticizing fashion, e.g. *Art Club 2000*, Cindy Sherman, and Izima Kaoru. Art Museums has exhibited fashion, e.g. Armani at the Guggenheim Museum in New York in 2000, or Helmut Newton's fashion photography at Carlsberg Glyptotek in Copenhagen in 1989. Similarly, some fashion designers are just as much artists as couturiers, their clothing exists mostly in exhibition contexts; this applies for example to Hussein Chalayans sculptural pieces, Viktor & Rolf's conceptual fashion shows, and some of Issey Miyake's creations. Fashion designers have often referred to the arts in their clothing; e.g. Yves Saint Laurent's Mondrian-inspired cocktail dress from the autumn/winter collection in 1965. There are many examples of artists who have worked for the fashion industry, e.g. Sam Taylor-Wood's photo art on the front of Selfridges department store in London in 2000, or the artist Man Ray, who in 1930 photographed the designer Elsa Schiaparelli who herself was inspired by surrealism. As previously emphasized, fashion has to a large extend overtaken art's the traditional preoccupation with the depiction of female beauty.

the state and large corporations, including luxury fashion companies. The same is true for architecture; in some historical periods architects were also considered to be artists.

Architecture, luxury and art share some characteristic. Aesthetics are of significant importance to the three fields. They go way back in history; it was typical art and luxury objects that were placed in tombs (Kapferer and Bastien, 2009, p. 35) and pyramids are examples of extreme funeral architecture. They also share a relationship to aesthetics and power, 'designer jewellery is a luxury and an art, as is the architecture of a mansion or a museum' (ibid). In art and luxury, function is of little importance 'whereas the symbolic value is very high' (ibid), some excessive architecture has similar strong symbolisms, cathedrals or castles for example, but usually there is also a functional values present in architecture.



*Figure 5* Luxury fashion meets feminine beauty, interior design and art. Chanel flagship store and Japanese headquarter in Tokyo's Ginza area. The retail space, located on the first to third floor, is decorated with a number of special ordered artworks; on the first floor there is art by French artists, on the second by American artists, and on the third by Japanese artists. Opened in the end of 2004 and standing 56 meters high with 10 floors and 6.098 square meters of space, it is the largest Chanel building in the world. The 10th floor houses the restaurant Beige Tokyo, operated by Chanel in cooperation with the French chef Alain Ducasse. The architectural space of the building also serves as a kind of visual digital interface to the street environment as the glass facade is lined with 700.000 LEDs creating a large video screen by evening. Source: photos by the author (2005).

Obviously, flagship stores meet many of the basic functions of architecture, but at the same time they are also a form of luxury architecture: Architecture where optimization according to price and function might be of secondary importance compared to the aesthetically conspicuous. Architecture that reinforces the architects as artists and world celebrities.

### *The flagship store and Fashion Service Design*

The substantial corporate activities centred around the luxury fashion stores as well as the high employees workload indicate that the service processes of luxury fashion are just as important as the production characteristics (refined products). A significant meaning production is clearly going on in luxury fashion after the tangible good production, and the flagship phenomenon can serve as a starting point for the development of a distinct Fashion Service Design.

It is possible to apply a classical service design perspective on the experiential fashion retail activity, especially the concepts of back-stage – front-stage is useful. The back-stage is the where the unseen (from the customer's point of view) activities take place; through design, equipment, technology and employees raw materials are transformed into finished products and/or processed information (Teboul, 2006, p. 14). The products or service components that are produced back-stage will later be brought into contact with the customer at the front-stage. The customer with a problem or requirement will be relieved or serviced at the front-stage through a performance; that is through a 'direct interaction with employees, equipment, décor and other customers' (ibid, p. 13).

Teboul's service design metaphors can be transferred to luxury fashion business but his distinction between industry sector and service sector must be altered somehow. For Teboul industry sector types of businesses are characterized by the inverse relationship between the weight of front-stage and back-stage operation (ibid, p. 14). In the industry sector, the front-stage is recognized as being small in comparison to the back-stage whereas in the service sector the front-stage is large and the back-stage is small.

The suggestion in this text is to make an equal balance between front-stage and back-stage (symbolized by the equal size of the two frames in Figure 6). In luxury fashion there must be a significant amount of investment and energy in design, manufacturing of the 'material refined' physical products and promotion. But the front-stage embodied by the (flagship) store experience is equally important. As it has been shown, the store

environment is where the vast majority of employees are engaged in luxury fashion.

Figure 6 is an attempt to visualize luxury fashion inspired by Teboul's theory of Service Design but with a significantly different content inside of the front-stage frame. It should be rather easy to imagine the various touchpoints know from service design in the front-stage, the numerous material and immaterial elements and encounters between the company, the staff, and the customers.



*Figure 6. Source: The author, 2014.*



*Figure 7 User co-production of meaning, beauty, and seduction. Fashionable dressed female luxury shopper passing Dior's Directly Operated Store at Sloane Street in London. Source: photo by the author (2010).*

However it is important to recognize that in luxury fashion 'desire' would most likely be the primary customer requirement or 'problem'. Because desire can be considered the core of the luxury phenomenon (Berry, 1994, p. 3) and further, that luxury fashion to a high degree is an industry centred on female beauty relating to sexual desire and ultimately human reproduction (Hansen-Hansen, 2012, p. 618).<sup>12</sup> The flagship store can be

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<sup>12</sup> The consumption of luxury fashion can obviously go beyond Barry's (1994) definition of luxury as desire; many customers might instead have a 'social need' for luxury fashion in order to enhance their professional career life. However, this usage of luxury fashion does not remove the desire related to physical or erotic beauty. See also the next endnote on 'erotic capital'.

envisioned as a front-stage setting where a performance is taking place between employees and customers and even between customers and customers; through affective and often excessive architecture, décor, lighting effects, images, signs, design, packaging, displays, music, beauty, eroticism, luxury fashion (beauty) objects, sales assistants, and art, customers with a desire are potentially transformed and perhaps even the symbolic meaning of the fashion objects are transformed through the human interactions.

The usual user-centred approaches known from classical service design may not be applicable in luxury fashion, at least not in the same way. User participation or co-design (e.g. Sanders and Stappers, 2008) where the customers are active in product development might not work in luxury fashion, as this business ultimately is based on scarcity, desire, status and seduction.

If there is a user co-creation in luxury fashion it is perhaps taking place in the 'real private life' of the customers, the continual symbolic encoding of desire, hedonism, pleasure, and status through interaction (and exclusion) with other people and objects. This attempt to view luxury fashion in a service design context, should not be seen as fully completed. At this stage it should be considered a tentative experiment with plenty of room for further development and improvement.

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## Post-Industrial Design for Consumption: discovery and invention of “tribes”

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*While the role of users and consumers in various “consumer tribes” has begun to be mapped in research, open research questions remain. These include whether or how designers or management executives ought to be a member of a consumer tribe that has formed around their product or service. Reporting on our study of consumer tribes in on-line games played on mobile phones, tablets, and PCs, we ask: (1) To what extent does it make sense for an on-line-game designer or executive to be a member of the on-line-game consumer tribe around their game? (2) If membership in the consumer tribe makes sense, what kind of a role or roles ought the designer or executive take? We draw on earlier research in the sociology and anthropology of marketing, on the one hand, and game design, on the other hand. A tribe or its (near-)equivalent can exist in a primordial sense, in an industrial and modern sense, or in a post-modern sense. We analyze three cases of a consumer tribe around a game, the nature of the tribe, and kinds of design and execution: “Minecraft” by Mojang, “Angry Birds” by Rovio Entertainment, and “Clash of Clans” by Supercell. We find that membership in each of the consumer tribes in question makes sense, with roles such as user/consumer, designer, and executive. Yet, roles differ from case and kind of tribe to another, as well as between designer and executive. Each designer or executive successfully takes on no more than two roles at once in her tribe. We call for further research on tribes and communities, especially on consumer tribes in on-line games.*

**Keywords:** *design, consumption, games, gaming, tribe*

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## Introduction

Currently, there is great interest in tribes in marketing and design theory in “consumer tribes” (Cova, Kozinetz & Shankar 2007; Djelic & Ainamo 2005). According to this stream of research, designers and executives of wearable or mobile devices can be active members of a tribe of users and consumers in ways that contribute to design quality (Kotro & Pantzar 2002). While the role of consumers in various currently relevant consumer tribes has begun to be mapped, open questions remain as to the extent that designers and executives have discretion in terms of how to be or not to be a member of one or another consumer tribe, in particular when the offering is an on-line one.

In this paper, we take as the topic of our research consumer tribes related to on-line games played on mobile phones, tablets, and PCs. We focus on how the underlying games related to these tribes have been designed and executed. Still more specifically, we focus on how or why game designers and games executives may take one or another kind of a role when it comes to a consumer tribe or several thereof. We skew our theoretical lens so as to take the point of view of a game designer or games executive:

1. To what extent does it make sense for an on-line-game designer and executive to be a member of an on-line-game consumer tribe?
2. If membership in a consumer tribe around an on-line games make sense, how the designer or executive ought to be a member; that is, what kind of a role or roles should she take?

We draw on literature from game design and from the sociology and anthropology of marketing. From the sociology and anthropology of marketing, we bring in research findings on sub-cultures, communities and tribes link those to our discussion on tribe formulation and construction in on-line games. We integrate the findings on tribes and on designers’ and executives’ commonalties and identification with a sub-culture or cultural system particular to the “users” or players of one’s game to design research on the ontology of games and how games are used and designed.

We operationalize our approach through an analysis of how users have commonalties with one another and identify with the game in question, and how the tribe dimension in the game in question is designed and executed. To move on to cover contemporary studies on tribes and games and game design and games execution, we provide an overview of the generic research context and specify this context to bear on the context of three games: “Minecraft” by Mojang, “Clash of Clans” by Supercell, and

“Angry Birds” by Rovio Entertainment. In all three cases, tribes have spun or have been spun around the game in a way that makes this a crucial element of the game – yet, in different ways. Finally, we will discuss our three case games from the tribe perspective, and conclude the paper by offering implications for practice and research.

### *How Sub-Cultures, Communities, and Tribes Come About*

In the past, when not based on intuition, design for consumption of more or less any product, whether a physical good or an intangible serviced, concerned describing and analyzing cross-sectional and demographic data about consumers’ places of work and about their favorite place of purchases, and concluding from these starting points for industry what was the kind of design that was needed. Last year’s data about consumption was useful for designing offerings to be launched in a year or two.

Still in the 1990s, research on sub-cultures, communities and tribes of users and consumers still focused on the how rate of change by which these regionally-based cultural systems formed, arranged, rearranged, destroyed over time in particular local cultural systems was accelerating (Lash & Urry 1990). By the turn of the millennium, focus shifted on how the prophecies of a global and post-modern era were beginning to turn into reality (e.g. Miles 2000). Now, those prophecies are beginning to be a reality.

What has by now clearly changed and is different from the context of the past is that globalization, digitalization and cultural change have disrupted the earlier modern-industrial model. Consumers increasingly personalize their lifestyles; they travel, commute, listen to music and play games in ways loosely if at all coupled with where they live or work, or what is their age or gender or education. When the consumers use a digital device such as a mobile phone or a tablet, they leave real-time traces of their consumer lifestyles in a cloud of big data.

Marketing and design research have increased understanding on new kinds of “sub-cultures”, “consumption communities” (Boorstin 1974 in McAlexander, Schouten & Koenig 2002); and “consumer tribes” formed out of such sub-cultures and communities (Cova, Kozinets & Shankar 2007; cf. Djelic & Ainamo 2005; Kotro & Pantzar 2002). A tribe differs from a community in that the former is a fully blown cultural system with an integrated set of commonalities and identification of community members with a geographical space, an occupation, a leisure pursuit, and a consumption patterns such as devotion to a specific brand. In a community, the commonalties or identification relate to only one of these kinds of

dimensions. In a tribe, the commonalties and identification function across multiple dimensions, resulting in tight coupling, high integration, and strong identification.

At the other extreme from a tribe, a sub-culture is weak form of a cultural system that exhibits commonalties and identification in degrees that are weaker than in a community (Figure 1). These three forms of a cultural system are well known as cells of 1A, 2B and 3C of the cultural matrix, with other forms (1B, 1C, 2A, 2C, 3A, and 3B) being less known. Let us first elaborate further on what are sub-cultures, communities, and tribes.

C. Fully blown cultural system			3C Consumer tribe
B. Identification		2B Community	
A. (Pro)active use	1A Sub-culture		
	1. Users toy with, transform product	2. Users evolve a social commonalty	3. Multiple commonalties evolve

Figure 1. User characteristics and developmental “stages”: Sub-culture, community, tribe.

Sub-cultures. Whereas earlier consumers were passive recipients of the marketing efforts of manufacturers of goods, in the 20th century consumers began for the first time in large numbers to toy around with new product and service launches. Consumer use of new technologies over time transformed these technologies and their use in ways that have serious consequences, still today (Pantzar 2003). Outlier and deviant ways of use become meaningful as replicated, became topics of social interaction, and changed behavior associated with lead users, opinion leaders, and sub-cultures. Recent advances in information and communication technologies mean that consumers in ever larger number are active, even proactive, participants in processes of design, so that we may say that choices about how to use and design an offering have become increasingly “democratized”. Lead users are increasingly co-creators, if not creators, of innovation (von Hippel 2005; Djelic & Ainamo 2005).

Communities. A sub-culture of active users becomes a community when it can be said to exhibit marked commonality or identification of users or consumers with a particular and distinct “neighborhood, an occupation, a leisure pursuit, or devotion to a brand” (McAlexander, Schouten & Koenig 2002). When commonalties and identification forge a strong link among

users so that they both as individuals and as a group engage in purchasing behavior, this specific kind of community can be called a “consumption community” (Boorstin 1974 in McAlexander et al. 2002). The advances in ICT, analysis of the big data of patterns of consumption of members of such a community, stored in a cloud, produces detailed images of each user- and consumer-member of such a community.

Tribes. We may consider that a local tribe has been brought about when, within a given geographical space, for example, a community amounts to fully blown cultural system with users thinking and acting in ways where commonalities and identification are marked and distinct across all or most dimensions of the set of an occupation, leisure pursuit, patterns of consumption (Lash & Urry 1990; Geertz 1975). With the recent ICT advances, many a tribe now exists purely in virtual space; that is, it can transgress the constraints of a particular geographical space such as the boundaries of a nation state, and, instead be a global or transnational phenomenon. Many of these tribes escapes the confines of a particular geographical space but still remains fully intact and integrated (Djelic and Ainamo 2005; Cova et al. 2007). Whereas tribes used to be phenomena confined to a particular geographical space (Lash & Urry 1999), this is no longer necessarily the case. More often and more significantly than earlier, use and consumption in our postmodern era are increasingly cosmopolitan.

A cosmopolitan tribes transcends the boundaries of a particular geographical space and ecosystems that traditionally have less external than internal contact. This is not to say that a member of a global tribe could not retain characteristic cultural features in terms of her location, amount of use, skill level, gaming occasions, or off-gaming features in terms of her identity. But tribes, to a greater amount and degree than earlier, have cultural features that cosmopolitan ones. A tribe comes about more and more often first either on the Internet as “social media”, only later to spill over into traditional media (Jing Wang 2005), being less and less a traditional or urban phenomenon a given geographical space “on the street” as in the past (Geertz 1973; Djelic & Ainamo 1999). Even if there is no reason to assume that the three modes would out-rule each other, of the two modes of the street or social media, the virtual mode would increasingly appear to dominate the street-culture and traditional-cultures ones.

## *User and Consumer Tribes, Game Design, and Games Execution*

In the industrial-model or off-line design, such as those related to a wearable off-line computer, designers would “borrow” on the cultural features of a tribe in in another class of offerings such as a snowboard (Kotro & Pantzar 2002). In contrast, game designers tend to build on schemas and scripts within their own class of offerings rather than borrow on the cultural features from another one. According to Douglas & Hargadon (2001):

*game innovations tend to be adopted most rapidly when their newness is domesticated, so to speak, by design features that invited us to treat the new object as if it were merely an extension—albeit an improved one— of a familiar object or device. Early video games like Pong stuck to the simple, rigid schema of a ball game with the ball batted between players or against walls. Later successful video games drew off arcade staples that involved escaping through mazes—an approach drawn loosely from the pinball schema—or raining bullets on would-be protagonists, a schema drawn from that staple of county fairs everywhere, the shooting gallery. The result: a game that imposed rigid rules, drawn from already familiar games which could thus be immediately grasped by users... game designers have encountered difficulty whenever they have attempted to stray into territory where no dominant schemas reign.*

In the design language of those in the consumption community for gaming, a game designer is often herself a “user” – even a “manically obsessed” user who may calls herself a “player” or “gamer”. At best, the designer is “engaged”, even in a state of “flow”, knowledgeable and discerning about what makes a good game and how to use it, as a result of such “immersion” (Douglas & Hargadon 2001). To offset this in-built conservatism, game designers have long had a strategy to somehow “invite users to interact” (Douglas & Hargadon 2001) with the game and, at least indirectly, with them as designers. When this strategy does not work well, at the worst, the designer-user is “addicted” (Ainamo & Tammi 2013).

On the other hand, the recent advances in ICT have had implications in new ways of not only for use and consumption, but also for design and what is in this paper called execution. In on-line games, gaming and other information and communication technologies enable a games executive to



move from assembly to “modular-coding schemes” (Baldwin & Clark 2001) and “customization” (Djelic & Ainamo 2005). Taken alone, market tests with a few highly engaged leaders or as customization to a few test users are both windows often too small to fully reveal the cultural behavior of users. In other words, small numbers lessen opportunities to include appropriate consideration of elements such as demography, lifestyle, and a whole cultural ecosystemic complex of big data that might be able to show how much more than gaming may matter in discovering or designing, exploring or exploiting, a consumer tribe around an offering building of recent advances in ICT (Djelic & Ainamo 2015), such as an on-line mobile game. Within this context, boundary control of what is considered legitimate peripheral participation a tribe has been in design research found to be a useful approach (Haverinen 2012; McGee 2003; Lave & Wenger 1991); that is, the extent that a tribe exists in virtual or real space where the boundaries are open or closed.

With these starting points, in this paper, we inquire into the extent it makes sense that designers and executives in gaming belong to the same tribe as do the realized and intended users of their game. These findings are based on working with informants such as Peter Vesterbacka, marketing director at Rovio Entertainment, with others at Rovio, with Bror Salmelin, Senior Advisors for Innovation Systems at the European Commission, as well as with Samuli Syvähuoko, founder at Remedy and, later, of Gaming Mill.

## **Research Context**

### *Three Games And Their Design, Execution, And Use*

In this paper, we operationalize our emerging framework with two highly successful sets of commonalities of and identification with by users of a game, and its underlying design and execution: “Minecraft” by Mojang and “Clash of Clans” by Supercell. In all three cases tribes are a crucial element in shedding light on contemporary game design as they both have spun various tribes around them.

Another commonality across the three game design and execution is that, given the conservatism of the typical game designers to keep to established and well-known styles and genres of games, games executives have taken measures to off-set the in-built conservatism in gaming communities (that is, communities of both game use and consumption and communities of game design). There are specialized external providers of tracking and analysis of big data the services of which the games executives

of many of the best gaming studios employ. With both intra-game and extra-game knowledge and language of design, service providers' big data and its analysis enable more detailed and precise and knowledge than earlier and elements for visions of user and user lifestyles, preferences, wants, and needs, at the level each individual user, her possible purchases, as well as her associations with various group and communities.

Findings from analysis of big data afford precise and real-time information not only about one user, player or game, but how use and consumption patterns of N users, players and games are associated and appear to interact. Sometimes game designers create and analyze big-data samples of as of yet non-existing sub-cultures (a small niche group, a community, a tribe) to simulate or semi-simulate a cultural element to which some niche group may "latch on to". At other times they "mash up" big data about consumers to invent a tribe that does not really yet exist. Often explicitly they know that they belong to a tribe (see e.g. Minecraft Books 2014; Tribal Battles 2013; Forbes 2011).

From the perspective of a games executive, a good game locates at the "sweet spot" or heart of many lifestyles, many ecosystems, and involves at least one cultural system as source of cultural schemata. Massive success is more probable than otherwise when playing the game carries on also one way or another onto "face-to-face" encounters; that is, social encounters matter in any tribe.

Thus, a game designer and games executives can take on somewhat of a different role. Game designers tend to be an in-born or trained member of a tribe. In contrast, games executives responsible for launching and marketing a game tend to leverage big-data analyses of the possible on-line purchases by each user, the user's possible purchases of add-ons or a premium version of this game. Working together, designers and executives can leverage the above kinds of tribal membership and analyses of the big data to figure out the extents that users can be clustered into a like-minded group or like-minded groups, and how the users' patterns of free use leveraged into realized or potential purchases.

Let us next take a look at a few of the differences across the three cases.

The open tribe around "Minecraft" by Mojang. "Minecraft" is "an indie sandbox game". By "indie", the design language of the gaming community is that the game originates from outside major studios such as Ubisoft and Capcom that have long employed thousands of people.

“Minecraft” started as a one-man project. Markus ‘Notch’ Persson started working on the game alongside his daytime work. After a few years, his daytime work to focus solely on finishing “Minecraft”. Hence, Mojang, his game studio publishing Minecraft, was born.

In essence, “Minecraft” is a game with no clear objectives defined by the game itself. There are no boundaries or tasks. The game is about “building things”. The building materials are various “cubes” (e.g. wood, ore, water). These cubes are “mined” in the game and further refined by the player to produce other materials. The visual identity of the game takes us back to the 8-bit world in the 1980s (Figure 2).



*Figure 2. “Minecraft” by Mojang.*

While these starting ideas may appear bizarre, they may explain the success of the game: these starting ideas are sources of differentiation. “Minecraft” has become a major success both in commercial and cultural terms. Another reason perhaps behind the success of “Minecraft” is its openness and strong connection to “Lego” building blocks, the classic toys, made of plastic material and sold to children by the billions by the Danish manufacturer with the same name as its main product line. With “Legos” building blocks, children can build basically whatever they want. To the point: they can imagine as they build. Similarly, a child or an adult playing with “Minecraft” can even build a copy of “Minecraft” within “Minecraft”.

“Minecraft” has given rise to collectives, celebrities, communities and a veritable “Minecraftian tribe” (Minecraft 2013). People want to showcase their creative skills to others. Here, users are not drawn together in their attempts to beat each other, but instead to witness what imagination can create. Users of “Minecraft” at one point started posting their videos on

YouTube. Soon afterwards one of the “Minecraft” fans was recruited by Mojang to take care of their fan-community management (Goldberg & Larsson (2014).

Incentives for grouping into one or another tribe that have been designed into “Clash of the Clans” by Supercell. Supercell was founded by Ilkka Paananen and Mikko Kodisoja, two Finnish game industry veterans, in the summer of 2010. By 2014, this games studio has released three games for mobile platforms, of which their second title – “Clash of Clans” – has become the most immensely popular globally. “Clash of Clans” has not been only a commercial success, but has given rise to many communities and tribes.

The game itself – a tablet-first strategy game (Figure 3) – places a lot of emphasis on “clans” or sub-tribes. Users are encouraged by the game design to group together in order to defend themselves and attack from other clans. While it is completely possible to play on your own, advantages for joining one or another clan in “Clash of the Clans” have been designed attractive with various incentives. Moreover, various kinds of punishments to the obstinately sole user have been designed as various kinds of disadvantages.



Figure 3. “Clash of the Clans” by Supercell.

Most users join and form clans also for two other purposes: purely social reasons or to outperform competition. In the first case, clans are formed by friends. The game is a medium to chat with other users in one’s clan. (One anecdote tells a story of a man whose car’s tire broke down and he asked help from his friends through Clash of Clans).

In the latter case, users in a clan have a common interest in a “desire for fame and glory”. For competitive purposes, some clans collude into meta-clan communities online so that people can discuss and hone their strategies and tactics with fellow clansmen and -women.

Tribe as a metaphor in “Angry Birds” by Rovio Entertainment. Rovio Entertainment was formed in 2003 by Niklas Hed, who was 29 at the time, with the name of Relude, after he and two friends won a competition at the University of Helsinki to create a multiplayer mobile game on one of the very first Nokia smartphones. The team spent most of its time developing games for EA, Namco and Real Networks, without any distribution or marketing muscle of its own. By the winter of 2006 the company was nearly bankrupt. Niklas was forced to cut his staff, from 50 eventually down to 12.

Then, in March 2009, Jaakko Iisalo, Rovio’s chief designer, sketched hundreds of characters, until finally in March 2009 he sketched a bird—and it looked angry. “There was something about that bird,” says vice president of franchising Ville “Bird Whisperer” Heijari. “We knew we had something.” The team tweaked the game and its characters until they found themselves playing it nonstop. Birds were given different colors, squawks and abilities such as extra density, acceleration and the power to lay explosive eggs in the air before winging off their parabolas from the counterforce of laying eggs. And to justify why its birds were angry, Rovio added egg-grubbing pigs. In “Angry Birds”, a user launches vengeful birds at greedy pigs (Figure 4).



Figure 4. “Angry Birds” by Rovio Entertainment.

Rovio worked with U.K. games publisher Chillingo to polish the animation and work out a plan to keep rolling out new updates, so Rovio could stay in contact with its players. The release of “Angry Birds was initially lost in the December 2009 holiday noise and for its first three months looked like another flop. Then in February 2010 Apple agreed to feature the game on the front page of its app store. To coincide with the

feature, Rovio created an animated YouTube video about its pigs and birds, a free, stripped-down version of the game and 42 new levels. Within three days of Apple featuring Angry Birds, the app jumped from the 600th most-downloaded app to number one.

After USD 42 Million from investors Accel Partners, Felicis Ventures and the founders of Skype, Rovio moved into conquer new markets and transform its plump birds into brand monsters à la Disney—an ambitious strategy for a mobile game that was on the brink of insolvency 18 months ago. After nearly eight years and 51 tries to lay a golden egg, since this breakthrough in 2009 with “Angry Birds” it has been doing everything possible to cook it right.

Even if Rovio would prove out to be a one-hit wonder in terms of games, the studio has been ensuring it is as broad and profitable a wonder as possible. Vesterbacka, with Hewlett-Packard at the time of the 2003 competition, became the studio’s “Mighty Eagle” or marketing director. The game has spread, like bird flu, from Helsinki to mobile phones to the Web and on-line stores such as Amazon. The “Angry Birds” brand is now so well-known it’s hard to imagine this all going away even if the game itself would disappear. In an uncanny metaphor, Peter Vesterbacka has shown to a journalist how children—in loincloths— from Peru’s Yagua Tribe that play Angry Birds somewhere in the Amazon (Forbes 2011).

Rovio’s plans for “world domination” are twofold. Rovio’s “Mickey Mouse strategy”, as Vesterbacka calls it, involves expanding into toys, shirts and cookbooks. The complementary plan is a “Tetris strategy” of expanding across every platform imaginable. What Rovio is not doing (that most gamemakers do) is building a stable of decent games. It’s a risk but less of one than it used to be, given the billions of devices in the hands of consumers. Rather than focus on how to design and execute new games, Rovio has since 2011 been producing a series of short animated films that back into the tale of why its birds are so furious with these pigs in the first place. It has moved into playgrounds and education. In sum, Rovio have “created a clever game app and built it into a cultural phenomenon” (Disney executive in Forbes 2011). The Economist (2014) has argued Rovio Entertainment is Finland’s most valuable brand when it comes to ICT startups, followed by Supercell (and Grand Cru, another gaming studio, in third place, Table 1, next page).

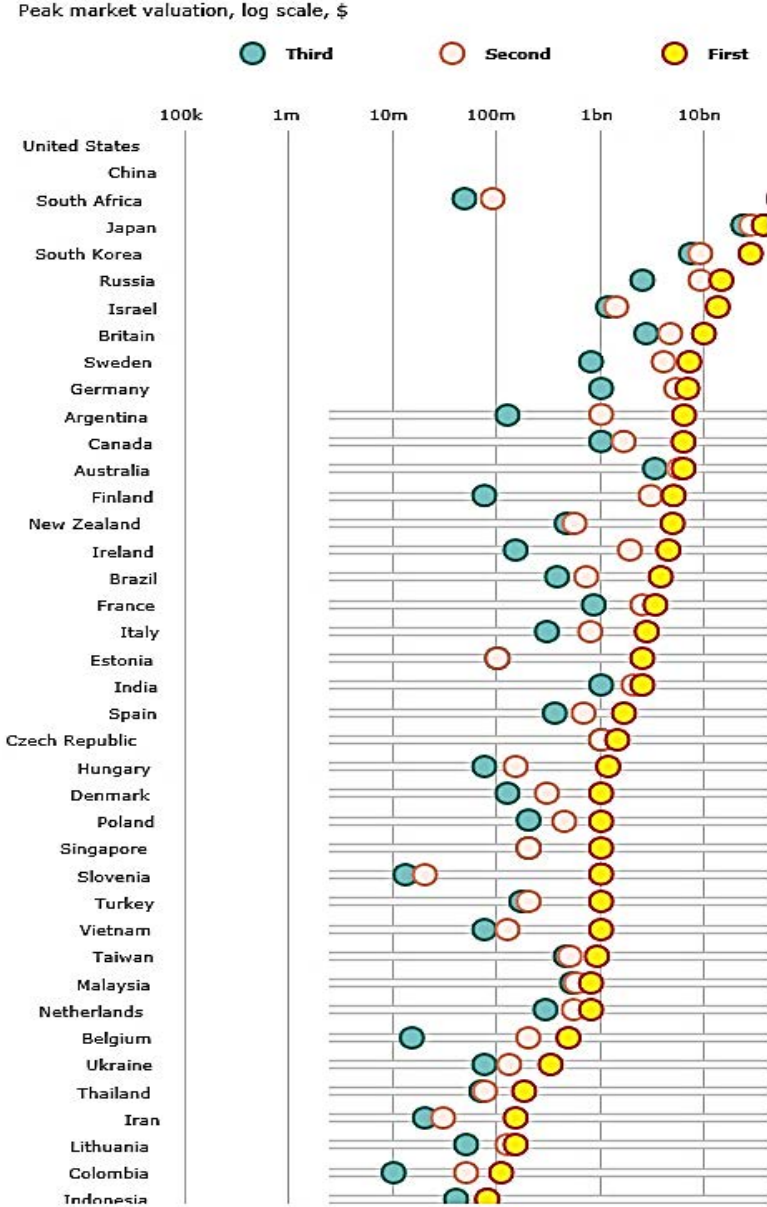
## **Discussion, conclusion and implications**

To what extent does it make sense for an on-line-game designer and executive to be a member of an on-line-game consumer tribe? If the membership does make sense, how to be a member; that is, what kind of a role or roles should she take? In answering these kinds of questions, this paper adds to both design and marketing research. The review of earlier design-research literature in this paper shows that the model of a fully blown cultural system for one’s own tribe can come from a game designer’s own focus of professional interest (Douglas & Hargadon 2004), rather than from a hobbyist pursuit. The case of “Minecraft” in this paper’s empirical section, building on ethnography, shows that a community may from a games-executive point of view be a more highly developed form of organizing use, consumption and design than is a tribe. Findings of earlier design research on a wearable consumer device for measuring impacts on human body of physical exercise imply that designers and executives ought both to be members of a consumer tribe and in ways similar to one another. By virtue of both the designers and executives being members in a tribe of snowboarders, the benefit would be to understand from user and consumer perspectives what is a tribe and how to design and executive the wearable device (Kotro & Pantzar 2002).

Research in marketing has implied that a consumer tribe evolves in developmental stages, from a community that, in turn, forms on the basis of a sub-culture of lead-user innovation. Tribe is in this view the most developed form of organizing of the three modes of organizing – sub-culture, community and tribe – and sub-culture the least developed. Hence, the implication has been that one ought to be a member of a tribe more than a member of a community or a sub-culture.

To answer the first of the two research questions in this paper, we conclude that a game designer and games executive both have discretion to be or not to be a member of a consumer tribe. Our review of literature points to how there are advantages in being a member of a tribe (Kotro & Pantzar 2002) and cloud computing and big-data analysis make it increasingly possible to be a member the consumer tribe for one’s own game.

Table 1. ICT startups around the world, 2014 (Case of Finland: 1. Rovio, 2. Supercell).





On the basis of the empirical section, we find that to take on two or three roles – user, designer, executive (“Minecraft” before reform) – appears to have drawbacks in comparison to taking on one or two roles (“Clash of the Clans”, “Angry Birds”). We find an analytic strategy (“Clash of the Clans”) is made most effective when the executive-analyzer is independent of phenomenon modeled and analyzed. There are advantages to being liberated from the daily detail of tribal affairs, and disadvantages to being enmeshed with these affairs (“Minecraft”; “Angry Birds”).

We take it that “Minecraft” is an example of a taking a game-designer role in treating the above kind of creative tensions, and “Clash of the Clans” is an example of taking a games-executive role in treating these creative tensions. The case of “Minecraft” suggests that a designer and executive like ‘Notch’ Persson in the Mojang indie studio initially appeared not to care about the users from the monetization perspective, but instead focused on designing the game that he himself would like to play. While it is in principle possible to be both game designer and games executive both at the same time, this is in practice probably a feasible solution only in the early phase of a game-design studio, before success would appear to change logics of how to design and execute games. Even Rovio Entertainment (and not only Supercell) shows clear differentiation in roles.

According to this paper, a tribe of consumers may emergently form around a game (“Minecraft”), be synthesized from big data already in the design phase of game (“Clash of the Clans”), or be discovered through analysis of big data about use and consumption (“Rovio”). Over time, the three modes of tribal evolution may encounter each other and co-evolve; over time, some of the new practices from the consumer tribe can travel into game design and execution, affording translating and transformation, and even vice versa (“Minecraft”). The three modes of organizing of use, design and execution are a primordial and tribal mode, an industrial and modern mode, and a post-modern mode. Let us briefly describe each of these three modes, in turn:

A tribe is a primordial form of organizing use, design, and execution. In this first mode, we argue that a genuine tribe of users exists, akin to the traditional anthropological notion of what is a tribe. This mode represents a “primordial” (Djelic & Ainamo 2005) form of creativity and innovation. A user does not change her life style, way of life, or relevant set of cultural meanings according to each cultural offering, but is quite resilient, even rigid, as to the cultural schema that she is most acquainted with.

In any games studio we have analyzed in this paper, there appears to be both a bright side and a dark side to tribes in game use, game design, and games. In the case of “Minecraft”, the result has been what Douglas and Hargadon (2004) call a flow experience for a user. The flow experience has not run amok, requiring ever more large doses of immersion, until all the characteristics of addiction are in place, and a collapse of psyche of the user’s psyche (Ainamo & Tammi 2013). The advantages of a consumer tribe outweigh the disadvantages of potential addiction.

A sub-culture is a modern form of organizing use, design, and execution. The game may be a robust design in that even resilient active use by users will not upset the way the game works (“Clash of the Clans”). As the sub-cultures takes shape, users start off playing for free (“free to play”, F2P) and end up paying for add-on services and premium services. There is no integrated set of cultural meanings. Rather, the consumers are like clogs in a machine, parts of the system more connected by their set of purchases of the game and its format than by any modern notion of advances in technology or in truly autonomous knowledge.. The big data about the users and consumers are treated mechanistically. In this mode, no tribe in the formal sense exists but, rather, a sub-culture connecting users is deliberately synthesized, designed, or created, on the basis of analysis and interpretation of big data in a cloud. Over time, when this kind of synthesis works well, the immersion of users develops into engagement and a flow experience.

A community is a postmodern mode of organizing use, design, and execution. In between the primordial and the postmodern, a creative tension may exist when modes of emergence and design coexist or coevolve (“Angry Birds”). In this third mode, we consider that a community rather than a tribe exists. This is a fluid mode in the sense of being porous, leaking in a semi-controlled way both in and out.

Designer-executive differentiation makes sense in sub-cultures and communities. In the “indie” or independent studio such as Mojang, game design is the driver. There was originally little differentiation between designer and executive roles. In contrast, at Supercell and Rovio, design and execution exhibit a differentiation of roles in between game designers and games executives. Games executives at Supercell make sure that the games that are produced are all estimated to sell well. It is a mainstream studio, very different from Mojang, a studio that is part of the indie scene. In between these two extremes is Rovio Entertainment, both when it comes to design and when it comes to execution, or development, planning, ramp-up, and launch.

Games executives can find advantages into how to target marketing – for tribes, sub-cultures, or communities and sub-tribes –so that the users are normatively compelled, addictively coerced, or for reasons of membership in a fashionable community motivated to spend money in the game. This kind of modularization and recombination of modules appears most deliberately true in the case of Supercell, the mainstream studio. The Supercell games executives ask how to create new games and new “clans” or sub-cultures around them so that users feel more immersed in the game, more engaged with each other, and everybody have a “flow” experience. In “Clash of Clans”, tribe thinking is designed in. Without a clan, a user will find it much more difficult to defend against attacking users as gamers than in a clan: the game design is that users are supposed to form clans in order to progress in the game.

In the case of Mojang, the indie studio, tribe thinking is emergent. Given recent modularization and recombination, there are signs of a transformation of both the consumer tribe and the original design-driven strategy. The tribe around “Minecraft” has not been consciously designed into the game but has evolved organically, side by side with the rising popularity of the game. At Mojang, its indie designers and executives do not opt for a “free to play” (F2P) monetization scheme. Rather, they are taking liberties from such analytics as they create a game, let a tribe evolve, or both. Then again, the dark side the success of “Minecraft” is that, with success, the indie studio will develop more mainstream ways.

In the case of Rovio Entertainment, it is unclear whether the dualistic tribe thinking in terms of “Mickey Mouse” and “Tetris” is tacit and fuzzy purposefully or emergently. Games executives less than at Supercell but more deliberately or consciously than at Mojang aim to create F2P and tribes and analyze big data to categorize users and gamers.

In sum, in this paper, we have shown that there are more than one mode on how users, designers and executives can be members of one or another tribe. We have introduced an approach on how to align findings in marketing research on consumer tribes with findings in design research on being design- or execution-driven, a topic of great interest not only for research but also for contemporary commercial and design practice. We call for further research on how and why consumer tribes related to on-line mobile games shape and are shaped by elements such as passionate hobbyism, a passion to monetize, and occasions of serendipity. We do not expect that these kinds of elements will distribute equally across users, games, designers, executives, and studios. Important research implications

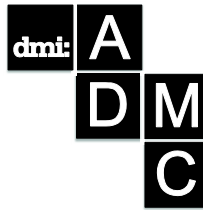
for both design research and marketing research relate to postmodern communities, in particular. What are differences across organically evolving virtual or Internet-based tribes and synthetic sub-cultures after analysis and interpretation of collection, analysis and interpretation of big data in the cloud? To what extents are creative tensions between designers and executives resolved? Given the existence of more than one mode of organizing, in what modes are designers liberated, in what modes is corporate control improved? How to combine such advantages?

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# Sustainable Fashion: a re-conceptualization of the role of fashion design

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*Design thinking is increasingly considered as a valued strategy for innovation and the development of solutions for sustainability. Consequently, the role of the designer as a problem solver has evolved along with the emergence of design management within academic discourse. The adoption of a systems thinking perspective is increasingly recognized as a key strategy for sustainable development. However, fashion designers rarely identify themselves within the role of problem solver nor do they design for sustainability or with a systemic perspective. This paper looks to conceptualize the emerging role of fashion design in driving innovative solutions for sustainability. The paper draws upon ideas and developments from design-driven innovation, user-centred design and corporate sports giant Nike in formulating a re-conception of design. Design-driven innovation pushes for new product meanings and languages while user-centred design focuses on the application of design through a better understanding of the user and their needs. Nike is explored for their innovative development of the Nike+ platform, a service that expands the consumer experience, thereby increasing brand and potentially product value. Products developed in tangent to the Nike+ platform have highlighted the ability to induce behaviour changes in regards to physical activity. This phenomenon warrants investigation as to the applicability to consumption behaviours and patterns within the fashion system. This highlights the importance of the evolving multi-disciplinary role of the fashion designer for a sustainable fashion system*

**Keywords:** sustainable fashion design; Nike; sustainable consumption

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## **Introduction**

Fashion design is a complex process that involves a number of trade-offs between aesthetics, cost, time, and consumer preferences. The fashion design process often unfolds in an ad hoc manner. Typically, designers employ an “anything goes” attitude where the key objective is to produce something original and marketable. Considerations beyond aesthetics, such as negative impacts from production or consumption, rarely play a prominent role in the design process. Apparel is typically designed and worn to serve a relatively narrow niche focused on one of comfort, function, or style. Efforts to simultaneously address all three of these functions are uncommon.

Currently, the clothing and textile industry is one of the largest global industries. This is largely due to dramatic changes in recent decades, driven by a desire on the part of the consumer to continually update their wardrobes, thus increasing the scale of fashion production and consumption. Social and experiential dimensions influence consumption patterns while fashion obsolescence is largely driven by aesthetic change that is typically tied to changing social preferences. Lifespans of fashion apparel is affected by the various nature of psycho-social factors that underscore changing social preferences (Fletcher, 2012).

Mass production and consumption of fashion apparel has significant negative environmental and social impacts that have rendered the industry unsustainable (Niinimaki, 2011; Niinimaki & Hassi, 2011; Fletcher & Grose, 2012). Negative environmental impacts are increasing during material cultivation, production processes, use and disposal and are experienced through increased pollution and waste, resource depletion, toxic chemical use and climate change (Hethorn, 2008; Esslinger, 2011; Fletcher & Groese, 2012).

The fashion industry can no longer afford to maintain the status quo of rapid trend-driven products. There is a need to address the environmental and social impacts of the fashion industry in a systematic manner. A number of authors have recognized that this necessitates a focus on the practices within the focal firm and its supply chain (Fletcher, 2008; Hethorn, 2008; Gwilt & Rissanen, 2011), although the literature often approaches these challenges in a piecemeal way. Critically, any effort to reduce the adverse impacts of fashion production and consumption must also explicitly take consumer behaviours into account (Niinimaki, 2011; Niinimaki & Hassi, 2011; Fletcher & Grose, 2012; Armstrong *et al.*, 2014). This issue is often overlooked.

Fashion, like sustainability, is a concept that is well understood yet suffers from multiple constructs, definitions and theories as to its role within modern society. Fashion also appears in many forms such as luxury fashion, couture and fast fashion (Beward, 2003; Brand & Teunissen, 2006). For the purposes of this paper, fashion is referred to as an umbrella term encompassing its various forms where aesthetics and obsolescence dominate over functional use of apparel products. Fashion design therefore functions within the design mandate of aesthetic considerations and appeal of apparel and the associated meanings (Barthes, 1983; Entwistle, 2009). Therefore, environmental and social concerns are largely, at best, a peripheral consideration in fashion design, production and consumption (Fletcher, 2008; Gwilt & Rissanen, 2011; Fletcher & Grose, 2012). Design elements are paramount in how a consumer engages with a product or service. Fashion at large is thus valued not for materiality but the symbolic function of aesthetics, eroticism, knowledge, status or power (Simmel, 2003; Veblen, 1899/2009; Svendsen, 2006; Barthes, 1983; Loschek, 2009). However, digital technology, expansion of communication and globalization have allowed for mass participation of fashion, thereby shifting a greater emphasis to the experience of fashion. Services have become more important as globalization now emphasizes knowledge and experience (Van Halen *et al.*, 2005; Armstrong *et al.*, 2014).

This conceptual paper argues that the fashion design process must be modified to account for environmental and social impacts associated with production and consumption of fashion. The logic in focusing on the design process is that it is at this point that the greatest potential for reducing those impacts exists (Walker, 2006; Niinimaki & Hassi, 2011; Fletcher & Groese, 2012). Design thus plays a critical role in the overall sustainability strategy of any fashion brand. This paper looks to conceptualize the emerging role of fashion design in driving innovative solutions for sustainability. This is accomplished through ideas and developments drawn from design-driven innovation, user-centred design and the initiatives of corporate sports giant Nike in formulizing a re-conception of design. While design-driven innovation seeks new product meanings and languages, user-centred design focuses on the application of design through better understanding users and their needs. Nike is examined for its innovative development of the Nike+ platform, a service that expands the consumer experience—thereby increasing brand and product value. Products developed in tandem with the Nike+ platform highlight the capability of



design to induce behaviour changes in regards to physical activity (well-being, healthy lifestyle).

## **Design**

Design is increasingly seen as a valued strategy for innovation and the development of solutions for sustainability. The role of the designer as a problem solver has evolved and design management has emerged as a focus of academic discourse (Fletcher, 2012; Niinimäki, 2011). The adoption of a systems thinking perspective is increasingly recognized as a key strategy for sustainability. However, fashion designers rarely identify themselves within the role of problem solver nor do they design for sustainability or with a systemic perspective (Fletcher & Grose, 2012). Fletcher and Grose (2012) describe systems thinking as a “way of thinking [that] transcends the binary (i.e. either/or) perspective that frames production and consumption activities as separate and consecutive and the linear view of how resources flow through the supply chain, sometimes described as ‘take, make, waste’” (p.11). A systems thinking perspective is needed in developing a sustainable system, as there are a broad range of social, economic and environmental factors that necessitate consideration. System transformation cannot occur by only focusing on a few isolated parts such as supply chain sustainability but on all parts that make up the system. As designers begin to introduce the concept of a systems thinking into the design process, the function and boundaries of the system must be clearly defined.

Fashion design within the nineteenth and twentieth centuries has largely concentrated on aesthetic values and symbolism of power and status (Breward, 2003; Brand & Teunissen, 2006; Svendsen, 2006). Symbolism of power and status were demonstrated through the ability to create and consume new styles of dress, i.e., fashion, distinguishing a higher social class. Aesthetic values were shaped and associated with symbols of power and status, as social classes with power and status had the means to participate in fashion. Thus the key driver for fashion was maintaining social class differentiation, creating a product-orientated production culture. The semiotic significance of power and status as a signifier for class differentiation dissolved as technological developments with respect to materials and processes transformed the accessibility, function and consumption patterns of fashion clothing.

Within contemporary culture, fashion is one of the most important forms of expression. Fashion by definition, perpetuates renewal, creating

new systems of meanings (Brand & Teunissen, 2006; Breward, 2003). The process of fashion moves through several modes of action and experience encompassing designers, manufacturers, retailers, brands, marketing and consumers. Fashion is context-dependent and not free of artistic and emotional motivations, effects of technology or consumer demand. The cycle of innovation and obsolescence, which characterize fashion trends, are the culmination of impacts from cultural and societal changes. A strong characterization within modern fashion is the value of fashion for its prioritization of temporal notions of aesthetics/style over functional considerations of wear (Breward, 2003; Svendsen, 2006; Entwistle, 2009).

## **Sustainable consumption, meaning and value within the fashion system**

Greater participation in fashion inevitably leads to greater consumption of fashion products. Faurschou (1987) provides an example of a viewpoint on the nature of the relation between fashion and consumption, “fashion is the logic of planned obsolescence—not just the necessity for market survival, but the cycle of desire itself, the endless process through which the body decoded and recoded, in order to define and inhabit the newest territorial spaces of capital’s expansion” (p.82). Fashion consumption is leveraged by the ease and accessibility of fashion products brought about by technological advances.

Consumption is identified as a central challenge to achieving sustainability (United Nations, 2002; EU, 2006). In spite of substantial technological innovations with the capacity to mitigate environmental impacts of products and production, consumption has increased; as a result the environmental impacts in many areas have increased. Sustainable supply-chains alone will not eradicate or amend the deeper issue of fashion consumption. Fashion consumption is now an area of concern, in particular as a result of the expansion in consumption promoted by fast fashion. Mass fashion consumption has been identified as detrimental to the environment. It can be argued over-consumption of fashion products is in direct conflict with the philosophy of fashion. In the pursuit of communicating through fashion as a system of meaning and signs, the profusion of accumulation merely puts more obstacles in the way of relating . If one is communicating, “through objects then proliferation blocks that communication” (Baudrillard, 2003: 5), thereby nullifying the original intention of fashion as a

system of meaning. Thus, over-consumption is not only an impediment to sustainability; it undermines the very philosophical underpinning of fashion.

The excessive consumption associated with fashion has affected concepts of value. Considerations of the predominant value-based paradigm are imperative as value is intimately linked to objects and is a powerful force in terms of influencing consumer behaviour. The study of value is complex as sign value is ephemeral whereas commodity value can be captured. Fashion has managed to distort the association between commodity value and sign value. Consumers no longer have widespread knowledge of apparel construction, labour and resources involved and repair. The loss of intimacy with the production process has led to a loss of value for the process and the associated resources. This has contributed to the decreasing commodity value, thereby altering the meaning and sign value associated with symbolic exchange. The significance of the symbolic exchange within fashion suggests consumption is greater than the tangible acquisition and use of clothing. The experience of fashion clothing is arguably a more significant aspect.

This emphasizes the need to construct new value creation within the context of fashion for sustainability. If value is to change, the relationship between the consumer and a brand must be redefined, as consumers are part of the value chain. This will facilitate reconceptualization of meaning and value in the symbolic exchange of fashion apparel. Krippendorf (2006) largely advocates the need for design to focus on semantics for meaning and value creation for products rather than intended use. A more user or human-centred design philosophy can aid designers in conceptualizing meanings for consideration during the design process (Krippendorf, 2006).

Designers can play a significant role in new value creation through consumer engagement, innovative technologies and business model development. It has been found that consumer behaviour can have a significant influence on the environmental and social impact of clothing (Fletcher, 2008; WBCSD, 2008). However, efforts thus far are unsuccessful in fundamental transformations in consumer behaviours. Adoption of sustainability innovations must fulfil consumer wishes and needs and “fit” into everyday lifestyle to change consumer behaviour (Schultz & Stieb, 2006; Hoffman, 2012).

Reconceptualization of fashion, design, value creation and meaning in building a sustainable fashion system requires systems thinking. Sustainable production and consumption entail more than reducing supply-chain impacts or re-designing products—all facets of a system require change.

However, it is difficult to modify one aspect of a system without changing the rest (Tukker, et al., 2008; Meadows, 2008). “Production, markets and consumption form a regime of an interdependent and co-evolving set of technologies, symbolic meanings, services, consumer practices, rules, interests, financial relations and expectations” (Tukker, et al., 2008:1219). Therefore, in the process towards sustainability, consumers as a part of fashion system, have a decisive part to play. Innovations for a sustainable system often require changes in consumer behaviour, therefore identification of key factors facilitating and obstructing adoption is necessary (Knot & Luiten, 2006; Hoffman, 2012). The following table (Table 1) outlines further implications for designers presented by Vezzoli and Manzini (2009) in conceptualizing a design process for a sustainable system.

*Table 1: Implications for designers in designing for sustainable products, services and systems (Source: Vezzoli and Manzini, 2009).*

- Design as a solution-orientated process as opposed to a product-orientated process (a redefinition of the object of designs action).
- A reorientation of skill and capabilities towards sustainability in both problem-solving and communication.
- Initiate design process with problems for which Product Service Systems may perhaps be the solution as opposed to products.
- Address the design of products for function rather than physical product itself.
- Build on traditional skills to address environmental, social and economic issues.

## **Product Service Systems (PSS)**

It has been argued that within modern or postmodern societies, a multidimensional understanding of the role of consumers and how they consume serves as a platform for developing sustainable changes and strategies (Sto, Throne-Holst, Strandbakken, & Vitterso, 2006; Schultz & Stieb, 2006). One method for fashion brands to better understand the consumer is through interaction, which also allows for the identification of opportunities for value creation. Engaging consumers in the co-creation of value has led to inventing new competencies and business practices. The process also provides essential information on consumer needs and wants. Innovations are also more market-oriented when they can be more closely adapted to consumer wants and needs. Nike has demonstrated many positive outcomes in the form of product-service systems (PSS), innovation, and value creation by continuously interacting with consumers through social media engagement platforms.

A PSS can be defined as an innovation strategy integrating a combination of products and services, jointly capable of fulfilling specific client demands and embracing a service-led competitive advantage (Manzini & Vezzoli, 2003; Mont, 2002; Van Halen, Vezzoli, & Wimmer, 2005). The focus is shifted from designing (and selling) physical products to designing (and selling) a system of product and services. This strategy within sustainable design discourse addresses the potentialities of a sustainable product service system (SPSS) approach in producing synergies among profit, competitiveness, and environmental and social benefits by minimizing environmental and social impacts from production and consumption (Mont, 2002; Manzini & Vezzoli, 2003; Meijkamp, 1998; Armstrong, Niinimäki, Kujala, Karell, & Lang, 2014). A promising strategy offered by SPSS is to delink value creation and resource consumption, thereby stimulating innovation and a systems thinking approach. Shifting from a “product-orientated” to “service-orientated” consumption focus, SPSS aims to enhance cultural change. It has been found that radically innovative products and services, shifting commercial focus from products to services, and related new business models offer opportunities that contribute positively to the sustainability challenges facing businesses.

The rise of social media platforms and social networking has made it easier for companies to engage consumers. Interactive consumers or consumer-led innovation opens channels for communicating thoughts and wants for better products, services or experience. This allows for co-creating value where consumers and non-consumers feel more involved by having the opportunity of speaking freely and having their opinions heard. Developing this idea further is the experience co-creation (ECC). ECC is a process enabling co-creative interactions where individuals can have meaningful and compelling engagement experiences. Nike’s ability to develop social networking through services has prolonged the consumer experience, pushed innovation within the business and increased affinity for the brand.

## **Nike and Nike+**

Nike is a global leader in athletic footwear, apparel, equipment and accessories for a wide variety of sports and fitness activities. Nike designs, markets and distributes all product ranges under the Nike umbrella. More recently, Nike is known for embedding sustainability and innovation as a key driver in achieving long-term business growth. Hannah Jones, Chief

Sustainability Officer & Vice President, Innovation Accelerator, outlines Nike's for a sustainable future:

*We are constantly integrating more sustainable ways of working across our business. But we recognize that many issues facing business and society are greater than one brand can solve alone. To achieve systemic change we must understand risk and embrace innovation as a way to accelerate positive impacts at scale. Collaboration and unconventional partnerships will be critical to our collective ability to design more sustainable business systems. (Nike, 2014: para 7)*

The following section looks at the innovative collaborative development of Nike+, a PSS that has brought Nike to the forefront of the athletic market through consumer engagement. At the moment the Nike+ PSS is not directly linked to sustainable design but demonstrates the innovative capabilities, behaviour change and opportunities to both brand and consumer from this strategy.

In 2006, Nike created the Nike+ (NikePlus) platform, a PSS for interactive engagement with runners. As a joint venture with Apple, Nike+ wirelessly links a runner to various devices, including the Nike Fuelband, GPS watch, iPod, and iPhone, capitalizing on the connection between runners and music. Users must be members of both iTunes and Nike+ online communities. This leverages the power of mobile technology to track, measure, compare, dissect current habits, and share exercise performance globally (Lui, 2013; Nike, 2012).

Through years of studying elite athletes by way of sensors and amassing data on biomechanics, Nike has concluded that athletes cannot improve what they cannot measure. The ability to provide better information provides better motivation. Nike created Nikefuel in 2012, a metric that utilizes an accelerometer to detect three-dimensional motions to measure whole-body movement and energy expenditure. The more active an individual is, the more Nikefuel points they earn, depending on their activity and intensity. The aim is to reach a personalized Nikefuel goal that is set by the user and may be adjusted daily. Wearing the Nikefuel band for most activities and the GPS watch, which is specific to running, captures Nikefuel points. By providing basic data, the Nikefuel and Nike+ system supports users in forming healthier, long-term lifestyle habits (and, possibly, long-term attachments to the devices themselves). The Nikefuel band is an innovative wearable technology, a design that evolved from the Nike+

platform and is an example of a successful PSS. The Nike Fuelband even became a favourite in fashion circles, which began when Serena Williams wore one at Wimbledon in 2012 . Permeation of innovative PSS into mainstream culture is facilitated by technology and wearable technology becoming more fashionable. This highlights the ability for innovative products and services to enter mainstream culture and the potential to influence behaviours beyond a niche market, showing great promise for sustainable behaviour change.

Unlike previously when the purchase of a product signified the end of the consumer relationship, Nike+ focuses on initiating the experience with the consumer with the purchase of a product. Nike is provided with data on why and how products are used and the preferences and behaviours of consumers . Technology has unlocked the ability to better understand the consumer experience by collecting data. Using technology, Nike created a service that has become vital to individuals as a motivation to be active and stay active.

Users have the ability to set goals and exchange information within the Nike+ community. This creates a sense of community, a sense of goals and a motivational nudge. Awareness is a powerful catalyst when users are aware of their own (and others') actions. A better experience brings value to users. Humans are driven by recognition and that is what Nike+ and the Nike+ community provides . This PSS is built on the premise of changing habits. Addressed simultaneously, motivation, intent, ability and opportunity are components likely to change consumer behaviour. Nike found a way to redefine and enhance consumer experiences by opening up opportunities to facilitate behaviour change for fitness and well-being. Simultaneously, Nike established a new way to profit from these innovative products and services along with market growth. Table 2 summarizes the benefits of the Nike+ PSS for both brand and user.

*Table 2: Benefits of Nike+ PSS for Nike and user (Source: Ramaswamy, 2008).*

Benefits Nike	Benefits User
Unique insights for innovation, design and consumer management (learning directly from user behaviour)	Motivation to run
Increased strategic capital	Ease of tracking performance and progress
Lower risks and costs with product/service development and	New experiences of value to stakeholders (consumer/user)

experiment with new offerings quickly  
Reduction in conventional advertising

Low implementation and maintenance costs (digital is a low cost form of media)  
Public evaluation increases brand preference, loyalty and advocacy (build deeper relationships and trust within communities (ex. Nike+ and running).

Data on product use, experience and user lifestyle (activity i.e. running) previously unavailable and direct input on engagement preferences with the PSS.

Lower costs (no need to pay for professional services/run club)  
Social value and recognition (sense of community)  
Functional value (access to data & ability to retrieve useful product, training information & other users insight)

Entertainment value (entertain, educate, & inspiration) in the form of videos, articles and challenges

## Discussion

The problem with contemporary fashion is the negative environmental and social impacts of the industry from production and consumption. The challenge lies in that consumption involves both the fashion brand and consumer. Inviting the role of design in tackling the sustainable consumption challenge, Manzini and Vezzoli (2003) argue that design competencies should move towards those of “strategic design for sustainability”, one example being the SPSS strategy. These systems have the capabilities to reorient current unsustainable trends in production and consumption practices. Essingler (2011) also suggests the key to the role of design in shaping an innovation-driven business model to include sustainability is involving stakeholders, including consumers. Innovations need to move beyond technological developments to include different stakeholders, stimulating new interactions and partnerships as well as new sustainable relationships between consumers and products (Vezzoli, 2007). Innovations for sustainability would benefit from a diverse set of strategies in addition to technological developments.

What Nike has demonstrated is how innovation through the development of PSS by involving the consumer has enhanced the consumer experience, thereby creating new value and facilitating behaviour change for a more active lifestyle. PSS also facilitated technological developments in the form of wearable technology such as the Nike Fuelband and GPS watch to work in conjunction with the Nike+ platform. Looking to Nike, fashion design has the ability to engage the consumer to enhance experience



through innovative SPSS in support of behaviour change for sustainable consumption. Just as activity for health and well-being is a lifestyle, so is sustainability. Nike's vision was to facilitate a healthier lifestyle by encouraging an active lifestyle through sport and not sustainability or sustainable consumption. However, it is this achievement of lifestyle change that is of interest. If Nike, through design and innovation by way of PSS in facilitating change for an active lifestyle, possibility exists for fashion design to facilitate behaviour change for sustainable consumption.

A sustainable lifestyle that incorporates sustainable consumption habits must exist within a system designed for such behaviours. Designers need to interact with consumers to better understand current lifestyles if they are to create opportunities, such as SPSS, to encourage more sustainable behaviours. Successful sustainable innovations require behaviour changes and knowledge about consumers is crucial to design products and services that are easily integrated into users' habits and everyday lifestyle. Franscara (1999) argues that when designing appropriate interfaces and interactive products, considerations to broader issues such as context, situation, moods, emotions, social communication and value systems are imperative. A product can therefore be designed to be recycled but is reliant on the consumer to fulfil this potential. Consumers need to be a part of the process as informed and active participants.

The advantage of the fashion system is the existence of strong digital social media platforms and high levels of engagement with these platforms in the fashion community. Fashion is primarily communicated through visual images and when coupled with technological advancements within digital communication, allows for immediate broadcast and diffusion. This has enabled a strong online community within fashion to permeate and exist. For the fashion industry, the visually-driven app Instagram was a natural union. Instagram has become the go-to social media platform and a critical component of fashion communication.

Fashion itself is a platform for social change thus inherently an ideal aspect within society to develop changes for sustainable consumption and a sustainable system. Therefore harnessing the power of social media platforms and online communication for sustainability strategies is not a major barrier. Fashion design has the ability to either build upon or integrate these existing platforms or develop new platforms to interact and engage the consumer. This now extends design activities to include new dimensions in the development of strategies such as PSS for sustainability. This particular analysis focused on the Nike+ platform as social media is such a

dominant aspect of contemporary society. However, there remains many alternative means of consumer engagement in developing sustainable consumption behaviours and a sustainable fashion system through a re-conceptualization of the role of fashion design. Table 3 summarizes innovative design led solutions for developing sustainability within the fashion system.

*Table 3: Summary of design led solutions for a sustainable fashion system.*

**Design thinking**, where focusing and working with designers and on the design process in developing solutions for a sustainable fashion system.

**Systems thinking** perspective where all aspects of the fashion industry are considered during the design process.

**New value creation** through a more user or human-centered design philosophy, innovative technologies and new business models.

**PSS** an innovation strategy integrating a combination of products and services to jointly fulfil consumer needs. A shift from designing and selling a product to designing and selling a system of products and services.

**Nike+**, a successful PSS where consumers are engaged, creating new value and meaning through new experiences with Nike+. By engaging with the Nike+ platform, consumers experience behaviour change in terms of leading a more fitness/active-orientated lifestyle. Nike, through design and innovation by way of PSS, facilitated behaviour change for a healthier active lifestyle.

## Conclusion

Fashion plays a vital role within contemporary culture as a visual system of meaning and symbolic exchange. Commoditization of fashion as a communication medium coupled with technological development to materials and processes has contributed to increased rates of production and consumption of fashion products. With the growing interplay between sustainability and technology, this paper looked to conceptualize the role of fashion design by examining the innovative PSS, Nike+ and its application as a potential sustainability strategy within fashion. Design is frequently cited as a key factor in developing sustainable systems and driving innovation for sustainability. The consumer and consumption behaviours are also seen as a crucial factor in developing and promoting radical changes for sustainable system innovation.

This paper contributes a conceptually driven argument as to how lessons learned from Nike and the Nike+ PSS are influencing consumer behaviour

and lifestyle change. Fashion as a social system of meaning with a strong digital communication community already in existence is the ideal platform to apply such a strategy. The aim is to harness the power of design and employ systems thinking to further engage the consumer in developing more sustainable consumption behaviours. It is crucial that the design process and the role of design transform for fashion system sustainability. While this paper focused on the Nike+ PSS, this by no means limits the development, use and/or applicability of alternative means of consumer engagement for fashion system sustainability and sustainable consumption. This merely highlights the great opportunities of the consumer engagement and design relationship for developing sustainability.

There are also many implications for designers in developing this emerging role within the sustainable design discourse. Designers and fashion brands bear a greater responsibility in developing upon the traditional design practice to incorporate considerations to economic, environmental and social issues. Designers need to challenge the concept of what fashion can be and how individuals and society as a whole interacts and engages within the fashion system.

This paper highlights areas of potential research in measuring the magnitude and effects of behaviour change from such technological innovations within wearable technology and PSS. There is also potential to investigate the further development of social media platforms within the fashion system in driving sustainability and consumer engagement. How do fashion brands and designers put in place the tools to measure the impact and effects? Also, how will fashion brands implement organizational learning of sustainability for designers to begin incorporating the principles of sustainability within the design process?

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— Chapter 2 —

**Transformational Design  
Management**

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## **Section 2a: User-Centred Design**

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# **Editorial: User-centred Design (UCD): a Disruptive Business Enabler for Sustainable Consumption?**

Debra LILLEY and Val MITCHELL

The potential of UCD as a process for enabling sustainability has been demonstrated across a range of sectors including energy (Wilson, Lilley and Bhamra, 2013) and transport (Ross, Mitchell and May, 2012). However, this often requires integration with existing established processes (Haines, Mitchell and Mallaband, 2012). The aim of this track is to explore the potential benefits of adopting a UCD approach to reduce over-consumption of resources and encourage more sustainable actions, and in doing so, gain a greater understanding of the potential influence and impact of UCD in a business context.

A number of the papers in the session illustrate how sustainable consumption and value creation are closely intertwined from both a consumer and business perspective. Newton highlights how consumers who value luxury brands are unwilling to sacrifice quality and functionality for sustainability, yet many of the values of luxury brands such as craftsmanship and durability align with the goals of sustainability. In line with this need to provide value beyond sustainability, Moreno, Lilley and Lofthouse introduce a model and toolkit developed to enable businesses to examine their potential for sustainable consumption whilst identifying opportunities to improve their business model and value proposition. Simeone's paper describes the development of an interactive platform for connecting project stakeholders within a European research project. The benefits of considering economic and organisational considerations alongside user requirements were identified, again demonstrating the benefit of taking a wider perspective on value creation. The process of value creation is also explored in depth by Williams, Malinin and Leigh who focus particularly on the relationships between disruption, perception and empowerment in relation to team creative performance.

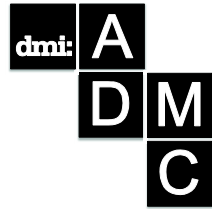
The integration of UCD into a business context brings particular challenges including how to best facilitate adoption of UCD methods and processes within existing commercial practices. Kwok, Harrison and Qin,

provide a conceptual framework for designers to enable introduction of eco labeling at the point of sale. Bryant and Wrigley discuss the integration of UCD methods into a technology driven design process within the automotive industry and identify the need for a new organizational role to support integration of user- centered knowledge and processes. Attracting investment in UCD at this level is ultimately dependent on being able to measure its impact. The paper by Minvielle et al. provides an example of a critical and systematic evaluation of a UCD method, in this case, digital ethnography.

Together the papers illustrate the diverse nature of UCD and its role as an enabler for sustainable consumption. The need to provide value to both business and consumers when delivering sustainability is identified across the submissions and tools and methods are proposed to facilitate this. Our thanks go to the authors, reviewers and conference organizers.

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# Interplay Between UCD and Design Management in Creating an Interactive Platform to Support Low Carbon Economy

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*TESS (Towards European Societal Sustainability) is a three-year research project receiving funding from the European Commission to study the potential for community-led initiatives to help deliver a low carbon, sustainable future. More specifically, TESS is interested in how existing initiatives (e.g., projects working with renewable energy, car sharing, community farming, ...) can be evaluated and supported in order for them to scale up and have wider societal impact. An interactive platform to connect the project stakeholders (researchers, industry, government, NGOs) is one of the key components of TESS. This paper documents the interplay between user-centred design and design management in creating this platform. In particular, the author organized a series of workshops where theoretical approaches and techniques from both user-centred design and design management have been applied to design an early-stage prototype of the interactive platform. The research question behind this paper is: How can design management complement user-centred approaches in the early stages of the design process? The paper will show how adopting a design management approach helped the participants of the workshops in broadening their perspective. In particular, through a design management lens, participants could reflect upon organizational and economic constraints of the project and thus refine their first prototype of the interactive platform for TESS.*

**Keywords:** user-centred design; design management; personas; low carbon economy; EU-funded projects

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## Introduction

This paper reflects upon the outcomes of some design workshops I initiated and facilitated within the scope of TESS (Towards European Societal Sustainability), a three-year EU-funded project in the area of sustainability started in 2013.

TESS targets the following questions: (a) How can innovative, grass-roots green initiatives lead to the transformational changes required to meet stretching carbon targets and wider community objectives? (b) How can the wider emergence and success of such initiatives be supported?

In order to explore these questions, TESS seeks the active participation of a wide range of community-led initiatives (e.g., projects working in the areas: renewable energy, car sharing, community farming, recycling, building cycling tracks, compensation of CO2 emissions...). As highlighted in TESS' first press release:

*“Participant initiatives can expect:*

- *An Internet mapping platform to register and promote their initiative to funders, partners and other communities;*
- *Support with assessing their current and potential environmental and socio-economic impacts;*
- *The opportunity to network with and learn from other socially or technically innovative projects across their country and wider Europe;*
- *The ability to contribute to shaping policies that support community-led sustainability; and*
- *Access to other influencers at local, national and European level including policy makers, researchers and the media.”<sup>34</sup>*

Whilst specifically addressing the community-based initiatives, TESS is also oriented to other stakeholders (Freeman & Reed, 1983; Freeman, 2010), which – in a broader view – affect or are affected by the work of these initiatives: local, national and international policy makers and government bodies, industry, research institutions and general public. For example, TESS takes into consideration that community-based initiatives might need the strategic support of policies and government actions, or might benefit from the interest of industry, or might want to team up with

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<sup>34</sup> Press release produced in December 2014, by the TESS consortium.



academia on joint projects. The needs and the interests of the grass-roots initiatives oriented towards low carbon economy and their potential to scale up or out and have a greater impact are strictly entangled with the agendas and actions of other societal stakeholders. As Bettencourt and West argued: "To combat the multiple threats facing humanity, a 'grand unified theory of sustainability' with cities and urbanization at its core must be developed. Such an ambitious programme requires major international commitment and dedicated transdisciplinary collaboration across science, economics and technology, including business leaders and practitioners, such as planners and designers" (Bettencourt & West, 2010, p. 912).

A web-based, interactive platform to connect TESS' stakeholders will be a crucial component of the project. This interactive platform will not only contain reports, white papers and webinars produced by the research centers and organizations that are part of the consortium<sup>35</sup>, but also:

- An interactive map of small-scale social innovation initiatives across Europe
- Some collaborative functionalities for the community-based initiatives (and possibly for other stakeholders), where the users can collect, discuss and share their experiences
- An online tool, which the community-based initiatives can use to evaluate their score in terms of carbon reduction

As a member of the consortium, I am in charge of designing this interactive platform<sup>36</sup>. In the spirit suggested by Bettencourt and West, I decided to set up a process where the characteristics of this interactive platform are co-designed together with some representatives of the final users of the platform. Instead of a traditional top-down design process, I applied a collaborative process and invited a large number of stakeholders to design the interactive platform in a participatory way (Simonsen & Robertson, 2013).

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<sup>35</sup> TESS is coordinated by Germany's Potsdam Institute for Climate Impact Research, with collaborating partners, The James Hutton Institute in Scotland, Universitat Autònoma de Barcelona, Spain, Università degli Studi di Roma La Sapienza, Italy, Oulu University of Applied Sciences, Finland, University Stefan Cel Mare Suceava Romania, T6 Ecosystems s.r.l. in Italy and Climate Futures in Scotland.

<sup>36</sup> Here and in the rest of the paper I use the first person as I led the interaction design activities for TESS. Interaction design activities were a component of a dissemination and communication strategy defined and implemented by other TESS partners, such as Potsdam Institute for Climate Impact Research, T6 Ecosystems, The James Hutton Institute and Climate Futures.

In particular, I organized a series of collaborative workshops where theoretical approaches and techniques from both user-centred design and design management have been applied to build an early-stage prototype of the interactive platform. Activists, policy makers and researchers participated to these workshops and had the chance to apply techniques such as rapid prototyping or wireframing<sup>37</sup> to design their own version of the interactive platform. This process was not specifically tied to a single location, but organized across nomadic workshops that saw the participation of a distributed network of stakeholders coming from at least 18 different countries, from Chile, Colombia, Canada, Korea to several EU countries. The prototypes created in one workshop were presented and discussed in other workshops held somewhere else, thus igniting and sustaining conversational processes across different sites.

This paper presents some reflections on a specific dimension of these workshops: the interplay between methods and techniques coming from user-centred design and design management. The more specific research question behind this paper is: How can design management complement user-centred approaches in the early stages of the design process?

The paper will show how adopting a design management approach helped the participants of the workshops in broadening their take on the project. In particular, through a design management lens, participants could reflect upon organizational and economic constraints of the project and thus refine their first prototype of the interactive platform for TESS.

This paper therefore claims that the interplay between user-centred design and design management can be beneficial for the field, the processes and the practice of interaction design, especially when dealing with complex and ambitious projects facing big economic and societal challenges such as environmental sustainability.

## Theoretical framework

Multiple definitions, theoretical frameworks and methods have been proposed for user-centered design, design management and interaction design. Since a thorough review of all the positions is beyond the scope of this paper and since the distinction between user-centred design and

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<sup>37</sup> The wireframe is an initial layout that represents the basic elements of a user interface: "The wireframe is a bare-bones depiction (as the name suggest) of all the components of a page and how they fit together" (Garrett, 2002, p. 128).

interaction design is debated between different design communities, I will here only present some of the concepts that have been central in my study.

Kumar and Herger provide an introductory definition of user-centred design: "User Centered Design is a philosophy that puts the user, and their goals, at the center of the design and development process. It strives to develop products that are tightly aligned with the user's needs" (Kumar & Herger, 2013). Authors such as Donald Norman, Bill Moggridge and Bill Buxton are generally credited as important figures in user-centred design (Bainbridge, 2004; Buxton, 2007; Halse, Brandt, Clark, & Binder, 2010; Moggridge, 2007; Norman, 2013).

Nowadays, user-centred design and the very notion of user are crucial components of interaction design projects like TESS.

Löwgren and Stolterman propose this conceptual framing: they define digital artifacts as "artifacts whose core structure and functionality are made possible by the use of information technology" (Löwgren & Stolterman, 2004, p. 7); interaction design is consequently defined as "the process that is arranged within existing resource constraints to create, shape, and decide all use-oriented qualities (structural, functional, ethical, and aesthetic) of a digital artifact" (Löwgren & Stolterman, 2004, p. 5). The notion of use is a key element in both sentences. Löwgren and Stolterman continue by defining as user: "a person who will be using the digital artifact when it is implemented" (Löwgren & Stolterman, 2004, p. 7).

In the specific case of the digital artifact for TESS (its interactive platform), we can identify multiple users: from a member of a bike-sharing initiative in Copenhagen, to a policy maker from the European Commission or to a researcher in a department of environmental sciences, just the name a few examples.

A user-centred perspective would put the needs and desires of these users at the center of the design process.

Design management would look at this same design process from a different angle.

McBride, Chairperson of Design Management at Pratt Institute, sees design management as the "identification and allocation of creative assets within an organization to create strategic, sustainable advantage" (Best, 2006, p. 200). Although this is only one of the many views on design management (see for example: Best, 2006; Cooper, Junginger, & Lockwood, 2011), generally speaking the organizational dimension is a key element of the field. Design management tends to focus on the managerial and

organizational dimensions of design, from how to lead creative teams, to how to ensure the economic and financial viability of a design project, up to how to measure the success of design outcomes, just to name a few of the areas generally covered in literature.

In the specific case of TESS, for example, some design management components would refer to how design is strategically used by the organizations that are part of the consortium, or how the process of developing the interactive platform is managed throughout and beyond the project.

Several authors have explored the interrelations between user-centred design and design management. Svengren Holm analyzes how user-centred design can be a strategic resource for design management (Svengren Holm, 2011). Johansson and Woodilla point out how some studies in user-centred design adopt a “more holistic view” that intersects with organizational studies (Johansson & Woodilla, 2011, p. 467). Dunne elaborates on how user-centred design can be beneficially used in management education (Dunne, 2011). A good number of papers from the 2013 Cambridge Academic Design Management Conference<sup>38</sup> and the 2012 DMI International Conference in Boston<sup>39</sup> reflect upon how user-centred design is an important part of the strategic approach advocated by design thinking and design management. Holmlid argues that design management offers a broader outlook - that also includes a focus on the business and operational dimensions - to organizations that perform user-centred design or interaction design work (Holmlid, Lantz, & Artman, 2008; Holmlid, 2006). Holmlid is also a researcher in service design, which also offers an interesting transversal view on the organizational components of design projects (Meroni & Sangiorgi, 2011). Buchanan – with his interdisciplinary viewpoint across design, information systems development and management - claims that it is nowadays crucial that design education offers students the tools to adopt an organizational perspective and, citing a specific project work carried out with his students, realizes that “there was a missing component that had to be there, that designers had to understand the relationship to organizations” (Buchanan, 2011).

This paper is positioned along this line of thinking and, in particular, aims at offering an original contribution to the design research community by:

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<sup>38</sup> <http://www.cadmc.org/> accessed March 6, 2014

<sup>39</sup> <https://www.dmi.org/dmi/html/conference/academic12/academic.htm> accessed March 6, 2014

- (1) Carrying out and documenting empirical work (a design workshop) that shows the potential of combining user-centred design and design management at an early stage of an interaction design project;
- (2) Presenting some reflections upon the interplay of the two approaches and how this interplay is particularly important when dealing with complex projects, such for example the ones addressing economic and societal challenges related to environmental sustainability.

In the next paragraph I will describe a workshop in more detail.

## **A workshop and its outcomes**

In the workshops I have conducted for TESS, I have used both methods coming from user-centered design, such as personas<sup>40</sup> and wireframing, and processes from design management, such as budgeting and diagrams mapping the stakeholders' needs and desires from an organizational standpoint. The economic dimension is described as a core component of operational design management (Borja de Mozota, 2003) or one of the fundamentals of design management (Best, 2010). As for the organizational dimension, methods to describe how organizations use design in their strategic activities or how design can help creating strategic alliances among different organizations have also been presented in literature (see for example: Bamford, Gomes-Casseres, & Robinson, 2003).

I used this mixed approach with the explicit goals of defining the requirements of the interactive platform for TESS and elaborating its user experience design up to a first set of prototypes.

Throughout the course of 5 months (from December 2013 to April 2014), several design workshops have been conducted for TESS, either face-to-face or via Skype. Some of these workshops were reserved to internal partners of the consortium, whilst some other ones were specifically addressed to external stakeholders.

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<sup>40</sup> Personas are fictitious descriptions of final users and are employed in the design process as a way of representing potential needs and desires of users (Nielsen, 2013).

I present here the outcomes of a specific design workshop held at the Politecnico di Milano in January 2014. I called this workshop ‘Design Management Lab’.

About 20 people, mostly students from the Master’s Programme in Service Design at the Politecnico<sup>41</sup> and professionals from external design companies, teamed up in 4 different groups and worked for two days - 16 hours in total - in order to get to a first proposal for the user experience design of the TESS interactive platform. Each group worked independently and, at the end of the second day, presented their final results to the other groups and to a final jury, composed of some representatives of TESS and a user experience designer from Google.

I chose to describe here this workshop as it was specifically aimed at gathering a group of designers – coming from different background: service design, industrial design, graphic design, interaction design – and at leveraging their expertise to reflect upon the user experience design of the TESS platform.

The Design Management Lab was structured as follows:

#### First day

- Initial briefing about TESS and user-centred design methods (1 hour)
- First design cycle aimed at producing a first set of wireframes for the TESS interactive platform (7 hours)

#### Second day

- Presentation of design management (30 minutes)
- Collective exercise on budget (30 minutes)
- Collective exercise on organizational stakeholders’ mapping (1 hour)
- Second design cycle aimed at re-working and finalizing wireframes for the final presentation (5 hours)
- Final presentation: each group had 15 minutes to show their work to the jury

The structure of the workshop was based on an iterative process with two design cycles. During the first cycle, the participants mostly adopted methods coming from user-centred design. At the end of the first cycle, the participants were exposed to a design management perspective. The

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<sup>41</sup> [www.polidesign.net/en/servicedesign](http://www.polidesign.net/en/servicedesign) accessed June 30, 2014

insights emerging from this new viewpoint gave the participants the occasion – during the second cycle - to go back to the drawing board, rework and finalize their presentations.

My main interest here is to show how the interplay between the two perspectives – user-centred design and design management – allowed the participants to broaden their take on the project and further develop their reflections on a suitable user experience design for the TESS platform. To show how the participants gained this broader view on the project, in the next paragraphs I present the different design outcomes produced during the first and the second design cycle.

### *The first design cycle: user-centred design*

The first day started with a 1-hour long briefing, where I introduced the TESS project also using a PowerPoint presentation and some videos. I subsequently divided the participants into 4 groups, with approximately 4 or 5 people per group. I then handled a short document synthesizing the briefing to each group. The briefing was structured as follows:

#### **Briefing for design activities for TESS**

**TESS** is a three-year, European-wide research project. It aims to reach an understanding of the potential for community-led initiatives to help deliver a truly sustainable, low-carbon future.

The main research questions are: How can innovative, grass-roots green initiatives lead to the transformational changes required to meet stretching carbon targets and wider community objectives; how can the wider emergence and success of such initiatives be supported?

**TESS** is seeking the active participation of a range of community-led initiatives, whether focused on food, energy, transport, waste or with a wider agenda to build community resilience.

Participating initiatives can expect:

- An internet mapping platform to register and promote their initiative to funders, partners and other communities;
- Support with assessing their current and potential environmental and socio-economic impacts;
- The opportunity to network with and learn from other socially or technically innovative projects across their country and wider Europe;
- The ability to contribute to shaping policies that support

community-led sustainability; and

- Access to other influencers at local, national and European level including policy makers, researchers and the media.

### **TESS: Our goal**

Our goal is to help TESS in designing a website/an interactive platform that hosts useful functionalities for the stakeholders interested in TESS.

We do not need to get to a final graphic layout for the platform, but we have to:

- Outline content and functionalities of the platform
- Design some sketches of the home page and key internal pages

The overall budget for designing and developing the platform is about € 600.000.

At the end of the second day (8 January 2014 at 16.00), we will meet (via Skype) Katja Firus and Antonella Passani (in charge of the Communication and Dissemination activities for TESS), Alessandro Suraci (a visual designer from Google) and present our work.

The activity will be organized in two cycles:

- First cycle (first day): you can employ strategies and techniques from UCD in order to:
  - Define your users (e.g., through a set of personas or other suitable techniques)
  - Define a preliminary version of the information architecture (e.g., through a basic site tree or other suitable techniques)
  - Design a first set of wireframes
- Second cycle (second day): you will refine your design materials after a presentation and some exercises oriented to highlighting a design management approach.

As facilitator, I split my time among the four groups, sitting with them, answering their questions and offering advice.

Most of the participants were already familiar with design methods and had already worked on similar tasks.

Most of the groups (3 out of 4) segmented the process in a sequential way, working collectively on the following tasks:

- They started creating a set of personas
- They sketched out a preliminary diagram representing the information architecture of the interactive platform



- They created a first set of mock-ups

In another group, participants decided to split the tasks, so that whilst some people were taking care of the personas, some other people in parallel were working either on the information architecture or the mock-ups.



Figure 1. First design cycle: A slide showing some personas produced by one of the groups during the workshop.

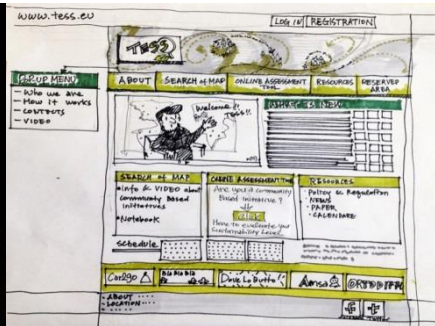


Figure 2. First design cycle: Wireframe representing the home page of the interactive platform, produced by one of the groups during the workshop.

### The second design cycle: user-centred design + design management

The second day started with a brief introduction on design management (about 15 slides, containing some definitions and key themes).

We then collectively worked on two exercises to expose the participants to a design management approach:

- A rudimentary version of the budget
- A stakeholders' analysis: in this exercise, we analyzed the viewpoints of the organizations vs. the individuals usually represented as personas.

Sometimes, the personas depict stereotypical characteristics of single users that might not be aligned with the organizations they are part of. We made a practical case. All the groups created a persona representing the policy makers interested in TESS. All the groups portrayed an enthusiastic policy maker sitting in her office in Brussels, happy to fund TESS and eager to support community-based initiatives in low carbon economy (e.g., see

Figure 1). There might be some truth in these representations, but the dynamics of such a complex organization as the European Commission warn against overly optimistic depictions, and the enthusiastic policy makers may have to navigate across the tense and conflictual landscape of politics. Especially at the high levels of political power, where the interplay with economic power is significant, promoting and supporting governmental actions and policies for sustainability is still a matter of compromises. Within this scenario, the question is how the TESS interactive platform can support policy makers in their daily – probably conflictual – activity within their organizations.

Another important element that emerged from the analysis of stakeholders is that it showed the need to reflect upon the relationships among different users. During the first day, whilst creating the personas, the workshop participants mostly created fictitious representations of single, isolated users. The relationships among different users (or different personas) were not represented. The stakeholders' analysis showed to the participants that a web of relationships connects one organization to other ones and – in a systemic way – the user's actions are entangled into complex dynamics of organizational dependencies.

It is here important to clarify that during the second day I did not present information on TESS that I had not already shared on the first day. Rather, the two design management exercises allowed the students to interpret the same briefing in a different way. The results of the application of this design management perspective were:

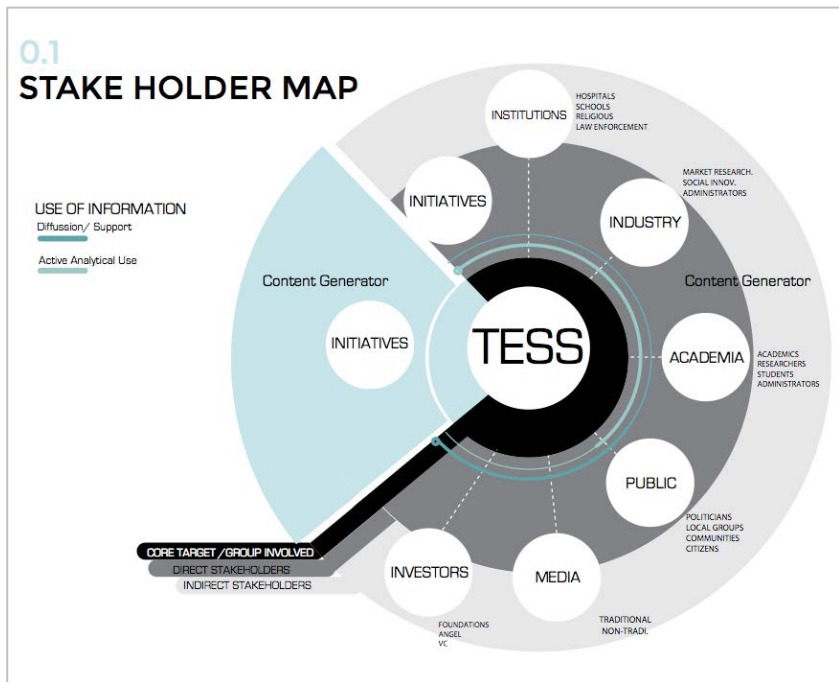
(1) All the groups reworked on the information architecture. Whilst the first day they just piled up ideas for a lot of potentially interesting and useful functionalities for the TESS platform, the second day they realized that the economic resources did not allow developing and maintaining all the proposed functionalities. Consequently, all the groups had to scale down their proposals.

It is here important to clarify that the first day I already gave the participants a rough idea of the budget they could count on, but it is only on the second day - when we worked together on a more analytical budget - that the participants more clearly realized the amount of economic resources that could be allocated for the actual design and development. It came as a surprise to most of the participants that, out of the entire budget, only part of it could go to the actual development of the interactive platform, whilst a significant percentage of it had to cover costs that were not immediately visible (e.g., the impact of taxation over the personnel net

monthly costs, or the project management costs, or the overhead). As already mentioned above, the participants of this workshop were mostly designers and the majority of them did not have previous experience with budgeting.

(2) The stakeholders' analysis also showed a different angle to the participants. The immediate results were:

(a) A group decided to abandon the personas and they worked instead on a quite complex visual representation that did not show individual users, but organizations (initiatives, general public, etc..) and some of the interactions among them.



*Figure 3. Second design cycle: Diagram representing TESS stakeholders.*

(b) Another group realized that the differences between the various segments of the expected users of TESS were so significant to justify the creation of two different interactive websites: one targeted to researchers and policy makers, another one targeted to community-based initiatives and general public.

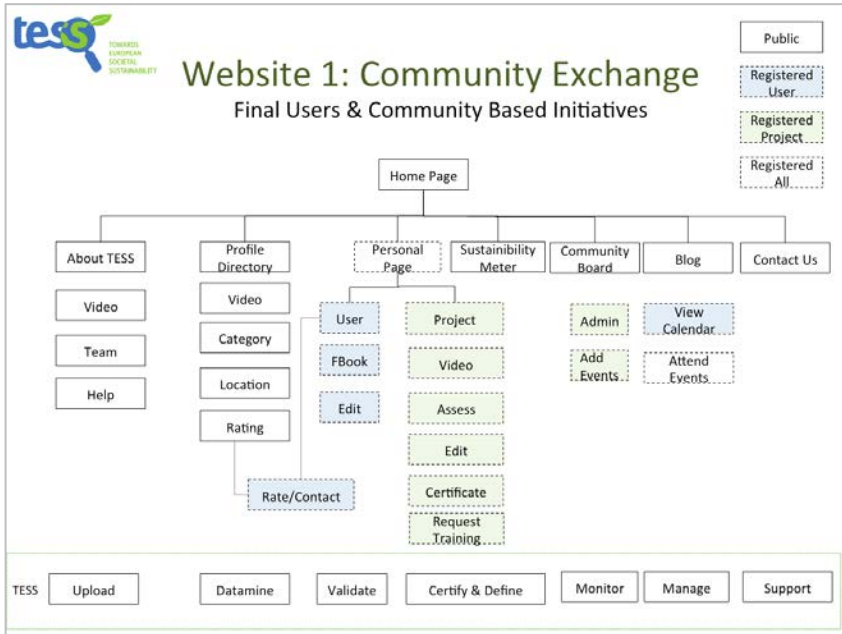


Figure 4. Second design cycle: Site tree representing functionalities of the specific TESS website for community-based initiatives and general public.

(c) Another group re-worked on the format they had previously used to represent personas, labeling it as a ‘quick customer journey’ and adding some more details that could – at least partially – illustrate the more complex scenario emerged from the stakeholders’ analysis.

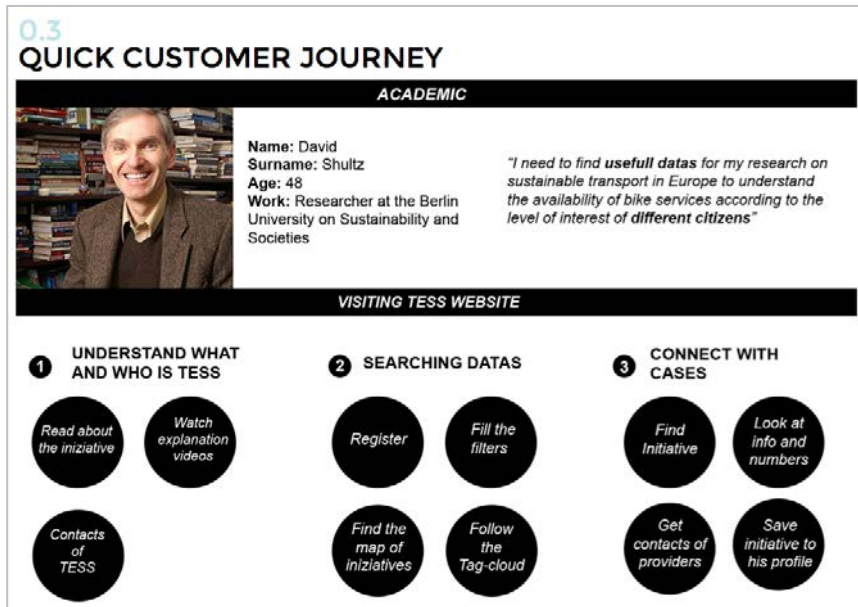


Figure 5. Second design cycle: Quick customer journey for one of the final users of TESS.

At the end of the second day, all the groups presented to the final jury, which appreciated some of the ideas and offered constructive feedback.

## Discussion

Before entering into the discussion, I want to acknowledge some limitations of this study.

Firstly, although the methods used in the Design Management Lab have been also replicated in other workshops, I only describe here the outcomes of a single workshop. As such, the paper is grounded into a single example and is therefore insufficient to draw any definitive conclusion. Although I could see common patterns emerging from several workshops I conducted, a more consistent investigation is needed. At best and as of now, this study only offers some contributions that open up for further explorations.

Secondly, the methods used in my workshops are not paradigmatic and do not represent the only way of doing user-centered design or design

management. I chose the specific methods presented above having in mind an audience for the workshops that was not (always) composed of participants with skills and experience in design. It was also important to choose methods that could be applied and used within the relatively short duration of the workshops (few hours).

In spite of these limitations, I still think that my study can offer some reflections on the research question I presented in the initial section of this paper: How can design management complement user-centred approaches at the early stages of the design process?

First off, I want to clarify here that I am not arguing that either user-centred design, design management or even interaction design should stay on top of the others, but I am rather suggesting that they offer different perspectives on the design process. I am claiming that by adopting different vantage points designers can have a clearer picture of the design situation. When I use the notion of interplay, I want to highlight the processual dimension of this activity of deliberately changing viewpoint. I see the interplay between user-centred design and design management as an iterative process, where, for example, the designer starts with some techniques from user-centred design, then adopts the design management approach, then goes back again to user-centred design and so on, in a process where the two views keep interacting between each others and thus influence the design outcome. In my specific case, this interplay happened at an early stage of TESS, when the project was still quite open and therefore could more easily accommodate inputs coming from different perspectives. It might be the case that this interplay can be also beneficial at later stages, especially when the interactive project is structured across different cycles of design/development and therefore can be refined over time.

The user-centred design techniques that have been employed in the first cycle of my workshop (such as the personas) are oriented to representing users at an individual level. Several scholars expressed their concern about the way users are sometimes represented with these techniques. There are at least three important components of this critique:

1. The representations of users can be naïve or too stereotypical (Chapman & Milham, 2006; Djajadiningrat, Gaver, & Fres, 2000). Nielsen - who has worked and studied personas for a long time - in a recent paper co-authored with Storgaard Nielsen, documents how some Danish firms enact theatrical representations (e.g., through role-play or the use of masks) in

order to enrich personas (Nielsen & Storgaard Nielsen, 2013). These role-play activities enhance the understanding of the final users for both actors and spectators, since they create greater empathy and depict some of the interrelations among the final users.

2. The practice of user-centered design and the representation of users generated by it happen in a socio-political context, where inequalities of power and special interests might be at play. Halse, for example, warns against the idea that the representations of users in user-centred design are neutral, detached and accurate snapshots of reality (Halse, 2008). These representations are created in contexts where dynamics of power and authority might play an important role (e.g., imagine the case of a big multinational corporation headquartered in North-America – like Microsoft - that routinely employs user-centred techniques to create interactive products or services massively distributed at a global scale).
3. These first two points show once again how user-centred design needs to be complemented by an organizational view. Representing the final user as a persona is an important design technique to keep in mind the final audience, but the audience is not composed of users that act as isolated individuals. Users live and act within organizations and organizations live and act within a wider context where they have to interact with other organizations. The sphere of autonomous decisions and behavior of the individual user is strictly entangled with organizational and wider societal dynamics.

It is for these reasons that I advocate for the interplay of user-centred design and design management. Design management allows reflecting upon the organizational, structural, systemic, economic level of the design process. In terms of scale, it is like design management operates at a different level of zoom compared to user-centred design and allows for a broader view. At the same time, user-centred design offers a closer perspective and as such can be more easily operationalized during the design process.

Again, I am not stating here that a specific viewpoint or technique is better than another, but my claim is that all these perspectives should be

taken as complementary ways for deepening the understanding of design activities.

Although during the first day of the workshop I had warned the participants about some of the possible limitations of user-centered design techniques such as personas, it is only on the second day - when they had the chance to apply a design management perspective and techniques and then go back to another design cycle - that they fully saw and experienced these limitations.

## Final remarks

As a concluding remark, I would like to go back to the original claim I stated in the first section of this paper, namely that the interplay between user-centred design and design management can be beneficial for the field, the processes and the practice of interaction design, especially when dealing with complex and ambitious projects facing big economic and societal challenges such as environmental sustainability.

Adopting views and techniques from design management would allow interaction designers (and perhaps also other kinds of designers) to better grasp the complexity of real-world problems as strictly entangled with dynamics of power and authority. I suggest that this approach would better prepare designers to acknowledge the economic and socio-political dimension of their work and – potentially – to operate in a more transformational way when dealing with big societal and environmental challenges.

Binder et al. suggest embracing a design perspective focused on the notion of “design things” (Binder et al., 2011). The original etymology of the word *things* refers to the governing assemblies in ancient Nordic and Germanic societies. Things were collaboratively decided within these assemblies. In Binder et al.’s words, “designing things” means embracing the idea that design should be a venture where a plurality of diverse and conflictual points of view is represented and where this plurality also becomes a socio-political ideal that a designer should struggle for.

In my opinion, the interplay between user-centred design and design management and the way this interplay would equip interaction designers are steps into this socio-political orientation.

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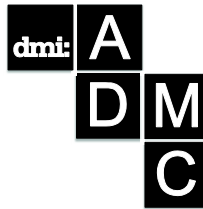
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## Presenting the SCL Model: Adding value to business strategy through UCD principles

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*This paper presents the Sustainable Consumption Leveraging (SCL) Model and its toolkit, which was developed to help businesses examine their potential for enabling sustainable consumption whilst identifying areas of opportunity to improve their business model and value proposition.*

*The paper begins by establishing the contribution of business towards sustainable consumption and sets out user-centred design (UCD) principles as a valuable approach to leverage sustainable consumption. The relationship between UCD principles and sustainable consumption in a business context was studied through qualitative research. The findings of in-depth interviews with experts, a focus group and a document analysis led to the construction of a theoretical framework, which was used to develop the SCL Model and its toolkit.*

*The paper then evaluates the potential for the SCL model and toolkit to leverage more sustainable consumption through a comparison made between four workshops within multinational companies in two different contexts: Mexico and the UK. The paper also presents a discussion of some implications of applying the SCL Model, as well as some corporate culture implications. The paper concludes by drawing out the opportunities represented by integrating UCD principles as an enabler for sustainable consumption.*

**Keywords:** *User-centred design, sustainable consumption, business models, innovation*

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## **Introduction**

Increasing economic, social and environmental problems around the world have shown that current models of economic development cannot be sustained. Thus, new patterns of consumption are needed. According to the World Economic Forum (2011), global companies are well placed to leverage more sustainable consumption, as their production lines, supply chains, products and services extend across many continents, and as such the cumulative effect of their actions are wide reaching.

The contribution of business towards sustainable consumption will require setting in place new business models which take into account the complex factors that govern consumer behaviour including: aspirations, habits, needs, lifestyles, and the context in which goods and services are delivered (Seyfang, 2009). To address these complex issues, businesses should modify their business models to develop innovative consumer-focused business propositions. Transforming the business model could help companies to engage more effectively with consumers by empowering them with knowledge about their consumption patterns to modify daily habits that can ultimately trigger behavioural change. (Clinton & Whisnant, 2014).

Innovation is considered as a critical factor in business competition (Owen, 2006). Michaelis (2003) argues that to move towards sustainable consumption businesses will need to innovate in their products, services and business models. However innovation strategies and processes might be different according to each organisation's aims, corporate culture and systems (Nijssen, Hillebrand, A.M. Vermeulen & Kemp, 2006).

In the last decade, the area of design has moved forward to understand its contribution to innovation. The consequence has been the development of new theories of design, innovation, and design management (Verganti, 2011). One clear contribution of these new theories is referred to as 'design thinking.' (Lockwood, 2010a; Brown, 2008; Owen, 2006; Brown & Wyatt, 2010). Design thinking is a way of thinking that parallels other ways of thinking to offer a way of approaching issues, problems and opportunities almost uniquely suited to innovation (Owen, 2006). One of its main characteristics is that it has a human-centered focus (Brown, 2008). Thus, it has been argued by Fletcher, Dewberry & Goggin (2001) that design is an interface between consumers and consumption, and thus it has an important role to play moving towards sustainable consumption. The former is acknowledged through the research presented in this paper, by focusing on user-centred design as an important element of design thinking to improve the innovation process towards sustainable consumption.

### *User-centred design and sustainable consumption*

Design facilitates the ability to understand users and their interactions with the world through different design approaches under the umbrella of user-centred design (UCD), e.g. interaction design, experience design, user interface design, inclusive design, human-centred design, human-computer interaction, and practice-orientated design, amongst others (Moggridge, 2007; Nilstad & Boks, 2008; IDEO, 2009; Saffer, 2006; Abras *et al.*, 2004, Kuijer and de Jong, 2011). Though not all of these approaches are used to contribute towards sustainability, they have recently been seen by design researchers as a valuable approach to bring about a reduction in environmental and social impacts from people's consumption activities (Pettersen, Boks & Tukker, 2013).

User-Centred Design (UCD) is a design process and philosophy in which the designer focuses on users' needs, wants, and limitations through the planning, design and development stages of a product (Usability Professionals Association, 2011). Gould and Lewis (1985) recommend three principles of UCD which are generally accepted to be: an early focus on users and tasks; empirical measurement; and iterative design.

Pettersen *et al* (2013) recalled different approaches for design that address sustainability issues and are linked to theoretical understandings of behaviour and consumption. Two of these approaches that could be related to UCD principles are those that address sustainability issues of consumption through influencing users practices – namely as practice-oriented design, which is grounded on practice theory (Kuijer & De Jong, 2009; 2011; Scott, Bakker & Quist, 2012; Liedtke, Welfens, Rohn & Nordmann, 2012, Haines, Mitchell & Balaband, 2012) and those based on psychological theories whose aim is influencing user behaviour and are better known under the umbrella of 'design for sustainable behaviour' (Lilley, 2009; Lockton, Harisson and Stanton, 2008; Tang & Bhamra, 2012; Zachrisson and Boks, 2012).

To develop their different positions within the research, the former scholars involved users either as informers or co-creators (Sanders & Kwok, 2007). Informers are seen as a subject of study to get information, and co-creators are users, which actively participate in the design process. However no matter how the users are involved, the major advantage of UCD principles is that a deeper understanding of user's practices, habits and behaviours emerge from this iterative design process. The partial or complete involvement of users ensures that the product will be suitable for the intended purpose in the environment in which it will be used (Abras *et*

*Presenting the SCL Model: adding value to business strategy through UCD principles* al., 2004). It also helps to communicate user's expectations to higher management and incorporate these concerns into the design process, as user experiences are taken into account in the early stages of design development (Lofthouse & Lilley, 2006).

In a business perspective, UCD research could deliver different advantages such as developing easy-to-use products/services, better satisfying consumers, decreasing company's expenditure on technical support and training, advertise ease-of-use successes, and ultimately increase market share (Vredenburg, Mao, Smith, & Carey, 2002). In addition, it could help companies to avoid rebound effects of certain products designed for environmental sustainability by actually understanding people's practices and behaviours and what can influence them (Liedtke et al, 2012).

Although UCD principles have been applied in user-centred research to address sustainability issues of consumption, this research has mainly focused on everyday practices such as bathing (Kuijjer & De Jong, 2009; 2011), laundry (Pink, 2005) or food preparation and storage (Tang & Bhamra, 2008; Bhamra, Lilley, Tang, 2011). However, UCD principles have not been explored as a potential aid for businesses to place the user/consumer at the heart of their strategy to enable more sustainable patterns of consumption. Thus, the aim of this paper is to nurture this area of research and discuss the opportunities of UCD principles to act as enablers for sustainable consumption whilst at the same time adding value to the business.

## **A Theoretical Framework**

Considering the potential of UCD principles to leverage sustainable consumption, the research aimed to build a theoretical framework supported by UCD principles that can guide companies to leverage sustainable consumption. To achieve this aim, the researchers explored the relationship between UCD principles and sustainable consumption in a business context through an extensive literature review and an empirical research.

### *Summary of literature review*

The literature review focused on the complexities of consumption and sustainable consumption by studying economic theories (Fine, 1993; Wilk, 2002), anthropology and social theories (Heap and Kent, 2000), cultural

theory (Lury, 1996), systems/infrastructure of provision (Sanne, 2002; Ropke, 1999), system innovation theories (Geels, 2002; 2004) and psychology theories (Ajzen, 1991).

The state of the art review also analysed current theoretical approaches – e.g. product/service life cycles and sustainable product service design proposed by Munasinghe, Dasgupta, Southerton, Bows and Mcmeekin (2009), the Green Marketing Manifesto by Grant (2007), Mindful Consumption by Sheth, Sethia and Srinivas (2011), Collaborative Consumption mainly by Botsman and Rogers (2010) –; and tools – e.g. Consumer Futures 2020 by Forum for the Future (2011), Three Ps of behavioural marketing by Shea (2011); 5 levers of Change by Unilever (2011); Sustainable Consumption Motivators by Hicks & Kuhndt (2011) and the Design tool to achieve sustainable consumption by Hofstetter and Madjar (2003, 2005) - towards influencing sustainable consumption in a business context.

From the literature review, three key concepts that should be embedded within the business model to leverage sustainable consumption were identified. These concepts were: communication, collaboration and innovation, and were further explored through primary data collection to aid the development of the theoretical framework.

### *Empirical research approach*

To build the theoretical framework, the researchers followed a qualitative exploratory research purpose with the aim to investigate the relationship between UCD principles and sustainable consumption in a business context. The following research questions were formulated, which were relevant for the exploratory purpose of this enquiry and were linked to the theory studied through the literature review.

1. Can multinational companies leverage sustainable consumption by focusing on UCD principles?
2. Which are the existing conditions that multinational companies should take into account in order to leverage sustainable consumption?
3. Which user-centred strategies can be applied to leverage sustainable consumption?
4. What are the drivers of multinational companies to leverage sustainable consumption?

To answer these questions and be able to build the proposed theoretical framework, the research needed to generate theory that outlined the



opportunities and challenges that companies face in order to influence sustainable consumption by following UCD principles. As such, the research used grounded theory as a research strategy and as a data analysis technique. This is because grounded theory aims to generate theory from data to develop a theoretical framework (Robson, 2002; Charmaz, 2006), and allows using different data collection methods to identify core elements of a phenomenon to provide an understanding of the underlying principles that explain that phenomenon (Denscombe, 2007).

### *Data collection techniques*

Within this research in-depth interviews and focus groups were chosen as data collection techniques, as they provide a more in-depth insight into the research topic, drawing on information provided by expert informants, which for grounded theory is not shaped by prior concepts or theories (Denscombe, 2007). A document analysis was then conducted with the purpose of verifying and complementing the data obtained from the interviews and focus group.

In-depth semi-structured interviews were conducted with five UCD consultants and five experts (e.g. researchers and consultants) in business and sustainability. Then, a focus group with a UCD consultancy was conducted with six participants including three senior designers, a research analyst, the operation manager and the director of strategy and operations. Finally, a document of a section of questions and answers from the general public posted on an on-line webcast during the Unilever Sustainable Living Plan event on November 15th, 2010; was analysed. The aim of this analysis was to report on where global companies stand regarding the path towards sustainable consumption and to verify and complement the data previously collected.

### *Data analysis and initial findings*

The findings for the three different types of data collection were coded and clustered separately using Charmaz (2006) approach to grounded theory. A within method triangulation was used to compare the findings from the interviews. After, a cross-triangulation of the latter findings with the findings from the focus group and document analysis was applied. The cross-triangulation resulted in:

- Three main conditions, which stated that to leverage sustainable consumption, large companies should have an understanding of the value of integrating sustainability into their core strategy and

recognise the important role of innovation in informing their corporate strategy and operations.

- Three different types of strategies based on UCD, which can help companies to understand UCD principles to leverage sustainable consumption and embed sustainability at a strategic level of the company to develop consumer-focused business models.
- Six business drivers that would help companies to leverage sustainable consumption i.e. gain business benefits through an increase on demand, upcoming legislation, finding relevant issues for the company, and minimising economic and environmental costs through innovation, amongst others.

A correlation between these findings and the three key concepts of communication, collaboration and innovation was seen, constituting the theoretical framework. Figure 1 depicts a summary of these findings and how they relate to the theoretical framework.

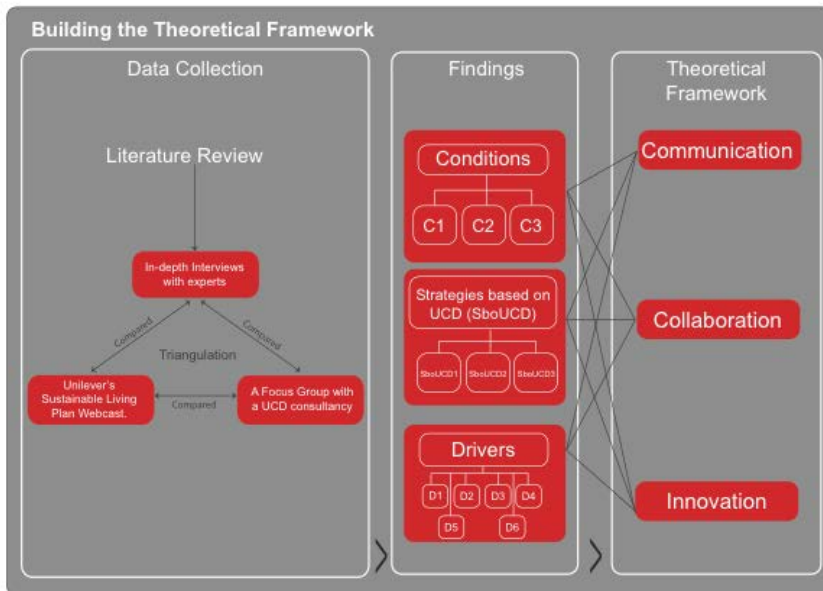


Figure 1 Summary of how the theoretical framework was built

## **Development of the SCL Model**

Based on the theoretical framework described above, the Sustainable Consumption Leveraging (SCL) Model was developed as a mechanism that can enable companies to communicate, collaborate and innovate towards leveraging sustainable consumption. The SCL model is comprised of evaluation criteria, a set of consumer-focused strategies and a Sustainable Consumption Index (SCI) devised from the initial findings previously described.

### *Evaluation Criteria*

The evaluation criteria were divided into four main business areas – Business Model, Consumer, Design and Sustainability – as it was considered that an evaluation of the current business model was necessary to assess further changes in the business proposition. An evaluation of the relationship with, and understanding of, consumers was needed in order to develop more sustainable markets. An evaluation of the capability of a company to apply design thinking was needed in order to see its capabilities to innovate; and an evaluation of the understanding of sustainability was required in order to assess how deeply it is integrated into their strategy and vision. Figure 2 illustrates the four areas with the corresponding criteria to be assessed.



*Figure 2 Evaluation criteria according to four areas of the business*

## Consumer-focused strategies and the Sustainable Consumption Index (SCI)

The model also contains fourteen consumer-focused strategies, which aimed to assist companies in developing ideas that can lead to the creation of a consumer-focused business model to foster sustainable consumption. The strategies were related to the three key concepts of the theoretical framework resulting in five communication consumer-focused strategies, four collaboration consumer-focused strategies and five innovation consumer-focused strategies. All strategies were complemented with prompt questions that could help users to apply each strategy. An example of each set of strategies is depicted in Figure 3.

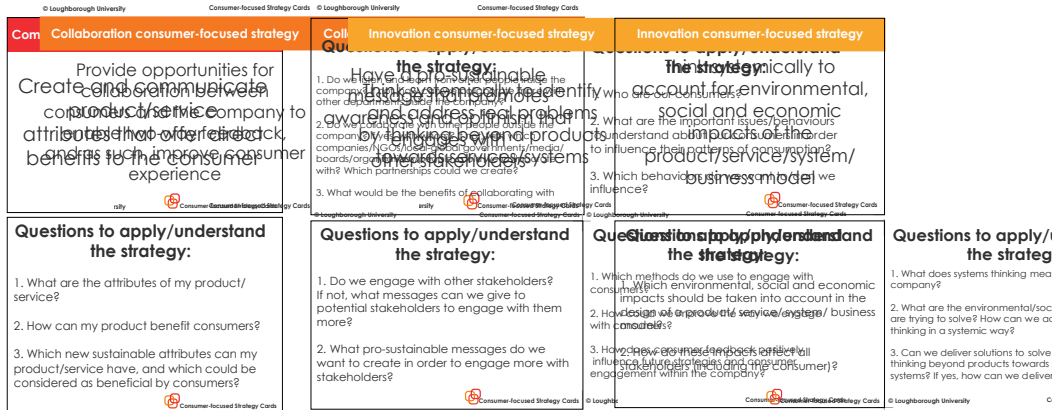


Figure 3 Examples of each type of consumer-focused strategy

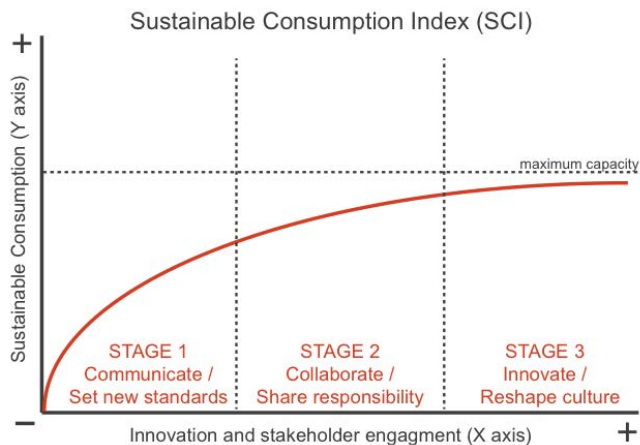
The three key concepts of the theoretical framework were also used to develop the Sustainable Consumption Index (SCI) to qualitatively measure the levels of sustainable consumption that a company wishes to motivate and set its targets to, dependent on their objectives and business strategy. The aim of the SCI is to guide companies to evaluate where to set their targets to the level of sustainable consumption they wish to motivate by applying different consumer-focused strategies.

The SCI is inspired by similar models that explain different levels of eco-efficiency related to different types of innovation (Brezet, 1997; United Nations Environmental Programme, 2009). The premise of the SCI is that there is a fundamental relationship between communication, collaboration and innovation. Thus, to motivate more sustainable patterns of

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consumption, different innovative actions and degrees of engagement amongst stakeholders are required in order to enable incremental, disruptive or systemic changes within the business model of a company. The former is grounded in the idea that to achieve higher levels of sustainable consumption a greater level of innovation and involvement of stakeholders is needed (Mont and Plepys, 2008; Nilstad and Boks 2008).

The Green Marketing Manifesto by Grant, (2007) also inspired the SCI. Grant (2007) described three green marketing objectives, 1) to set new standards and communicate, 2) to share responsibility and collaborate, and 3) to support innovation and reshape culture, which are associated to the three main concepts of communication, collaboration and innovation, identified in this research. The SCI is depicted in Figure 4. It shows the levels of sustainable consumption (y axis) as a function of the level of innovation and stakeholder engagement (x axis) in relation to the three different stages identified by Grant (2007).



*Figure 4 Sustainable Consumption Index: Three different stages to motivate sustainable consumption*

The SCI approach argues that certain levels of innovation and stakeholder engagement are always involved in the process of motivating sustainable consumption, as stronger engagement and collaboration with stakeholders, including the consumer, could move a company toward innovation (Lockwood, 2010b). The SCI also argues that global companies will innovate upon other existing products, services or business models, as

breakthrough innovations are based on inventions that serve as a source of many subsequent inventions (Assink, 2006).

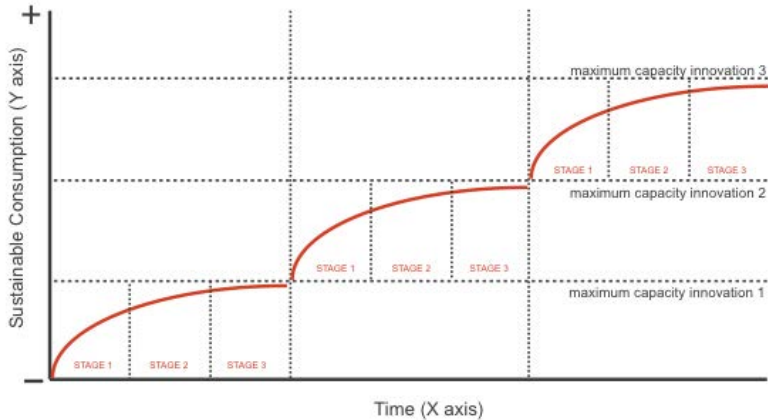
To motivate higher levels of sustainable consumption, disruptive innovation will be needed (Mont and Plepys, 2008). For this context, disruptive innovation is defined as a product, process or concept that significantly transforms the demand and needs of an existing market or industry, by creating new business models or markets with significant societal impacts, as it might transform the way we live, work and learn (Brown, 2003). However, disruptive innovation is a hard concept to grasp and hardly a one-time effort, thus it requires continuous improvement in the overall capability of firms (Cohen and Levinthal, 1990).

To this respect, with the SCI, companies can choose the consumer-focused strategies according to their targets depending on their current innovations, business strategies and resources. For example, a company can set its targets to motivate levels of sustainable consumption within the communication stage by applying only communication consumer-focused strategies. This could be done to incrementally innovate in their communication strategies with consumers or other stakeholders. However, if a company wants to innovate further, it will need to apply a mix of communication, collaboration and innovation consumer focused-strategies to possibly achieve a disruptive innovation that could motivate a higher level of sustainable consumption. Disruptive innovation is a circular development process of continuous feed-back loops (Assink, 2006). Thus, in the SCI, there is no clear boundary between its stages and they may even overlap.

The SCI curve has an ever-decreasing slope (Figure 4) in which an innovation has a maximum capacity of disruptiveness, and improvements towards leveraging sustainable consumption diminish as one progress through the stages. In economics this behaviour is called the law of diminishing returns. Paap and Katz (2004) argue three cases in which innovation reaches its maximum capacity of disruptiveness to the point of saturation, which leads to develop further innovations. These cases are:

- The innovation becomes obsolete, as it no longer satisfies the needs of consumers.
- Incremental improvements responding to emerging needs of consumers are no longer seen as valuable.
- There are changes to the environment due to political, economic, sociological, technological, legal and environmental factors.

In order to avoid stagnation of sustainable consumption, new innovations are needed, resulting in a process where new innovations are required at the end of the life cycle of the preceding ones (Figure 5). Building upon innovations has been studied in the growth of cities where innovation is necessary to maintain a city's viability (Bettancourt, Lobo, Helbing, Kuhnert, & West, 2007).



*Figure 5 Building upon innovations through time to avoid stagnation*

## **Applying the SCL Model through its toolkit**

The SCL toolkit is a resource to assist companies to implement the SCL Model described above. From each element of the SCL Model, each tool of the SCL toolkit emerged, resulting in four evaluative canvases, fourteen consumer-focused strategy cards, and a sustainable consumption index (SCI) template. The SCL Model and toolkit were tested with four global companies through three pilot workshops in Mexico and a main workshop in the UK.

The sampling strategy followed to choose the companies to conduct the workshops with, was based on a convenience sample in which the researches had previously worked with those companies. However, the sample went through a selection process based on the previous findings. The findings revealed certain conditions, which must be present within a company in order to be able to leverage sustainable consumption. These include an understanding of the value of integrating sustainability into their core strategy; and recognising the role of innovation in informing their corporate strategy and operations. As such, three companies in Mexico and

one in the UK that have an understanding of integrating sustainability into their core strategy and who recognize the important role of research and development (R&D) in informing their corporate strategy and operations, were selected. To select these companies, secondary data was used to prove that the companies have a global corporate sustainability and innovation strategy set in place.

The companies, which the workshops were conducted with, were considered as a sample to evaluate the effects of the SCL Model and its toolkit on multinational companies in these regions, but were not considered representative of these countries.

### *Workshops general layout*

Participants that attended the workshops were chosen from different areas and positions inside the company with the condition that they should fit within the four areas of the evaluation criteria of the SCL Model – Business Model, Consumer, Design/R&D and Sustainability -. To do the selection of participants, the researchers worked closely with a person inside the company. An invitation to participate in the study was sent to a list of recommended people, and thus all participants were notified previously that they would be part of this research. This particular recruitment allowed the research to gather different perspectives within the business. In addition, a facilitator was used to moderate discussions and guide participants during the workshop. The workshop consisted of five general activities:

**Activity One – Application of the Evaluative Tool:** The Evaluative Tool aimed to find areas of opportunity to improve upon in the business model and value proposition to consumers. It consisted of three types of self-completion templates including: two self-evaluation canvases, a score canvas and a strengths and weaknesses canvas. For this activity, participants were divided into four groups according to their expertise in relation to the areas of the evaluation criteria of the SCL Model. Each group completed the SCL self-evaluation canvases, which consists of two questionnaires for each area of the evaluation criteria. The questionnaires follow a scale of 1 to 5 to evaluate the current performance and future improvement of the company regarding the criteria for these four areas. Figure 6 depicts an example of these questionnaires showing the one designed for the Business Model Area.



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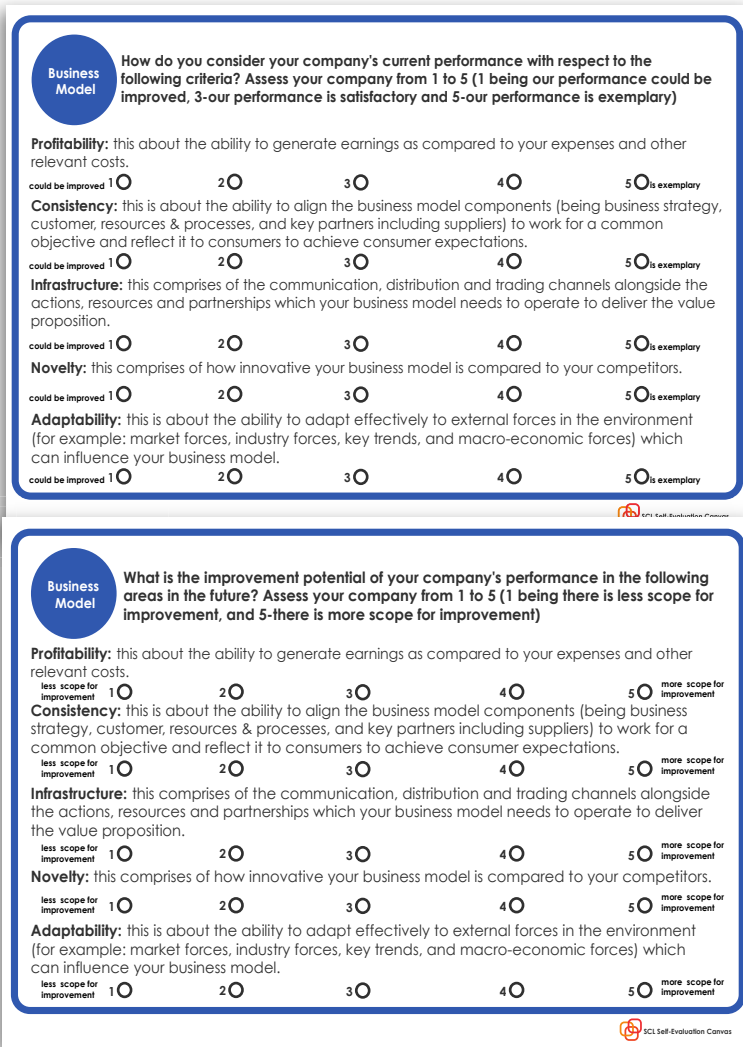


Figure 6 SCL Self-evaluation Canvases – Business Model Area

After completing the self-evaluation canvases, participants transfer their scores to the SCL Score Canvas (Figure 7) with the purpose of understanding and easily comparing the current performance and future scope for improvement for each criterion. When transferring their scores, participants

were encouraged to use post-it notes and the SCL Strengths and Weaknesses Canvas (Figure 7), to identify strengths and weaknesses for each criterion regarding their scores for their current performance and future scope of improvement. Through identifying strengths and weaknesses, a list of areas of opportunity that could be improved was generated.

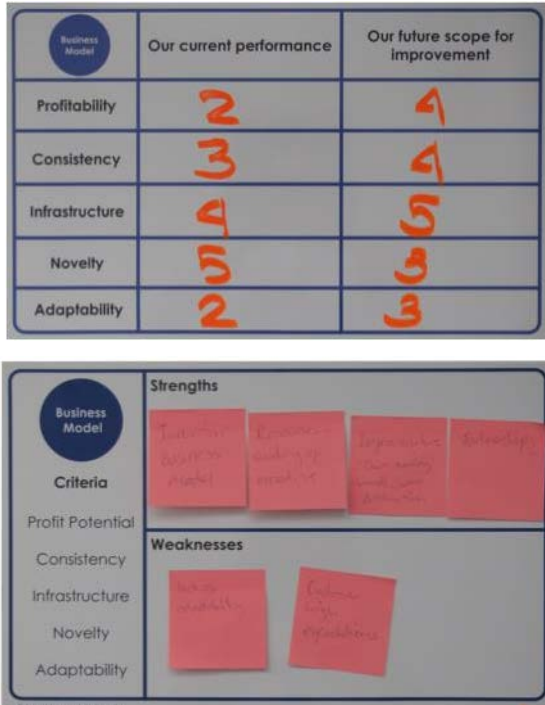


Figure 7 Example of SCL Score Canvas and S&W Canvas used at the workshop

**Activity Two – Identifying overall areas of opportunity:** In this activity, teams gathered together to present their scores and the areas of opportunity identified. The moderator facilitated a discussion between the teams to identify the most important opportunities. To select these opportunities, certain criteria were used. These criteria was set up according to the four areas of the evaluation criteria and was based on internal (e.g. how cost-effective is the business, current in-house sustainability practices with their employees, in-house activities that motivate creativity and innovation, relationship with their consumers) and external (e.g.

*Presenting the SCL Model: adding value to business strategy through UCD principles*

relationship with their supply chain and competitors, external economic, environmental and social factors that could affect their business, perception of their consumers, R&D happening within similar sectors) aspects of the business.

**Activity Three – Choosing the areas of opportunity to work upon:**

Participants were re-organised into new teams by mixing the people from each area of the evaluation criteria. Through facilitation, a filter was applied to identify those areas of opportunity that were deemed most influential for each company. This filter was based on the criteria mentioned above to identify internal and external aspects of the business, which could be utilised to better leverage sustainable consumption. Each new team chose one area of opportunity to brainstorm ideas in response to that opportunity.

**Activity Four – Brainstorm ideas with the Sustainable Consumption Index (SCI) and the consumer-focused strategy cards:** The SCI was introduced as a tool that participants could use to co-relate the consumer-focused strategies to the three key concepts of communication, collaboration, and innovation; to target the level of sustainable consumption they wanted to motivate. The consumer-focused strategy cards were also introduced by explaining that each card had prompt questions that enabled participants to reflect on how and when to apply the strategy and generate ideas within the area of opportunity previously chosen (Figure 8).



*Figure 8 Applying the SCI with the consumer-focused strategy cards to generate ideas that target the chosen area of opportunity*

**Activity Five – Presentation of ideas:** Finally, the sub-groups presented their ideas, which could result in new/improved products, services or business models.

### *Pilot Workshops*

The pilot workshops aimed to identify corporate reactions to the SCL Model and to assess its application with different configurations so improvements could be made. The pilot workshops were carried out with three multinational companies from different sectors including; a pet food manufacturer (C1), a breakfast cereal manufacturer (C2); and a large chain of retailers (C3), with the purpose of making a comparison between them. Because of confidentiality issues, it has not been possible to disclose with which companies the model was tested. For this reason, each company was labelled with a code (e.g. C1, C2 and C3).

The workshops had the same format but were designed in different configurations in relation to the number of participants, the level of seniority of participants, and the areas of specialist knowledge represented by the participants. For example, with C1 and C3 the participants were chosen from different areas and positions inside the company that fit within the four areas of the evaluation criteria. As such the activities described above were conducted with multi-disciplinary teams. This format was chosen because in design thinking, multi-disciplinary collaborative perspectives are considered to lead innovative business solutions (Vianna et al., 2012). Table 1 depicts teams for Activity 1 and Table 2 shows teams for Activities 3 and 4 conducted with C1.

*Table 1 Teams formed for C1 Activity 1*

Participants' Description	Code
<b>Business Team</b>	
Purchasing and Logistics Director	BMC101
R&D Director	BMC102
Manufacture Director	BMC103
Corporate Affairs Director	BMC104
<b>Consumer Team</b>	
Packaging Purchase Coordinator	CoC101
R&D Product and Packaging Manager	CoC102
<b>Design Team</b>	
Packaging Manager	DesC101
Product Manager	DesC102
R&D Manager	DesC103

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Sustainability Team	
Raw Material Purchasing Coordinator	SusC101
Raw Material Purchasing Coordinator	SusC102
Environmental and Sanitation Coordinator	SusC103
Raw Material Purchasing Coordinator	SusC104
Technician on Environmental Security	SusC105
Factory Manager	SusC106

*Table 2 Teams formed for C1 for Activities 3 and 4*

New Teams C1	
Blue Team	
Purchasing and Logistics Director (BMC101)	
Factory Manager (SusC106)	
Raw Material Purchasing Coordinator (SusC104)	
R&D Product and Packaging Manager (CoC102)	
Yellow Team	
Corporate Affairs Director (BMC104)	
R&D Manager (DesC103)	
Raw Material Purchasing Coordinator (SusC101)	
Red Team	
Manufacture Director (BMC103)	
Packaging Purchase Coordinator (CoC101)	
Technician on Environmental Security (SusC105)	
Raw Material Purchasing Coordinator (susC102)	
Green Team	
R&D Director (BMC102)	
Packaging Manager (DesC101)	
Product Manager (DesC102)	
Environmental and Sanitation Coordinator (SusC103)	

In contrast, for the workshop carried out with C2, participants with a higher position inside the company related to sustainability but with sufficient knowledge about the other three areas of the evaluation criteria were recruited. Thus the activities mentioned above were conducted within a single team.

Targeting the right area and level of participants was considered a limitation, due to the availability of participants in the time given to conduct

the workshop. It was particularly difficult to get participants from higher positions in the company. Despite this, these different configurations of the workshop allowed the researchers to assess the level of influence of different participants in developing strategies to address sustainable consumption.

### *Main Workshop*

The main workshop was conducted with a leading pharmaceutical, health and beauty retailer and manufacturer. To identify this company the code C4 was allocated.

As the research followed an iterative process, reflection on the findings of the pilot workshops, led to the conclusion that a multi-disciplinary team that covered different areas of specialist knowledge, and that have certain power to influence, is needed to implement the SCL Model and its toolkit. As such, the participants chosen to conduct the main workshop with, were part of the sustainability champions programme that C4 implements between its employees to influence more sustainable practices within the company. The levels of participants were senior managers, managers and coordinators.

## **Potential of leveraging sustainable consumption**

The potential of leveraging sustainable consumption was assessed by a comparison between the four workshops of how participants used the SCL Model and toolkit. The findings described an evaluation of ideas generated by participants through using the consumer-focused strategy cards and the sustainable consumption index (SCI). The findings also revealed that the potential of leveraging sustainable consumption would be dependant on the successful application of the SCL Model and on the corporate culture of each company. Thus, some implications on how the workshop was conducted, and some corporate culture implications are also described.

### *Workshops' data analysis and findings*

All workshops were recorded by using up to four Dictaphones to capture what participants in each team were saying. Transcriptions were made to further analyse the data. In addition, three questionnaires were applied to participants: two in the workshops and one three months after the workshops. The questionnaires and the comparison between workshops were analysed through a thematic coding analysis, by following a concept-driven system in which categories and concepts were already

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predetermined (Miles and Huberman, 1994). Different master codes were used and classified as evaluation codes (e.g. EXT – external factors, INT – internal factors POS- positive comment, NEG- negative comment) to study positive and negative comments and external and internal factors that could influence the use of the model and its toolkit; and perception codes (e.g. CFSC – perceptions about the cards, SCLM – perceptions about the model) to analyse the perceptions of participants towards how by using the model and each part of the toolkit could help them to generate ideas to motivate sustainable consumption. Sub-codes were attached to the master codes when needed. To interpret the data, counting and making contrasts and comparisons were used, as this helped the researchers to see what is in the data by looking at the frequency of occurrence of recurrent events (Miles and Huberman, 1994 p.245).

### *Evaluation of ideas generated using the consumer-focused strategy cards and the SCI*

By comparing both pilot and main workshops it was seen that in the pilots, the levels of sustainable consumption that their ideas could motivate did not surpass the communication-collaboration stages of the SCI. For example, the two teams (red and blue, see: table 2) that made up the C1 workshop worked in areas of opportunity that could encourage consumers to adopt more sustainable behaviours.

The blue team worked on: ‘communicate simple sustainability actions to the consumer through their packaging’, and applied the following consumer-focused communication strategy:

- Create and communicate product/service attributes that offer direct benefits to the consumer,

And the following consumer-focused innovation strategy:

- Continual evaluation of a new product/service/campaign/business model through iterative processes, procedures or/and appraisals.

The red team worked on: ‘engage consumers into sustainability actions through programmes and innovation in their products’, and applied the following communication strategy:

- Make pro-sustainable consumption/behaviour rewarding, fun, and interesting to the consumer,

And the following innovation strategy:

- Create experiences that make consumers feel good.

However, although a mix of communication and innovation consumer-focused strategies were used, these teams only thought about communicating the actions towards sustainability that the company is implementing to the consumer:

*“We can evaluate if our services and processes are sustainable before, during and after we manufacture a product...[as such, we can] inform our consumers [about our sustainability actions] so they can be informed about what we are doing to then influence them” (CoC102).*

Thus it was inferred that at this moment the levels of sustainable consumption they could motivate could not surpass the communication stage of the SCI. Despite this, the company acknowledged three months afterwards that the workshop had helped them to set a five-year plan in which they are *“...looking at the corporate efforts/metrics to align (them) as much as possible [with the consumer] to have a robust sustainability strategy in the company” (BMC103).*

Within the workshop conducted with C2, the participants worked on: ‘developing new business models that are more convenient for the consumer, but at the same time to encourage more sustainable services.’

Although the team in C2 used a mix of communication, collaboration and innovation consumer-focused strategies, they did not relate the strategies to the SCI, and thus it was not clear which levels of sustainable consumption they felt they could motivate and to what extent. In addition, after three months, C2 acknowledged that they had not followed up any of the ideas that emerged at the workshop as *“they ha[d] other priorities to attend [to] with certain time frames” (SusC202).*

Within C3, teams worked upon areas of opportunity related to: ‘...know[ing] about consumers’ environmental impacts and consumers’ perception to integrate this knowledge in the innovation process’, and ‘on creating strong partnerships to communicate sustainability to the consumer in order to influence them.’

Even though a mix of communication and innovation consumer-focused strategies, and a mix of collaboration and innovation consumer-focused strategies were used, the discussion amongst these two teams focused on:

*“Communicating to the consumer and other stakeholders what the company will do to innovate to deliver more sustainable products” (DesC301) and on: “Which collaborations are needed to design social and environmental programmes that can engage consumers into more sustainable actions e.g. packaging take back scheme” (CoC302).*



Thus, it could be said that the levels of sustainable consumption could not surpass the communication-collaboration stages of the SCI, as there was no evidence of ideas generated during the workshop that actually focus on innovating in the business model or their products/services. In addition, after three months of conducting the workshop, C3 also acknowledged that *“first the company has to recognize a sustainability strategy, to then create the awareness between the employees to start working on [influencing consumers]”* (CoC301).

In contrast, in the main workshop the ideas generated reached the innovation stage of the SCI. For example, one of the teams chose: ‘to encourage more sustainable living by building on the trust that consumers have for the company’s brand’ and used three communication consumer-focused strategies and one collaboration consumer-focused strategy.

Although, only these four consumer-focused strategies were used to develop an overall idea that could target the area of opportunity identified, the team also used several collaboration and innovation strategies to evaluate their idea by plotting each card on the SCI tool.

*“Does it provide opportunities for collaboration between consumers and the company to enable two-way feedback, and as such improve consumer experience – Yes it does...Our idea is innovative and does it communicate a strong value proposition to the consumer – Yes it does”* (Red team).

Although innovative approaches could be developed through expanding on these ideas, three participants from C4 acknowledged that it would be difficult to achieve this expansion as *“higher management needs to be involved to drive through such significant business changes”* (CoC401).

Despite this, three participants with a degree of influence in corporate-level decision acknowledged *“in the past we had worked bottom-up achieving sustainability improvements in our products... to this, higher management had responded positively”* (DesC401). As such, building a business case *“with some of the ideas that are currently being investigated in the company [could] had a good response of people by saying yes”* (SusBMC401).

In comparison with the companies from the pilot studies in which C1 and C3 acknowledged that they have to work first on embedding a much more integrated sustainability strategy within the business; C4 recognized after three months, that participants followed some of the ideas to *“incorporate [them] into a product sustainability strategy paper”* (SusBMC401). This reveals that they took action to work ‘bottom-up’, and as such they also

shared the outcomes of the workshop with internal colleagues and were planning to present them to internal and external stakeholders.

### *Implications on how the workshops were conducted*

It was found that to better benefit from the workshop; it should be conducted with a multi-disciplinary team. Having this configuration showed that participants had a more collaborative approach to make linkages between what is happening in different teams or areas. In addition, having a multi-disciplinary team allowed discussions that led participants to account for a more holistic perspective. These discussions helped participants to understand their position in relation to what is needed to innovate in their business model and from which perspective.

Participants that are recruited to attend the workshop preferably should be corporate-decision makers, or at least people that have certain degree of influence in corporate level decisions, as the findings revealed that the effectiveness of the model will depend on the buy-in of decision makers or higher management. However the findings also revealed that this could also be achieved through a “bottom-up” approach through which ideas could be tested before being scaled up for senior management.

### *Corporate culture implications*

The comparison between the pilot and the main workshops brought to light that to effectively motivate sustainable consumption, strategic level engagement is vital. Whilst, the secondary data used to prove that the participant companies had set in place a sustainability strategy worldwide, the workshops proved that some of these strategies are difficult to filter down to region specific areas. Three drivers to filter down quicker global sustainable consumption strategies to region specific operations were found from the workshop findings and were compared to the drivers found to built the model. These drivers are:

**Gaining a financial benefit:** the workshops revealed that global companies would be more confident if those strategies could demonstrate an immediate financial benefit.

**Finding relevant issues for the company:** Benefits such as secure resources, controlling of energy use, and avoiding pollution are in the interest of companies, as they have proved beneficial e.g. improving environmental performance in the manufacturing stages. In the four workshops it was recognized that similar benefits could be gained by focusing on “*the sustainability of consumption as most of the environmental*”

*Presenting the SCL Model: adding value to business strategy through UCD principles impacts are in the consumption stages of the life cycle of a product/service” . (C4 workshop)*

**Being motivated through the influence of other stakeholders:** Including legislation and voluntary standard codes. Legislation was found in the workshops as a key driver for companies to filter down innovative strategies towards sustainable consumption. Legislation can vary by country and region. However, global companies situated in countries that have more support from their governments, seem more likely to establish measures to comply with legislation. As such, they might want to influence other regional operations to implement similar measures.

Despite these drivers, sustainable consumption strategies might take longer to disseminate *“due to region specific cultural differences”* (C1) (i.e. population segment, readiness of the market, legislation, availability of technologies, amongst others). Corporations might have to target their strategies to region specifics, which can be resource consuming and, as such, they might not be willing to spend the time and money on doing so. However, it could be argued that multinational companies that have a strong sustainability and innovation corporate culture will filter down all kinds of global sustainable consumption strategies amongst all regions, as they will understand that the sustainability of consumption is a key determinant for future growth and profitability.

## Conclusion

Through this paper a theoretical framework was presented which was then used to develop the SCL Model and its toolkit. The key concepts of the theoretical framework - communication, collaboration and innovation – were considered as part of applying UCD principles in a business context to leverage sustainable consumption. The former was revealed from initial findings which demonstrated that to influence sustainable consumption it would be necessary to communicate and collaborate with people inside and outside a company in order to propose new innovative business models.

Applying the SCL model within multinational companies drew out some opportunities for UCD principles to act as an enabler for sustainable consumption. Opportunities were seen through the workshop whilst ideas were developed through using the consumer-focused strategies and the SCI. Such opportunities were: a) Companies were able to place the consumer at the heart of their business model, which was seen as a way to help them to build brand trust and engagement, and at the same time offer alternatives

that could influence consumers to purchase, use and/or dispose of products differently; b) Companies thought about developing programmes that could engage their stakeholders including their employees to collaborate with the purpose of improving the sustainability of their products, services and business models; c) UCD principles were used to develop new ideas from the bottom-up, which could result on thriving innovation at all levels of the business, enabling structural changes to happen; d) UCD principles were seen as useful to innovate in their value proposition by developing and deploying new business models that could support more sustainable patterns of consumption and at the same time gain financial benefits. These opportunities will need to be seen by decision makers within the company and could be hindered by regional policies, cultural differences of each population segment in which they operate, and corporate culture and values.

The paper presents UCD principles as an enabler for sustainable consumption and draws out some opportunities through applying the SCL Model in a business context. However, there is no means that UCD principles will address the scale of the problem and further changes in the structure where businesses operate are needed.

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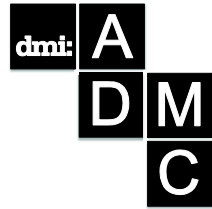
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# Digital Ethnography: a critical evaluation of the contribution to innovation of the current tools and methods

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*Aside of its academic form, ethnography has also become a fairly used method in marketing (Mariampolski 2005), design (Wasson 2000), and more widely, in the products and services creation field (Bauwens & Kloetzer 2013). In the business context in particular, the numeric resources appear as a resources for ethnography in order to work on many points that are specific to companies' businesses, such as temporality, and the articulation between big data and thici data. A preliminary review of the literature reveals some historical shifts since the early stage of the history between ethnography and numeric data. The second part of the paper details two cases study of ethnographic work using digital tools, and immersing in a digital field. Both case studies are commented in order to understand what is the potential of these approaches in innovation processes.*

**Keywords:** Netnography, Digital Ethnography, Design Anthropology, User Centered Design

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## **Introduction: as a fact, life is more and more digital, and so is ethnography**

Historically, ethnography is a methodology that aims at studying behaviors in a holistic way, by embracing the point of view of individuals called informants. In order to do this, it relies on the encounter *in situ*, of the ethnographer and its informants. This is done in their natural setting in order to incorporate all the interactions, between behaviors, practices, cultural and symbolic contexts etc.

If ethnography is a research method that is being used in numerous disciplines, it has been founded and is still deeply linked to the academic approach to anthropology. Keeping this in mind; it is deeply attached to cultural and social dimensions of the situations that are studied and to what allows collective living, even in its individual form.

Aside of its academic form, ethnography has also become a fairly used method in marketing (Mariampolski 2005), design (Wasson 2000), and more widely, in the products and services creation field (Bauwens & Kloetzer 2013). Interestingly, many methodological innovations come from this field because of the organizational constraints weighing on the innovation processes.<sup>42</sup>

In its academic setting, the ethnographic approach implies a long and deep immersion in the field. It is from this immersion, and the time spent observing and sharing that a privileged relation is created with the informant. In the business context, there are two main debates. The first one deals with time management (Jordan 2013) and its impact on how the ethnographic studies are done. As an example, in the marketing field, ethnographic practice tends to be reduced to a short visit (1 or 2 hours), in a “real” context. The longer immersions are then being reserved to the most complex subjects (Mariampolski 2001). The second one deals with the ethnography’s capacity to identify the consumers’ lever of decisions. Because it relies on its capacity to listen to its informants, ethnography can sometimes be perceived as ill equipped to understand the consumers’ subconscious mechanisms (as opposed to psychology, or other devices such as eye-tracking) or, on the opposite, it can be perceived as ill equipped to identify macro social trends (as opposed to big data approaches for examples) (Metaxas & Mustafaraj 2013).

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<sup>42</sup> On this matters, see the EPIC conferences: <http://epiconference.com/>

Combined to the flexibility and evolution of the hypotheses, the ethnographic approaches nevertheless allows revealing hidden rationalities, which cannot be apprehended by classic marketing analysis based on behavioral substrata that are perceived as obvious by the marketing manager.

Since the apparition and development of information based means of communications, ethnology has had to evolve as much in the object that is analyzed as in the tools that are used. In the business context in particular, the numeric resources appear as a resources for ethnography in order to work on the points levers identified above: temporality, and the articulation between big data and thick data.<sup>43</sup>

Ardevol et Cruz distinguish three main steps in this development:

- The cyberspace ethnographies

Linked with the apparition of the Internet, these ethnographies are based on the idea that a “cyberspace” exists in which “virtual communities” may develop. This leads also to the idea that there is a “virtual identity”. The underlying point for ethnography is that there is then a legitimacy to analyze these identities and virtual communities “behind a screen”, and without meeting in the real world.

- The Internet ethnography

This period is correlated with the abandonment of the idea of a “world apart” (Miller & Slater) that would be digitally independent from local cultures and hence separated from the physical work. Terminologies that are being used now start to make a distinction between offline and online rather than “the Virtual world vs. the Physical World”

- The ethnography of the digital

In this period, there is a growing recognition that everything is not about Internet. The amazing development of new tools such as cellphones makes Internet a permeable thing in our life. This leads to a reconsideration of the objects and tools that we use to communicate. Ethnographic approaches hence starts mixing online with offline, at different steps of the ethnographic analysis.

This short historical perspective illustrates three entries by which ethnography has been “modified” by the development of the digital technology. It takes support on the development of Internet and the usages linked to it. Even if Internet is unequal in terms of access (between countries

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<sup>43</sup> <http://ethnographymatters.net/2013/05/13/big-data-needs-thick-data/>

and social classes), it is nevertheless a world phenomenon, which, in the most connected countries has a penetration rate of 70% or more<sup>44</sup>. At the same time that these societal changes are taken into account, the ethnologists have integrated the digital as a tool to be used during the fieldwork. Even if the panorama is not absolutely clear as of now, we can nevertheless distinguish at least three types of tools that are currently the subject of academic research and business applications:

- Netnography, as defined and popularized by Kozinets (2009)

The method is the “online” translation of “offline” methodology. It is a qualitative and immersive approach in digital spaces. Can also be added to this approach the works on digital and virtual ethnographies that are in fact the continuation on the virtual field of the practices created before the emergence of the digital. Here, we see an adaptation of the modes of communication and interaction with the informants, based on the textual mode of communication.

- Digital Humanities (Schreibman & al 2008).

The objective of digital humanities is to conduct an automatic analysis of large corpus of data obtained by a digitalization already done or done on purpose (such as Google’s project of digitalizing books) (Michel & al. 2011). It combines the network sociology’s approaches and the *text mining* ones.

- The numeric platforms (applications or private blogs)

Developed mainly in the consulting world, but also in the psychological one,<sup>45</sup> (Miller 2012), these tools create distant interactions with informants. Via digital interfaces, informants answer requests ranging from simple questions asked in the informant’s context, provided through platforms requesting videos or richer content. The ethnographer then analysis this material in qualitative or quantitative way according to the study’s needs and format.

These different approaches have in common the fact that they try to reduce the costs of *in situ* by trying to set up an interaction despite the physical distance between the informant and the ethnographer (Gurrierii & Cherrier 2013); but also try to get closer to the moment of the informant’s practice through a « just in time sociology »<sup>46</sup>. To summarize, the netnography studies the spontaneous judgments, solicited or not, in the

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<sup>44</sup> Data Q2 2012: <http://www.internetworldstats.com/list2.htm>

<sup>45</sup> For a review of the applications in psychology, <http://www.otago.ac.nz/psychology/otago0474751.pdf> :

<sup>46</sup> For a review of the applications in ethnography: <http://jitso.org/>

exchange frame with the ethnographer, on products, services or the digital expression. Digital humanities break down social movements or trends by following, or anticipating the web practices (Severo & Giraud 2013). And finally, the applications on Smartphone of computers allows collecting judgments or opinions in real time (see the happiness studies on these matters. Palmer & al 2013).

However, because these approaches are new and because they focus on digital as a social phenomenon or as a way to access it, the works that have been published so far are a bit difficult to address: are they digitalized ethnographies or ethnographies on digital? We propose to approach all these practices under the term “digital ethnography”, with the objective to clarify their contribution to the innovation and design practices.

To go one step further, our proposition is to take seriously Ted Richards<sup>47</sup> proposition: the most efficient way to understand the mechanisms that shape the human experience is empathy! To be able to put oneself in someone else's place, is a fascinating but complex thing to do: it implies to abandon for some time one's own conception of things in order to embrace someone else's. Anthropology and ethnography are particularly attached to this problematic (Hollan & Throop 2008), that shapes the relation between the informant and the ethnographer, and serves as a unique way to move closer to the consumers (Winick 1961: 55). It is also a very powerful tool that, by itself, allows to rethink a problematic out of the boundaries established by markets and consumers, or to create these segmentations when, in the case of innovation, no such thing exists (Millier 2014). Based on this, while ethnography in marketing is sometimes limited to a selection of usage items within predefined consumer segmentations, the construction of empathy serves a more radical approach. In this case, it allows reframing the informant's experience based on its emotions, its subjectivity, and more largely, its value (Graeber 2001). It goes the same way for the design ethnography approaches, which reduces ethnography to a question of deviant and tinkered behaviors (Wakkary & Maestri 2008), and does not address the experience and the underlying values.

In this perspective, we propose to discuss the digital stakes of ethnography in regard with its capacity to create empathy in different forms.

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<sup>47</sup> [https://www.ted.com/talks/sam\\_richards\\_a\\_radical\\_experiment\\_in\\_empathy](https://www.ted.com/talks/sam_richards_a_radical_experiment_in_empathy)

## **Objects and tools, mapping the current academic production**

In order to present a review of the literature, we propose a classification based on the object of the ethnographic study versus the tools that are used in order to do it. Both entries subcategorized whether they are digital or analogic. For example, ethnography can be analogic in the object (observing someone drinking wine), but digital in its means (video recording the respondent and posting the video online). It could also be digital in its object and tools (analyzing an online community with digital tools such as Skype or private chat).

We propose some articles that reflect this dichotomy and underline the fact that the situation is still complex since some academic work can appear in more than one box. The “analogic / analogic” box representing the classical approach to ethnography, it is not really developed, the literature being too abundant on the subject. Same thing goes for the analogic object analyzed through digital means. Ethnographers have been using digital tools such as videos or photos for numerous years, and the literature is quite important here too.

In fact, the most interesting research for the scope of this article seems to be on that treats the digital object, with analogic or digital tools. In the case of digital tools, the literature quickly grows with researchers analysing a broad range of objects, such as the relationship with medicine (Aubé, Thoër, 2013), the reason why one posts its holidays’ pictures (Cardon, Beuscart, 2009), or why one exposes oneself on Facebook (Granjon, Denouël, 2010).

The digital tools that are used or tested are also extremely diverse, and range from tweeter conversations (Boyd D. Golder S. Lotan G. 2010), to forums (Aubé, Thoër, 2013), Instagram or Flickr (Cardon, Beuscart, 2009), etc.

In most of these articles, the researchers have a dominant usage in terms of digital tools. As will be argued later, the richness seems to come from the triangulation of different tools in order to produce an adequate number of points of views. As an example, the article from Kara & Graham (2010) present a new digital practice that allows to digitally live a visit of Singapore. The digital tools were complemented by a more classic ethnographic survey in order interview the participants of this experience.

**Table 1** Categorization of academic production

		<i>OBJECT</i>	
		Digital	Analogic
<i>TOOLS</i>	Digital	#2 Ben Belek, 2013 #3 Aubé Sandra & Christine Thoër, 2010 #4 Dominique Cardn & Jean Samuel Beuscart, 2010 #5 Fabien Granjon and Julie Denouël, 2010 #6 Boyd Danah, Scott Golder & Gilad Lotan, 2010 #7 Denisa Kara & Connor Graham, 2010	#1 Nada Sayarh, 2013
	Analogic	#1 Nada Sayarh, 2013 #2 Ben Belek, 2013 #3 Aubé Sandra & Christine Thoër, 2010 #7 Denisa Kara & Connor Graham, 2010	#2 Ben Belek, 2013 #7 Denisa Kara & Connor Graham, 2010

## Benefits and limitations: two case studies

### *Presentation of the case study 1*

#### **Case study 1. A quasi ethnography of smell**

What could be more interesting than analyzing a phenomenon that is *a priori* not really digital - such as the known olfactive cultures- as cultural representations in order to explore Internet’s potential to reveal cultural mechanisms. During a three-year research, we tried to decrypt the cognitive mechanisms that presided to shared forms and olfactory competences in culinary and aesthetic domestic preferences. Quickly, we felt the limitations of an interview-based approach due to the specific aspects of olfactory experience: they are fairly episodic, happen on a long time period and imply a very long follow up of informants for, *in fine*, a limiter number of exchanges. Interviews and experiences followed proved to be very rich, but showed that the daily life’s olfactive experience needed to be rationalized in the form of identity storytelling.

In order to deal with all these limitations, we decided to explore the olfactive verbalization made of Internet culinary discussion forums. More than 2700 exchanges have been extracted in a semi-automatic way (through the use of key words search engines programmed to look for smell

vocabulary, Wathelet 2011). Three types of data were gathered in the course of this project.

First, we collected a large range of olfactory behaviors, even in domain of experiences hard to interview such as sexual life or the management of dirt. Many posts talked about the sensual experience of smelling each other while having sex or using wind or sweat in very intimate games. Even if it seems far from the first object of work (culinary experiences), this helped us get a deeper understanding of how people wrote about their olfactive experiences.

Second we were able to collect a large range of tiny pieces of behavior shedding light on social and cognitive mechanisms through some regularity in the way smell was processed. For instance, we did observe the role of the mother as provider of a legitimate smell for their children, like washing hairs and cleaning clothes of children after a first day of school or coming back from their step-mother. They expressed the need for a legitimate range of smell judged as familiar, linked to a common identity and, connected with other findings, highlighted some cultural trends in the way smell are structured in the course of childhood by mothers and other relatives (Wathelet 2012). Knowledge of that kind was hard to gain through open-interview given the “mundanely aspect” of odors and the difficulty to remember those kind of events in the course of a meeting.

Third, we were able to identify some olfactory skills operating in the course of specific actions, such as cooking. In this case, we described a process we called “sensory pathway”. When cooking, some smell became little anchor structuring the action of cooking and allowing the cook to know to which extent he was in a good or bad way. The cognitive process of creating olfactory cues appeared then to be a central operation, and we were able to describe some of its compound. For instance, cooks tend to pay more attention to smells described as bad, not because of their intrinsic stench but because of their irrelevance at the very stage of the process (like a smell of meat when cooking a cake). In some specific case, specific odours are expected. They are supposed to be the sign of specific change into chemical transformation of food. In forums, lots of talks used this kind of sensory cues to explain some skills said to be non-verbal or embodied, like an hazelnut smell is said to be the reason why a good cook stop to heat butter.



### **Learning from the case study 1**

The netnography brought value to the research in a certain number of ways:

- The number of informants was geographically extended to some targets that would have otherwise been complex to manage (in this case, France, Belgium, Swiss, Canada)
- The semi anonymous aspect of the web allowed the informants to describe smells that related to the personal sphere (sexuality, wife or husband smell etc.). This is a major point of the “digital-digital” approach in the sense that these kind of feedbacks would have been extremely difficult to obtain in a “face to face” setting.
- The possibility to compare experiences that were distant in time in order to describe different paths of sensorial constructions. It also allowed to define shared perceptual structures between the informants (and more precisely, the construction modalities of perceptual indexes)

If this first study proves that many elements of netnography are particularly interesting, the Internet field led to some constraints that had to be negotiated:

- The anonymity is obviously a major limitation when trying to describe who is the informant. In the case of the French food network, it appears to be a very common joke to introduce yourself as an elderly (sometimes supposed to be 100 year olds) given the value of “grand-ma” skills in cuisine.
- This approach offers a generic model, created by individual and distinct units: the different paths of informants are described in sequence but correspond to a multitude of informants. Maybe here can we talk a generalized empathy: one puts himself in the shoes of an abstract informant because there is a reconstruction of numerous scenes in order to build this kind of paths. One ends up here in the posture of the persona: imaginary figures cumulating real experiences. However, it is still possible to get closer to a subjective experience, olfactive in this case, which implies the development of a strong empathy.

To summarize, we produced a specific empathy of the smell phenomenon that is different for two major reasons: it grasped the

dimensions that were expressed through digital means (the smell that I remember by discussing it, the one that is present in the discussion, the one that I talk about, ...) and it allowed an experiential re-composition that completes the empathy created *in situ*. Not better that the *in situ* one, this empathy simply contributes by different means to the general ethnographer's understanding of the experiential value of smelling.

### *Case study 2. A quasi ethnography of cooking traditions in China*

#### **Presentation of the case study 2**

The second case study deals with a two yearlong research done at between Groupe SEB, the world leader in small household appliances, and master in business and design. The objective of the research was to produce a realistic presentation of the tensions existing in China about traditional cooking, and to understand the determiners of the tensions between traditional and modern cooking. Based on the insights that were found in the first phase, Groupe SEB's ethnographer and a group of students were sent to China in order to do a one-week design anthropology. The specificity here was that the remainder of the team left in France would interact with them through digital tools. To summarize, the approach was:

- Digital in its tools and object in the first phase, with an analysis of online communities, and through Internet,
- Digital in its tools (dedicated private blog, Skype for communication, digital cameras for filming etc.) and analogic in its object (physical presence in China, design workshops with informants etc.) in the second phase.

In line with Kozinets, the first step was to define a clear question in order to select what Internet pages or communities should be analyzed.

A first immersion in four important Chinese cooking blogs<sup>48</sup> allowed to select five recipes that generated an important number of comments and that seemed to be perceived as being traditional in Chinese cooking: Jaozi, meatballs, beef noodles, sweet & sour pork, shumai.

Based on this, a number of Internet sites have been selected in order to proceed to the immersion.

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<sup>48</sup> Douguo.com, Haodou.com, Meishichina.com. The immersion lasted two weeks, with the Chinese students of the Master (five of them) serving as interpreters for the rest of the group

*Table 2 List of sources analyzed*

Websites	Appetiteforchina.com Recetteschinoises.blogspot.it rasamalaysia.com Douguo.com Haodou.com Meishichina.com
Blogs	Canarddumekong.com Isseandsinshanghai.com Foodbucks.over-blog.com Mrgalmes.over-blog.com recetteschinoises.blogsp ot.fr
Networks / forums	Recettesd'une chinoise Recetteschinoises Yummyasi Xinshipu Ttmeishi weibo

For the immersion itself, the team chose two types of actions: observation and interaction. The observation part was a fairly classic approach in the sense that the team was only asked to read all the material available and to highlight comments, discussions etc. that were representative of existing tensions. The interaction part was a bit more complex to handle: when it was felt to be possible the team was asked to interact with the people online. As an example, in the case of the swee&sour pork, 14 comments were posted in order to get a better understand of what the tension was about. These comments only got a limited number of answers (4 in total), underlying the difficulties in developing a relationship with people online, and creating a valuable exchange.

This first phase lasted four months and led to a good understanding of what are the elements of modernity that are questioning the traditional way of cooking. More precisely, the health concerns regarding food, the changing lifestyle (and the fact that it is more and more nomadic), the habits of eating outside, and the impact of youth independence on the oral transmission of recipes have been found as being critical. As an example, still in the sweet & sour pork case, an exchange on [www.meischichina.com](http://www.meischichina.com)

underlines the perceived differences between traditional and modern recipes, and the tension around the use of ketchup in many recipes:

*“I love the taste of sweet and sour, but I’ll never accept ketchup!”*

*“You are very good at cooking, and it’s a pretty dish. But it should be calle ketchup pork. Besides, in the 8<sup>th</sup> step, I do not think it’s half bowl’s water, it’s half pot’s water”*

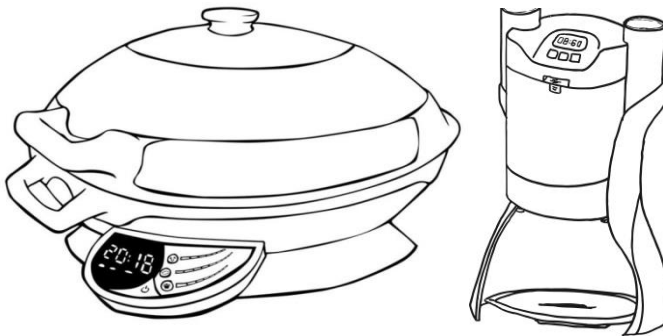
*“As written this recipe was mediocre at best. I think there is room for improvement, the ketchup would definitely be one of the first things to go!” (3 likes)*

*“It should be called the ketchup pork, not the TRADITIONNAL SWEET AND SOUR PORK !!!”*

To summarize, the online approach allowed the team to quickly identify the critical elements of modernity in order to determine what could be valued later in terms of product or services by the clients.

Based on these elements, five concepts were developed that were representative of the insights gathered in the first phase, and brought to China in order to be presented and incremented in a “design ethnography” approach. The concepts were hand drawn objects, with a storytelling explaining its usage and a typical user experience.

Figure 3: pictures of two of the concepts developed for the design anthropology workshop



The objective here of the design anthropology week was to use all techniques (creative workshops, prototyping, iterative work etc.) in order to challenge the digital ethnography’s findings and insights, in interaction with

Chinese consumers. As a consequence, and in line with design ethnography, the informants became part of the project (Kjaesgaard & Otto 2012). Based on the five concepts' drawings, some were quickly disregarded as not very interesting, and the others led to more testing.

*Figure 4: pictures of the design anthropology workshop*



During this phase, digital tools were used in order to create empathy with all the members of the innovation team that was in France during the week. More specifically, there were four persons in the ethnographic team, the industrial company's team in France (mostly engineers), and in China (who also participated in the fieldwork, but on an elective basis, so never the full team), and the student team (conception and creation).

The design workshops held in China allowed the ethnographic team to evaluate the concepts' prototypes with the Chinese informants. All comments, rebuttals or proposals were shared with the French teams and led to revising the insights behind the prototypes, and not the aesthetical or formal choices of the prototypes. This is an important point in the sense that design anthropology can be misused by challenging the formal concepts instead of challenging the insights they are based upon. The pictures below show how the team prototyped some concepts, and "tried them" in a real setting in order to evaluate their real potential.

*Figure 5: pictures of the design anthropology workshop – prototyping and testing in a live situation*



## **Learning from the case study 2**

The first phase, based on a netnography was fairly rich in terms of insights:

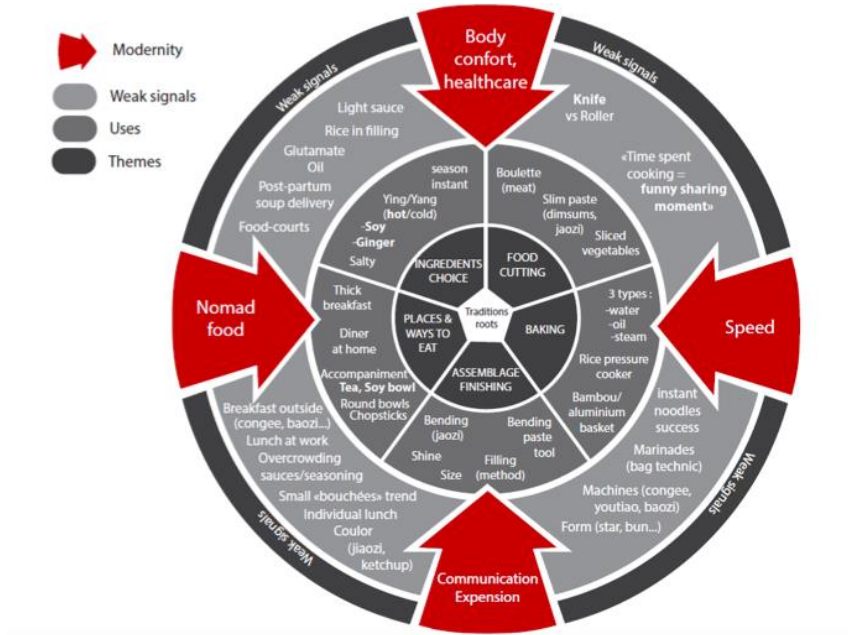
- First of all, it allowed analyzing a distant culture at a lower cost than sending a team directly in China
- Tensions around the subject clearly translated on line and could be understood from the exchanges that happened on line
- Data were accessible by simply reading the pages, without a direct exchange with informants. From this point of view, Internet seems

to be a field where informant's representations are stated without barriers, some people having brutal comments or discussions.

- Interestingly, when the team tried to contact some people online, or to comment, few people answered. This could be linked with the fact that they presented themselves as an ethnographic team and that the time to immerse themselves in the field and be accepted was too short.
- A sort of quantitative filter seems to appear online: a post that receives numerous comments or likes seemed *a priori* to be an interesting one to follow, and it was confirmed during the work.

To summarize, because it was taken from the macro-sociological standpoint, and without precise interviews being held, the netnography did not allow developing an empathy with Chinese informants. The results were much more oriented around the identification of structures, rules or norms. Unfortunately, the experiential or emotional aspects of these rules, structures or norms greatly lacked after the study. This can be clearly seen in the following figure that summarized the netnography, where emotions and experiential aspects are obviously absent. This chart was developed in order to map the findings of the first phase of research, and was used as a summary. If, in itself, it is fairly interesting, it is not a good representation for empathy creating. In fact, out of the five concepts developed based on this chart; three were quickly abandoned when confronted to Chinese people. The authors feel that the main reason was that it is not a very good tool for being empathetic.

Figure 6: a representation of tensions between modernity and tradition in Chinese cooking



The second phase, a design anthropology framework that used blogging and Internet based communication tools also underlined a few critical points:

- It underlined the necessity to do a fieldwork when it comes to leaving the macro-social representations in order to deal with things that are specific to some stakeholders, or that have a situated meaning.
- Some insights found during the netnography have not been perceived as really carrying value once presented on the field.
- The use of the blog has been interesting but difficult. Numerous questions were raised about the kind of material that was expected by everyone (well analyzed one? simple pictures without comments?). This led to some stress in the ethnographic team in the sense that its members wanted to deliver something that was nicely written and presented, hence spending more time on the presentations and postings etc.



The use of the blog was necessary in order to allow the different team to share a vision of the problematic in real time. For the fieldwork, the active collaboration of students allowed to develop new tools, new prototyped concepts through storyboards that were taking into account the insights found. This has only worked because of the “direct” communication that the blog allowed. An interesting point comes from the fact that all the teams’ members underlined that videos and pictures were the best items used. They indeed allowed to share the field’s experience, but also left space for negotiation and creativity.

Also, the publication process of the ethnographic fieldwork becomes a digital ethnography of the ethnographic work in the sense that what is shared and hence has value is the ethnographers’ judgments and the way they publish, day after day, the concepts’ experimentations on the field.

In this case, one can talk of an open empathy, since materials shared in the digital form in almost real time allowed the innovation team to be in the ethnographic team’s boots. It also allowed interpretations and creativity through a critical analysis of concepts during the fieldwork, and through a critical analysis of the ethnographic team’s work according to what he was showing and sharing.

## **Conclusion**

These two case studies highlight a few findings about the potential of digital ethnography. First of all, they underline that no approach is better than the other, but that one needs to triangulate the different tools. Some authors, such as Hime (2005), refer to this as “connective ethnography”. The underlying idea being that the object should be apprehended as a heterogeneous network representing the links between the informants and their connections to real or material objects, or to physical or virtual situations (Jenna Burrell 2009).

The marketing approach to netnography that tries to reduce the time of fieldwork should be dealt with carefully. Indeed, the off and online worlds are connected, but nevertheless have distinct structures. They should be more described as parallel and connected worlds that mirrors. Think for instance about the current big data trends. Neither of these data reflects each aspect of everyday life nor do they capture the whole range of connection defining the behaviors we want to study. It is then feasible to describe how rumor spreads on the social web thanks to automatic analysis of the Internet. But capturing the whole range of judgment leading to the

transformation of shopping behavior needs to proceed thanks to in-depth (or *thick*) analysis of mixed material, based on on-line and off-line materials.

We should proceed with the same caution about numeric platform (blogs, community of customers or dedicated apps), a digital ethnographic approach we are currently studying. Most of them have been developed with the explicit aim of reducing the amount of time needed to gain so called ethnographic insight. By asking informant to document themselves part of their live is also supposed to provide a very wide understanding of specific topic without any interference from the research team<sup>49</sup>. Both assumption remain highly speculative. Our preliminary findings highlight the amount of time needed to create a relevant communication channel with the informants. Having access to intimacy and real life behaviors and emotions implies a lot of energy from the research team as well as the absence of direct communication appear to be a limiting factor to interpretation. Instead of reducing bias like in psychological experimental sciences, the digital medium request lots of engagement from research team to offer in-depth understandings of wishes and uses.

Fortunately, the current approaches tend to push for hybridation of resources, and as a consequences the data analysis processes, rather that replacing the analogic field ethnography by the online field netnography

The fact that these approaches are still not very clear allows for great optimism in terms of academic research. As an example, they pose the question of “just in time sociology”, or the help for decision-making in terms actions that are being done, or finally, the users’ solicitations in innovation processes. Put differently, how could we reintegrate empathy (length in the work, and familiarity), but in ethnographic relations mediatized by the digital tools. We are here in the domain of the construction of a digital empathy that would be adequate according with the subjects at stake: create a sense of understanding of what cannot be captured through face-to-face interview. Maybe an “intimacy empathy” that has been so far privatized?

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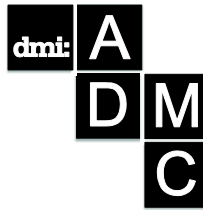
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<sup>49</sup>The « 360 ° ethnography » claimed by several market agency.

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# The Drive Towards User-Centred Engineering in Automotive Design

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*Falling sales in Europe and increasing global competition is forcing automotive manufacturers to develop a customer-based approach to differentiate themselves from the similarly technologically-optimised crowd. In spite of this new approach, automotive firms are still firmly entrenched in their reliance upon technology-driven innovation, to design, develop and manufacture their products, placing customer focus on a downstream sales role. However the time-honoured technology-driven approach to vehicle design and manufacture is coming into question, with the increasing importance of accounting for consumer needs pushing automotive engineers to include the user in their designs. The following paper examines the challenges and opportunities for a single global automotive manufacturer that arise in seeking to adopt a user-centred approach to vehicle design amongst technical employees. As part of an embedded case study, engineers from this manufacturer were interviewed in order to gauge the challenges, barriers and opportunities for the adoption of user-centred design tools within the engineering design process. The analysis of these interviews led to the proposal of the need for a new role within automotive manufacturers, the “designer”, to bridge the divide between designers and engineers and allow the engineering process to transition from a technology-driven to a user-centred approach.*

**Keywords:** *automotive design, user-centred design, personas, designer.*

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## **Introduction**

In an industry worth more than €500 billion annually, producing more than 80 million vehicles worldwide each year and consisting of over 50 major manufacturers worldwide, the automotive industry represents a lucrative but highly competitive manufacturing industry (ACEA, 2012; Deloitte, 2009a). With sales falling in Europe in 2013 for the sixth consecutive year (Boston & Curtin, 2014), automotive manufacturers are increasingly turning to new strategies to retain their share of sales in a contracting market. Some strategies have focused on the industry approach to manufacturing, namely a technically focused push for a “build-to-order” process rather than the current “build-to-stock” approach in order to reduce overall value-chain costs and to increase efficiency (Parry & Roehrich, 2013, pp. 13). However, others stress a more customer-orientated approach, striving to develop products that meet customer requirements (Oliver Wyman Group, 2007).

The global automotive industry represents the pinnacle of technology-driven innovation, striving to produce marketable, high-tech products in a highly competitive industry. This competition has driven the need for automotive firms to develop a customer-based approach to automotive manufacturing in order to differentiate themselves from their similarly technologically-optimised competitors (Oliver Wyman Group, 2007). With this said, the customer-based approach that is becoming increasingly popular with automotive manufacturers places emphasis on sales and marketing of their products to potential consumers, instead of the development of ongoing relationships with these prospective customers (Deloitte, 2008). However, in spite of this move towards a customer-orientated sales approach, automotive firms are still firmly entrenched in their reliance upon technology-driven innovation to design, develop and manufacture their products (Deloitte, 2009), with a customer focus acting as little more than a way to sell the product to the customer.

In recent times, challenging economic and market conditions have led some automotive manufacturers to question the status quo and seek out new methods for vehicle design and subsequent sale to end-users. More specifically, the time-honoured technology-driven engineering approach to vehicle design and manufacture is coming into question. The rising importance of rapidly changing consumer needs is making it difficult for automotive engineers to focus on the latest and greatest technology integration into their vehicles with little regard for the end-consumer (Accenture, 2010). Understanding that increasing future competitiveness,

and subsequently vehicle sales, is dependent on producing vehicles that are designed and engineered for what the customer (i.e. the user) needs, not just on what is the most technologically advanced, represents the next step forward in the highly competitive global automotive industry. This represents the integration of the user into the total design process, from initial conception through to engineering design and subsequent manufacture.

The aim of this paper is to examine, from an engineering perspective, the challenges and opportunities facing automotive manufacturers seeking to adopt user-centred design as a way to add value to their total vehicle design, development and manufacturing process. Typical user-centred design research explores the implementation of these tools from the perspective of a designer (Cooper, 2004; Bucolo & Matthews, 2010; Dell'Era, Marchesi & Verganti, 2010; Gellatly, Hansen, Highstrom & Weiss, 2010). However, the aim of this research is not to understand how better to enable designers within the automotive industry to effectively implement user-centred design, but rather to assess how to empower engineers with traditional design tools throughout the entire automotive development cycle. This research, conducted as an embedded case study with a global automotive manufacturer in Germany, seeks to test the following hypothesis developed upon reflection of the current state of the industry:

*The acceptance and implementation of design tools such as personas within the context of automotive engineering departments is dependent upon the benefits of the tools perceived by engineering staff in terms of effort vs. reward, in addition to its ability to be adapted to the inertia-bound, heavily regimented and hierarchical structure of large, global firms such as that assessed in the research.*

This paper examines the preliminary stages of the attempt by this global automotive manufacturer to implement the use of a single design-tool (personas). Interviews of key personnel are used to examine (from an engineering standpoint) the challenges faced in the implementation of design tools, such as personas, in the existing automotive development process. Findings from the study provide insight into the issues faced in acceptance of user-centred design tools by technical staff, and propose a number of methods to overcome these impediments.

Whilst this research focuses on an automotive manufacturer in Germany, the challenges and opportunities for user-centred design from an engineering perspective are relevant to other global automotive manufacturers where technology-led innovation and design holds sway.



### *Centring on the user – user-centred design and personas*

The integration of the customer and their needs into the automotive design process represents a new design approach for automotive manufacturing firms. The move from traditional, technology-driven innovation is being facilitated through the use of existing user-orientated approaches. More specifically, it is a combination of the traditional technology push approach, and the complimentary design push approach, focusing on the meaning of the product to the user (Dell’Era, Marchesi & Verganti, 2010). Alternate approaches, such as user-centred design, represent established methods for continually refocusing the design on the end-user, and are starting to be implemented by automotive firms seeking to gain a competitive advantage within the technology-driven industry.

User-centred design can be defined as “...a vision for business growth based around deep customer insights...”, allowing companies to better understand their customers’ values i.e. what customers really need in a product (Bucolo & Matthews, 2011a). More specifically, companies often have a limited understanding of what their customers want, limited to what is immediately observable via interaction with prospective customers which tends towards the solution of short-term needs (Bucolo & Wrigley, 2011). User-centred design provides an opportunity to “develop deeper customer understanding that goes beyond observation”, providing a longer-term understanding of customer needs and requirements in the context of the product design (Bucolo & Wrigley, 2011). The application of user-centred design methodology often uses ‘Personas’ to better understand the users for which the product is being designed.

Personas are typically defined as “fictional, detailed archetypical characters that represent distinct groupings of behaviours, goals and motivations” (Calde, Goodwin & Reimann, 2002) which act as ‘stand-ins’ for real users and help to guide decisions about functionality and design (Calabria, 2004); they are often used when designers are unable to engage directly with end-users, be it due to time, money or other project constraints (Marshall, Cook, Mitchell, Summerskill, Haines, Maguire, Sims, Gyi, & Case, 2013). They are based on knowledge of real users garnered from user-research, and help to identify customer motivations, expectations and goals with regards to the target product segment (e.g. automobile usage). The development of personas as a focus tool used, for example, in vehicular design, personalises target customers in the minds of employees, removing the disconnection in the design process between the customer

and the product developer, allowing for a design to take multiple stakeholder perspectives into consideration in terms of final product design.

Such a user-centred approach to vehicular design has precedence, with a user-experience design team at General Motors seeking to gain a deeper understanding of how their drivers interacted with their in-car infotainment systems, in order to better tailor the design of these systems to the everyday General Motors vehicle user (Gellatly et al., 2010). In spite of the apparent move towards a user-centred approach to automotive project design and development, this project appears similar to many automotive design “success stories”, such as the design of Ford’s successful 2005 Mustang (Tischler, 2004). More specifically, such projects are predominantly design-centric, divorcing themselves from the reality of the multi-disciplinary nature of automotive vehicle development, where designers and engineers are both required to successfully manufacture a vehicle. Whilst this cannot be entirely the case, as such projects go on to develop fully-functional products despite the apparent backgrounding of the developmental engineers, such articles highlight the current absence of the engineer from the design process, at least from the perspective of automotive design.

### *Divorce of interaction – engineers & designs forever apart*

This lack of integration between designers and engineers in development projects is often cited due to the traditionally technology-driven nature of (automotive) engineers who are not accustomed to looking at design from a user-centred perspective (Tütek & Ay, 2011; Bergström, 2007; Persson & Warell, 2003). Such an argument, whilst seemingly logical at first glance, marginalises engineers through such a black and white perspective, turning the design process into an “us versus them” debate between designers and engineers. This marginalisation of such an important facet of the automotive development process appears rather naïve, as although customer-orientated approaches are typically developed within non-technical departments (i.e. by designers), such an approach needs to be adopted by the technical (engineering) staff in order for it to be successfully applied in the physical product. Furthermore, past persona-driven projects, such as that completed by Microsoft (Pruitt & Grudin, 2003) belie the notion that technical staff are divorced from the user-centred design process, with the inclusion of software engineers from the commencement of their persona project (albeit after initial reservations and conflict).

It is proposed that in a similar manner to that of the ‘transitional engineer’ proposed by Wrigley & Bucolo (2012), which builds off of the idea of Norman (2010) for the need for a transitional engineer/developer to bridge the gap between design and business, that there is an inherent need for a transitional engineer to bridge the gap between design and engineering. Whilst the ‘mid level’ opportunity presented by approaching departmental managers and key decision makers with the concept of user-centred design could be addressed by the pre-existing proposition of an intermediary translation team who would “translate the knowledge into practical realisations that the team (business) can then develop and deploy” (Wrigley & Bucolo, 2012), a translation into a business-context is unlikely to work with engineers. This new breed of transitional engineer/developer, a “designer” would function in all three worlds – design, business and engineering – and would facilitate the implementation of user-centred methodologies, such as persona use, within the vehicle design processes of ground level engineers.

## **Case study – engineers, automotive design and personas**

The case study firm, a German automotive manufacturer, is attempting to implement a user-customer centric approach throughout their entire vehicle design, development and manufacturing process. The manufacturer, in spite of its industry leading status at a global level, is mired in a “technology driven” vehicle design process, with the development process led by engineers with little awareness of the users for whom they are designing. The firm’s approach to automotive design is given in Figure 9, and highlights a key barrier to their effective implementation of user-centred design. At first glance appears to have a user-centred focus with the initial design step involving the definition of customer needs and requirements followed by initial customer engagement.



*Figure 9 - Design methodology of automotive case study firm*

However, this approach is dependent on the initial interaction of a multidisciplinary team involving customer-orientated marketing and design employees, and technology-focused engineers, which results in the initial concept definition. Following this stage there is limited interaction between the two groups for the life of the design project. The absence of the user from this technology-driven development process at the firm, and at many others like it, is none more apparent than in their final vehicular products. One fine example is the number of optional extras (vehicle add-ons not included as 'standard') for one vehicle model increased from 14 in 1986 to 92 in 2006, whilst the number of customers purchasing these add-on components remained steady at only 1 in 6 for the same time period (Oliver Wyman Group, 2007). Furthermore, many of the features included as standard in the vehicles were not utilised by users due to their complexity and lack of explanation/intuitiveness (Oliver Wyman Group, 2007).

## **Method - gauging engineers' drive to adopt personas**

The research method undertaken as part of the case study conducted with the automotive manufacturer aimed to assess the challenges, barriers and opportunities for the adoption of a user-centred design approach. This study selected personas as a tool representative of this approach. The selection of personas was a result of their recent development within the firm, along with the use of storytelling and storyboarding, in an attempt to re-centre the vehicle development process around the end-user. These personas attempted to combine measurable customer data, such as driving habits, vehicle usage and driving climate, with less quantitative data such as the psychological needs and social characteristics of potential users. This process was proposed in order to develop a set of target customer representations that could be integrated into the "story" of a vehicle in order to more accurately define the vehicle development requirements.

An action research approach has been applied to understand the how engineers at the company could implement such a user-centred design process. Defined as "the study of how technology is applied in the real world and the practical consequences of technology-enabled action" (Kock, 2013), the action research method moves away from traditional, solely theoretical research, by providing a project solution or service outcome to a specific organisation, in addition to adding to existing academic knowledge on the focus area of the project (Georges & Romme, 2004).

The researcher actively participated in the journey towards the desired organisational change within the participatory automotive manufacturer firm, and the findings outlined in this paper are based upon interviews conducted with engineers at the firm. These interviews took place after the development of initial ‘trial’ personas, and used semi-structured questions to guide the interview. The interviews used the trial personas as examples of the proposed user-centred design methodology, with additional questions specific to the participant’s area of expertise used to better gauge their understanding and opinion of the potential for the implementation of personas within their work and the overall vehicle design process within the firm. Ten 30 to 60 minute interviews were completed, with participants comprising a mix of senior engineers and engineering management.

## **Results – unwillingness to change, or institutional forces at work?**

Interviews with engineers at the case firm suggest that they are quite open to the implementation of design tools such as personas in the automotive development process. However, in spite of individual positivity towards the embodiment of user-centred design thinking in the use of personas in day-to-day development processes, the interviews also revealed significant institutional challenges and barriers that must be addressed if the firm is to transition towards a more user-driven, less technology-led vehicle design process. An analysis of interview transcripts highlighted three key institutional challenges that must be overcome for the successful uptake of the persona design tool by engineers:

- Focus of the engineering design process on “technical requirements”
- Managerial and political decisions in design
- Disconnect between engineers and the customer/user

Breaking down and understanding these institutional barriers is the first step in understanding the subsequent opportunities for the transition to a customer-centric engineering design process at the case firm and many automotive manufacturers like them.

### *Shifting focus from technical requirements*

Emerging as the underlying institutional barrier, ‘technical requirements’ represent the focus of the automotive manufacturer on developing their vehicles to meet a certain list of pre-determined quantitative specifications

(e.g. top speed, acceleration, mileage, torque, horsepower etc.). Whilst such detailed, data driven specifications are vital in completing the necessary calculations for engineering a vehicle, it is argued that the fixation of the engineering design process on technical requirements is inherently institutional. Participant 3, when discussing the development process notes that: *“the department manager is always a part owner of the project, they delegate the work and say: you are now doing this and implement these technical specifications”*. This suggests that the engineers have little say over the choice of a technology-centred design process which stems not from engineers themselves but rather from higher-up and/or elsewhere in the firm. Similarly, Participant 1 elaborates on the design process implemented by the automotive engineers where *“...with the requirements look to the competitor, the competitors, and then you develop your concept, and then you make a list, which concept fits best to your technical requirements...”*, highlighting the dependence of all design decisions on their need to fit the predefined technical requirements.

### *Managing managers and engineering decisions*

The second key institutional challenge was managing managers and engineering decisions, that is the dependence of all development decisions ultimately residing with departmental management. Furthering the need to include, if not focus on, departmental managers in discussions pertaining to the implementation of personas is the understanding of their sheer influence over design process choices and the subsequent tasks undertaken by the engineers under their command. One participant discussing the engineering decision making process reflects: *“we place a lot of time and effort into a design, but only do it the first time, because one of us (from the department) wants it that way. And the person that wants it is not the customer, but the department manager, who says, we have to include these options. And the reason for this, often not even they know, because someone said so”*. Furthermore, this top-down approach to design results in engineers who are often not even engaged in the reasoning behind the work they are completing. Participant 3 elaborates: *“At the moment everything comes from management. They are specifying everything. Of course, someone else (non-manager) maybe thinks a little bit about it, also about the bigger picture, but that is totally voluntary. I would say that everything is already specified in advance for the engineers”*.

### ***Engineers – a lack of user awareness***

This institutionalisation of engineering design as a hierarchically dominated, top-down decision making process has significant flow on effects with the way engineers think about the individuals who will purchase and use the vehicles they are developing. In short, they don't. One participant bemoans the lack of comprehension as for whom the vehicles are being manufactured: *"there is no person behind this, that is tangible, that people can relate to and understand why they want this feature"*. This lack of awareness of the user is prevalent throughout engineering teams, where the engineering *"team leader has no influence over whether the concept is relevant to real customers, because they are only working on small things"* and this stems back to the apparent lack of input the engineers have in the overall design process.

Moreover, it is argued that this institutionalised removal of the engineers from the design decision-making process has in of itself created the issue where the engineers themselves *"don't see, that there is a customer somewhere that wants it"*. This is not to say that the implementation of personas, and through them user-centred design, faces no barriers directly from the engineers. As one engineer put it *"there are many professionals that have been here for ages doing this and they always say: 'I've always done it like this, I can't do it any other way. I always do it like this. Now comes something new, how is this supposed to be better'"*. However, such apparent resistance to change appears to stem directly from the disconnect between the engineers and the users for whom they are designing. It has been suggested that such a barrier could be challenged by highlighting the tangibility of the user-customer: *"If someone now says, I have here a customer profile and I have here my personas and they are like this...then that would be quite interesting, because it is a completely different aspect, the customer is completely different, sort-of. And alone that would help, because developers often forget the customer"*. Such an understanding of the existence and importance of real users by the engineers developing the vehicles, and ensuring this thinking is at the core of engineering design is stressed by Ward, Runcie & Morris (2009) and Bucolo & Matthews (2011) to be of tantamount importance for ensuring automotive manufacturers have the knowledge and flexibility to integrate potentially changing customer requirements, and thus remain competitive in the global automotive market.

## Findings – the value of user-centred automotive design

As succinctly observed by one interview participant, *“I think something, we have to do something like mind-change”, “but to get this opinion or mind change, is the hard part”*. It is such a “mind change” that needs to be targeted if automotive manufacturers such as the case firm are to reap the benefits of user-centred design and develop a sustainable engineering design process (sustainable in the sense of minimising features unwanted by users and maximising the available functionality). Changing such an institutionalised way of thinking such as the technology-driven vehicle development mentality adopted by the case firm presents a sizeable hurdle to be overcome. However, by reflecting upon the dialogue from interview participants different ‘levels of opportunity’ arise that may be targeted to help transition automotive manufacturers to a user-centred view of vehicle design, namely:

High-level: a company-wide “mind change”;

Mid-level: a “mind change” in departmental managers and key decision makers, and;

Low-level: encouraging the shift towards designing for an actual user-customer rather than just for technical requirements.

Whilst a ‘high-level’, company-wide change in institutionalised behaviour presents the greatest challenge, it is believed that by reducing this challenge down to localised opportunities such as those represented at the ‘mid-level’ and ‘low-level’, user-centred design or *“the right car for the right target people”* can be achieved in engineering-dominated firms such as automotive manufacturers.

### *Integrating personas, technical requirements and managerial engineering design*

Interviewing senior engineers gave insight into how to best present the concepts of personas to the managerial decision makers (and the user focus with which they bring), namely highlighting the overall advantages. Specifically, an often-cited institutional issue at all levels was that of time-pressure where *“we simply don’t have the time, we have more projects, we never have a specific time to dedicate to one project”*. The proposed use of personas is seen as *“helpful if you do it, to get a really transparent view of the customer and then you have good decisions, and therefore you save time”*. Similarly, another participant highlighted their usefulness *“especially*



*for new concepts, where we didn't know what we are doing, I think it would be very very helpful to start more controlled, and to have the customer more in focus".* By engaging key decision making managers with the advantages arising from the use of personas, namely that of improved products and reduced time pressure, the opportunity for a 'mid-level' institutional mind change can be seeded.

Furthermore, this engagement can be fostered from within the senior engineers, with one stating that for personas *"in general the acceptance from the 'method experts' is definitely there"*. These senior engineers are the direct link between the departmental managers and the engineering design teams, and their view that *"these personas are naturally a great application to see that the final customer would really want this, and not just the board (managers) but really the final customer, that there are people outside the company on the street that want it"*, suggests that integration of user-centred design via personas is merely a matter of framing the process in terms acceptable to the respective stakeholders, in this case the departmental managers.

### *Connecting engineers and their users*

Similar to the approach suggested for the 'mid level' opportunity presented by targeting departmental managers, instigating a 'low level' institutional shift towards user-centred engineering design is dependent on the correct framing of the proposed persona process. Whilst engineers are cited as data and technology driven, the researchers argue that this is largely a result of the engineering environment where *"there is so much that they need to do, and they often don't know why they are doing it that way"*, *"there is no person behind this (the design), that is tangible, that people can relate to and understand why they want this feature"*. Engineers are indeed technically minded given their role in the production process, but as one participant said when asked about the usefulness of understanding the user in the overall design:

*"if you know the background of the customer, if you know ok he's somebody who's more keen about understanding the technology or if the vehicle is vibrating, or if he just wants some fat car which is just moving at 180 (km/h)...we don't know...then the discussion usually ends there, because we don't know, nobody can answer for what reason did the customer come to the dealership. So I think it is a very good opportunity to use the tool"*.

Given the apparent amiability of the engineers to the added value brought about via user-centred thinking, connecting engineers and their

users seems to be a matter of finding the right medium for the transfer of information. When propositioned with the concept of personas to centre the user needs in the engineering design process, the following general positive response was received from one German engineer: *“that I have a persona supporting me that tells me why I am doing all of this. And this is, for an engineer also tangible, because the data support this”*.

## What next for automotive engineers?

The proposed concept of “designengineering”, whilst seemingly at odds with the traditional manufacturing separation of engineers and designers, as seen at the case firm, could be crucial in ensuring the acceptance of the general engineering staff. It would allow for a shift in the institutional mentality found at many large automotive manufacturers. As one case firm design engineer recounted:

*“I think the most important thing is the acceptance, because people have to come to us, and tell us, and ask us ‘could you please help us, we are developing this part, could you help us so we know what we have to look into’, and people don’t do that”*.

The implementation of “designengineers” tasked with re-connecting engineers with designers and the underlying vehicle design throughout the vehicle development process (as shown in Figure 10) would ensure that the final product is ultimately one that is desirable to the target customers. By framing each stage of development in the context of the Personas developed along with the vehicle’s story in the initial project definition stage, “designengineers” would allow engineers to better understand the needs of those for whom they are developing the vehicle. This process would also provide departmental managers with a clear idea of the accuracy of the vehicle design at different stages of development, and allow them to more easily base their future decisions on the objectives of the vehicle design, namely the Personas and story for which it is has been designed.

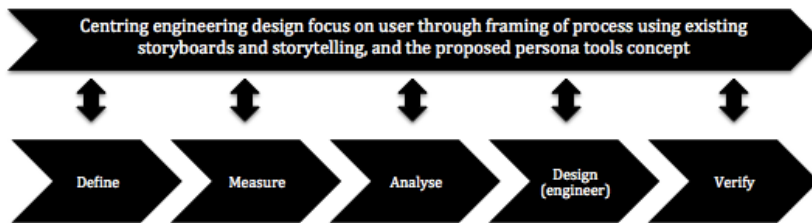


Figure 10 - New proposition for vehicle development process at the case firm

## **Summary**

The core premise of this paper is the current trend of global automotive manufacturers looking to shift their vehicle development processes to a more user-centred approach in order to remain competitive. Whilst user-centred development processes are not new to the automotive manufacturing industry, they are typically used only by designers, with a key segment of the development team, engineers, not included in this process. Such a divide between designers and engineers currently results in a disconnect between engineers and the customer, resulting in the engineering of vehicles that contain components that remain untouched by the user. Compounding this problem is the residence of all decision making authority with the departmental managers, which has come to institutionalise the focus of the engineers solely on technical specifications to the detriment of the end-user.

To overcome this disconnect, the concept of a “designer” was proposed. This role would provide a means to connect the engineer with the customer through the framing of the engineering process decisions on the use of storytelling via Personas. By using Personas, “designers” would provide engineers with a tangible concept of whom they were developing their vehicles, and the story behind why they were using the vehicle. This would allow for engineering decisions to reflect the needs of the user rather than technical specifications disconnected from everyday usage. Similarly, such a process would also provide positive benefits to the key decision makers, the departmental managers. Such a role would provide departmental managers with a clear idea of the accuracy of the vehicle design at different stages of development, and allow them to more easily base their future decisions on the objectives of the vehicle design, namely the Personas and their stories, for which it is has been designed.

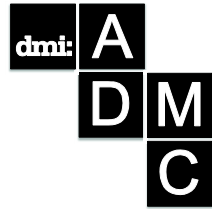
In spite of the apparent positivity towards the implementation of Personas by the engineers and departmental managers interviewed at the case firm, much work is to be done to help transition automotive manufacturers to a more user-centred process at all stages of the development process. Following on from the insights presented in this paper, future work will involve evaluating how such “designers” could best be implemented within automotive manufacturers, and ultimately the integration of such a role within an automotive manufacturer, as part of an existing role, or as a new position.

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## Value Creation: disruption and empowerment to support creativity in-the-wild

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*Value creation is the process whereby individuals and teams within organisations co-create consumer benefit. The consumer can be external – a client or customer; or internal – other colleagues and departments within the organisation. We explore this process through the Disruption-Empowerment Model of Value Creation, which describes the instrumental relationships between disruption, perception, and empowerment and their impacts on team creative performance. We suggest that value is both individually and socially constructed from creative processes and contexts, and propose that empowering individuals and groups to be creatively disruptive will ultimately improve team creativity and productivity. We differentiate between value creation of (among others) return of investment (ROI), market share and brand recognition, and the personally affective values of creativity rooted in the creative practitioner's or team's own process and sense of meaning.*

**Keywords:** *creativity, disruption, empowerment, value, flow, groupthink*

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## Introduction

In the design industries creativity — the ability to come up with novel and useful ideas, procedures, and products — is a critical component of both design thinking processes and workplace organizational climate. The concept of group creativity has become increasingly popular, for example in business practices based on assumptions that “hive minds” are exponentially more creative than people working alone and in design practices where consumers are increasingly becoming co-producers. However, groups are not always more creative than individuals; they are sometimes subject to periods of *groupthink* or *stasis* that lead to decreased creative productivity. This paper’s primary contribution is a new dynamical systems model of creativity that describes the relationships between a) group creative processes, b) external and internal disruptions to those processes, and c) the socio-physical organisational environment with respect to value creation.

The Disruption-Empowerment Model of Creativity & Performance positions disruption, perception, and empowerment as instrumental elements in both individual and group creativity. Our work draws on previous research in multiple areas, including Wallas’ (1926), Evans & Russell’s (1989) and Resnick’s (2007) models of the creative process, Gibson’s (1977) concept of affordances and Weeks & Fayard’s (2007) work on the complementarity of affordances and habitus (Bourdieu, 1977). We also reference Csikszentmihalyi’s (1975; 1990; 1996) work on *flow* and Janis’ (1972/1982) concept of groupthink.

We first provide a brief survey of creativity processes and background creativity research relevant to the paper’s focus of disruption and empowerment in the creation of value. We define key terms, such as disruption, empowerment, and groupthink. We describe our methodology and the background to the two teams from which we derived our model: staff in a multinational engineering company (MEC) charged with trouble-shooting across 80 plants worldwide; and government employees in a Departmental Innovation Support Team (DIST) enabling colleagues to deliver policy and key performance priorities and targets. We next propose a theory of individual and team creativity that describes two alternative cycles, each set off in response to a disruption in accordance with the degree of empowerment given (or perceived to be given) to the team. We derive the model from, and illustrate it with, examples drawn from our case studies. A key strength of our model is that it is based on observations of



working groups applying creativity-in-the-wild in situations that can be, in both case studies, highly contentious within their respective organisations.

## **Background**

Creativity today is understood to entail a confluence of factors, commonly referred to as the *4Ps* (among others Rhodes, 1961; Kozbelt, Beghetto & Runco, 2010): *people, processes, products* and *press* (the socio-cultural and physical environment of creativity). In this paper we focus on the creative process.

### *Creative Process*

The creative process involves both problem finding and problem solving. A significant portion of the creativity literature examines the problem solving process as a series of mental stages involving ordinary cognitive processes. However the way a creative problem is “found” (discovered and/or defined) can significantly impact the creativity of a corresponding solution (Getzels & Csikszentmihalyi, 1975; Mumford, Baughman, Maher, Costanza, & Supinski, 1997). In their meta-analysis of prior creativity research, Jay and Perkins (1997) found that problem finding includes several sub-processes, including an iterative reassessment and reformulation of the problem statement throughout the creative process. Creative problem finding and problem solving are highly influenced by both environmental conditions and people’s abilities to see opportunities or challenges in a situation (Malinin, 2013). It is commonly understood today that creativity is an iterative process (among others: Armbruster, 1989; Csikszentmihalyi, 1996) and that even the problem finding and problem solving phases may be intertwined — such as when unexpected setbacks (e.g. “breakdowns” or “disruptions”) during problem solving may require a redefinition of the problem itself (Malinin, 2013).

### *Group Creativity*

Creativity researchers generally acknowledge that all creativity involves some form of social interaction — it does not happen unaided in the solitary human mind, but rather emerges through people’s interactions in their socio-cultural environments (Amabile, 1996; Csikszentmihalyi, 1996; Sawyer, 2012). Some researchers assert that groups working together on a single creative problem produce more creative outcomes than individuals simultaneously working individually on the same problem, particularly when

the problem is complex (Fischer & Giaccardi, 2007; Sawyer, 2007). There is contrary evidence to suggest, however, that group processes like brainstorming (a group divergent-thinking process described in Osborn's (1953/1979) model) can also lead to decreased creative ideation within a group compared to the same number of people working alone (Diehl & Stroebe, 1987, 1991; Mullen, Johnson, & Salas, 1991; D. W. Taylor, Berry, & Block, 1958). These contradictory findings suggest that group creative processes are complex and subject to environmental influences (Amabile, 1996; Csikszentmihalyi, 1996). See for example Tatsuno's (1990) group creative process model, based on his observations in Japanese manufacturing plants, that describes how core organisational values are central to creativity. Work on the dynamical systems approach (Arrow, McGrath & Berdahl, 2000; Aragon & Williams, 2011) has largely influenced the now generally accepted perspective that creativity is a socially-situated and socially-constructed phenomenon.

## **Related work**

In this paper we aim to further scholarly discussion about workplace creativity by examining the relationship between value creation, disruption, and empowerment in team creativity-in-the-wild. In particular we extend Csikszentmihalyi's (1996) work on creative flow by considering its role in team creative processes both in terms of creative productivity and groupthink. We also build on Amabile's (1996, 2013) work on creative environments by considering the role of physical context in workplace creativity and productivity. In Table 1 we synthesis the related research underpinning the development of our theory of creative performance introduced later in this paper.

Table 1 Summary of Related Research

Concepts & Definitions	Summary of Related Research	Sources
<b>Creativity-in-the-wild</b> Creative processes are dependent upon people's interactions in their socio-physical contexts, and thus creativity occurs iteratively in-the-wild.	Distributed cognition: Individual cognitive abilities are magnified through interactions in their socio-physical environment	Hutchins 1995
	Flow: total immersion in creative problem-solving is sustained by clear feedback from actions	Csikszentmihalyi 1975; 1990; 1996
	Group immersion (flow) in, for example, creative jazz improvisation and theatre improvisation	Sawyer 2007; Schön 1983
	People use features of their physical environment to engender, sustain, and inhibit different creative processes in order to improve productivity	Malinin 2013
<b>Affordances</b> <i>The relationship between the features of a socio-physical environment with respect to a person's goals, intentions, and abilities; providing opportunities for action in pursuit of those goals</i>	Features of the environment present action opportunities: people see them in terms of <i>functional relevance</i> .	Gibson 1977
<b>Perception</b> <i>Group collective perception of the affordances or constraints of a situation impacts group empowerment and creative performance.</i>	Not all affordances are perceived but creative people are skilled at uncovering hidden affordances; perceived affordances may be false or potential (not yet actionable.)	Malinin 2013
	Perception is impacted by organisational climate  Whether or not people feel in flow	Leigh 2011; Williams 2013;

	depends upon how they subjectively perceive the challenges and experiences in their environment	Nakamura & Csikszentmihalyi 2002
<b>Empowerment</b> <i>Level of perceived empowerment – by self, team, or organisation – impacts people’s abilities to perceive affordances in a creative situation.</i>	Empowerment to perceive affordances depends upon intrinsic factors (e.g. personal skills, abilities, motivation, personality/ mindset) and extrinsic factors (e.g. autonomy, constraints, control, resources) in the socio-physical environment. High creativity correlates with high empowerment (especially over physical environment)	Malinin 2013; Williams 2013  McCoy, 2000; Dul & Ceylan 2011
<b>Disruption</b> <i>A misalignment between expectations of how a creative situation ought to be and outcomes of how the situation is perceived. We posit that disruption is a necessary counter-balance to the possibility of groupthink (Janis, 1972/1982)</i>	Part of the creative process as <i>bisociation</i>  “Tension between continuity and discontinuity (and between compliance and transgression)” (p.35)  Appears as play and experimentation in the creative process (including Einstein’s <i>combinatory play</i> , “a whack on the side of the head” and “provocation”  Dissent and diversity play an important role as a stimulus of creative thought, also liberating people from a tendency to conform  Not listed in indices of creativity handbooks	Koestler 1964  Klausen 2013  Resnick 2007; Van Oech, 1983; de Bono, 1972  Nemeth & Nemeth-Brown  Sternberg, 1999; Kaufman & Sternberg, 2006; 2010; Thomas & Chan, 2013

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<b>Value creation</b>	When intrinsic and extrinsic values align, teams are more productive and can better handle external disruptions to the creative process	Womack, Jones & Roos, 1990; Wheatley & Kellner-Rogers, 1996
<i>We propose that creativity is the co-creation of value and organizations that empower individuals and groups to be creatively disruptive will ultimately improve team value creation through increased creativity and productivity</i>	Lack of diversity can lead to <i>groupthink</i> and resultant decreased value creation	Foy, 1997; Janis, 1972/1982

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## Study Methodology

This research emerged from our desire to find a model that could describe the role of disruption in value creation within organisations. The model we present is developed from studies of creative teams (co-located and distributed) across contrasting sectors, and from observations of creative practice ‘in the wild’. The data are drawn from the authors’ academic research, professional practice in organisational creativity, and theoretical work on the role of the physical environment in creative cognition. We make particular reference to two case studies: a multinational engineering company’s (MEC) trouble-shooting team and a government departmental innovation support team (DIST). The case studies reflect different aspects of disruption: the MEC team are working with external disruptions to the performance of the company, while the DIST team’s disruption is internal, that is, a misalignment between team members, aims and work practices.

### *Multinational Engineering Company (MEC)*

Interviews were conducted with the network leader of a distributed group within MEC. The group comprised 150 people in 90 locations across the three global areas of AsiaPacific, the Americas, and EMEA (Europe, Middle East and Africa). The interviews focused on, among other areas, the creative process followed by the distributed trouble-shooting team in identifying and then tackling, potential problems. This case study examines

how, by scanning for disruption, an internally well-aligned team can identify and solve company-wide problems.

### *Departmental Innovation Support Team (DIST)*

This study was conducted over the course of a year in the office of a Departmental Innovation Support Team (DIST) that “supports the delivery of [Government] policy and key performance priorities and targets”. The team comprises sixty-five people, of whom twenty-nine work in an open-plan office. A further thirty-six employees work remotely from their homes, hot-desking in the team office; with consequent tensions between the two groups. This case study examines how an internally misaligned team can identify and tackle those internal misalignments with a corresponding increase in performance.

The data were collected by electronic survey, and the existing data sets were reanalysed to develop the proposed model. We then tested and refined the model within the context of the two case study groups, and with reference to data sets from our wider research projects pertaining to organisational creativity, agency and the physical environment.

## **Theory: The Disruption-Empowerment Model of Creativity**

Work by Arrow, McGrath and Berdahl (2000) on the complex systems nature of small groups, and Aragon & Williams’s (2011) theory of the dynamical systems nature of distributed creative groups (in which they hypothesise that as in physics where the system stores and transfers energy between two or more modes, so creative idea generation “flourishes across a distributed group [as] *creative resonance*” (p. 1879)) have led us to apply similar principles to the role of disruption in the process of value creation.

In our work on creative groups in organisations we have repeatedly observed the effect that the presence or absence of disruption has on the creativity of the groups at different stages of their creative process (Wallas, 1926; Evans & Russell, 1989 among others). We have observed how a lack, or avoidance, of disruption can push a functioning team into groupthink (Janis, 1972/1982) and hence stasis, where “politeness [driven by] fear seems to reinforce rule-following behaviour” (Isaacs, 1999, p. 261).

We hypothesise firstly that disruption or misalignment can be a creative affordance, affording multiple possibilities for value creation. We posit that the disruption can occur internally within the team itself, where there is a

misalignment between the team's context and its processes. The DIST team's misalignment afforded it the opportunity to realign itself (explored below) with a subsequent significant increase in performance. Value was created within the team itself and enhanced for the team's internal and external clients. We also posit that the disruption can occur externally, where a misalignment is observed by the team, or imposed upon it (explored in the MEC case study). Here the affordance is for a realignment of the problem, resulting in a significant increase in value to the organisation.

We further hypothesise that a team's response to disruption is predicated by the extent to which the team is, or perceives itself to be, empowered to act. When the team perceives itself to be empowered – either by its manager or by itself – then the opportunities afforded by the disruption are perceived and can be acted upon. This leads to flow and increased levels of both creativity and performance: what we call a *creative cycle*. When the team does not perceive itself to be empowered, the affordances are either not seen, or are ignored. This can lead to stasis with decreased levels of creativity and performance: what we call a *degenerative cycle*. An extension of the degenerative cycle is found when a functioning team, instead of continually seeking and welcoming new challenges and disruptions, slips into groupthink (Janis 1972/1982) where performance remains good, but creativity levels decrease. These cycles are illustrated in Figure 1.

Finally we hypothesise that each cycle is driven by affect; that is, by the team's emotional response to the disruption. We draw on the work of De Dreu, Baas & Nijstad (2008) and Rank & Frese (2008) examining the impact of mood and affect on creativity; and on Russ's (1993) definition of affect as "a feeling or emotion as distinct from cognition". We suggest that when the disruption occurs in an environment of trust (Wheatley & Kellner-Rogers, 1996) then people move through empowerment towards flow.

This environment of trust is demonstrated in MEC when a disruption or misalignment occurred between common company practice and the trouble-shooting team's perspective of "We were getting uncomfortable with a particular aspect of the technology". Engineers on the ground were empowered to actually discuss the issue: "[T]hey would say: yes, we know, we've been trying to change this for years" (MEC team leader).

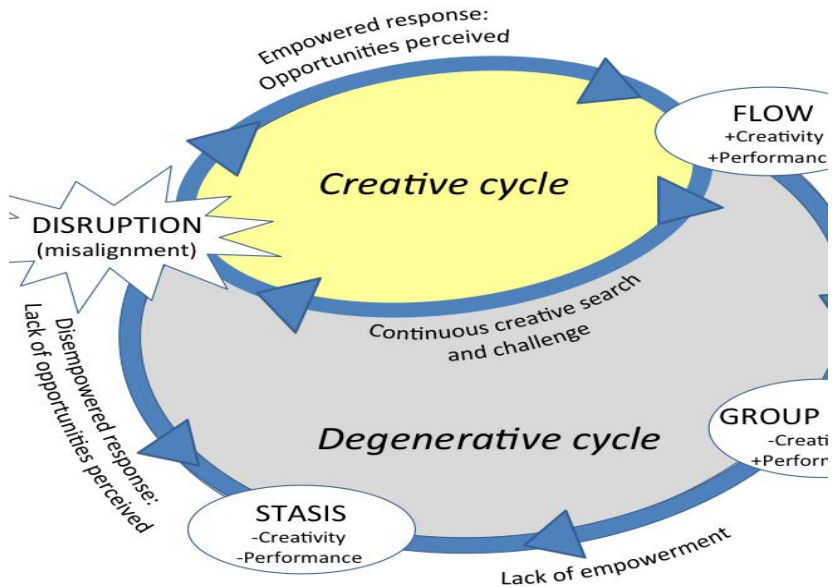


Figure 1: The Disruption-Empowerment Model of Creativity & Performance

The high level of trust and empowerment within the troubleshooting team is reflected in the leader's observations:

*People are really focused on common interest. It's remarkable. I was thinking about it on one of the calls I had this week. I'd never met him before, I didn't even know what part of the company he works in, but [...] we were emailing some thoughts back and forth and we just talked as if we had known each other for 20 years.*

The team leader talks about the strong alignment between creative context and creative process inside the trouble-shooting team:

*And it always happens when somebody inside the company rings up to discuss something, there's never any kind of tension of difficulty about getting going. I suppose it's because you've got this very*



*strong shared attitude – that is what enfolds it all. [...] It's more like a sense of family.*

In this example, the core trouble-shooting team exercised its remit to support the people on the ground with “stuff that’s coming from the sites saying ‘can you help us with it?’ [...] so we might go and help them, or we might say “I know someone who is better in one of these sites, you go and help them””. The trouble-shooting team also takes “a central view”. In the core case study example, “the team of us, the network, management team; we said: We think there’s a particular safety concern inside our technology. We want every plant to address that.”

The internal alignment of the team’s creative context and creative process enables its members to tackle large – and sometimes contentious – company issues:

*We produce the work and tell the sites: You have to do this. [...] We had a very strong pushback from the senior management saying: Why on earth would that be – our systems are already designed to cover all that stuff. [...] And there was a very big argument, and in the end they gradually conceded that we could do it. And this year the team of us who did that won an award and it is reckoned to be the way that it should be done. The optimum way of doing it – a perfect case study.*

In the model’s second, or *degenerative cycle*, we suggest that a disempowered team responds to disruption by seeking and maintaining stasis, unable or unwilling to perceive the affordances and possibilities inherent in the disruption. We draw on the DIST case study as an example of an internal misalignment between the team’s creative process and its creative context. We then present what happened when the cycle’s misalignment was realigned.

The research took the form of two electronic surveys conducted either side of an intervention by the researcher, and workplace changes made by a small Workplace Improvement Project team. The surveys measured the extent to which staff felt that the physical office environment in their office, and in their remote working bases, actively supported agreed performance measures for individual, teams and the department.

The first survey highlighted a tension between the home-based and the office-based workers: when the home-based people came into the main

office their aim was to liaise and network with colleagues, but they found that “the actual office space doesn’t feel like an area where you are supposed to be ‘networking’ in. Although it is its most helpful function [...] you are given the sense that you’re breaking the rules”. Their office-based colleagues, on the other hand felt that “people do not respect other people’s space as they just chat to you even though you are busy doing something”. The Workplace Improvement Project team was then empowered to identify and implement small changes in the physical creative context. These included ways of ensuring that new and existing staff could readily identify their colleagues (revised induction, nameplates on desks, seating plans and “who’s who” photo board), team pods for closer communication, and increased comfort in the office environment through clearing and cleaning, and a tea and coffee-making cupboard organised for all the team.

A second survey, identical to the first one, was carried out nine months later to avoid the Hawthorn effect (in which people being studied improve or modify the aspect of their behavior being observed simply in response to the fact that they are being studied, not in response to the changes that are being studied). In each of the three areas of measurement (individual working, team working and departmental working) the second survey returns showed that staff perceived that their working environment, after the intervention and changes made, had an increased beneficial impact in supporting performance. The percentage of low scores (gives *very little* or *little* support) decreased, and the percentage of high scores (supports *well* or *substantially*) increased. This was particularly noticeable in “Produce high quality work with an 18.6% increase, and “Think innovatively” with a 5.1% increase. In each area of measurement the remote workers, who served as a control group, had unchanged or slightly lower results.

## **Discussion: Value Creation Through Disruption and Empowerment**

As illustrated in the previous section, we propose that disruption is an important element in creativity, and describe it in terms of perceived misalignment. A disruption may be experienced as unease, and on occasion as cognitive dissonance (Festinger, 1957) — or it may be perceived as an unexpected happy surprise. (Isaac Asimov is quoted as saying “the most exciting phrase to hear in science, the one that heralds new discoveries, is not, “Eureka!” (“I found it!”) but rather, “Hmm... that’s funny...”).

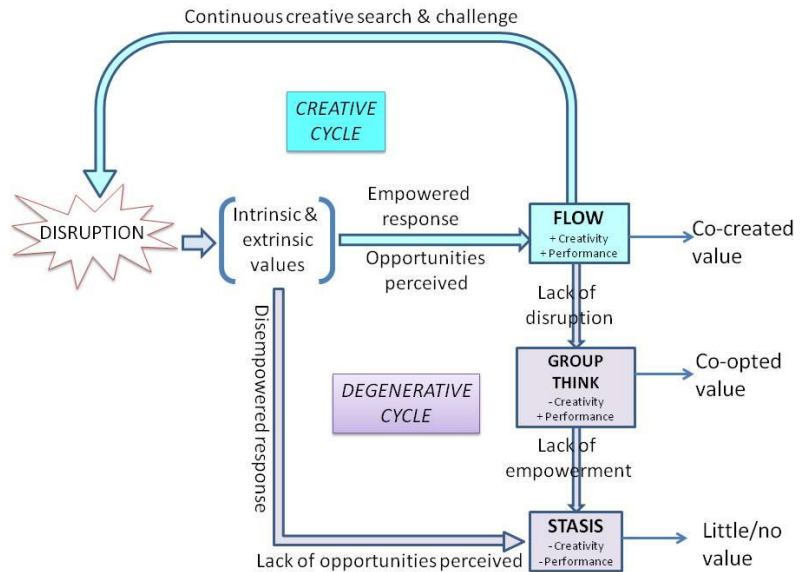


Figure 2: Value Creation Through Disruption and Empowerment

Our findings show that disruption creates a choice point that is instrumental to creativity, but one which may be either unperceived or suppressed. As illustrated in **Figure 2**, how a group responds to disruption significantly impacts the value it may potentially create. A group in flow is empowered to respond creatively, by exploiting disruptions to co-construct value. On the other hand, when the disruption occurs in an environment of disempowerment, people are more likely to move into stasis, resulting in little or no value creation. Finally, a well-functioning and empowered team that avoids disruption risks groupthink (Janis 1972/1982) where value created may be co-opted by one or two members of the group, resulting in decreased creativity.

## Conclusion

We suggest disruption and empowerment are instrumental to value co-creation by organizational teams in flow, (Csikszentmihalyi, 1975; 1990; 1996) the state of high creativity that occurs when individual and group

expectations align with perceptions about the creative context. We posit that disruptions are instrumental to creativity, something Csikszentmihalyi does not consider with his flow theory. Disruptions cause a breakdown in a particular way of thinking about a creative problem when people perceive a mis-alignment. To address the disruption (and return to flow) requires a change in thinking about the creative process (for internal disruptions) or the creative problem (for external disruptions) and ultimately can yield higher levels of creativity and productivity — thus counteracting problems with groupthink. Organizational teams are becoming more diverse as design thinking is employed to address increasingly complex problems while also responding to users who are more educated and discriminating than ever before. We posit that it is all the more important that organisations encourage a climate that embraces creative disruptions and empowerment to improve internal and external value co-creation among employees and other stakeholders.

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## Designing an Individualised Eco Information System: a conceptual framework

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*What is the potential of consumer behaviour change if appropriate eco information is provided at the point of purchase? What are the opportunities brought by the latest technologies to information design? What is the role of designer in this context? This paper investigates these questions through a review of literature surrounding the areas of eco information provision, eco-labelling and consumer behaviour, contextual technology and information, User Centred Design (UCD) in business context and in eco-labelling. Building on the findings from literature, this paper proposes a conceptual framework for designers in designing an individualised eco information system. The components and technologies required for such a system are described. The application of the framework is demonstrated with two example scenarios. The conceptual framework was evaluated with a focus group study, which confirms the usefulness of the proposed framework. Implications can be drawn from this paper for designing other information systems for behaviour change.*

**Keywords:** User Centred Design (UCD); Consumer Behaviour; Information Individualisation; Contextual Technology; Eco Labelling

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## **Introduction**

The sustainability imperative is changing the landscape of business. Competitive advantages are presented to companies that build sustainability into the rhythm of their business (Markley & Davis, 2007; White, 2009), for example, by green marketing and environmental product labelling (Ottman, 2011; Peattie, 2001; Young, Hwang, McDonald, & Oates, 2010). Despite a good deal of survey evidence showing consumer awareness and acceptance regarding eco labelled products has grown substantially, evidence also suggests that consumers have difficulties in perceiving, understanding and trusting the eco information provided at the point of sale (Basu, Chau, & Grote, 2003; Bjørner, Hansen, & Russell, 2004; Cohen & Vandenberg, 2012; Leire & Thidell, 2005; Loureiro & Lotade, 2005; O'Brien & Teisl, 2004; Shams, 1995; Thøgersen, 2002; van Amstel, Driessen, & Glasbergen, 2008).

Consumer information search behaviour is changing in the digital age (Klein & Ford, 2003; Peterson & Merino, 2003). Consumers are having increasing expectations for products which adapt to specific user needs and usage situations. Precise and comprehensible product information has become very important for shopping experience (Alisibai, Chung, & Frankel, 2012).

An individualised eco information system will therefore benefit consumers by providing convenient access to relevant product information, and benefit the businesses by increasing efficiency in reaching target customers.

Considering the importance of understanding user needs and engaging users, this paper aims to propose a conceptual framework which guides future designs of a novel contextual individualised eco information system using a User Centred Design (UCD) approach.

## **Methodology**

Three literature reviews were carried out focusing on:

- The state-of-the-art development of environmental information provision relating to consumer behaviour;
- Theoretical and technological development of contextual information
- The role of User Centred Design (UCD) in business and in eco labelling.

Building on the findings from literature, a conceptual framework was proposed to guide future designs of a novel contextual individualised information system. The framework was further explained using two example application scenarios.

To evaluate the value of the proposed conceptual framework, a focus group study was conducted to collect opinions from designers, who are the target users of the conceptual framework. We conducted two semi-structured focus group interviews in May 2014, totally 10 participants attended the study. All participants are design students at postgraduate level and have a good understanding in UCD and information design. All discussions featured a briefing session and several open-ended questions. Knowledge about eco labelling, individualised information system, stages of contextual technology, the conceptual framework and the two user scenarios were explained to all participants before the discussions began. Data was then analysed using thematic analysis. Focus group is considered to be a flexible tool to uncover opinions, to contextualise perceptions and to test the reality of assumptions. It is particularly useful for exploratory purposes or preliminary analysis. This qualitative method can be used to extend and deepen understanding, but not to validate nor quantify design characteristics (Adams & Cox, 2008; Stewart, Shamdasani, & Rook, 2007; Wilson, Lilley, & Bhamra, 2013).

## **Provision of eco information to consumer**

### *Current Practices in eco information provision*

Alongside other traditional means of environmental regulation, such as permits, mandatory standards, taxes and subsidies, and voluntary agreements, provision of information on the environmental effects of consumption is often put forward as an appealing tool to increase consumer attention toward environmental risks associated with consumption (Bjørner et al., 2004; Cohen & Vandenberg, 2012; Tanneurs & Vezzoli, 2008; Thøgersen, 2002).

Bhamra et al. (2011) identify seven design intervention strategies, amongst which eco information and eco feedback are believed to be two of the most effective strategies in reducing environmental impact associated with individual behaviour (Froehlich, Everitt, & Fogarty, 2009). Kwok et al. (2013) survey existing eco information and eco feedback tools, and identify four major tools that promote sustainable behaviour, namely energy monitor, web-based eco-calculator, mobile app eco-calculator and eco label.

It is found that eco labelling addresses consumer behaviour at the point of purchase most directly.

### *Eco labelling and consumer behaviour*

Eco labelling is defined as a practice providing information to consumers about a product with improved environmental performance and efficiency. An 'eco label' is a label which 'identifies overall, proven environmental preference of a product or service within a specific product/service category based on life cycle considerations' (Global Ecolabelling Network, 2004, 2013). This is an information tool which is 'arguably one of the most prominent measures to facilitate sustainable consumption and production' (Dendler, 2014). The hope is that consumers will then be able to distinguish these products from others, and consumers' choices will give producers of relatively environmental-friendly products a competitive advantage, while discouraging less environmental-friendly products gives companies an incentive to develop more environmentally benign products, in order to promote a market-driven continuous environmental improvement (Basu et al., 2003; Boström & Klintman, 2011; Global Ecolabelling Network, 2013; Thøgersen, 2002).

Since the launch of the first environmental eco labelling programme, the German Blue Angel, in 1978, eco labelling programmes have proliferated. Nowadays there is a large number of eco labelling programmes at national, European and international levels (Basu et al., 2003; Bratt, Hallstedt, Robèrt, Broman, & Oldmark, 2011; Thøgersen, 2000). Over 400 different eco labels or certification schemes exist in 207 countries (Cohen & Vandenberg, 2012; Ottman, 2011, p. 165).

Numerous issues of eco labeling are recognised. From a psychological perspective, the two major problems identified are the ability of the consumer in perceiving and understanding eco labels (Leire & Thidell, 2005; Lynch, 1994; Thøgersen, 2000, 2002; van Amstel et al., 2008), and the lack of trust in them (Boström & Klintman, 2011; Koos, 2011; Nilsson, Tunçer, & Thidell, 2004). These problems are related to other psychological factors such as attitude, motivation, social norm and habit (Biel, Dahlstrand, & Grankvist, 2005; Cohen & Vandenberg, 2012; Leire & Thidell, 2005; Thøgersen, 2002). On the practical side, the two major problems that consumers face are information asymmetry and information overload (Jacoby, 1984a; Koos, 2011; Russell, Krarup, & Clark, 2005). Information asymmetry refers to the case when consumers are handicapped by their deficient knowledge of the quality and pricing of goods in comparison to

producers. Eco labelling is known to be a tool to overcome information asymmetry (Koos, 2011; Russell & Krarup, 2005). Information overload occurs when there is too much information to the extent that the information becomes dysfunctional. In such case, the amounts of information available make it more difficult or more time consuming to reach a decision, or make it less likely that the consumer will attend to some critical information (Jacoby, 1984b).

In summary, there is a generally optimistic view of the future of eco labelling, despite existing schemes' poor performance in diminishing the information gap between company and consumer. Under the right conditions, eco labelling can potentially lead to a substantial reduction in pollution and resource use. It is appropriate to develop eco labelling as part of a portfolio of measures (Baddeley, Cheng, & Wolfe, 2011; Bjørner et al., 2004; Tan, Tan, & Khoo, 2012; Thøgersen, 2002; Vandenbergh, Dietz, & Stern, 2011).

## Technology factors

### *Contextual technology*

Contextual technology is a collective term for various technologies enabling the 'age of context', as illustrated in the book of Scoble and Israel (2014). The book examines the five forces of contextual technology (i.e. mobile, social media, big data, sensors and location-based technologies) and describes how this technology can unlock new ways for companies to connect with customers.

We have divided the processes of context technology into four stages, and related them with some particular relevant enabling technologies, the list is not exhaustive (see Table 1).

While the term 'contextual technology' may be new, the application of contextual technology resembles persuasive technology, and its technology infrastructure is comparable to ubiquitous computing and context-aware system.

*Table 1 Stages in contextual technology in relation to enabling technologies*

Contextual technology	Enabling technologies
Capturing contextual data	Mobile sensing & the Internet of Things Wearable camera & lifelogging Location based technology (e.g. GPS) Data mining
Storing contextual information	Cloud computing Ubiquitous computing Database
Presenting contextual information	Information retrieval & visualisation Mobile device Augmented reality Social media
Sending contextual information	Wireless data transmission

### *Contextual information*

Context is a concept that has been discussed in the field of Information Retrieval and Information Systems for several decades. Numerous models of context and context-aware framework have been proposed (Achilleos, Yang, & Georgalas, 2010; Baldauf, Dustdar, & Rosenberg, 2007; Cheverst, Mitchell, & Davies, 1999; Floch, Hallsteinsen, Lie, & Myrhaug, 2001; Göker, Watt, & Myrhaug, 2004; Henricksen & Indulska, 2006; Ruthven, 2011). These models or frameworks are mainly developed for different technological domains to support the software engineering process.

One useful example is the context model developed by Kofod-Petersen and Aamodt (2003), that illustrates the range of contextual factors around users and mobile devices.

Contextual information has the potential to design very different types of systems. To support better interaction design, Ruthven (2011) has further delineated the concept of contextual information by proposing the five axes along which contextual information may differ:

- Objective (e.g. GPS signals) or subjective (e.g. mood, experience)
- Individual (e.g. individual searcher) or group based (e.g. family);
- Meaningful context (directly affects how a task is performed or how the task results are interpreted) or incidental context (does not significantly affect how a task is carried out or evaluated);

- Extrinsic (e.g. popularity of documents) or Intrinsic (e.g. document type);
- Visible or invisible.

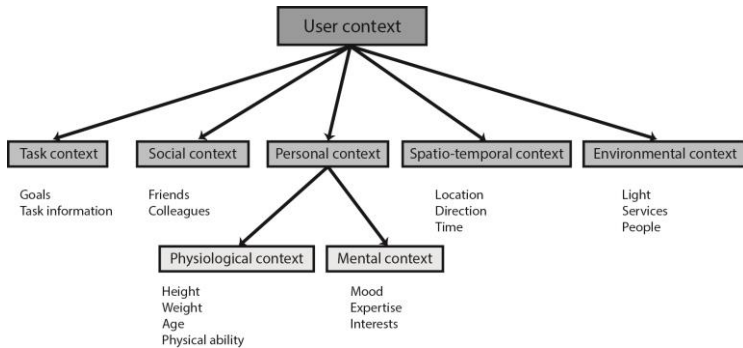


Figure 2 Ambisense model of context (Kofod-Petersen & Aamodt, 2003; Ruthven, 2011)

While the human computer interaction (HCI) community is aware about the availability of a large amount of consumption-related data (Froehlich et al., 2009), there seems to be surprisingly little emphasis on human factors research for behaviour change (Lockton, Nicholson, Cain, & Harrison, 2014; Zimmerman, Forlizzi, & Evenson, 2007). It is time to start thinking about interesting and engaging applications, interfaces, and information designs to make use of this data (Froehlich et al., 2009), but the existing models and frameworks are not pertinent enough to support user experience (UX) designers.

## Design factors

### *User Centred Design (UCD) in business context*

Ergonomic considerations are becoming increasingly important for many businesses. Emphasis are shifted away from pure technological development towards understanding consumer perception and experience (Giacomin, 2012; Hill, 2010; Shaw, Dibeehi, & Walden, 2010).

User Centred Design (UCD), sometimes known as Human Centred Design, focuses on designing products, systems and services that are

physically, perceptually, cognitively and emotionally intuitive and engaging. It can be used as an innovation model and delivers market-pull business strategy which enhances:

- 'Interaction with the customers';
- 'Communication between the customers';
- 'Communication within the business';
- 'Communication of the vision';
- 'Identification and integration of the ethical challenges'
- 'A change of business strategy' (Giacomin, 2012)

The benefits of a user centred design approach to the success of an interactive information system are now widely recognised. The benefits include "increased productivity, reduced user errors, reduced training and human support, improved user acceptance and enhanced company's reputation" (Garrett, 2011; Knoche, Rao, & Huang, 2011; Kontogiannis & Embrey, 1997; Maguire, 2001). The International Organisation for Standardisation (ISO) has published the standard document 'ISO 9241-210:2010 Ergonomics of human-system interaction' to guide human-centred design for interactive systems (British Standards Institution, 2010).

The vast amounts of data in our daily lives can be seen as an enabler of possibilities for the Personal Data Economy. Margolis's (2013) perspective on personal data - one that focuses less on what is technically possible and tantalisingly profitable but concentrates on what people need - is in parallel with the views of UCD approach in the design discipline and HCI community.

### *Opportunities in eco label design*

Regarding the consumer needs for better-designed eco information on product labels, we have identified a number of design opportunities from literature.

In the early stage of the label design process, an important question to be asked is "what is the level of information detail?" There exists a dilemma in deciding the amount of information to be displayed on the label, on one hand research has found that more detailed environmental labels are more credible, on the other hand research indicates the label design should be simple (Hartikainen, Roininen, Katajajuuri, & Pulkkinen, 2013; O'Brien & Teisl, 2004; Vandenbergh et al., 2011). A plausible solution is to offer flexibility in information accessibility by changing its presentation style (Kimura et al., 2010), for example, to encourage active-search condition which utilises the value of detailed information.

To encourage changes in actual behaviour, it is critical to provide actionable information to consumers, beyond conveying static information about the product life cycle (Cohen & Vandenberg, 2012). Examples include providing information that is specific, task-related and based on actual consumer usage, features that allow comparisons among products. Educational function is worth considerations too (Bell, Greene, Fisher, & Baum, 1996; Hartikainen et al., 2013; Thøgersen, 2002).

Credibility and confidence in green claims can be promoted if the source of information is guided by national/ international standards and monitored by third party organisations (Thøgersen, 2002). Using open-source databases may also support the widespread availability of accurate information (Vandenberg et al., 2011).

Before starting a labelling scheme, a selection of the most promising initial products should be identified. Despite the intractable methodological challenges of life-cycle assessment (LCA) (Gaussin et al., 2013; Morris, 1997), it is believed that 'the value of the labels does not come from providing perfect information, but better information than the consumer has at present' (Vandenberg et al., 2011). The design of a labelling system can benefit from using new technologies (Vandenberg et al., 2011). We believe in the future, eco-labelling will no longer be limited to static text/images printed onto packaging, instead it may be possible to have interactive features.

Empirical testing can improve the chances for success before committing to the development stage, as well as provide evidence to further develop the scientific basis for eco labelling design (Cohen & Vandenberg, 2012; Vandenberg et al., 2011).

## **Towards information individualisation: a conceptual framework**

### *Conceptual framework*

Considering insights from the Design for Sustainable Behaviour (DfSB) and HCI research, we believe contextual technology can enable a powerful solution for supporting individual behaviour (Kwok et al., 2013). The conceptual framework proposed in this paper aims to provide a systematic methodology that facilitates the design process of an information individualisation system.



In this system, both product and user act as data carriers (Figure 2). Since contextual technology permits the ubiquitous capture, storage and retrieval of a large amount of contextual data, not only a person can keep a personal profile, history, status, preference and social life ('personal data'), a product can also have a traceable record and a 'life' ('product data') that can be comprehended.

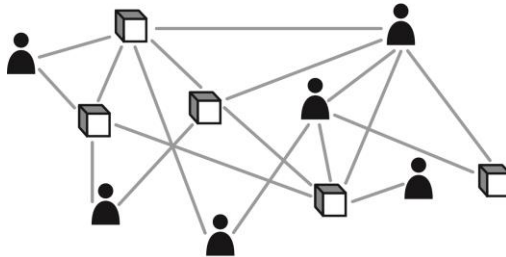
Using enabling technologies, such as mobile computing, the Internet-of-Things and augmented reality, with appropriate information software, persuasive interaction between product and user can be realised. The product data library can be seen as a matrix containing tremendous amounts of product related information. The personal data can be seen as a vector, which extracts a row of values from the matrix after multiplication. The extracted values equal to information individualised to the user's interests. As such, a product can be intelligent enough to approach and appeal to a user in need, and provide tailored assistance.

On a 'product-user interaction' level, the availability of the 'personal data' can enable calculations based on actual user behaviour, so the user can get information that is more accurate and more actionable. On a network level, the 'Internet-of-Things-and-People' can empower a wide range of opportunities for collective decision-making and collective planned action.

The conceptual framework presented in Figure 2 describes the five components required for the proposed system. Using eco labelling as an example application, Table 2 describes suggestions for the information architecture for personal data and product data, as well as gives a list of technology choices to be employed. Different technologies are suitable for different applications; the actual system design thereby varies.

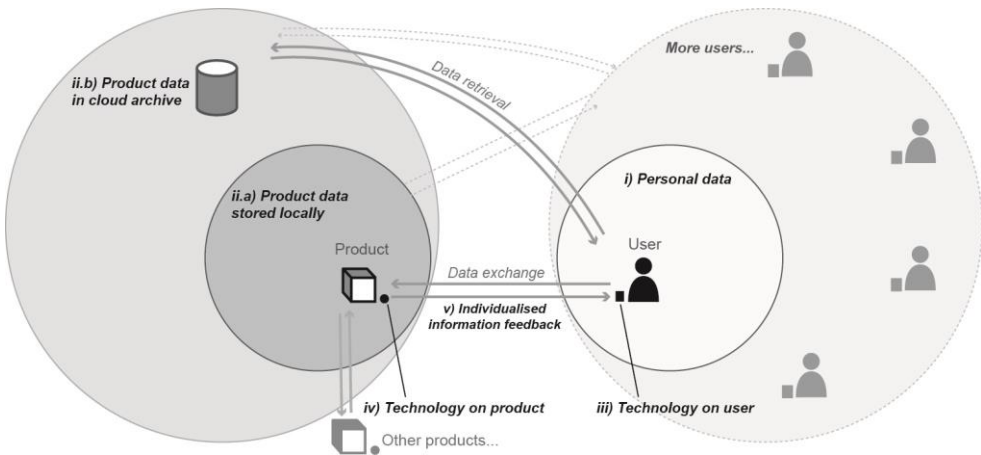


*Dimension 1) Product – user interaction  
Support individual behaviour/ decision making*



*Dimension 2) Internet of Things/ People  
Support collective behaviour/ decision making*

*Figure 2 System concept (above) Product and user interaction. (below) Multiplying the dimension of interaction constructs an Internet of Things and People.*



*Figure 3 Components of individualised information system*

Table 2 Description of components for an individualised eco labelling system

Components	Information/ technology
1) Personal data	<p><b>User profile:</b> age, gender, size...</p> <p><b>History and habit:</b> shopping record, frequency of laundry, frequency of grocery shopping...</p> <p><b>Status:</b> location, time, weather, task to do, budget...</p> <p><b>Preference and need:</b> motivation for environmental behaviour, information presentation preference, personal goal...</p> <p><b>Social:</b> social circle (family, friends...), activities record with social circle...</p>
2) Product data	<p>Can be stored a) locally and b) in cloud archive.</p> <p><b>Archive:</b> database storing all information about products</p> <p><b>Product type:</b> storing information for each product type (e.g. Brand A Fresh Milk 2 Pint)</p> <p><b>Product life:</b> storing record of each individual batch/ piece of product (e.g. a specific bottle of milk produced on a specific date from a specific producer)</p> <p>Information can be categorised in terms of content and format/medium.</p> <p>Content can be divided into four groups:</p> <ul style="list-style-type: none"> <li>i) Life cycle assessment (LCA) (e.g. material, manufacturing, transport, usage, disposal) and corresponding footprint (e.g. carbon footprint, energy efficiency, embedded energy, water footprint)</li> <li>ii) Certificates (e.g. fairtrade, organic, cruelty free)</li> <li>iii) Instructions (e.g. recyclability, care instruction, suggested usage)</li> <li>iv) Other purchasing considerations (e.g. price, colour, size, quantity, material, place of production, material sources)</li> <li>v) Traceable record of actual product (e.g. location of specific product, history of usage, interaction history with other product or user)</li> </ul> <p>Format/ medium can be number, text, chart, infographic, photo, video... or a combination of the above.</p>
3) Technology on user	<p>Choices include ubiquitous computing, GPS, sensors (e.g. camera, accelerometer, proximity, touch, light...etc.), display (e.g. screen, head mounted display, projector), wireless signal transmission (e.g. Bluetooth, Wifi, infrared).</p>
4) Technology on product	<p>Choices include GPS, tags (e.g. QR code, RfID, NFC), digital memory, wireless signal transmission (e.g. Bluetooth, Wifi, infrared), tag sensor and tag writer (e.g. RfID writer).</p>
5) Individualised	<p>Tailored label based on user's preferred content and format.</p>

### Application scenarios

Two application scenarios are described below to illustrate how an individualised eco labelling system works in relation to the proposed conceptual framework. The scenarios were chosen because Scenario 1 shows an example where two users see different individualised labels when looking at the same shirt, and Scenario 2 illustrates an Internet-of-Things example.

#### Scenario 1: Clothing purchasing

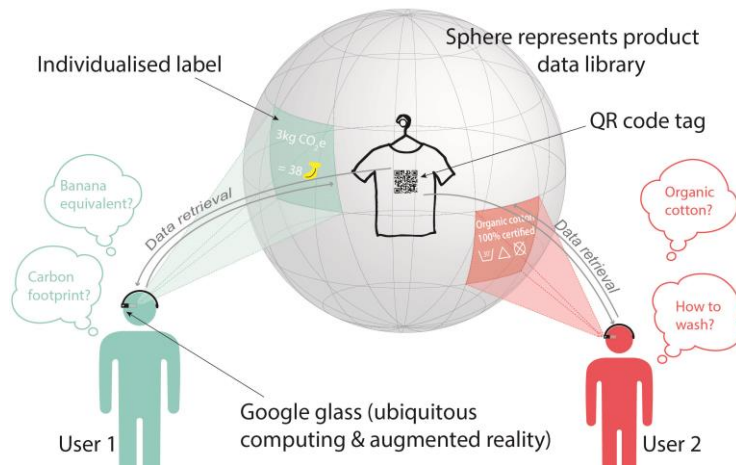


Figure 4 Individualised eco labelling in a clothing purchasing scenario Table 3 Components of an eco-labelling system for the clothing shopping scenario

Components	Information/ technology
1) Personal data	Personal preference of information content and formats. For example, user1 wants to learn about the carbon footprint value of the t-shirt, and wants to see the information displayed in the format of infographic in relation to bananas, a unit which he is familiar with; user2 cares about the material used (whether it is made of organic cotton) and how to wash the t-shirt.
2) Product data	All information about this type of t-shirt (product type) and this specific piece of t-shirt (product life) is stored remotely on a cloud archive, which the QR code links to.
3) Technology on user	Google Glass (ubiquitous computing + augmented reality)

	display), internet connection
4) Technology on product	QR code printed on a tag
5) Individualised information feedback	Two users see different labels according to their needs and preference. User 1 sees the carbon footprint of producing a t-shirt, and the representation of that in terms of 'number of banana' (infographic format). User 2 sees an organic cotton label (certificate information) and clothing care tips (instruction information).

### Scenario 2: Bottled milk shopping

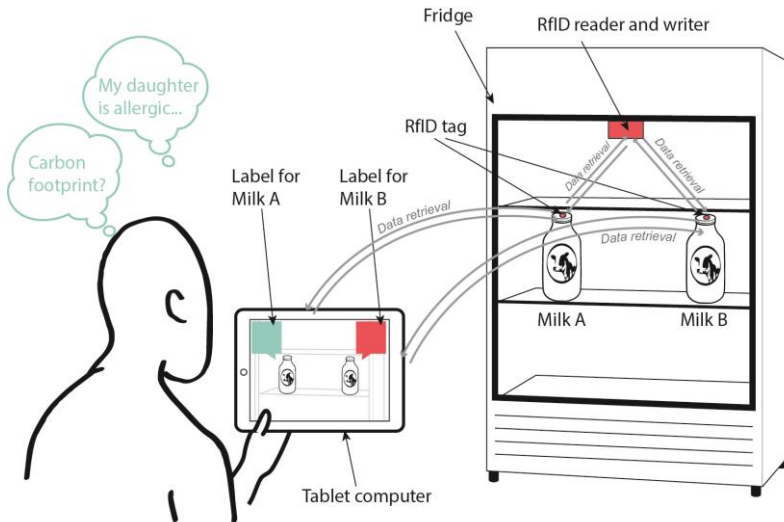


Figure 5 Individualised eco labelling in an Internet-of-Things

Table 4 Components of an eco labelling system for the milk shopping scenario

Components	Information/ technology
1) Personal data	User location, user preference on information content & format. For example, the user's daughter who would drink the milk suffers from allergies, and he needs to check if there is any allergenic substance in her food (social context); this user is concerned about carbon footprint (LCA information) and prefers to read numerical figure (information format).
2) Product data	Milk A & B: general product information (e.g. ingredients, volume), life cycle information (e.g. producers location, transportation history, storage record).

	Fridge: energy efficiency, storage record (what and when is the product stored in the fridge).
3) Technology on user	Tablet computer (mobile computing) with RfID reader embedded, internet and augmented reality function
4) Technology on product	Milk bottles: RfID tags Fridge: timer, RfID sensor and writer These three products form an Internet-of-Things.
5) Individualised information feedback	Although the two bottles of milk look identical, their product data can be different. For example, they may have different carbon footprint values because they are transported differently, and cooled in the fridge for different length of period. The two individualised labels then show different carbon footprint labels based on the user and product location (LCA and location information), and show whether the ingredients are allergy-provoking for the consumer's daughter (social information).

## Framework evaluation: focus group study

Two semi-structured focus group interviews were conducted with a total of 10 design students at postgraduate level. The goal was to collect insights for evaluating and refining the framework.

### *Outcome 1: Designer's opinion on the conceptual framework*

The participants were asked to comment on how useful they think the proposed conceptual framework is in inspiring future designs of individualised eco information system. The feedback was highly positive.

*PA2 The framework is easy to understand.*

*PA1 [The framework] is useful.*

*PB5 The framework is good.*

*PB7 It makes sense as a framework. Certainly there are elements designer can use in designing the system.*

When asked about the potential applications to be designed based on the proposed framework, the participants quickly came up with a variety of ideas. In addition to eco information display, some suggest the designs of information system for health and medical care, such as supporting exercise, diet control and medication. The participants also thought the conceptual

framework can be used in designing smart home solutions, product marking system and educational device. The participants generally believed that the individualised information system is economically viable and it opens up many possibilities for information and product design.

*PB5 I think it is possible economically and [sensors] prices are dropping and dropping.*

*PB7 I think the biggest challenge and also biggest asset of this system is to individualise information feedback and the data exchange. You know that data is so valuable that Google uses that to basically be a multi-billion pound company.*

*PB7 There are possibilities for [information and product] designers... This is like an automatic feedback system that designers can interpret. If it is done properly then it could be a quite powerful tool for designers, or even engineers for that matter, who actually do new product development.*

It was observed that the system concept diagram (Figure 2) was useful in clarifying application ideas that involve the Internet-of-Things-and-People. The participants circled the involved data carriers and their relationships on the printed copies of the diagram when they explained their system concepts.

### *Outcome 2: Role of User Centred Design (UCD) in designing individualised eco information system*

Although it is generally agreed that UCD is important in design and evaluation of information system, its role in designing an individualised eco information system is yet to be fully explored.

In the focus group study, the participants had discussed about the role of UCD in designing an individualised eco information system, and described the potential contributions of UCD in informing, designing and evaluating the system development processes.

All participants strongly acknowledged that UCD methods are useful in informing the design of this kind of system, because designers are good at understanding users and empathising with users' needs.

*PB1 UCD methods such as field study and observation are important for deciding the function of the system, timing to intervene and the information to be displayed.*

*PB2 The stakeholder analysis is used [in marketing and business discipline] to identify groups of end user... [UCD methods] will be useful in understanding the needs of an individual user... This understanding will better benefit the design of the individualised information system.*

*PB7 The strength of designer is about empathising with customers.*

Some pointed out the individualised information system acts like an automatic feedback system which generates a lot of data, and design profession is especially strong at interpreting and visualising data.

*PB4 From the point of view of information architecture, data is already there. But designers are needed to organise and give meanings to them.*

Building this kind of system is complicated; the participants thought the conceptual framework would be useful in supporting communication among various teams, such as designers, engineers, marketing department and behaviour scientists.

*PB1 It is the engineers who are responsible for the technological part and they would not concentrate so much on the user. Designers can put the user needs together and decide what kind of technology to be used.*

*PB6 Designer can be the mediator between teams... such as marketing and psychologist.*

Lastly, all agreed that designers are good at evaluating product/ system, especially before the product/ system is implemented or launched.

## **Discussion and implications**

A common problem with many information systems is that human factors advice and user involvement come very late in the design process, usability and potential benefits of the system are thus reduced (Kontogiannis & Embrey, 1997). Responses from the focus group study indicate the proposed conceptual framework can support designer's involvement in an early stage of the design process of the individualized



information system. The benefits brought by UCD approach are also discussed.

An individualized information system is believed to have a big potential for impact on consumer behaviour, and can be made an effective tool to encourage sustainable consumption. The application scenarios picture how the proposed system concept can change people's perception and understanding towards everyday products, and impact decision-making processes.

In the context of eco labelling, information individualization can potentially benefit the consumers by reducing information overload, reducing information asymmetry and increasing consumer receptiveness. It can also benefit businesses by providing a way to direct highly motivated consumers to navigate niche markets in the long tail.

The conceptual framework also provide design implications for other application areas such as marketing, health care, education and smart home.

We purposefully use the term 'individualisation' to differentiate from 'personalisation', a term commonly used in marketing, design and information system. To the authors' knowledge, there are no clear-cut definitions to set apart these two terms in these contexts. In our opinion, individualised design and personalised design fall in different positions on the spectrum of tailoring. A design can claim to be personalised with minor tailoring to the user's preference, an example is the colourful changeable mobile phone case from the 1990s, while individualised design has a much higher degree of tailoring, an example is a smartphone which possesses tremendous flexibility in its features depending on the apps installed.



*Figure 6 Difference between individualised design and personalised design*

## Conclusion and future works

A review of current literature surrounding the areas of eco information provision, eco labelling and consumer behaviour, challenges related to eco-labelling, contextual technology and information, User Centred Design (UCD) in business context and in eco labelling, highlights a number of knowledge gaps:

- Under the right conditions, eco labelling can have a substantial impact on sustainable consumption;
- There exist numerous consumer issues with eco labelling that can potentially be tackled using UCD approach;
- The emergence of various contextual technologies can enable opportunities for information and label design, change people's relationship with products, and unlock new ways for companies to connect with customers;
- There is a lack of framework to guide designers in designing an individualised eco information system;
- The vast amounts of data generated from our daily lives can be viewed as an enabler of possibilities to the era of disruption. UCD approach is an important key to innovation.

By conceptualising both user and product as data carriers and reducing purchasing environments into components and analytical elements, we are better able to work towards product label design through a UCD approach.

A conceptual framework of a novel individualised eco information system is presented. To the authors' best knowledge, it is the first framework on individualised information system proposed by designer and for designer. We have described the components, data and technologies required, and demonstrated the use of the framework with two application scenarios.

The framework was evaluated with a focus group study. Results indicate that the proposed framework for such a system is useful to guide future design of eco labelling system. Implications can be drawn for designing other information systems for behaviour change.

Space limitations prevented us from discussing other important issues related to pervasive sensors and personal data, for instance, privacy and ethical implications, legal matters, economic and environmental costs of technologies. Besides, this paper has a major limitation that it is mostly theoretical and is supported by little empirical evidence. In the future we

will prototype and test the concepts of the eco information individualisation with a series of empirical studies on consumer behaviour.

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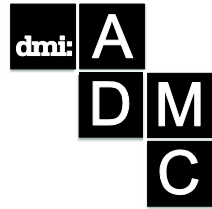
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## UCD in the Sustainable Luxury Design Process

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*The values of luxury brands largely align with sustainable practices. These include timelessness, innovation, durability and craftsmanship; all characteristics that mirror the underlying goals of sustainability. Luxury brands must ensure that their products meet environmental legislation requirements, achieve profitable growth and, importantly, meet customer expectations. The focus on Sustainable Luxury is mounting. However, the present volume of literature dedicated to exploring the concept is low. The purpose of this review is to collate and assess extant research in sustainable luxury. We present an argument for the compatibility between luxury and sustainability through a review of design and engineering literature. So, where does a luxury brand fit in a sustainable future? Findings indicate that consumers are unwilling to sacrifice quality and functionality for sustainable derivatives of products. There is also an attitude-behaviour gap in ethical consumption, where consumers demand ethical products but do not reflect this in their buying behaviour. On the communications side, review findings suggest that consumers are unreceptive to corporate social responsibility (CSR) due to their belief that luxury and CSR are incompatible. The paper concludes by suggesting a means of incorporating consumer feedback into the luxury design process to facilitate design for sustainability in the luxury context.*

**Keywords:** *Luxury, Design for Sustainability, User-Centred Design*

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## Introduction

The luxury industry is steadily growing despite the global economic downturn. This growth has been apparent since the 1990s (Nueno & Quelch, 1998; Vickers & Renand, 2003) and it is estimated that the global luxury goods market in 2025 is likely to be over 5 times larger compared to 1995 (Bain & Co, 2013). This growth has occurred due to factors such as rising demand for luxury goods and services in emerging markets such as China (Cavender & Rein, 2009), rising standards of living and the democratisation of luxury (Vickers & Renand, 2003). Collectively, this has led to increased attention towards the social and environmental initiatives of luxury companies and the whole sector has been criticised of lagging behind in terms of sustainability through publications such as the Deeper Luxury report commissioned by the World Wildlife Federation (WWF) (Bendell & Kleanthous, 2007).

As well as governmental demands for sustainability stemming from the top-down through legislation, there has been some evidence that consumers are demanding that the products they consume are responsibly sourced, manufactured and sold, and that the workers throughout the supply chain are respectfully treated (McGoldrick & Freestone, 2008). Pressure from non-governmental organisations (NGOs) and activist groups has also forced the luxury industry to consider environmental and ethical issues in their operations due to the fear of damaged reputation and equity (Marie-Cecile Cervellon, 2013). However, despite this, there are still very few NGOs dealing with the luxury sector, minimal labelling or certification measures and limited research being published concerning ethical consumption patterns amongst luxury goods sales (I. A. Davies, Lee, & Ahonkhai, 2012).

To many people, 'sustainable luxury' is a paradox. The etymology of luxury - a derivation of the Latin word *luxus* - means excess (OED, 2013), and tends to be inherently associated with issues such as overconsumption, personal indulgence and social inequality. Conversely, sustainability is associated with ethical and social responsibility, economic growth and the preservation of natural resources. When exploring the principles of both sustainability and luxury, similarities that are fundamental to both overlap, indicating a potential for sustainability and luxury to be compatible (J. Kapferer, 2010).

Figure 1 illustrates the structure and content of this review. The paper begins by analysing extant research in sustainable and luxury purchase behaviour. By understanding key factors impeding each type of

consumption, conclusions can be drawn as to the potential for sustainable consumption in the luxury market. Additionally, the paper discusses the implementation of consumer research in luxury product design processes in order to facilitate design for sustainability in the luxury context.

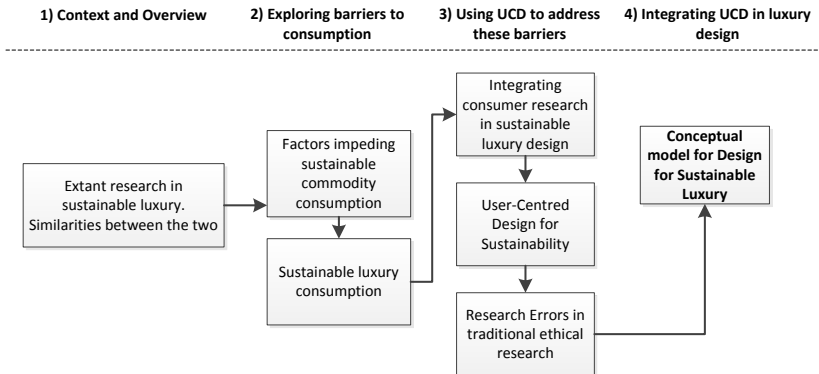


Figure 1: Structure and content of review

## How does Sustainability relate to Luxury?

The word ‘luxury’ is one that is familiar to every individual, but cannot be precisely defined due to its inherent subjectivity (Hudders, Pandelaere, & Vyncke, 2013). The concept has also changed and evolved over time and continues to do so (Yeoman & McMahon-Beattie, 2006). More and more companies with differing business models, customer segments and offerings are marketing themselves as being luxurious, leading to a dilution in the meaning of ‘luxury’ (Csaba, 2008; Ricca & Robins, 2012). Many definitions of luxury have been published from a myriad of different angles, but a common definition is lacking in literature (Janssen, Vanhamme, Lindgreen, & Lefebvre, 2013; Vickers & Renand, 2003). Generally speaking, luxury goods are almost always associated with premium prices that far exceed their functional value (T. B. Jackson, 2004; J.-N. Kapferer & Bastien, 2012; Ward & Chiari, 2008). These prices are justified for a variety of reasons, including: the leveraged status of the brand (T. Jackson & Haid, 2002) and the quality of products on offer (Wiedmann, Hennigs, & Siebels, 2007). Moreover, luxury is also commonly associated with prestige (Vigneron & Johnson, 1999) brought upon by the marketing ability to evoke exclusivity (Phau &

Prendergast, 2000), quality (Biel, 1992), aspiration (Keller, 2009) and a rich heritage (Beverland, 2004).

Similar to defining luxury, sustainability is also an ambiguous term that is difficult to define in a consistent manner (Carrillo-Hermosilla, del Río González, & Könnölä, 2009). Dozens of definitions attempting to do so have been published – many of which are diverse and often conflicted, which indicates the complexity of the concept. Nevertheless, sustainability generally takes into account environmental, social and economic impacts, which are often regarded as the three pillars or triple bottom line of sustainability (Elkington, 1999). Sustainable development is most widely defined and accepted as “development that meets the needs of the present without compromising the ability for future generations to meet their own needs” (Brundtland, 1987). This definition implies that the environmental resources used for economic and technological development should be managed and controlled so that depletion in its entirety does not occur, and that future generations will be able to benefit from the use of these natural resources.

At first glance, the terms ‘sustainability’ and ‘luxury’ can seem paradoxical, but a deeper understanding of the two uncovers similarities fundamental to both concepts. Luxury is, by definition, durable (J. Kapferer, 2010) in both a tangible and intangible sense. Products – largely sculpted by artisans – are limited to the availability of their resources, resulting in careful sourcing of materials and very little waste due to the value of these materials.

Some may struggle to disassociate luxury with issues such as overconsumption, personal indulgence and social inequality. The activity of spending copious amounts of money on materialistic goods can seem immoral when there are issues such as poverty and climate change happening around us. Some researchers have indicated that the collective impact brought upon by the throwaway society, which refers to the consumption and disposal of everyday, mass-produced goods (Cooper, 2005; Robins, 1999), has a much more detrimental environmental impact than that of the luxury sector: a much smaller market in comparison (J. Kapferer, 2010). However, the luxury sector highlights these issues, but it does not cause them. Through prestige prices (Nia & Zaichkowsky, 2000), limited editions (Hudders et al., 2013) and selective distribution (Phau & Prendergast, 2000), luxury brands are able to monitor and control the consumption of their products and services by alluding to an impression of rarity. These factors could be used to actually encourage responsible

consumption through perceived rarity and a guaranteed limitation in demand amongst certain customer groups, thereby protecting natural resources (Janssen et al., 2013; J. Kapferer, 2010). Figure 12 illustrates schematically the common preconceptions derived from the literature when considering luxury, the apparent contradiction between sustainability and the actual similarities between the two.

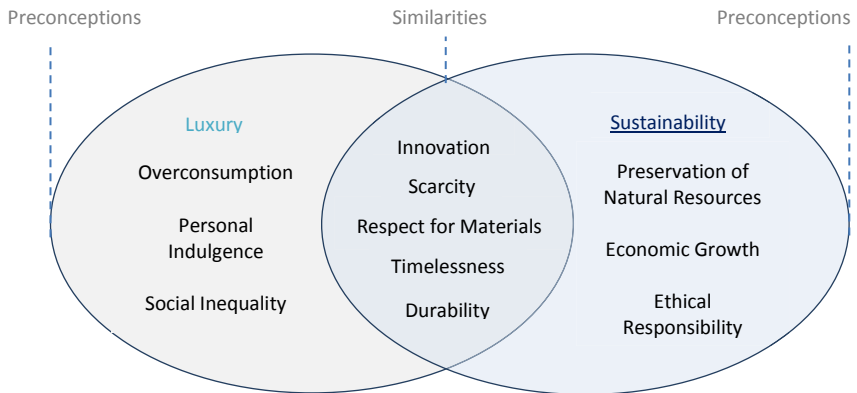


Figure 12: Similarities between luxury and sustainability

The main similarities between luxury and sustainability are therefore:

- A strong emphasis on innovation. Luxury sets the trends in a given industry and radical innovation is often needed for demands such as cleaner technologies and encouraging sustainable behaviour.
- Both sustainable and luxury products are long-lasting and durable. Emotionally-durable design (Chapman, 2005) is an effective strategy for increasing the value of products and ensuring that the user retains the product for a long period of time.
- The notion of scarcity and timelessness is apparent in certain luxury products and sustainability as a whole. The perceived fit between luxury and corporate social responsibility can be strongly conveyed if a company provides a scarcer offering as opposed to an ephemeral one (Janssen et al., 2013).

## Factors Impeding Sustainable Consumption

Researchers have suggested that we are experiencing an “ethics era” (Crane & Matten, 2007; McGoldrick & Freestone, 2008; Smith, 1995) where more and more consumers are taking ethical considerations into their purchasing decisions and adapting their behaviour accordingly (Harrison, Newholm, & Shaw, 2005; Mason, 2000). Ethical consumer behaviour can be defined as ‘decision making purchases and other consumption experiences that are affected by the consumer’s ethical concerns’ (Cooper-Martin & Holbrook, 1993). Examples of ethical issues can include human rights, labour conditions, animal well-being and the environment (Doane, 2001). Ethical consumption can manifest itself as consumption of products because of their positive attributes (e.g. buying Fair Trade products) or boycotting products because of their negative attributes (e.g. avoiding products produced by child labour) (De Pelsmacker, Driesen, & Rayp, 2005).

In 2010, sales of ethical goods and services (namely in the food, finance, travel and household sectors in the UK) rose by almost 9% from £43 billion to £46.8 billion in comparison to £13.5 billion in 1999. Although ethical consumerism seems to be on the rise in the UK, ethical expenditure is still relatively low when compared to overall spending (Co-operative-Bank, 2011). Additionally, research has found that around 30% of UK consumers report that they are very concerned about purchasing ethically due to an environmental attitude and it is important for companies to demonstrate their commitment to social responsibility (Ipsos-Mori, 2009) but only 3% reflect this in their purchase decisions (Defra, 2006). Clearly, individuals are struggling to translate their environmental concerns into their purchases – this behaviour is known as the ‘attitude-behaviour gap’ (Papaoikonomou, Ryan, & Ginieis, 2011; Sheeran, 2002).

It is important to understand the factors that lead to this attitude-behaviour gap in order to develop ways in which more sustainable offerings can be successful on the market. As illustrated by Figure 11, after an understanding of these factors impeding each type of consumption is achieved, a way of addressing these factors is discussed.

### *Barriers to Sustainable Consumption*

Research aiming to identify the barriers to ethical consumption has been conducted, but has so far produced conflicting findings. For instance, some studies suggest that sensitivity towards ethical products increases with age (Hines & Ames, 2000) and affluence (Barnett, Cafaro, & Newholm, 2005), and to be greater in female consumers and those at lower educational

levels. Conversely, some studies have found no such correlations (Bray, Johns, & Kilburn, 2011; Doran, 2009).

In a study, Bray et al. (2011) suggested potential explanations for the attitude-behaviour gap (presented below with supporting references), and thus barriers to sustainable consumption:

1. Price sensitivity - participants felt that ethical derivatives of products were too expensive (Öberseder, Schlegelmilch, & Gruber, 2011; Richardson, Irwin, & Sherwin, 2005; Young, Hwang, McDonald, & Oates, 2010).
2. Personal experience - participants were more likely to consider changing their purchasing habits when a negative news story forced them to think about a certain ethical issue or when they were personally affected (Öberseder et al., 2011).
3. Ethical obligation – many participants reinforced that they would like to make a difference – especially when the price differential was small – but they also felt that it was ‘too difficult’ to engage in ethical consumption regularly (Young et al., 2010).
4. Lack of information – participants stated that they did not have enough information about ethical issues to inform their purchase decisions on this agenda (Wheale & Hinton, 2007; Young et al., 2010).
5. Quality perception – the perceived quality of ethical goods was identified as being a clear influencing factor in consumers’ decision-making processes during consumption. It was clear that consumers were not willing to tolerate a loss in quality for ethical products. Some consumers also frequently believe that there is a trade-off decision to be made between sustainability and functional performance (Luchs, Brower, & Chitturi, 2012).
6. Inertia in purchasing behaviour - brand loyalty ultimately kept participants from straying from a brand in search for ethical derivatives. Additionally, consumers tend to be ‘locked-in’ to their current habits and over-estimate the inconveniences of sustainable consumption (Richardson et al., 2005).
7. Cynicism - some participants felt that sustainability marketing and communications were not genuine and that ethical claims were a strategy to take advantage of consumer goodwill and to charge higher prices. Most participants believed that the extra

premium paid towards certain products did not reach the end beneficiary (Richardson et al., 2005).

8. Guilt - some participants retrospectively felt guilty when they decided not to purchase an ethical alternative of a product. Further supported by Young et al. (2010).

### *Sustainable Luxury Consumption*

Academic studies exploring sustainable luxury have focussed on the propensity for consumers to consider ethics in their luxury consumption choices (Achabou & Dekhili, 2013; I. Davies, Doherty, & Knox, 2010; Joy, Sherry, Venkatesh, Wang, & Chan, 2012), the appropriate means of sustainability communications in the luxury industry (Janssen et al., 2013; Steinhart, Ayalon, & Puterman, 2013) and the cultural differences in the perception of sustainable luxury (Marie-Cécile Cervellon & Shamma, 2013). The total number of academic studies in this research area is limited currently up to 2014, but it is gradually increasing.

I. A. Davies et al. (2012) conducted 199 structured interviews with UK consumers and found that ethics was not a priority when buying luxury goods versus commodity goods. It was postulated that the market for ethical luxury goods would be minimal in the present climate of conducting the study (2010) due to several reasons:

1. Quality-price differential - the most prominent finding was the perception that ethical luxury products were too expensive.
2. Lack of information - the majority of respondents felt that there was a lot more information available for ethical commodity products compared to ethical luxury products which were largely unheard of to them.
3. Regularity of purchase - respondents felt like they could put more effort into finding out about the ethical credentials of a commodity product they purchased on a regular basis (such as coffee).
4. Lack of availability - there was a clear perception that ethical-luxury goods are rarely available on the market.
5. Commodities make a difference, luxuries do not – respondents felt that they could make a difference towards less economically developed countries by purchasing commodity products such as fair trade coffee, but not with ethical luxury goods.



Attributes such as product quality and brand reputation remain to be of higher priority than the environmental commitment of a brand – which is coincidentally not a decisive factor for purchasing a luxury product. Furthermore, the presence of recycled materials in luxury clothing products was perceived unfavourably amongst luxury consumers because recycled materials are not readily associated with quality and prestige (Achabou & Dekhili, 2013). However, consumers were willing to accept the use of recycled materials in packaging. Consumers therefore look for a distinctly different set of benefits when buying luxury products compared to commodity purchases and ethics does not seem to be part of this. Luchs et al. (2012) found that focusing resources on achieving superior product aesthetic design for sustainable products resulted in a positive effect on confidence and increased the likelihood of consumption. Sustainability in luxury design could therefore be compatible as luxury designers already possess the capability for superior aesthetic design.

Furthermore, it is crucial for luxury brands to understand the factors they can leverage within their communications to achieve responsible business practices without the negative consequences of promoting sustainable luxury. These include issues such as a disbelief that luxury companies are genuine in their motives for promoting ethics (Torelli, Monga, & Kaikati, 2012) and a perceived degradation of quality.

The challenge then, is to transform an industry that is quickly associated with inherently unsustainable characteristics to one that is sustainable but maintains its values and desirability amongst consumers. It seems that any animosity towards sustainable commodity or luxury products is largely down to perceptions of low quality, higher prices and distrust when in reality this may not be the case.

It is clear that the barriers impeding both sustainable commodity and luxury consumption are extremely similar. These are:

- Quality-price differential: Regardless of whether a product is a commodity or a luxury, consumers perceive these products as being of lower quality and more expensive.
- Lack of information about sustainable products.
- Lack of availability.
- Cynicism and distrust in brands claiming to be ethical.
- Inertia in purchasing behaviour due to factors such as brand loyalty and consumer lock-in.

As illustrated in Figure 11, the following section aims to discuss how these barriers are addressed within standard product design for

sustainability. By doing so, the potential for using these strategies in sustainable luxury design can be considered.

## **Integrating Consumer Research in Sustainable Luxury Design**

Luxury designers and managers traditionally dictate what luxury is, and what consumers should want from a product or service. A luxury brand may listen to its consumers, but may not necessarily incorporate their desires into a final product if it does not align with the long-term vision of the brand in question. Of course, resources are invested into trend forecasting, but many luxury companies still rely on intuition and the creativity of their designers when developing new products. In contrast, companies such as Proctor and Gamble invest heavily in developing methodologies for consumer insight research in order to ensure that the products they produce are exactly those that their consumers want (J.-N. Kapferer & Bastien, 2012).

In contrast, sustainable product design often needs consumer insight research to attract customers to greener product offerings and to understand the attitude-behaviour gap apparent in sustainable consumerism. Research exploring the uptake of green products has suggested that focusing on market needs during product design and development will result in a greater chance of customer approval. Green products must also collectively incorporate environmental attributes as well as meeting market requirements accordingly with competing products (Berchicci & Bodewes, 2005). Moreover, the 'ethics era' seems much more limited in application than the literature sometimes suggests (I. A. Davies et al., 2012).

To alleviate this, exploring and analysing why values towards more sustainable offerings have a weaker influence on purchase decisions is paramount for understanding and attempting to influence consumer behaviour towards achieving sustainable consumption patterns (Young et al., 2010). Additionally, exploring how consumers interact with products and the hidden factors underlying purchase decisions should be useful in understanding environmentally and socially significant consumption (Bhamra, Lilley, & Tang, 2011).

Even consumers that already place an importance on sustainability have demonstrated that products must still meet a minimum threshold of functional performance in order to be considered for consumption (Luchs et

al., 2012). This reinforces both the importance and potential that the identification of this minimum threshold of performance of consumers could have in successful sustainable product design.

### *User-Centred Design for Sustainability*

As previously discussed, consumer adoption of low carbon products has been slow (Roy, Caird, & Potter, 2007). One reason as to why this may be is because many low carbon products on the market have been designed with little thought into user requirements, i.e. they have failed to take a user-centred approach to the design process. One such approach would usually take into account aspects such as appealing aesthetics and ergonomic requirements, but it has been argued that many design processes towards low-carbon products are only regarded as functional and technical entities, when multi-sensory features actually play an enormous role in whether an individual is likely to purchase a product or not.

The challenge of sustainability can be tackled using design opportunities. This can be from merely improving existing products to influencing the behaviours of consumers that can ultimately lead to a change in lifestyle towards more sustainable consumption habits. It is argued that in order for radical – rather than incremental – change to occur: a user-led approach to design for tackling the sustainability challenge is required (Richardson et al., 2005). However, there are some research errors that need to be taken into consideration when taking this approach in ethical consumption research.

### **Research Errors in Ethical Consumption Studies**

A consumer led approach commonly uses research methods such as surveys, interviews and focus groups. An issue with conducting qualitative research on sustainability and in particular, consumer ethics, is that some individuals may be inclined to respond with the most socially desirable answer, which causes a fundamental flaw in experimental design (Öberseder et al., 2011; Ulrich & Sarasin, 1995). The traditional survey based methods – as favoured in most ethical consumption research – therefore fails to take into consideration the complexity inherent in decision making and actual buying behaviour (Carrington, Neville, & Whitwell, 2014).

Additionally, many studies investigating ethical consumption in general also tend to use surveys that require respondents to simply rank certain ethical issues. The problem with this type of survey design is that these questions do not require consumers to trade-off ethical attributes against traditional attributes of products, nor do they allow analysts to determine

the degree to which consumers would sacrifice to make these trade-offs (i.e. the level of priority placed on a certain product attribute). Therefore, results obtained from these type of survey questions often overstate the importance of ethical attributes and issues simply because they are apparent answers that would generally be socially accepted (Auger, Burke, Devinney, & Louviere, 2003; Auger, Devinney, Louviere, & Burke, 2008).

Future research should look to reducing the effects of this bias. Exploring actual buying behaviour would be helpful, including the analysis of the trade-offs that individuals make during purchase decisions in order to gain a well-rounded and in-depth understanding of consumer purchase intentions.

Fuchs, Prandelli, Schreier, and Dahl (2013) explored whether the use of a user-centred design strategy in luxury fashion companies would generate negative perceptions as to the status and quality of products. Results indicate that for high status luxury products, consumers demand company-designed items more so than user-designed ones as it was perceived that user design fails to achieve the high standards of quality required in luxury products.

However, the adoption of a user-centred design strategy can lead to various benefits including the ability to develop new products that better meet the needs of consumers that may not have otherwise been met (Hoyer, Chandy, Dorotic, Krafft, & Singh, 2010).

We argue that a balance between systematically uncovering baseline needs of consumers while also allowing for creative freedom for designers could be needed for achieving successful sustainable luxury products.

### *A Conceptual Model for Design for Sustainable Luxury*

By reviewing extant literature on sustainable consumption, we have extracted that design for sustainability often necessitates the capture of customer perceptions and requirements in order to mitigate the risk of product failure. We believe that in order to achieve successful sustainable luxury products, a systematic process of capturing customer insights as a direct driver to product design is required but rather as a safety net to steer designers and product developers in the right direction. By doing so, the process of luxury design becomes more rigorous but not constrained, as it can allow designers to work towards baseline functional needs in terms of sustainability requirements but also allow them freedom in creativity.

The research errors – such as social desirability bias - commonly found in ethical consumption research also needs to be addressed. An understanding of customer purchase decisions is crucial to understanding sustainable

consumption. However, the attitude-behaviour gap (where individuals say they are demanding ethical products but do not reflect this in their purchasing behaviour) must be avoided.

To address this, the 'hidden needs' of customers should be identified. Hidden needs are defined as "requirements that customers or users have but which they have not yet directly recognised" (Goffin & Lemke, 2010). More often than not, individuals are largely unaware of these needs and are therefore unable to articulate them. This is therefore a research challenge, which can be addressed using the methods described next.

Hidden Needs Analysis is a set of tools and techniques that go deeper than traditional market research methods (such as surveys and focus groups). Some of these techniques include repertory grid technique, contextual interviews and lead user groups. For analysis, a method of conjoint analysis can be used for assessing how a product or service that addresses hidden needs is perceived (Goffin & Lemke, 2004). As articulation is difficult, and sub-conscious perceptions are identified, there is a reduced chance of social desirability response bias skewing results and impacting on validity. Thus, the methods used in hidden needs analysis may be able to uncover practical insights for developing successful sustainable products.

Figure 3 illustrates a conceptual model showing the process of integrating customer research and sustainability requirements in a luxury design context, while also taking into consideration the findings obtained from current research exploring sustainable luxury. The product criteria that could have the greatest influence on customer satisfaction can be identified, and then placed as a priority when making key design decisions. An understanding of these priorities could then help designers and engineers to pinpoint where best to optimise sustainability without negatively affecting customer satisfaction. For instance, consumer research could uncover that customer satisfaction worsens when leather seats are not integrated into the design of a car. Designers and engineers can then use this information and meet sustainability drivers by either focusing resources on ensuring that the leather used in their products are ethically sourced, or – if this impacts on quality or proves to be cost-ineffective – they can focus their sustainability resources elsewhere on a feature that is not highly prioritised by consumers, whilst still meeting their overall sustainability requirements. This highlights the potential for adopting a user-centred design approach in order to uncover ways in which customer satisfaction can be achieved while also ensuring that sustainability targets are met.

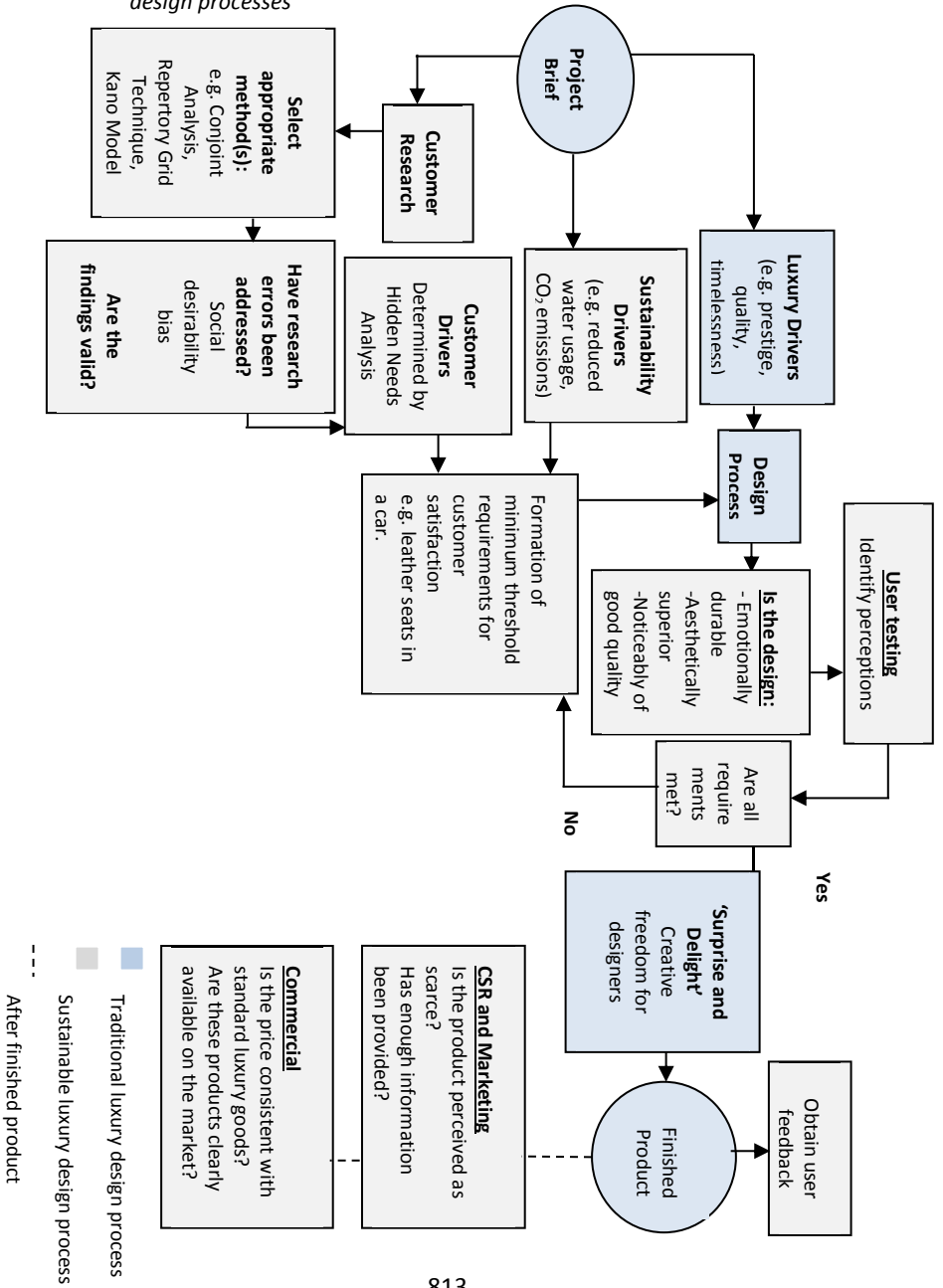
As a key problem identified in literature is that consumers are not willing to sacrifice functionality or quality for sustainable products, conducting consumer insight research will lead to a better understanding of product requirements. By doing so, this understanding of customer needs will aid in decision making when designing products or marketing communications.

It is important to note that in order to ensure that creativity in design is unhindered; customer data should indirectly feed into the overall design process and is used only as a guide to ensure that the product is more likely to be successful when introduced to the market.

Therefore, as the barriers impeding sustainable luxury consumption are very similar to those affecting sustainable commodity consumption, a user-centred design strategy can be used to mitigate the risk of product failure. This is because:

- Understanding why values towards more sustainable offerings have a weaker influence on purchase decisions can help to achieve more sustainable consumption patterns.
- Products must still meet a minimum threshold of functional performance in order to be considered for consumption. Consumer research can identify these requirements and incorporate them into the product design process.
- A user led approach to design for tackling the sustainability challenge is more likely to lead to radical – rather than incremental – innovations, which is needed for both sustainable and luxury design.

Figure 3: A conceptual model for integrating customer research in sustainable luxury design processes



## Conclusions

This paper highlighted that although the similarities between sustainability and luxury are not apparent at first glance, there are characteristics fundamental to both, such as innovation, timelessness and durability. The aim of sustainable luxury is to create awareness about the possibilities that luxury companies could have by integrating sustainability principles into their practices. Similarly to their products, luxury companies have an opportunity to set a trend in sustainable luxury in order to make greener products desirable to the public. While it is more difficult to integrate sustainability within an industry that is and has been inherently unsustainable, the principles and practices of sustainable development are already present in the underlying principles of luxury.

After assessing extant research in ethical consumption and sustainable luxury, we found that there is a general interest in sustainable products but not at the expense of functionality or quality. A sustainable product – particularly one sold at a premium – cannot overlook key attributes important to customers when creating ethical derivatives. Trade-offs and priorities of consumers have to be identified in order to ensure that customer satisfaction is maintained. Additionally, many studies aiming to explore the propensity for consumers to consider ethics in their purchase decisions adopt surveys as their main experimental method. This type of research method is subjected to the effects of social desirability response bias, where respondents select the most socially appropriate and obvious answer that often does not reflect their true buying behaviour. A more rigorous experimental methodology is required to counter the effects of this bias and uncover more valid information.

We believe that to tackle the attitude-behaviour gap apparent in ethical consumption and to achieve successful sustainable luxury products, emphasis should be placed on understanding consumer purchase decisions in order to mitigate the risk of product failure. Combining the desirability inherent in luxury products and systematically identifying baseline needs of consumers regarding sustainability could provide a safety net for sustainable luxury product design – ensuring that the end result is a product that is desirable and also sustainable.



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## **Section 2b: Exploring Collaboration in Product Development**

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# **Editorial: Exploring Collaboration in Product Development: the good, the bad and the ugly**

Nuša FAIN and Beverly WAGNER

Innovation is a key driver of competitive and economic growth, but nurturing it is a challenging task because it involves multiple and constantly changing actors, linkages and dynamics. Furthermore, although collaboration and cooperation have come to dominate successful innovation, businesses often run into information and coordination problems at the different stages. This means understanding collaboration, coordination and cross-functional integration processes is essential for effective innovation performance. As design is an integral part of such collaborations in innovation, contributions within this track address the challenges that new types of collaboration in innovation bring to designers. Examples include cross-functional and cross-disciplinary collaboration with other disciplines and functions, voice of the designer, working in dispersed design teams, engaging key stakeholders in the design process, measuring performance and product excellence as a result of cross-functional involvement.

Initially 29 abstracts were submitted to this track, followed by a submission of 19 full papers of which 8 will be presented at the conference.

In the opening paper Fain, Wagner, and Lemke discuss the relevant literature on collaboration in product development and propose a framework for exploring collaboration proneness in development processes. The framework provides a valuable insight into managing collaboration in practice and provides an evaluation tool for managers to determine internal team competences and gaps to be addressed. Furthermore, it enables companies to assess potential NPD partners outside company boundaries. A test on an industrial case demonstrates the applicability in practice of this theoretically derived framework.

In the second paper, Benker and Raduma explore the possibilities and constraints of applying the quality function deployment (QFD) method during the early phases of a product development process in order to facilitate collaborative design concept evaluation. They investigate the potential of utilizing the QFD method throughout an iterative design process without introducing too much complexity to the agile development process by

participatory action research. Two separate experiments are discussed that test the applicability of QFD to facilitate in the evaluation of different design concepts. This study highlights how the QFD method allows for communicating design concepts across different functions and facilitates design concept evaluation during early product development. The study concludes with suggestions how the method can be further developed to better manage design concept evaluation in the future.

The third paper in the track examines how designers' and managers' cognitive styles influence the outcome of innovation processes. Tabeau, Gemser, Hultink and Wijnberg collected comprehensive data on 83 projects in an online survey. Their results indicate that conformist managers enhance financial product performance, while creative designers contribute to success by developing products that are both unique and of high quality. Moreover, designers' and managers' cognitive styles complement each other, indicating that for higher levels of product performance, creative designers should not conform to rules whereas conformist managers should avoid being creative. However, the results also indicate that product performance is enhanced when designers and managers are both attentive to details, indicating that these professionals supplement each other's abilities as well.

The track continues with a paper by Johnson and McHattie using a case-study method to produce an account of design work within a strategic design intervention with an SME. Drawing on Latourian principles in actor-network theory, observations and accounts of intervention are grounded use of tools, artefacts and activities deployed. This allows analysis exploring traceable influences that design artefacts have on the work being performed and reflective space for designers to assess their performative agency. The paper proposes consideration of the constraints and opportunities that design management encounter concerning matters of concern for organisational change; and in so doing, how this can inform design practice.

Moreover, Lützenkirchen explores collaboration between designers and clients by focusing on three areas of collaboration – communication, design management and motivation for change. On the basis of narrative interviews, the research study finds two opposite perspectives of interest to designers and clients in all three explored areas. The paper thus addresses the need for awareness of these, advising careful analysis and description of the needs and expectations, as well as the characteristic performances and reactions of both designers and clients/entrepreneurs. This may open up new ways to bridge the gap between partly incompatible demands.

Van Der Linden and Dall'agnol take a different approach in the next paper and explore the question "how do designers work?", by addressing the dichotomy between academically proposed tools and actual practice. They interview product designers in Brazil and propose the following: they found different approaches for design processes related to designers' field of activity and experience. Some, mainly companies' internal designers, use formal and quasi-structured processes, but most adopt a flexible and intuitive approach. Also problem definition approaches vary among designers, where specifically marketing and user research, brainstorming and product analysis are some of the approaches defining a design problem. Finally, they observed that none of them adopts an explicit and formalized theoretical approach.

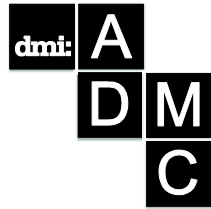
The last two papers explore influences of representations and design space to design processes and designers' work.

Stomppff and Smulders explore the fidelity of products: the degree to which representation of an intended product actually corresponds to the eventual real world product. In a long term participatory study, they observed that some of the studied representations serve as boundary objects: objects that have a capability for teams and organizations to transfer, translate and transform knowledge across difficult epistemological barriers. However, they also found that the fidelity of these representations varied considerably. Expressing the intended product is not merely a translation of a preconceived idea into an appealing visual object, but that might indeed even be said to influence the social process. The contribution of this paper lies in the categorization of the representations into four groups, where a representation is situationally dependent; situation being formed by the boundaries and aim of the social interactions. They present the categories and a framework to explain the findings in relation to the team process.

The final paper by Weinberg, Nicolai, Husam, Panayotova and Klooker discusses the impact of space on innovation teams as an outcome of the interaction of team members with their environment. It presents a pilot study that uses qualitative interviews with facilitators of design processes and non-participatory observations of innovation teams in design workshops. While they set up and interact with their team spaces to discover factors influencing the way teams worked within their space, the results indicate that conducting innovation workshops outside the usual corporate environment is perceived as self-made than perfectly designed. Further promoting factors include: access to raw material for prototyping, the spatial division between different teams, the possibility of using walls as well as flexible furniture as presentation surfaces. The opportunity to create the own team space proves

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highly beneficial for innovation teams. However, evidence was found that throughout the process more advanced design thinkers showed a higher iterative interaction with their environment.



# The Right Fidelity: designedly representations that enhance multidisciplinary product development

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*In product development, representations of the intended product are needed to enable specialists to learn about what they develop together. A variety of representations is deployed, ranging from textual documents like requirements, up to integrated prototypes. The difference between these representations is the fidelity: the degree to which a representation corresponds to the eventual real world product.*

*In a long term participatory study, we observed that some of these representations serve as boundary objects: objects that have a capability in teams and organizations to transfer, translate and transform knowledge across difficult epistemological barriers. However, the fidelity of these representations varied considerably. Expressing the intended product is not merely a translation of a preconceived idea in an appealing visual, but co-shapes the social process.*

*We categorized the representations into four groups, and found that the 'right' fidelity of a representation is situational dependent where the situation is formed by the involved boundaries and aim of the social interactions. We present the categories and a framework to explain our findings, including the relation with the team process.*

**Keywords:** Boundary objects, Collaboration, Co design, Boundary Spanning, visual representations

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## Introduction

Boundary objects are objects that have a capability in teams and organizations to transfer, translate and transform knowledge across difficult barriers such as between specialists, between departments or between disciplinary functions (Star & Griesemer 1989; Carlile 2002, 2004). Consider, for example, a plan board: even when people do not see each other, or communicate, they can still instil what they have to do and when and interact. The term boundary object proved to be particularly valuable in the context of New Product Development (NPD) (Leonard-Barton 1991; Cook & Brown 1999; Bechky 2003; Bucciarelli 1994; Carlile 2002, 2004; Levina & Vaast 2005). These boundary objects for NPD can be sketches; engineering drawings; models; abstract notions; timelines; charts; spreadsheets and so on.

Lately, there has been much interest in the notion of 'boundary objects'. But despite the scholarly interest, there are many questions unanswered for boundary objects. What objects may become boundary objects, why and when? How can these objects be improved for their boundary spanning capabilities? How can boundary objects explicitly be developed and managed? This leaves practitioners inside NPD teams and managers empty handed when it comes to developing effective boundary objects.

A specific kind of objects we are interested in are representations of the product and/or service a NPD team is developing. These enable specialists to learn about what they develop together. In a six year lasting participatory study of NPD teams in-the-wild these representations were omnipresent, ranging from textual documents like requirements and business cases, up to integrated prototypes. The difference between these representations is the fidelity: the degree to which a representation corresponds to the eventual real product. These representations proved to be of particular importance to facilitate collaboration in those teams (see Figure 1). In this paper we explore these representations, in order to understand and predict what kind of representations become boundary objects and in what context.



*Figure 1 An emotional discussion alongside sketches of a user interface. The project leader on the left discovered by means of the sketches that there was disagreement on the functionality of the product. It shows how objects are critical for multidisciplinary collaborative knowledge work.*

## **Theory: boundary objects**

In development of complex products, specialists create something none of them can conceive beforehand, as these products require too much knowledge to be developed by one person (Schrage 1995). However, collaboration is not simple, as each specialist has his own practice, constituted by their occupational and educational background, including jargon, tools, models, and the like. In short, specialists have different object worlds (Bucciarelli 1994). These specialists have problems to understand each other's practices and boundaries can be observed (Dougherty 1992; Carlile 2002): imaginary/felt demarcations between specialists, departments or disciplinary functional units. Boundaries are known to stifle innovation (e.g., Dougherty 1992) and also to incite innovation (e.g., Fiol 1995). Spanning boundaries is crucial for organizations that develop complex products and/or services. Not only to enhance its innovative capabilities, but also to reduce costly errors and iterations as a result of poor cross-disciplinary collaboration. Several mechanisms are known and studied to span these boundaries, such as (assigned) roles like boundary spanners; or specific tools such as 'wikis'. It is found that some objects used in teams also have boundary spanning capabilities.

Boundary objects (Star & Griesemer 1989) refer to a wide range of artefacts, observable by many actors that are robust enough to maintain a common identity across the diverse practices, yet are plastic enough to adapt to distinctive practices. Although the name suggests that boundary objects are at the edges of practices, Star & Griesemer (1989) described them differently. Boundary objects 'sit amidst' all practices, that is are part of the practices of many specialists. For example, a project planning is shared among all specialists and is part of all their individual practices. Thus, boundary objects should be conceived as nodes in a network, where practices become joint.

Carlile (2002, 2004) developed extensive theories to explain why some objects enable boundary spanning. He found that knowledge inside NPD teams is structurally different for specialists and that it is embedded in practices and cannot be articulated. Carlile identified four categories of boundary objects: repositories, standardized forms and/or methods; objects/models and maps. The importance of Carlile's writings is that he showed that there is a relation between the kind of boundary and the kind of boundary object. Repositories (as specification databases) and standardized forms are good for transferring and translating knowledge across boundaries, but have limited value when e.g. contradictory aims exist and knowledge has to be transformed. Put differently: when something new has to be invented.

Ewenstein & Whyte (2009) studied visual representations in architecture, like drawings and sketches. They highlight that these representations are characterized by a 'lack' or incompleteness that precipitates unfolding. In time, the objects change, the meanings shift and layers of information are added. The drawings serve as boundary objects, but are in flux, continuously adapted and never complete. These drawings have an 'unfolding ontology' (Knorr Cetina 2001) and are essentially mutable. This insight opposes the view that boundary objects are relatively stable, a view that is implicit in many publications on the subject.

What is lacking in literature are insights in the expressive form of these boundary objects themselves. For example: it is observed that sketches are boundary spanning (Ewenstein & Whyte 2009; Henderson 1999), yet what sketches? Are it 'back-of-the-napkin' kind of sketches, or well crafted and precise sketches? Do they need to convey beauty and elegance, or has a clumsy sketch also boundary spanning capabilities? In this paper the focus is on representations of the final product and/or service in NPD. The research



question we explore is: what representations have boundary spanning capabilities, how, why and when.

## Method

This paper deploys the data and analysis of a large PhD study conducted in 2006 - 2012 in the Netherlands. Aim of the large study was to understand what designers contribute to multidisciplinary teams and organizations. This paper deploys the same data and shifts the empirical lens from designers to representations used in the design process, in order to reflect on the boundary spanning capabilities inherent in some of these representations.

### *Method and context*

The large study (Stompff 2012) was instigated to contribute to the theory development on design, namely designing in multidisciplinary teams. There is a large body of literature on design, but design *teams* in the wild are rarely discussed. The other way round, there is an even larger body of literature on innovation, but designers are remarkably absent (Hobday, Boddington & Grantham 2011). A large, multinational, high tech company served as the context, developing printers, software and services. These are developed by a R&D organization of 2000+ employees that is based in nine different countries around the world. A topic was chosen that well represents multi-disciplinary NPD teamwork: Operator Recoverable Errors (ORE). ORE concerns enabling users of printers to solve errors, such as paper jams. In the company at hand, ORE is known to be a notoriously complex topic that impacts the work of many developers including mechanical-, software-, and electrical engineers; product- and interaction designers and quality assurance specialists.

The study was set up according to a Deweyan inquiry, a method based on Dewey's pragmatist logic (1938). The method is aimed to deal with a doubtful situation, being a design situation that is not readily understood and thus, stalling progress. The study consisted of roughly two stages. First an analytic stage to instil insights from observations in the everyday practice, to understand the constituents and the relations. This theory building stage leads to new or revised theory and associated hypothesis. Data gathering for the first stage lasted two years, and included 29 interviews; 30 hours of filmed team meetings; and many photos and scans of objects, sketches, models and so on. In addition, observations by the participating designer were recorded in a journal. Analysis was done by

means of five distinctive studies (triangulation of methods) and together with seven co-researchers that varied across studies (triangulation of evaluators).

The second stage consists of a range of guided experiments in the same practice, to validate or falsify the propositions. The second stage consisted of three guided experiments, that were done in-the-wild in the company at hand. The data from these stages consists of participatory observations recorded in a journal, plus photos and sketches of objects, sketches, the environment and the like.

One set of findings from the large study are subject of this paper and concern the role of representations in discussions and reflections on activities of specialists within and across their practices (Stompff 2012; Stompff & Smulders 2013). These representations seemed to provide a platform that served as common 'language' for the specialists to relate their activities to those of others and by that facilitate cross boundary discussions.

### *Representations as boundary objects*

A range of distinctive representations was observed, including simple sketches up to beautifully crafted and expressive representations as models. Several of the experiments in the second stage of the study were geared for developing and using these representations, to span boundaries inside the organization at hand. Some of these boundaries that were included in the experiments are known to be problematic in the company at hand, such as between R&D and marketing. The experiments done during the studies showed some mixed results: there were successful and less successful ones. Consequently, the question arose what kind of representations span boundaries and in what situations.

Informed by the methodical principle underlying grounded theory (Glaser & Straus 1967) we moved back and forth between analyzing and collecting data. While keeping focus on the research question at hand, we worked inductively in order to instil ideas for a framework until 'theoretical saturation' was obtained (Glaser & Straus 1967). The framework we looked for needed to form a combination of sets of representations and design situations. We categorized the representations and subsequently reflected on their contribution to the social processes in the design situation. A striking observation was that the fidelity of the representations seemed to be highly relevant for the situation and process a NPD team was in.

## Findings

The continuous refinement of our findings enabled to obtain a fine-grained perspective on representations and design situations. Below we present and describe four categories of representations, with a varying fidelity.

### *Category 1: When every detail counts*

The first category concerns representations whereby every detail seems to be of importance for the specialists involved. Consider for example, an integrated prototype or integrated CAD models that represented the work of a group of specialists (see Figure 2). Things that could not be seen were explained in depth in meetings by the specialists, e.g., such as software code. The photo of the integrated prototype shows that the team did experiments with the prototype collectively, interacting heavily with the prototype. They took much care that all steps for the experiments were done correctly. They closely scrutinized whatever happened. Discussions, proposals, experiments and reflections were cross disciplinary.

Interestingly, the interactions with the object itself seemed of particular value. Or more precise: not only the experiments they performed on the prototype provided additional information, also the experiences they had while interacting was important. The team members took parts in their hands to feel the robustness, sat on their knees to access a specific situation, listened to the sound of a motor gearing up and so on. The sensory experiences showed to be relevant. They felt that something inside was stuck; understood that a motor ran too hot due to the smell of ozone; or heard how something broke down. Consequently, the fidelity of the representations needed to be as high as possible. Any abstraction was considered a nuisance or was mistrusted. Only a detailed prototype allows to experience real time what the situation is at hand. If no prototype is available, a CAD model that depicts as best as possible the current situation is used instead. Put differently, these representations were not solely *abstract* boundary objects that represent something; also the *interactions* with the object proved to be meaningful and enabled boundary spanning.



Figure 2 On the left (1) a team meeting is depicted while experimenting with an integrated prototype. On the right (2) a team meeting is shown when a review was held behind a CAD station. In both situations, interactions and (sensory) experiences were important for boundary spanning.

Looking at the situation in which the detailed object fulfilled its boundary spanning contributions we see the following. In these meetings specialists were discussing problems that were not understood well; work was reviewed that was new to others; or situations were discussed whereby the team members disagreed whether or not it was a problem, or whether or not a proposal would solve a problem. Often ambiguity prevailed and team members had different explanations and interpretations of what they observed before them. They tried to make sense of the doubtful situation they found themselves in. The many questions, discussions and interactions with the object were focused on how to interpret the situation at hand and this lasted until the actors agreed upon what brought them there. Put differently, the situations concern a social process of problem setting and making sense of the situation at hand. Sensemaking is devising plausible explanations of the situation a team faces, retrospectively (Weick 1995). Once the problem was set, the detailed representations seemed to lose their value as a boundary object in the discourse and objects of other fidelity entered the situation as the next category illustrates.

### *Category 2: A 'little sketch will do'*

The second category opposes the first group in almost any conceivable way. This concerns crude sketches or maps, drawn on paper or on the whiteboard. A similar kind of representation was for instance a 'carton prototype' that a mechanical engineer made every now and then. He made those within few hours, showing, e.g., a cover or sub-frame. He

subsequently invited others to have a look, which sparked animated discussion and new ideas. The models were like 3D sketches and clearly served as a boundary object. The sketches include some words or arrows or circles to highlight something specific and typically have a very low fidelity.

In Figure 3 one such an example is presented, including what it evolved into in time. They are so rudimentary that these have hardly any meaning for those not involved in the meeting where these sketches were created, but make much sense for those that were part of the social activity. As an interviewee explained: "a little sketch will do". For example, the sketched map depicted in Figure 3 has some vertical boxes on the left side that have no words in it, whereas the boxes on the right have. These boxes with no text were already discussed and sketched before, so in this sketch just a hint suffices for the team members to grasp what is depicted. Also information is added, later in the meeting, adding another layer of meaning to the already existing sketch. The vertical curly lines were added to group some of the boxes together, which was done later in time.

These kinds of representations are swiftly created in multidisciplinary team meeting when collaboration is ongoing. Two or more specialists need to develop something together, e.g. to solve some problem that has impact on both their work. They have to find means to express to other disciplines what ideas they have and what enables the development and reflection on these ideas. While doing so, they develop a way to express their collective work in a sketchy way and meanwhile develop a common vocabulary and discourse. It is the essence of designing: to put forward an idea by means of a sketch and to reflect on it (Schön 1983). Thereby the sketches are changed, thrown away, drawn again and in time elaborated, just like a designer who is sketching, but then in a multi disciplinary setting. To show that, in Figure 3 also the final 'map' is depicted that evolved from these crude sketches, few months later. It is not hard to recognize the initial sketches in this map, although it is much more detailed and layered. The map enabled the team at hand to show and reflect on the relations between their activities.

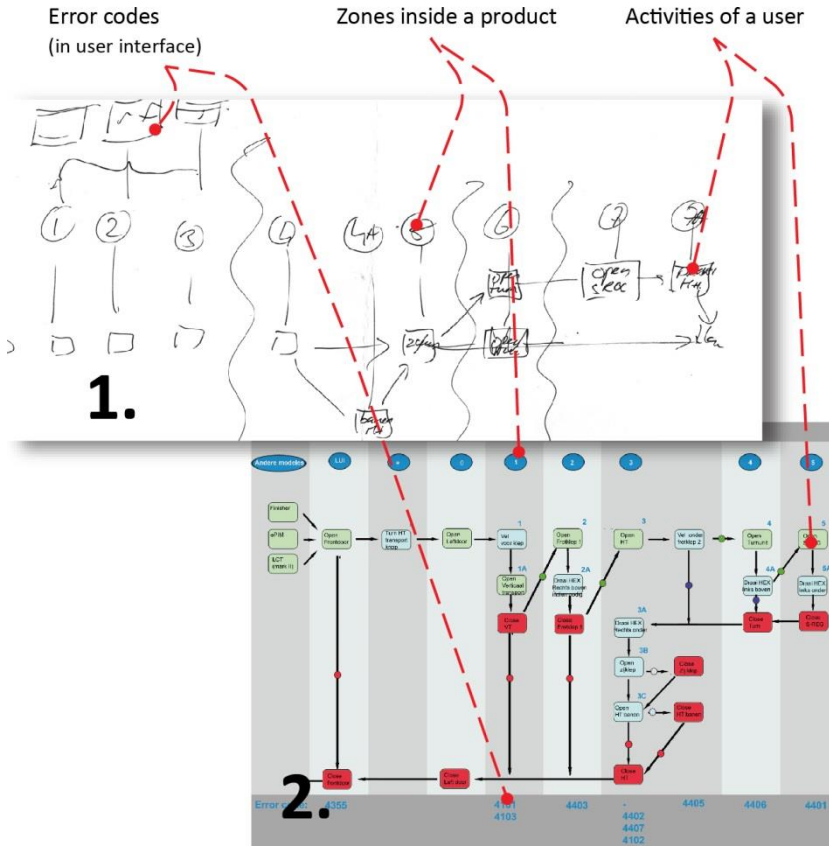


Figure 3 On top (1) a sketch is shown of a map that was used in a multidisciplinary team meeting. It provided the means to swiftly sketch ideas for solving a problem, cross disciplinary. The developed language proved to be fruitful, as the team stuck to these kind of maps, eventually developing it into a large map (2) that depicted the relations between physical 'zones' inside the product; software code for specific error scenarios and the activities of a user.

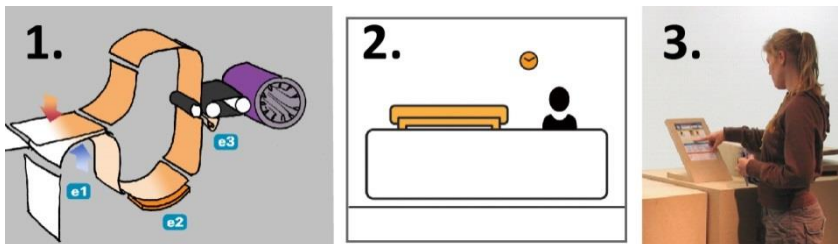
The map developed and matured over time, however remained 'open-ended' until the end of the meeting. The in-between sketches and digitally drawn versions of the map had 'white spots' that still needed to be filled in; areas that were still subject of debate. Put differently, the map was an essentially mutable object that is ongoing adapted to new insights and had to be co-created. It was a boundary object par excellence, sitting amidst

*The Right Fidelity: designedly representations that enhance multidisciplinary NPD practices, but not a static object as the object is coming into being while progressing. The sketches, with their low fidelity, have an 'unfolding ontology' (Knorr Cetina 2001): the object is never fully accomplished but rather "continually 'explode' and 'mutate' into something else, and that are as much defined by what they are not (but will, at some point have become) than by what they are"(ibid.:p.182).*

As becomes clear from the situational descriptions above, these sketchy boundary objects proved their value mainly while the various disciplines were actively involved in a multi disciplinary design process with the aim to identify solutions to the problem at hand.

### *Category 3: The essence of an idea*

The third category resembles the previous one, as it concerns representations that have a low fidelity and can be quite abstract. Consider e.g., hand drawn and computer drawn sketches that are deliberately 'iconified', or 3D models that depict a similar abstraction (see Figure 4). However, these representations lack the open-ended nature of the previous category. Rather they represent the essence of an outcome of a team decision, after considerable discussion. So, despite the abstraction and low fidelity, the aim of these representations is different to the crude sketches of Category 2: they represent the 'essential idea' a team agreed on - and nothing else!



*Figure 4 Three examples of representations that were created to summarize the essence of an idea the team agree on. The one on the left (1) is hand drawn and later 'beautified', whereby unnecessary details were erased. In the middle a highly 'iconified' picture is shown, and on the right (3) a photo is shown that was used to explain what was decided on the position of a user interface.*

The representation shows the frame for subsequent design and engineering activities, a frame that often needs to be approved by others. The representations depict rightfully what everybody agrees on - across

practices, and are sufficiently to the point so that everybody 'gets the picture'. In a way these representations are a visual summary of what happened in the meeting. At the same time, these representations leave open ample space for individual specialists to develop their lines of actions within their own disciplinary practice. Even though at team level a sketch is the closure of a multidisciplinary discussion, for individuals it leaves open ample space to manoeuvre.

Despite the apparent lack of details and the low fidelity, actually every detail is meaningful. Much information is deliberately omitted, and thus the remaining details have relevance. For example, in Figure 4 also an 'iconified' drawing is shown. Behind the man there is a clock drawn. There is hardly any information in the drawing, so time is considered very relevant. These kinds of representations not only summarize, but also attempt to prevent misinterpretations. These representations serve as boundary objects over time, establishing a jointly constructed frame for future activities. These sketches therefore come about in a social process that was termed 'future framing' (Smulders & Brehmer 2011), a design process in which the actors aim to develop a satisfactory frame representing the future outcome of their combined work as well as the solution space for their upcoming individual design and engineering activities.

These representations were also used to communicate with others, e.g. management stakeholders. By presenting the core of an idea and nothing else, it is clear what had been chosen and what is still open. They have vigour and charm that ensures commitment and invites to participate as so much is left open for the imagination. We observed that these representations incite open dialogues and ample space to explore new aspects. As such, somewhat paradoxically the representations of this category concern both the end of something in a meeting and the beginning of something new in separate tracks.

#### *Category 4: Even better than the real thing*

The last category concerns extremely well crafted representations and models that are aesthetical and pleasing. Consider e.g. photographic renderings of a product; real life models; almost art like kind of scale models; small movies or animations and so on (see Figure 5). The representations recall so-called concept cars that are presented at car shows, to show possible future models, also referred to as projecta's (Buijs 2012). Not only what is represented is made with great care, also how it is shown is deliberately chosen, providing a kind of future reality how the



*The Right Fidelity: designedly representations that enhance multidisciplinary NPD*

object should be seen. For example the lineup of products in Figure 5 is geared to highlight that the products will share the same user interface, which was considered a USP for the firm involved. The representations have an extremely high fidelity as these are often better than the real thing they refer to, namely the future product.



*Figure 5 Three examples of highly stylized representations of a possible future products. On the left (1) an idea is demonstrated to have one user interface across a range of products. In the middle (2) a proposal for a new package design is shown, to leverage the brand. On the right, a proposal for a new design language is demonstrated. When these representations were made, none of these product they refer to were planned.*

Just as the previous category, these visuals and models point towards the future but here represent a very detailed end of a design and development process. These representations serve another goal. Rather than summarizing what has been decided, this is aimed at getting commitment from others, such as getting resources and budget. This category of representations is compelling, clarifying, elegant, coherent, aesthetical, thought provoking. In short: seductive, if not persuasive. All means are employed to ensure that others are convinced something is a good idea. It is not about explaining an idea, it is about ensuring the idea is framed in a particular and preferred way. As such, these representations are basically 'selling' ideas to actors outside the team in social processes aimed at persuading actors from other disciplines or with other roles.

## **Summarizing the findings**

Four categories of representations are discerned that each have contributions as boundary objects in a social dynamic setting of actors, inside and outside teams. Thereby the fidelity of these objects varies across these settings. Consequently, we instilled that the 'right' fidelity of a

representation is situational dependent where the situation is formed by the involved boundaries and aim of the social interactions. In Table 1 an overview of our findings is presented.

Category 1	Category 2	Category 3	Category 4
When every detail counts	A little sketch will do	The essence of an idea	Even better than the real thing
High fidelity	Low fidelity	Very low fidelity	High fidelity
No abstraction allowed	Sketchy	Iconic	Carefully crafted and expressive
Preoccupation with failure	Preoccupation w. problem solving	Preoccupation with converging	Preoccupation with commitment
Sensemaking	Designing	Future framing	Gaining commitment

*Table 1 Comparing four categories of representations of the intended product that serve as boundary object*

The category 1 representations like integrated prototypes are used inside the team when the team experiences doubt and/or uncertainty around an unexpected situation. Or that someone presents e.g., a newly devised or adapted module that needs to be reviewed by all in context with other parts and modules. Such events initiate processes in which teams resort to those representations that best show their collective work at that moment in time and that hardly show any abstraction from that. While assessing the situation, the specialists have a preoccupation with failure, looking for clues that hint at problems or may provide explanations why something doesn't work. They set the problem at hand. Of interest is that the representations pre-eminently refer to *past activities*. For example, a prototype is representing what all team members did in the past and represents those past design decisions that brought them in the situation they are in. The social cognitive process aptly can be named a sensemaking process: the "retrospective development of plausible images that rationalize what we are doing" (Weick et al. 2005).

By contrast, category 2 representations like 'back of the napkin' sketches are used when a problem is well understood and the team engage in solving it. The low fidelity of the representations is needed because the team needs to invent, explore and adapt solutions swiftly; reflect on these and -if necessary - dismiss them. The representations need to be understood by all

and are often abstract and refer to both past activities (such as existing parts) and future activities (such as new parts that need to be developed). Representations serve as boundary objects among the disciplines and permanently are in flux and adapted to the latest insights and ideas. Layers of information are added. This category of representations is closely related to the findings of Ewenstein & Whyte (2009) and Knorr Cetina (2001) on the unfolding ontology of epistemic objects. These representations are deployed when team is in the process of developing a solution for a problem, i.e., when the team is designing.

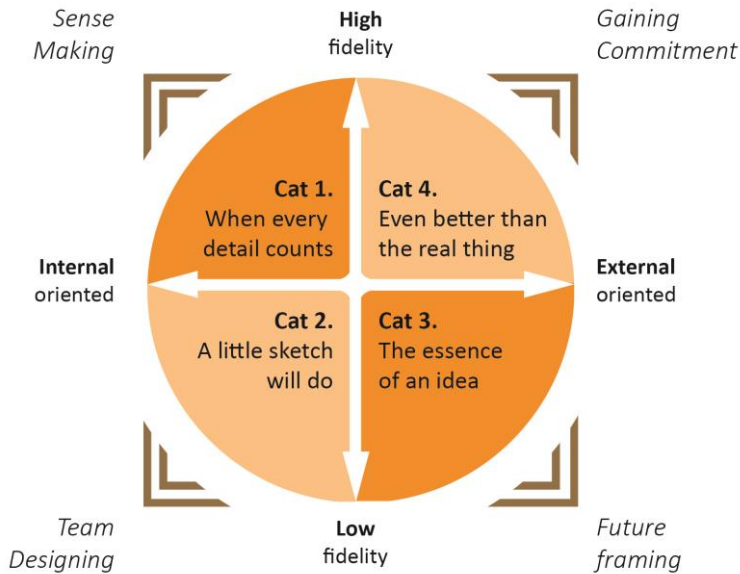
Category 3 representations fit very well in a process in which the robustness of possible lines of action is tested. These representations on the intended product summarize and capture the core of the idea, and consequently provide an agreed on frame for future activities. The process of summarizing is somewhat different from the design process, as the focus shifts from developing solutions to expressing 'what we agreed on what we will create'. Of interest is that these representations capture the essence and nothing more; they have what Weick named the 'charm of the skeleton' (Weick 2004: p.43). The 'skeleton' of a good idea has a vigour and a charm that is persuasive so that individuals can commit themselves; leaves open sufficient space for individuals to explore solutions and is sufficiently constrained so that everybody knows the generic line of thought. This class of representations embodies a frame for future activities without explicitly spelling out what individuals need to do. We see this social process as 'future framing' (Smulders & Brehmer 2011), rationalizing current and future activities.

Category 4 representations seem to have much overlap with the previous category, as these expressive representations also provide a future frame and are the outcome of a design process. However, the aim for these representations are fairly different. The persuasive representations are geared for gaining commitment of others, who are not part of the team. Consider for example management stakeholders who provide budget and resources and sales & marketing actors. Or consider potential future clients. Even though an idea is just premature, it is shown as if it is fully developed so that others commit themselves. A language is used that is easily grasped by all involved. It is harder to explain and reflect on the added value of for example a project description of 100 pages, compared to an expressive picture that 'says it all'.

## Conclusions and implications

The research question we explored in this paper is: what representations have boundary spanning capabilities, how and when? The focus we had was on representations of the intended product. Our findings show that the concept of 'boundary objects' is fruitful to study and explain knowledge work, at least in NPD. What we added to the existing body of literature is that the fidelity of representations that serve as boundary objects inside teams has a relation with the social process a team is in.

We observed that the many representations used throughout multi disciplinary product development have varying fidelity. We categorized these and in Figure 6, a convenient organizing framework is presented. The vertical axis depicts the fidelity of the representation being the degree to which a representation corresponds to the eventual final product. The horizontal axis depicts whether a representation pre-eminently is used inside the team, e.g., to span boundaries between specialists. Or that it is used pre-eminently outside the team, e.g., to span boundaries with stakeholders or other teams. We projected the four categories onto this map, showing (1) that the fidelity of these representations that serve as boundary objects can vary considerably. And (2) that this variation can be observed for representations that are used inside the team and outside the team. Consequently, there is no silver bullet, no representation category that serves boundary spanning independent of its context.



*Figure 6 An organizing framework. An explanation is provided in the text. The vertical axis concerns the fidelity of a representation. The horizontal axis depicts whether a representation is pre-eminently used inside the team, or outside. The four categories are shown, with a relation to observed team processes.*

The process a team is in is an indicator for what kind of representations are useful to the team members. Consequently the 'right' fidelity is an appropriate fidelity for the social process a team is in:

- If teams are in doubt, experience ambiguity, need to review parts and/or modules they hardly know yet: they need to make sense of the situation. The team engages in problem setting and the best representations get as close as possible to the eventual product, providing much detail and that enable team members to interact with it.
- If teams are solving problems, i.e., designing; representations need to have a low fidelity and are highly abstract. Key is that the specialists must be able to make swift cross disciplinary proposals that are ongoing improved, changed, and reflected on. These representations unfold in time.

- If teams 'know' where they are heading, they need to converge and explain each other and others what they will do in the future. We name that future framing: construct a guiding frame for all subsequent activities. Representations need to capture the core of ideas and nothing more. They are robust enough to maintain a common identity, yet are plastic enough to adapt to distinctive specialisms
- If teams need to gain commitment of others, representations are needed that are compelling, self explaining, seductive; if not persuasive.

Expressing the intended product is not merely a translation of a preconceived idea in an appealing visual, but co-shapes what the outcome will be. Also, the message conveyed cannot be seen apart from the way it is expressed. Thus, there is a 'right fidelity' considering the goals and the process a team is in. The implication of these findings for practitioners in NPD teams, such as managers, designers, engineers and so on, is first of all to get awareness for the impact of representations for team processes. And second, awareness of the impact of the fidelity on these processes. If a problem needs to be solved cross disciplinary, flashy renderings of the intended product will not help at all. The other way round, sketches used for problem solving make much sense to the involved team members, may look as incomprehensible, awkward and unprofessional to outsiders. Using an erroneous category for a specific process will not lead to boundary spanning.

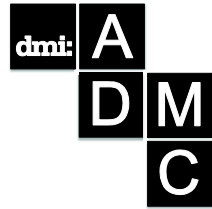
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## Exploring Collaboration in New Product Development

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*This paper discusses the relevant literature on collaboration in product development and proposes a framework for exploring collaboration proneness in development processes. The framework proposes valuable insight into managing collaboration in practice, as it provides an evaluation tool for managers to determine their internal team competences and gaps to be addressed. Furthermore, it enables companies to assess potential NPD partners outside company boundaries. A test on an industrial case demonstrates the applicability of the theoretically derived framework to practice.*

**Keywords:** *new product development, cross-functional collaboration, case study*

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## Introduction

Innovation is a key driver of competitiveness and economic growth, but nurturing it is a challenging task because it involves multiple and constantly changing actors, linkages between different departments, and dynamics, in terms of collaboration, communication and decision-making. Although academic literature emphasises collaboration and cross-functional integration as determinants of successful innovation, businesses often run into information and coordination problems at the different stages of innovation and product development processes. This means understanding collaboration, coordination and cross-functional integration is essential for effective innovation performance. Academic literature has identified collaboration as one of the key aspects of New Product Development (NPD) effectiveness (e.g., Evanschitzky, Eisend, Calantone, & Jiang, 2012; Gupta, Raj, & Wilemon, 1986; Jassawalla & Sashittal, 1998). Frameworks have been proposed that identify mechanisms relevant for achieving effective collaboration within companies (e.g., M. Song, Kawakami, & Stringfellow, 2010; X. M. Song, Thieme, & Xie, 1998). Furthermore, enablers and barriers of collaboration have been explored. Companies, however, still struggle in achieving internal cross-functional collaboration, and as a result, NPD activities are sub-optimised. This further leads into inadequate collaboration beyond NPD within the company.

This paper takes a holistic approach and identifies factors and dimensions that affect cross-functional collaboration in product development, along with the factors and dimensions that are affected by such collaboration. The assessment contributes to the innovation field through the development of a framework for the analysis of collaboration in product development that can be used in future research and practice, irrespective of context. This paper will begin with a systematic literature review that leads to the outline of a collaboration proneness assessment framework. An extensive pilot study will demonstrate how the framework performs in an actual organisational context and will highlight the vital lessons learned. A fresh outlook for managers and theory builders will be presented in the concluding section.

## Literature review and conceptual framework

Although cross-functional integration has been identified as an important driver of NPD success, it is striking to note that the views of scholars are fragmented in this regard. A literature meta-analysis of peer-

reviewed innovation journals identified more than 50 articles, when searching for the following keywords in title, abstract, and keywords section: cross-functional collaboration, integration, product development. In this analysis, we identified four emerging themes: (1) determining the cross-functional integration gap, (2) determining needed levels of functional involvement in different NPD stages, (3) Influence of integrative mechanisms on integration and NPD performance, and (4) information/knowledge management and integration in NPD. To provide background for the development of the collaboration proneness framework, these themes are further explored below.

### *Determining the Cross-functional Integration Gap – the antecedent*

Early work within the field of cross-functional integration is solely based on the framework proposition that Gupta et al. (1986) put forward. Their framework introduces the cross-functional integration gap and the factors that contribute to it. The propositions that guide the framework are: (1) the degree of integration between R&D and marketing can be assessed by measuring the difference in ideal and achieved levels of integration, (2) the ideal level of R&D-marketing integration is the level that is perceived by R&D and marketing personnel as the one at which the highest possible NPD success can be achieved, (3) the achieved level of R&D-marketing integration is the level of current cross-functional integration as perceived by R&D-marketing personnel (Gupta et al., 1986; M. Song & Thieme, 2006), and (4) the difference between the ideal and achieved levels of integration is referred to as the cross-functional integration gap, and is suggested to directly influence NPD success (Gupta et al., 1986).

Although later studies developed scales to measure and assess the cross-functional gap, little has been done on expanding Gupta et al. (1986) original framework, consisting of the four constructs influencing the cross-functional gap. It is apparent from the reviewed literature that industry competitiveness, firm characteristics and organisational structure and culture influence cross-functional collaboration in early stages of NPD.

Sherman et al (2005), for example, place importance on integration of information from past projects as a contributor to NPD performance, and consequently overall competitiveness. They claim that effective recording of information from past projects and efficient retrieval of that information, coupled with effective cross-functional integration result in improved efficiency in the early and later stages of NPD. Furthermore, firm

characteristics engage with NPD performance as well. Internal integration as a single factor has a negative influence on time performance, but when interacting with vision its effects are positive, meaning that a cross-functional process is not enough for better time performance (Tessarolo, 2007). Top-management support is critical for achieving effectiveness. It will influence individual behaviour within the team through the creation of social cohesion; however, cultural aspects also need consideration. For example, US and UK goal incongruity is attributed to motivational factors, whereas in Japan and Hong Kong to facilitative factors (Xie, Song, and Stringfellow, 2003). This means that effective integration is also linked to culture and change management and for the processes to be effective, these need to be considered prior to project development.

### *Determining Needed Levels of Functional Involvement in Different NPD Stages – the structure*

More recent studies can be divided into two separate streams, following the example of Ernst, Hoyer, and Rübssaamen (2010): behavioural and attitudinal. The former deals with information sharing between the studied functions in NPD, whereas the latter is focusing more on the level of cooperation between functions in the sense of common goals, shared resources and common vision. In this paper both aspects of integration, are combined, as both, information sharing and collaboration are understood to be important parts of successful NPD (L. P. Cooper, 2003). Furthermore, the process-oriented perspective has been widely researched, as cross-functional integration has been extensively studied within different NPD stages (e.g., X. M. Song et al., 1998). There is, however, no consensus on what exactly the NPD stages are. X. M. Song et al. (1998), for example, presume that the core of any manufacturing company usually consists of three major functions, namely R&D, manufacturing and marketing and therefore, the focus is on defining and investigating NPD stages. They identify market opportunity analysis, planning, development, pretesting and launch as the main NPD stages (X. M. Song et al., 1998). By contrast, the NPD literature (e.g. Cooper 2003) focuses on scoping, building a business case, development, validation and launch with important intermediate gate reviews. Every study defines the stages in unique ways, which hampers benchmarking the outcomes.

NPD success is more likely when the companies employ function-specific and stage-specific patterns of cross-functional integration (Song, Thieme

and Xie, 1998), which means that both customer and departmental requirements need to be considered when engaging with NPD projects.

Integration in teams has a positive relationship to NPD performance. Social cohesion, superordinate identity, market-oriented reward system, formalization of planning, and encouragement by management are positively associated with integration (Nakata and Im, 2010). Senior management policies can enhance the level of involvement between different NPD functions and can improve the likelihood of NPD success. The effects, however, depend on national culture, for example, team leader autonomy, team rewards and job rotation are effective in US, but not Japan (M. Song et al., 2010). Formalizing integrative mechanisms in terms of policy practices and structures facilitates inter-functional communication and knowledge diffusion. Established stages of the process further enable clear understanding of roles and responsibilities, making it clear to the team where their expertise is paramount for success (Cooper, 2003).

### *Influence of Integrative Mechanisms on Integration and NPD Performance – the process*

Recent literature suggests environmental uncertainty as one of the major factors contributing to the need for integration. Interestingly, it actually does not play a major role in fostering cross-functional integration in NPD. Thus, the focus of research should shift from investigating external influence factors towards a better understanding of the links and their effects internally (Calantone & Rubera, 2012). The centre of research attention is therefore shifting towards understanding what factors influence the cross-functional collaboration internally and how they can be manifested to aid better NPD performance. The initial propositions with regard to the so-called 'integrative mechanisms' have been put forward by Gupta et al. (1986), but have not been expanded since. The literature suggests several important mechanisms for integrating marketing and R&D (Lu and Chang, 2002; Maltz and Kohli, 2000; Song and Thieme, 2006; Garrett et al., 2006). Depending on the criteria used, these mechanisms are often classified differently (Griffin and Hauser, 1996; Cordon-Pozo et al., 2006). The most widely used mechanisms are formalization, centralization and organizational climate, along with joint reward systems and social cohesion (e.g., Nakata and Im, 2010). Although widely researched, there is still no agreement on the direction these influences have on firstly, cross-functional integration and secondly, NPD performance. Parry and Song (1993), for example, have discovered that formalization may aid R&D-marketing

integration by reducing role conflicts. But it may also impede integration by restricting the flow of information. Especially in SMEs effective organizational structures and management development activities tend to be more informal (Grey and Mabey, 2005). Formality of policies, strategies and structures is commonly associated with large firms. Other authors proposed formalization as a mechanism with positive effect on integration because it facilitates inter-functional information transfer, improves the awareness of that information by team members, reduces and prevents conflicts between the functions, reduces ambiguity throughout the NPD process and improves cooperation between departments (Ruekert and Walker, 1987; Cordon-Pozo et al., 2006). Similarly, centralisation and organisational climate have had mixed findings in different studies (e.g., Fain et al 2011; Song and Thieme, 2006) and have, moreover, not been investigated beyond cross-functional collaborations. As Nakata and Im (2010) recently point out, the effects of such integrative mechanisms on building fully successful NPD teams is still under-researched.

In line with the antecedents and structure, several practices can be employed to enable effectiveness in the process, such as lessons learned, project management, clear information storage facilities and effective teamwork.

Cross-functional integration can be enhanced by actions of senior management and diminished by goal incongruity (Parry et al 2010). Different project management practices can help support alignment of goals and processes, such as detailed plans, active participation of the team in developing plans and autonomy to respond to unanticipated issues (Thieme, Song, & Shin, 2003). Furthermore, activities, such as formal audits and memos contribute to effective retention and application of knowledge developed in prior NPD projects. This facilitates knowledge retention and learning from past projects. Activities that promote interpretation of knowledge in the firm's strategic context help uncovering new applications of existing knowledge and directly increase NPD performance (Marsh & Stock, 2006), confirming links between situational, structural and outcome dimensions in NPD.

### *Information/Knowledge Management and Integration in NPD – the outcomes*

By implementing virtual teams into the NPD, organizations get a greater spectrum of expertise. This process can involve experts beyond the boundaries of their organizations and even geographical area and

consequently, the NPD effectiveness level can be influenced. With organizing and distributing human resources in the virtual environment, all team members are able to contribute their abilities as much as possible. By the same token, the organisation can acquire, develop and deploy knowledge as a resource in a dynamic way. Superior performance is often the result when organisations use their capabilities in these new ways (Tseng and Abdalla 2006). Due to fast development of Information and Communications Technologies (ICTs) and other NPD aiding technologies, the question of knowledge management and information sharing has become of great interest within the field of cross-functional cooperation in NPD. Song and Song (2010), for example, study the moderation role of ICTs in NPD and cross-functional integration. They find that ICTs can be used to reduce the negative impact of physical separation and cultural differences and therefore, play a strong moderating role in R&D-marketing integration. Furthermore, ICTs can help in acquiring information from past projects and as Sherman et al. (2005) conclude contribute to NPD performance. They find that effective recording of information and its efficient retrieval contribute to stronger integration of functions and consequently, to greater NPD success.

The integration of the above constructs into an effective NPD project result in the following outcomes: product profitability, enhanced NPD performance and higher levels of team integration. This consequently means that cross-functional teams positively impact organizational performance through their innovativeness, particularly in cost-leadership organizations (Engelen and Brettel, 2012).

Cross-functional integration substantially impacts product profitability through a mix of direct and mediated effects (McNally, Akdeniz, & Calantone, 2011). Trade-offs are made between time, quality and expense and although speed to market and product quality enhance product profitability, they also partially mediate the impact of fuzzy front end expenses on product profitability (Brettel, Heinemann, Engelen, & Neubauer, 2011).

The framework presented in figure 1 summarizes the discussed literature and identifies four key dimensions that impact cross-functional collaboration, namely antecedents, structure, process/enablers and outcomes.

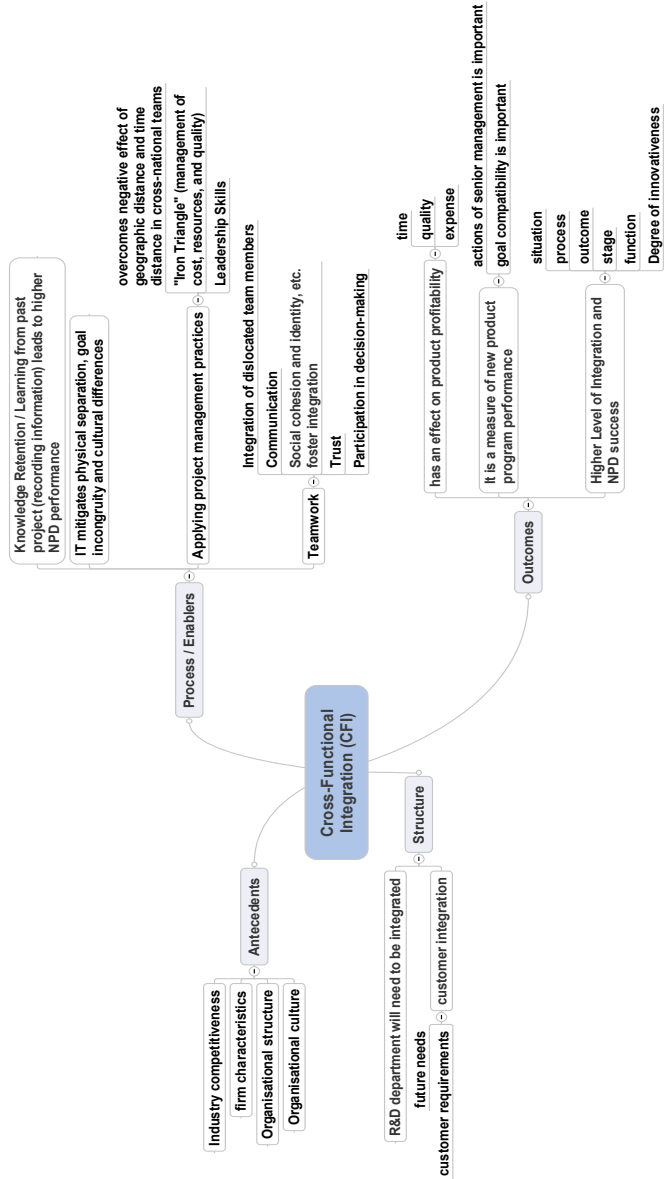


Figure 1: Conceptual framework for cooperation proneness



## Context and methodology

Based on the above framework a research protocol was derived to test its validity on an industrial case. The company involved, is a heavy-manufacturing organisation, focusing on development of bespoke high-tech products for a variety of industries and customers. The approach taken for the purposes of this case study was qualitative, integrating semi-structured interviews with content analysis of secondary sources for data triangulation.

The interview guide was derived from the key literature themes and was based on semi-structured questions focusing on industry characteristics, company structure and culture, team processes and NPD enablers, along with an assessment of relevant outcomes within the company (Griffin 1997; Kahn 2006; Kester 2011). Ten interviews were conducted with key stakeholders within the case company, including the project manager, marketing manager, production design and development manager, chief engineer, general sales manager and technology director. The interviews ranged from 30 minutes to 2 hours and resulted in around 100 pages of transcripts.

Company reports and operating procedures complemented preliminary interview data. The combination of such techniques enabled examining current state within the company, matching the empirical data to the proposed framework and its alignment with the company needs.

## Findings and discussion

The key theme discussed with the interviewees within the company was the effectiveness of cross-functional integration in their product development processes. It was determined at the outset of the conversations, that cross-functional integration is based on informal rules and regulations, mostly on team participant's good will. As outlined by the project manager *"It is quite a dynamic thing... Basically you bring people when you need them."* Cooperation and information exchange is not strong enough under such a loose structure. As one of the interviewees said, *"Manufacturing won't know what to manufacture. Sales and marketing, what happens to them? Do people have a forward view of where they want to go with their products?"* Ensuring engagement of all relevant stakeholders throughout the whole NPD procedure is seen as critical in best practice literature (Page 1993; Griffin 1997), but is currently not given high enough priority in the company. As outlined in the proposed framework, this consequently means that there may be a disconnection between the

four key constructs (antecedents, structure, process/enablers and outcomes) for effective cross-functional integration.

Interestingly enough, the industry characteristics may have a major role in this potential disconnect, as described by one of the interviewees *"It should be in mind that a lot of our competitors haven't changed any of their technology either within the period of the last 25 -30 years. They are not changing because they are not required to change."* Keeping the technology stagnant ultimately means that the need for cross-functional integration might be low in this sector. The literature identifies industry competitiveness as a relevant antecedent of cross-functional integration in NPD. Consequently, this case demonstrates the significance of the industry context as a principle influencing factor for NPD in this organisation. This is further supported by the marketing manager's claim that *"Everything we do just now I think is common sense; it's been through experience and learning what's been involved. But we don't have any pre-defined tool set that we can apply."*

There seems to be no drive for change from the industry and customer side. Thus, the need for a clear formal structure and process is not seen as a priority in the company. This is supported by the claim: *"It is a mature market. The first one who takes that big giant step is very brave indeed..."* and further strengthened by the notion that most of the NPD activities are undertaken in a relatively informal way. Large manufacturers in mature markets often face the inability to match resources, strategy, technology, etc. with new products (cf. Dougherty & Hardy, 1996), which may explain why the NPD process of our case company has not become business-as-usual. The NPD activities including idea generation, development, and review points are predominately driven by individual projects and are not standard practice. Idea generation, for example, has been limited to a single workshop, resulting in prioritizing ideas: *"There was an idea generation workshop that took place with representatives of most of the business units, and supply chain as well. There were like 300 ideas identified, which were then ranked in order of priorities and impacts."* This company approach diverts from best practice literature: the NPD process should be structured around customer needs to guide successful product ideas (R. G. Cooper & Kleinschmidt, 1987; Maidique & Zirger, 1984) [Griffin 1997] and a balance of 'newness' among projects helps manufacturers to remain competitive in the long-term [Edgett 2011; Griffin and Page1996]. On the other hand, although the processes employed are rather informal, the support of the senior management mediates the effectiveness of the outcomes. As the project

manager stresses “*we had a commitment from the managing director of that business unit to support the particular designer assignment. It tends to be that projects driven by customers’ needs have slightly higher priority*”.

## **Implications and conclusions**

The framework of cross-functional proneness outlined on the basis of a structured literature review presented four key constructs relevant for effective cooperation: antecedents, structure, process, and outcomes. The influence of these constructs has been tested within an industrial environment to firstly examine their relevance for practice and theoretical implications arising from this. The framework proposes valuable insight into managing collaboration in practice, as it provides an evaluation tool for managers to determine their internal team competences and gaps to be addressed. Furthermore, it enables companies to assess potential NPD partners outside company boundaries.

The case has shown that all four constructs contribute to cross-functional integration. It is interesting to note that respondents recognise the impact of antecedents on NPD performance (e.g., organizational structure, etc.) and these seem to drive the NPD procedure and influence remaining constructs. However, the stagnant competition in the heavy-manufacturing industry (i.e., another antecedent) is overriding the organisational need and management efforts to fully integrate functions across the organization. It appears that manufacturers are satisfied with their relative NPD performances, explaining inertia within this particular sector. Effective leadership serves as the key enabler to formalize structure and consequently influence the innovative nature of project outcomes. Through such actions they are balancing their NPD performance, enhancing their internal collaboration proneness. Future research will have to look at other industry settings to help formalise theory development in this area. With regards to our case company, it would be interesting to see what happens when one manufacturer begins to utilise its full collaborative potential to drive NPD to the next level.

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# Do Designers and Managers Complement Each Other? The influence of cognitive style on product performance

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*Prior research suggests that designers may complement managers in achieving successful innovation outcomes because of their different ways to approach problems and opportunities. Designers have, for example, been ascribed characteristics such as being explorative, future oriented and intuitive, while managers have been described in terms of a preference for exploitation, driven by the past and being rational. There is, however, not much empirical research that examines whether designers and managers indeed think differently and how this affects innovation outcomes. We attempt to fill this gap in the literature by examining how designers' and managers' cognitive styles (in terms of creativity, conformity, and attention to details) influence outcomes of innovation projects. Our results indicate that conformist managers enhance financial product performance, while creative designers contribute to higher levels of success by developing products that are both unique and of high quality. Moreover, designers' and managers' cognitive styles complement each other, indicating that for higher levels of product performance creative designers should not conform to rules and conformist managers should not be creative. However, our results also indicate that product performance is enhanced when designers and managers are both attentive to details, indicating that these professionals supplement each others' abilities as well.*

**Keywords:** Designers, managers, cognitive style, co-worker fit, product advantage, financial product performance.

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## **Introduction**

To gain and sustain competitive advantage, more and more organizations rely on innovation (Song, Im, Bij, and Song, 2011). Successful innovation requires the generation of new ideas and the implementation of these ideas into new products, services or processes (Amabile and Fisher, 2009). Designers can effectively assist companies in the development and successful implementation of innovation (Abecassis-Moedas and Benghozi, 2012; Dell'era and Verganti, 2009, 2010; Perks, Cooper, and Jones, 2005). The effectiveness of designers in innovation has, in part, been attributed to designers' unique orientation towards the work at hand, and the mental attitude with which problems are approached and situations responded to. Indeed, "design thinking" has gained considerable attention in the management literature, since designers seem to contribute to innovation in ways managers cannot (Hassi and Laakso, 2011; Micheli, Jaina, Goffin, Lemke, and Verganti, 2012). Designers are described as being explorative, ambiguity tolerant, positive, future oriented and intuitive (Hassi and Laakso, 2011). Beverland and Farrelly (2011) suggest that designers view the environment as mutable, change as radical and exiting, knowledge as intuitive and the future as the driver of the present. This mentality is different from that of individuals working in business functions who tend to view the environment as fixed and view change as incremental, knowledge as measurable and the past as basis of their decisions for the present (Beverland and Farrelly, 2011).

Even though prior research suggests that designers and managers have different mentalities, there is not much empirical evidence that designers and managers indeed differ in mentality and the effect this has on innovation outcomes. This research sets out to explore this topic, and focuses at how these professionals' cognitive styles (in terms of creativity, conformity and attention to details) influence financial product performance. Cognitive style is a person's "preferred way of gathering, processing, and evaluating information" (Hayes and Allinson, 1998, p. 850), reflecting how individuals approach problems, process information and learn (Miron-Spektor, Erez, and Naveh, 2011). When interpreting design thinking as a mentality that indicates how individuals approach problems and respond to situations, cognitive styles are a good representation of this mentality.

The purpose of this study is to explore (i) how managers' cognitive styles influence financial product performance, (ii) how designers' cognitive styles

influence financial product performance and (iii) how the two actors complement each other in achieving these innovation outcomes. We test our hypotheses by using a dataset of 83 innovation projects in which new products and services were developed in cooperation with an external designer. The dataset contains the responses from both the external designer and NPD manager that were involved in the project (n=166, 83 designers and 83 managers). The results from our PLS structural equation model show that for higher levels of financial product performance, designers should be creative (and not conformist) and managers should conform to rules (and not be creative), indicating that the two professionals complement each other. However, our results also show that both designers' and managers' attention to details is important for higher levels of performance, showing that they supplement each other's abilities as well.

This paper is structured as follows. First, we discuss the theoretical background and present our hypotheses. We then present the method and discuss our results. In the final section we give conclusions, the limitations of our study and directions for future research.

## **Theoretical background and hypotheses**

### *Cognitive styles*

Cognitive style refers to the process of problem solving rather than the content of the activity (Hayes and Allinson, 1994; Miron-Spektor et al., 2011) and describes how people "perceive, think, solve problems, learn and relate to others" (Hayes and Allinson, 1994, p. 53). Prior research has described individuals' cognitive style in terms of two extremes, such as intuition and analysis (Allinson and Hayes, 1996) or adaption and innovation (Kirton, 1976). This aggregation of the dimensions of cognitive style into one continuum with two poles, however, has been criticized since such a division can mask the effects of the underlying attributes on performance (e.g. Payne, 1987). In response to this criticism, Miron, Erez, and Naveh (2004) developed and tested a three factor structure of cognitive style. The authors examine cognitive style in terms of creativity, conformity, and attention to details. Creativity refers to individuals' ability to identify problems, reframe them and come up with many solutions (Miron-Spektor et al., 2011; Miron et al., 2004). Individuals who conform to rules seek consensus and generate ideas which will be likely to be accepted by their group (Miron-Spektor et al., 2011; Miron et al., 2004). Finally, those that are attentive to details are efficient, reliable, systematic and precise.



We hypothesize that the cognitive style of managers responsible for new product development (NPD) projects will directly influence the financial performance outcomes of these projects. Managers are involved in the organization of innovation projects by controlling, among other things, the budget and planning (Bonner, Ruekert, and Walker Jr, 2002), and by determining product pricing to ensure profitability (Beverland, 2005; Beverland and Farrelly, 2011). Therefore, we expect that managers' cognitive style influences the extent to which the product is effectively and efficiently implemented. We assess that managers' creativity will have a negative influence on financial product performance. Creative individuals tend to follow an unstructured and unorthodox process when developing solutions to complex problems (Amabile and Fisher, 2009; Cummings and Oldham, 1997). Moreover, they tend to navigate away from what is already known (Amabile and Fisher, 2009; Cummings and Oldham, 1997) and prefer to develop radical solutions (Miron-Spektor et al., 2011) which may be difficult to integrate within the organization (Bear, 2012). These characteristics often result in inefficiency (Kirton and De Ciantis, 1986), which in turn will negatively affect financial product performance. We assess that managers' conformity to rules and group norms will have a positive influence on financial product performance. Managers who conform to rules and norms will be focussed on solutions which will be accepted by their organization, creating support for these solutions and ensuring these solutions fit with organizational resources (Kaplan, Brooks-Shesler, King, and Zaccaro, 2009). Moreover, conformists are likely to abide to project planning and budget since they consider rules and regulations important (Miron-Spektor et al., 2011; Miron et al., 2004), aiding how efficient the project is implemented and stimulating financial product performance. Finally, we assess that managers' tendency to pay attention to details will have a positive influence on financial product performance. Managers who are attentive to details are thorough, efficient and enjoy improving rather than changing the status quo (Miron-Spektor et al., 2011; Miron et al., 2004). These characteristics aid in bringing an innovation to the market quickly, which will positively influence the financial performance of the innovation.

Therefore:

H1A. Managers' creativity has a negative influence on financial product performance.

H1B. Managers' conformity has a positive influence on financial product performance.

H1C. Managers' attention to details has a positive influence on financial product performance

Designers are usually not directly responsible for business aspects that have a direct effect on financial product performance such as price setting, budget and planning. This is particularly true for external designers. Rather, designers will influence, above all, the qualities and features of the outcome itself (Beverland, 2005; Beverland and Farrelly, 2011). Therefore, we propose that designers' cognitive styles do not directly influence financial product performance but do contribute to successful innovation through the development of product advantage. Product advantage is the extent to which an innovation is unique, superior at meeting customers' needs and has a better quality than competing products (McNally, Cavusgil, and Calantone, 2010). Designers' creativity will have a positive influence on product advantage since creativity enhances innovativeness (Miron-Spektor et al., 2011). As described above, creative individuals enjoy developing radical solutions (Miron-Spektor et al., 2011) and they tend to navigate away from what is familiar (Amabile and Fisher, 2009; Cummings and Oldham, 1997), enhancing the development of uniqueness in the solution. Designers' conformity to rules and group norms will on the other hand result in less innovative outcomes. Conformists are strong at developing products that are likely to be accepted by their group (Kaplan et al., 2009; Miron-Spektor et al., 2011; Miron et al., 2004). This suggests that conformist designers may be more incremental in their ideas, proposing ideas that meet current customer needs, rather than trying to develop future customer needs. Designers' conformity might thus result in developing products that resemble what is already on the market, reducing product advantage. Designers' attention to details will have a positive influence on product advantage since attention to details enhances reliability (Miron-Spektor et al., 2011; Miron et al., 2004). Those individuals that are attentive to details are thorough, they focus at small details of the task (Miron-Spektor et al., 2011; Miron et al., 2004) and as such can ensure that the quality of the final solution is better than that of competing products. Therefore, we propose:

H2A. Designers' creativity has a positive influence on product advantage.

H2B. Designers' conformity has a negative influence on product advantage.

H2C. Designers' attention to details has a positive influence on product advantage.

### *Person – environment fit*

Person – environment fit theory explains how the fit between individuals and their environment influences their performance (Kristof-Brown, Zimmerman, and Johnson, 2005). For example, the more individuals fit the requirements of a job they have to perform, the higher their satisfaction and performance in this function (Chilton, Hardgrave, and Armstrong, 2005). The environment of the individual may include, for example, the organization someone works in, the team someone is part of or direct co-workers (Kristof-Brown et al., 2005). In this research, we focus on the fit between co-workers. Examples include subordinates and supervisors, mentors and protégées and salespeople and their managers (Kristof-Brown et al., 2005). In this research, we focus on the dyadic relation between designers and managers, where managers represent the environment in which the designers have to perform. Depending on the type of dyadic relation, there are two types of fit that can play a role in performance outcomes: *complementary fit* and *supplementary fit* (Kristof-Brown et al., 2005). Complementary fit refers to the situation where co-workers have an offsetting pattern of characteristics, and reflects a situation in which one person has what the other needs (Kristof-Brown et al., 2005). Complementary fits plays a large role in performance when the exchange of resources or services between individuals is key (Kammeyer-Mueller, Schilpzand, and Rubenstein, 2012). Supplementary fit is reflected by a situation in which co-workers share similar characteristics, ensuring the harmonious relation between these two actors (Kammeyer-Mueller et al., 2012; Kristof-Brown et al., 2005).

We expect that complementary fit between the designer and manager will play a large role in achieving good product performance outcomes since designers and managers each will have different capabilities and skills due to training and experience (e.g. Abecassis-Moedas and Benghozi, 2012; Dell'era and Verganti, 2009, 2010; Perks et al., 2005). In the case of innovation projects in which external designers are hired, designers may actually be selected based on their complementary knowledge and skills. In line with complementary fit principles, we expect that higher levels of product advantage will be achieved when designers and managers complement each other in their creativity: i.e. when one actor is highly creative and the other

is not. When both actors are creative, the project may focus at developing new solutions, a strength of creative individuals (Miron-Spektor et al., 2011; Miron et al., 2004), but fail to implement those solutions. Conformity to rules and group norms will ensure efficiency but will also result in 'me-too' products that do not provide superior product advantage. When both the designer and manager conform to rules, they will not challenge each other (Nemeth and Goncalo, 2005) and will not challenge what the customers want anymore, which will negatively influence product advantage. Therefore, we also expect that the designers and managers should complement each other for higher levels of performance: i.e. one actor should conform to rules, while the other should not. While attention to detail is important for higher levels of product quality, we expect that when both the designer and manager have high levels of attention to detail, the project will revolve around improving characteristics of competing offerings rather than developing unique offerings (Miron-Spektor et al., 2011). Therefore, we again expect that when designers and managers complement each other, product advantage will be positively influenced. Thus, we propose:

H3A. The extent to which designers and managers complement each other in terms of creativity has a positive influence on product advantage.

H3B. The extent to which designers and managers complement each other in terms of conformity has a positive influence on product advantage.

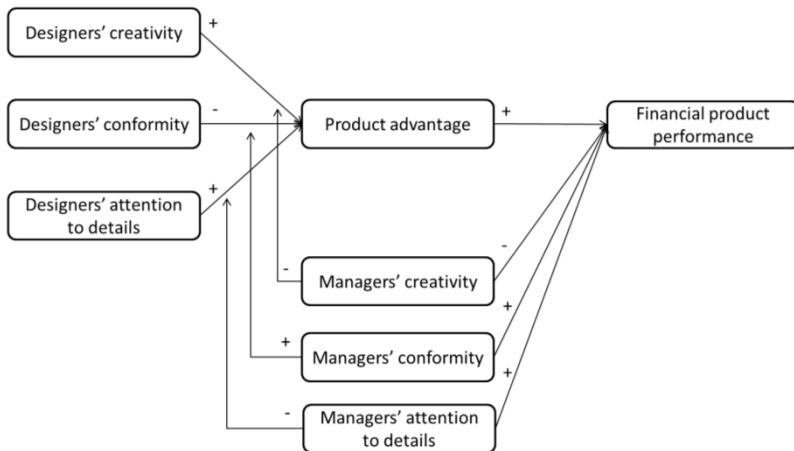
H3C. The extent to which designers and managers complement each other in terms of attention to details has a positive influence on product advantage.

Even though we do not propose formal hypotheses, we expect that designers should have high levels of creativity (and low levels of conformity and attention to details), while managers should be conformist and attentive to details (and not creative). This constellation will be most beneficial for financial product performance since designers' creativity will result in unique products and managers' will complement them to ensure that their conformity and attention to details stimulate the development of products that are of high quality.

Our final hypothesis concerns the influence of product advantage on financial product performance. In line with prior research, we expect that those products that are both unique and have higher levels of quality will

have higher level of financial product performance (McNally et al., 2010). We therefore propose:

H4. Product advantage has a positive influence on financial product performance.



The research model is presented in Figure 1.

Figure 1: Research model

## Methodology

### *Procedure*

The empirical focus was on innovation projects completed together by innovating organizations and design consultancies located in The Netherlands. The data collection procedure consisted of three steps: finding participants, selecting appropriate innovation projects and collecting data through an online survey, which all were completed between November 2012 and January 2014. To identify suitable participants for our study, we created a list of Dutch design consultancies, consisting of 227 organizations. We contacted the senior managers of these design consultancies by phone and, if they were willing to collaborate, asked them to select three or less collaborative innovation projects for our study that were completed in the past three years. This resulted in a list of 113 projects and, for each project,

contact-information of the senior design consultant working on the project and of the manager of the innovating firm. We collected our data through an online survey. To increase the response rate, we first contacted all respondents by phone to ensure their participation and to explain the research. In the end, we received 213 surveys, resulting in 103 matched designer–manager dyads (for seven projects, only one respondent answered). Of these 103 dyads, we had to drop 20 due to missing performance data, resulting in a final sample of 83 projects.

### *Sample*

The majority of the projects were completed between 6 months and two years (78.3%), had a budget between 50.000 and 1.000.000 Euros (63.8%) and the project team (i.e., the number of individuals that were involved in the project at the design consultancy and innovation organization together) was usually between 3 and 10 FTE (63.9%). The designers in our sample had an average of 17 years of working experience, are mostly males (78.3%), and an average age of 41 years. NPD project managers on average had 20 years of working experience, were also mostly males (75.9%), and were on average 44 years old.

### *Measures*

#### **Dependent variables: financial product performance and product advantage**

We operationalized financial product performance as the extent to which the innovation outcome met margin, profitability and return on investment goals (Griffin and Page, 1993). Product advantage was operationalized as the extent to which the innovation outcome offered unique attributes or performance characteristics, met customer needs in a superior way and had a superior quality as compared to competing products (McNally et al., 2010). Both constructs were measured on a 7-point Likert scale.

#### **Independent variable: cognitive style**

We operationalized cognitive style in terms of creativity, conformity to rules and group norms, and attention to details and adopted a 7-point Likert scale from Miron et al. (2004) to assess each dimension of cognitive style with four items.

### **Measurement validation**

We used our sample of 166 respondents to conduct a confirmatory factor analysis on all items pertaining to the main model. After deleting four items pertaining to the cognitive style construct due to low factor loadings, we obtained a model with a good fit ( $\chi^2 = 85.76$  d.f. = 67, goodness-of-fit index (GFI) = 0.93, comparative fit index (CFI) = 0.98, root-mean-square-error of approximation (RMSEA) = 0.04), in which all constructs have acceptable reliability and validity. All constructs have a composite reliability (CR) which is larger than the critical value of 0.70 (Hair, Black, Babin, and Anderson, 2010). Moreover, the CR is larger than the average variance extracted (AVE) for all constructs. The AVE is higher than the critical value of 0.50 (Hair et al., 2010). Finally, the maximum variance shared (MVS) and the average variance shared (AVS) are smaller than the AVE for all constructs in our study, giving indication of discriminant validity (Hair et al., 2010).

### **Common method bias**

We used a CFA based version of Harman's single factor test to evaluate whether common method bias is a problem in our study. A model in which all variables loaded on one construct had the following fit:  $\chi^2 = 655.82$ , d.f. = 77, GFI = 0.62, CFI = 0.32, RMSEA = 0.21,  $p < 0.005$ . This model is significantly inferior to our initial model, indicating that common method bias is not a major problem (cf. McNally et al., 2010).

## **Analysis and results**

### *Descriptive statistics and bivariate correlations*

Table 1 presents the descriptive statistics for our constructs. This table shows, among other things, that financial product performance is significantly and positively correlated to product advantage. We also find significant positive correlations between financial product performance and managers' conformity and between product advantage and designers' creativity.

### *Structural equation modeling*

We analysed our data by using partial least squares (PLS) structural equation modelling. When creating our structural model, we used the response of the managers for financial product performance as they are better informed of how financially successful the innovation was. We used

the average score of the designers' and managers' answers to reflect product advantage since both professionals can give an estimation of how the innovation compares to competing products. Next, the cognitive style responses were obtained from the designers and managers themselves (i.e. designers answered the questions about their own cognitive style).

Table 2 gives a summary of the hypothesis testing, including the signs and significance of the paths in our models. In the sections below, we elaborate on these results and the hypotheses we tested, while a detailed description of the structural model can be found in Appendix 1.

### **The influence of managers' cognitive styles on financial product performance**

Our results show no significant influence of managers' creativity and attention to details on financial product performance and thus we had to reject hypotheses H1A and H1C. H1B is confirmed since managers' conformity indeed enhances financial product performance.



*Do Designers and Managers Complement Each Other? The influence of cognitive style on product performance*

*Table 1: Descriptive statistics and correlations (2 tailed)*

Variable	Mean	S.D.	1	2	3	4	5	6	7	
1. Product performance	4.66	1.27								
2. Product advantage	5.68	0.83	0.24	**						
3. Designers' creativity	6.07	0.78	0.02	0.23	**					
4. Designers' conformity to rules	4.27	1.25	-0.27	**	-0.15	-0.18				
5. Designers' attention to details	5.09	1.20	-0.15	0.04	-0.12	0.28	**			
6. Managers' creativity	6.00	0.90	0.10	0.05	0.02	-0.12	-0.06			
7. Managers' conformity to rules	4.03	1.15	0.25	**	-0.26	**	0.03	0.05	-0.13	0.06
8. Managers' attention to details	4.55	1.61	0.11	0.07	-0.09	-0.03	-0.08	0.09	0.19	*

\*\*\*p<0.01, \*\*p<0.05, \*p<0.10

*Table 2: Summary of the hypothesis testing*

Hypothesis	Path	Directions	Model estimates	Results
H1A	Managers' creativity – product performance	-	0.09 (1.28)	Rejected
H1B	Managers' conformity – product performance	+	0.34 (3.06) ***	Supported
H1C	Managers' attention to details – product performance	+	-0.02 (0.32)	Rejected
H2A	Designers' creativity – product advantage	+	0.22 (2.07) **	Supported
H2B	Designers' conformity – product advantage	-	-0.15 (1.67) *	Supported
H2C	Designers' attention to details – product advantage	+	0.12 (1.26)	Rejected
H3A	Designers' creativity x managers' creativity – product advantage	-	-0.21 (1.96) **	Supported
H3B	Designers' conformity x managers' conformity – product advantage	+	-0.15 (1.70) *	Rejected
H3C	Designers attention to details x managers' attention to details – product advantage	-	0.22 (2.07) **	Rejected
H4	Product advantage – product performance	+	0.36 (3.05) ***	Supported

\*\*\*p<0.01, \*\*p<0.05, \*p<0.10

### **The influence of designers' cognitive styles on product advantage: the moderating role of managers' cognitive styles**

As hypothesized, we found that designer's creativity has a positive influence on product advantage, providing support for H2A. H2B was supported as well, showing that designers' conformity diminishes product advantage. We did not find a significant influence of designers' attention to details on product advantage, which caused us to reject H2C. To assess the complementary fit between designers and managers, we created interactions between their cognitive styles, which is a procedure common in research on person-environment fit (Kristof-Brown et al., 2005). We first studied the direct effect of managers' creativity, conformity and attention to details on product advantage, after which we examined their interactions with designers' cognitive styles. Our results show that managers' creativity does not have an effect on product advantage, while their conformity diminishes and their attention to details enhances it (see Appendix 1). While managers' creativity does not directly influence product advantage, their level of creativity does seem to moderate the relation between designers' creativity and this outcome. In line with our expectations, we found that managers' creativity diminishes the effect of designers' creativity on product advantage. These results indicate that designers and managers should complement each other's creativity, enabling us to accept H3A. We however have to reject H3B since designers' conformity to rules seems to be detrimental to product advantage and managers' conformity strengthens this effect. We concluded earlier that designers' attention to detail does not influence product advantage, but in subsequent analyses we found that this relation is moderated by managers' attention to detail: designers' attention to detail has a positive effect on product advantage when managers' attention to detail is high rather than low, indicating a need for supplementary fit between the professionals. Finally, our results indicate that product advantage enhances financial product performance, thus H4 is supported.

## **Discussion**

This research shows that designers' creativity pays off: the ability to reframe problems and come up with original solutions results in products that have unique attributes or performance characteristics, and such products have higher levels of financial performance. We build on the

findings of Miron-Spektor et al. (2011) by showing that creative individuals deliver solutions that are unique and of high quality. Moreover, our results suggest that, to optimize outcomes, creative designers should collaborate with managers' with low levels of creativity. Our findings also suggest that managers' creativity does not directly influence financial product performance, even though prior research suggests a negative relation between the two (e.g. Bear, 2012).

Our research also suggests that designers' conformity to rules and group norms has a negative influence on product advantage. Conformist designers may conform too much to current needs and wants, and as such may be unable to develop solutions that have high levels of uniqueness. Our results indicate that designers that do not adhere to rules and do not think about the acceptance of their ideas by the organization should collaborate with conformist managers for higher levels of performance. This will result in high product performance since the direct positive effect of conformist managers on financial product performance is stronger than the negative interaction effect of designers' and managers' conformity. Indeed, managers' conformity seems to positively influence financial product performance, which is in line with what prior research suggests (e.g. Kaplan et al., 2009).

As regards to attention to details, designers and managers should supplement rather than complement each other. Designers' attention to details in itself does not influence product quality. Apparently, only when both actors are able to supplement each other in terms of what aspects of the product could and should be improved, product advantage is created. Finally, even though prior research suggests that attention to detail directly influences financial product performance (e.g. Naveh and Erez, 2004), our findings based on NPD managers' cognitive style suggest that this is not the case.

## **Implications**

Our findings have important implications for organizations that seek to hire external designers in the context of new product and service development. Our results show that for higher levels of financial performance of the product, it is important to consider the cognitive styles of external designers and the NPD managers they will collaborate with. For high levels of performance organizations may want to select designers with high levels of creativity and attention to details and low levels of conformity.

These types of designers should subsequently collaborate with NPD managers that conform to rules and have high levels attention to details.

## Limitations and future research

Our results shed light how designers' and managers' cognitive styles influence and complement each other for higher levels of financial product performance. There are, however, some limitations to our study that provide interesting avenues for future research. First, the professionals' cognitive style was based on their self-reported scores. Future research can use the answers of a third respondent, an individual who knows the professionals well, to assess cognitive style. Second, this research focuses on cognitive styles and product performance outcomes. Designers' and managers' cognitive styles may, however, also have effects on process performance outcomes. Finally, we focussed at how external designers and managers complement each other and influence product performance: future research can study the collaboration between internal designers and their managers.

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## **Appendix 1: Results from the structural equation model**

The results from the structural model are shown in Table 3 and 4. Table 3 shows the influence of product advantage and managers' cognitive styles on product performance, while Table 4 details the stepwise inclusion of designers' cognitive styles, managers' cognitive styles and their interaction and their influence on product advantage. For the sake of clarity: the results in Table 3 and 4 come from the same model but to simplify interpretation they are presented in two tables.

*Table 3: The influence of product advantage and managers' cognitive styles on product performance*

Model	Dependent variable	Antecedents	R <sup>2</sup>	Model estimates
Model 1	Product performance		0.20	
		Product advantage		0.36 (3.05) ***
		Managers' creativity		0.09 (1.28)
		Managers' conformity		0.34 (3.06) ***
		Managers' attention to details		- 0.02 (0.32)

\*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

Table 4: Moderating influence of managers' cognitive styles on the relation between designers' cognitive styles and product advantage

Model	Dependent variable	Antecedents	R <sup>2</sup>	Model estimates
Model 1 - step 1	Product advantage		0.09	
		Designers' creativity		0.22 (2.07) **
		Designers' conformity		-0.15 (1.67) *
		Designers' attention to details		0.12 (1.26)
Model 1 – step 2	Product advantage		0.19	
		Designers' creativity		0.26 (2.47) ***
		Designers' conformity		- 0.13 (1.55)
		Designers' attention to details		0.10 (1.15)
		Managers' creativity		0.02 (0.29)
		Managers' conformity		- 0.31 (2.84) ***
Managers' attention to details	0.18 (1.95) *			
Model 1 – step 3	Product advantage		0.28	
		Designers' creativity		0.24 (2.41) ***
		Designers' conformity		- 0.12 (1.47)
		Designers' attention to details		- 0.03 (0.45)
		Managers' creativity		0.03 (0.38)
		Managers' conformity		- 0.08 (2.58) ***
		Managers' attention to details		-0.26 (1.80) *
		Designers' creativity x managers' creativity		-0.21 (1.96) **
		Designers' conformity x managers' conformity		-0.15 (1.70) *
Designers' att.to details x managers' att. to details	0.22 (2.07) **			

\*\*\*p<0.01, \*\*p<0.05, \*p<0.10.

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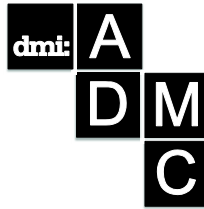
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*Do Designers and Managers Complement Each Other? The influence of cognitive style on product performance*

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# Making Design Explicit in Organisational Change: Detour or Latour

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*This paper explores a Latourian approach in addressing the challenge for Design Management to integrate design strategically within small, medium enterprises (SMEs). Design thinking's positioning towards providing an accessible and open process for organisational change is argued to currently manifest a rhetorical detour around the role of design practice. The proposal is that the role of design can be expressed in the repeated interactions between participants and design artefacts, and how these are then translated into the organisation.*

*The paper uses a case-study method to produce a situated account of design work within a strategic design intervention with an SME. Drawing on Latourian principles around actor-network theory (ANT), observations and accounts of the intervention are grounded in the use of tools, artefacts and activities deployed. This allows for analysis exploring the traceable influences design artefacts have on the work being performed and a reflective space for designers to assess their performative agency.*

*The paper proposes an approach to the constraints and opportunities that design management encounter around the matters of concern for organisational change; and in so doing, how this can inform reflective design practice.*

**Keywords:** *actor-network theory; design artefacts; performativity; participatory design; cultures of innovation.*

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## **Introduction**

Design is performative, a divergent process of repeatedly engaging people and things in order to devise and engender new things. When these things are tangible, such as artefacts, it's relatively simple to show how design has contributed. When these things are intangible, such as change in an organisation's behaviours and culture, design's contribution is much less clear. This paper explores how a shift in perspective towards design contribution could be made more explicit in future interventions for organisational change.

The paper lays out the background context of change management and cultures of innovation where design thinking has rhetorically sought to demonstrate value. This is argued to be a misrepresentative detour in articulating design's contribution for change and instead identifies the gap in literature between Service Science and Co-Design. The paper then presents a position around actor-network theory (ANT) in relation to design and the organisation and proposes a perspective towards articulating the performative agency of design artefacts. The paper then presents a case study representing a situated account of an on-going exploratory design intervention with an SME and draws on key analysis from the case study to argue how an ANT approach can help make design more explicit within the matters of concern for organisational change.

### *Design in the Discourse of Change*

Design is being performed on an ever-increasing spectrum of levels with complex practices arising in response to developing markets and technologies, co-design, digital interaction, service design and cultures of innovation; design itself is under constant disruption. This expansion is no longer restricted to artefacts but encompasses how designers participate in the distribution of production (Atkinson, 2006), mediate social change (Papanek, 1983; Saul, 2011) and innovate organisational processes (Brown, 2009; Martin, 2008; Neumeier, 2008). As a result there is demand on the management and articulation of design's application across disciplinary boundaries, which has led to many layers of abstraction in the communication and practice of design. As design becomes increasingly multi-disciplinary, the scrutiny of design from management theory has dominated the subject of delivering innovative change for organisations.

Hayes (2002) summarises two types of change predominant in management theory: firstly, incremental change, associated with periods of external equilibrium where the focus is on continuous improvement; and

secondly, discontinuous change, occurring in periods of disequilibrium and involves a break from the past based on new relationships (Hayes, 2002:7-8). This echoes Norman and Verganti's (2012) distinction of design's capacity to innovate in their paper, 'Incremental and Radical Innovation: Design Research Versus Technology and Meaning Change'. Verganti emphasises design research having more potential to influence radical innovation by focusing research methodologies towards meaning-driven rather than technology-driven innovation, as he claims currently happens through human-centred design (Norman and Verganti, 2012:16). Norman and Verganti's reflection on design's impact for change points towards a dynamic role for designers free of incrementally gaining knowledge. Here is an initial example of the rhetorical detour positioning design; permitting intuitive and speculative indicators for what is incremental or what is radical. Pre-determining these indicators of innovation during a design intervention is potentially misrepresentative of the change design can perform.

A telling commonality that Hayes notes in the methods and concepts for change management is the approach of developing models to simplify the complex phenomenon of organisational behaviour at different levels. These focus on key elements that are seen to offer a good representation of the real world, the ways these elements interact with each other and the outputs produced by these interactions (Hayes, 2002:71). These models try to summarise an understanding of the cultural factors within an organisation in order to maximise the ability to bring about preferred futures. As highlighted by New and Kimbell (2013), much of managing consultancy is positioned as trading in specific knowledge; 'they understand the problem better than you (they do a diagnosis) and they understand the prescription better than you (they provide the solution)' (New and Kimbell, 2013:3). This reductive modelling of a chosen context is left very much to the key actors and their acceptance of the model involved, leaving the process open to misrepresentation of individual relationships and interactions.

An important distinction that emerged within change management was between the role of managers and the role of leaders in affecting change. Kotter's (1999) influential text, 'What Leaders Really Do', argues that both managers and leaders have to attend to three functions: 'deciding what needs to be done', 'developing the capacity to do it', and 'ensuring that it is done'. Kotter distinguishes a marked difference in the way that managers and leaders attend to these functions: managers focus on a process of goal

setting, whereas leaders focus on setting a direction; managers develop capacity by organising and staffing, leaders focus on aligning and empowering people to make the vision happen; managers ensure accomplishment by controlling and problem-solving, leaders are concerned with motivation (Kotter, 1999). Kotter believes leaders can overcome the inevitable barriers to change that they will encounter as the initiative unfolds by articulating the vision, involving people in decisions, supporting others' efforts, and recognition and reward (Kotter, 1999). These can be argued to have influenced design thinking's approach to organisational change up to now, how to influence people to think differently and inspire creativity, with an emphasis on human-centred innovation (Brown, 2009:18). Despite the significant role of tools and prototyping, the relationship between designers and these artefacts is still greatly underrepresented in such approaches.

Design Management has positioned itself firmly within the field of change for organisations by linking design, innovation, technology, management and customers to provide competitive advantage through effectively designed products, services, communications, environments and brands. A major influence in this positioning has been the rise in design thinking, which professes to take shape as an attitude, as a methodology and as a philosophy that can bring customers and clients into the design process (Beacham and Shambaugh, 2011). The success of design thinking is interpreted by Press (2012) as 'a strategy for companies such as IDEO to be taken more seriously by the business community and by government.' There is a conscious attempt in the literature to 'distance itself from the analytical and quantitative, to the intuitive and qualitative,' while still being 'framed in business-speak' (Press, 2012). The designer is more an expert in a process rather than in a specific problem (New and Kimbell, 2013). Its increasing adoption suggests the message is getting through to both business and government helping to diversify and strengthen the markets of the design industry.

Brown's (2009), *Change by Design*, positions design thinking as a vehicle for change, writing that it 'uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity' (Brown, 2009:18). This aims to position designers as empathic leaders within strategic decision-making and to 'bring design into the boardroom' (Brown, 2009:37), allowing greater influence to use design methods to implement change. Martin (2009) presents design thinking as a term being used today

to define a way of thinking that produces transformative innovation. Martin attributes its popularity in making it easier for those outside the design industry to focus the idea of design as a way of thinking about solving problems; a way of creating strategy by experiencing it rather than keeping it an intellectual exercise, and a way of creating and capturing value (Martin, 2009). According to Martin, 'the design thinking organisation applies the designer's most crucial tool to the problems of business. That tool is abductive reasoning' (Martin, 2009). This is not specifically expressed in terms of looking to designers to meet these problems, but their methods and processes proliferated throughout an organisation, expressed as building a culture of innovation (Brown, 2009; Neumeier, 2009; Martin, 2009; Kelley, 2005 and others). A problem arises therefore in that the designer no longer embodies value, but the tools and approach an organisation is told it can acquire, as though the designer and the methods were distinct from each other. The authors' critique of design thinking is that it represents a rhetorical repackaging of design methods for the purposes of management culture, rather than a genuine innovation of organisational culture based upon values in design practice developed in and through the innovation of research.

Sanders (2006) highlights the mutual influences of the American-led Human-Centred Design, from which design thinking emerged, and the European-led Participatory Design that have begun to shape contemporary notions of co-design. The debate in the changing role of designers and their methods in a co-design process (Brandt, Binder and Sanders, 2012; Atkinson, 2006) pivot around design as a leader of innovation (Verganti, 2011) or design as the democratisation of innovation (von Hippel, 2006). With Participatory Design in particular, this has been influenced by methods of integrating new technologies and systems development within organisations, showing greater emphasis on designers and the tools and techniques they use. Bjögvínsson, Ehn and Hillgren (2012) recognise parallels in the appealing rhetoric of design thinking and many of the concepts explored in Participatory Design, but distinguish their approach to social innovation through engagement with the socio-material, as opposed to fluid notions of design intuition (Bjögvínsson et al., 2012:103).

Sanders and Stappers (2008) summarise the mixing of roles in co-design providing an indication of the blurring disciplinary boundaries in the design process:

‘... the person who will eventually be served through the design process is given the position of ‘expert of his/her experience’, and plays a large role in knowledge development, idea generation and concept development. In generating insights, the researcher supports the ‘expert of his/her experience’ by providing tools for ideation and expression. The designer and the researcher collaborate on the tools for ideation because design skills are very important in the development of the tools. (Sanders and Stappers, 2008:6).

Sanders and Stappers recognise the designer as able to occupy the researcher role in a co-design process, but also identify the rising challenge for design’s relevance as a profession by emphasising the wider skills future designers will need to adopt, such as conducting creative processes relevant at larger levels of complexity; using generative design thinking to address change in the future; maintaining expert knowledge on emerging technologies, production processes and business contexts; while maintaining recognised specialisations in product, interaction and communication design (Sanders and Stappers, 2008:15). There is a sense of a gamble for designers in the increasingly complex combinations of skills they will be expected to employ that are less and less rooted in design. This is an additional detour designers risk continuing to follow without some way of being able to make their design contribution explicit across the disciplinary boundaries they encounter.

An alternative approach is presented by the discipline of Service Science, which first emerged in 2004 from the efforts of researchers at IBM and associated academics, based on a call for more research in areas related to services (Chesbrough, 2004). There has been an increased service orientation in today’s business practices that departs from the traditional manufacturing paradigm (Oliva & Kallenberg, 2003). Services are defined as ‘the application of competences (knowledge and skills) for the benefit of another entity’ (Spohrer & Maglio, 2009). A service economy is hence bringing new managerial issues, which are linked to an intensification of not only knowledge, but also information technologies, innovation and the demand for highly qualified people (Hipp & Grupp, 2005).

Equally central to the development of service science is the complexity of business environments, which can be addressed through a focus on service innovation in a cross-disciplinary context. The service science premise is that no single discipline or philosophy can successfully be used to face complex systems, and a cross-discipline approach to decision making is required (Paton and McLaughlin, 2008b). In order to reach success in such

adverse and complex contexts, service science uses service innovation, which is now gaining recognition in academic and commercial research circles, as a key driver of sustainable socio-economic growth (Paton and McLaughlin, 2008a). Service innovation is based on the identification, support, development and delivery of meaningful service exchanges to achieve sustainable growth. A notable point of interest in the application of service science research through service innovation is the possibility to offer 'a means of securing knowledge leadership', which can be achieved through value-added knowledge exchanges, regardless of industry boundaries (Paton & McLaughlin, 2008a).

This paper sits within this gap of how we can infuse design principles from design thinking and participatory design with service science to stimulate and sustain value during cultural organisational change. The contribution proposed is that, following the emergent value discourse of service innovation, an actor-network theory (ANT) approach, already influential in Participatory Design, can better evidence the meaningful exchanges of design grounded in the matters of concern that can inform reflective design practice.

### *Representing Matters of Concern*

ANT is a sociological body of theory that 'attempts to overcome the old sociological dilemma of structure and agency by positing that structure and agency arise together' (Mewburn, 2010:365). It is derived from Science and Technology Studies (STS) research exploring object-oriented ontologies (Morton, 2011), which seeks to understand the complex connections and networks that emerge between objects, or as Latour termed them, non-human actants (Latour, 2005b). ANT emerged from STS as an approach to observing and describing the associations between human and non-human actants that produce the effects of agency we observe around us (Latour, 2005b). All effects of agency are phenomena often assumed as facts – such as a newspaper, an industrial sector, or perhaps the discipline of design management itself – and all can be thought of as actor-networks arising from the work of people and things that become visible or perceptual when performed. The focus of attention in ANT then is on the 'work of people and things which perform' the reality of an organisation 'into being' (Mewburn, 2010:365). As emphasised by Latour (2005a), it is the work, the movement, the flow, and the changes that should be stressed collectively as performative.



Butler (1990) associates the performative with a normalising power. The repetitive nature of work and language engenders actors in processes, structures, roles and artefacts that are perceived to stabilise the network. Performativity is recognised as having an increased influence within Management Studies through following the actions within an organisation and how these connect into stabilised patterns (Diedrich, Eriksson-Zetterquist, Ewertsson, Hagberg, Hallin, Lavén, Lindberg, Raviola, Rindzeviciute and Walter, 2013:16). Performativity, therefore, represents a particular articulation of the phenomena producing the effects of agency, 'pointing to the very world-making [...] effects of hybrid, heterogeneous, multi-agent practices such as designing' (Holert, 2011:28).

Key to this articulation for design are design artefacts, which draw on the position of Binder, De Michelis, Ehn, Jacucci, Linde, and Wagner (2011) 'what designers deliver is not an object, but just its embodiment – what they deliver is a thing,' (Binder et al., 2011:77). The design thing is explored through various representations to engage with the design problem, what they refer to as 'constituents of the object of design' (Binder et al., 2011:59). These constituents are not the object they [designers] are designing, but each of them allows them to interact with the object and to discuss its different features (Binder et al., 2011:59). In this scenario, the various tools, sketches, drawings, maps, diagrams, blueprints, storyboards, models and prototypes, are constitutive of the 'object of design', referred to in this paper as design artefacts.

Latour argued that through our will to modernise technologically, scientifically and economically, 'we rendered more and more explicit the fragility of the life support systems that make our 'spheres of existence' possible' (Latour, 2007); what Sloterdijk (2004) called, *explicitation*. In other words, what earlier was taken for granted has now become explicit matters of concern; an expression used by Latour to distinguish from matters of fact:

*While highly uncertain and loudly disputed, these real, objective, atypical and, above all, interesting agencies are taken not exactly as object but rather as gatherings. (Latour, 2005b:114)*

It is from this concept of *explicitation* that the following case study attempts to articulate the matters of concern and any role design artefacts play in 'gathering' and representing them. The suggestion is that any notions of strategic value generated through design should be assessed in line with notions of the matters of concern that emerge.

### *Case Study*

ANT uses qualitative methods including observation of the work being performed and interviews with the actors within the network (Mewburn, 2010) to tell 'stories of how things, objects, actors, come to be how they are... through a process of interaction with other actors;' how interaction 'changes actors' and 'translates actors' (Kraal, 2007:6). These stories, in ANT, are traditionally textual accounts with the main tenet being 'that actors themselves make everything, including their own frames, their own theories, their own contexts, their own metaphysics, even their own ontologies' (Latour, 2005a:150). This dedicated objective approach to describing the network, including allowing participants to inform what work they do in their own words, is not to say that they are describing the network for you, but in the process of interview and observation they help to describe what work they are doing, for what reasons, in response to, or association with, what things.

The descriptive textual account produced through ANT is 'not a nice story' but 'the functional equivalent of a laboratory [...] a place for trials, experiments, and simulations' (Latour 2005a:149). The analogy of the laboratory is suitable for cases of disciplined social sciences towards hypothesis and theory, but for design research there is a need to demonstrate the value of such an approach in practice. The suggestion is that the analogy of the laboratory could be appropriated towards the design studio through an act of *translation* by the designer in practice. By using embedded observations and accounts of the participants experience in the intervention, a descriptive ANT account emerges grounded in the tools and activities deployed. This allows for analysis exploring the traceable influences of work being performed and a reflective and reflexive space for designers to assess and value the affect they have. This paper presents a summary of the key observations alongside selected images representing key activities and artefacts in order to articulate the matters of concern that arose and how this affected the work during the intervention.

### *New Ways of Working with Design*

The case study presented in this paper is from a design research project working with an SME textile manufacturer based in Peebles, Scotland, who produce high quality woollen fabrics for apparel and transport markets. The company agreed to undergo a design intervention to develop a more creative and innovative organisational culture. The design intervention took place over nine one-day sessions, one session delivered per month between

October 2013 and July 2014 with a final tenth session scheduled for January 2015 to capture the progress made. The intervention involved a cross-diagonal slice of twelve of the company's personnel from management to the factory floor, who are referred to as the slice in this paper, to help embed the methods and approaches conducted throughout the company. The sessions were delivered by two design practitioners with the lead author as an embedded researcher. The embedded researcher observed the sessions through: note taking, photography and conversations with all participants. The sessions also included a change management consultant and academic who supported the delivery and reflections throughout the intervention. Before and after each session the delivery team would meet to discuss the design of the plan of activities, what was achieved, what wasn't achieved and what occurred outside the plan. A summary of selected methods and key artefacts are presented in the following account. The intention is to provide a notional indication of their interrelations and performativity through an actor-network theory approach.

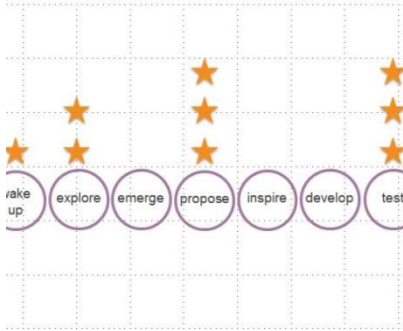


Fig. 1 'Detail from the Underlay'

Priority areas of workforce development through a topic of 'yarn stock' were agreed with the company's management team. This informed a structure for the intervention referred to as the 'underlay' (fig. 1): a live, digital document serving as a reference when designing each session and the methods to address each area for improvement. Each method was referred to as a 'beanpole' meaning the designers would not implement them, but introduce them and allow the company to appropriate them as they saw fit.

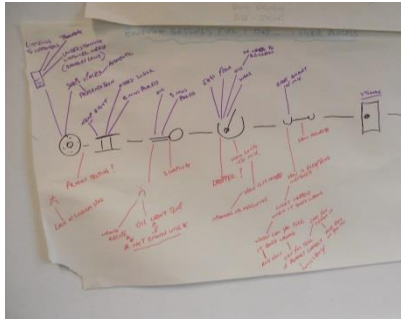


Fig. 2 'Product Journey from Bakery'

From the underlay, a key method chosen was based upon a 'user journey', which was translated into a product journey that yarn undertakes in the factory. The slice would first practise dry runs visualising the journey of beef and bread after visiting a local butcher/baker (fig.2).



Fig. 3 'Initial Yarn Journey Iteration'

The slice selected a best-selling, problem fabric with the intention of capturing the issues that occur along the entire yarn journey. The slice split themselves into pairs for gathering details of the yarn journey throughout the factory, including departments and processes that were unfamiliar. Initial pathways were text-based flow diagrams on flip chart paper (fig.3) upon which post-its were placed highlighting gaps and questions to be asked.



*Fig. 4 'Developed Yarn Journey'*



*Fig. 5 'Identifying Delays'*



*Fig. 6 'Mind-mapping Quick Wins'*

During a second iteration of the yarn journey, different ways of visualising the information emerged. A linear, box-based, process diagram with drawings or photographs of each stage and colour-coded annotations above and below were chosen and constructed. This was led by key members and put up on one of the factory walls, though all members were able to input information (*fig. 4*).

The session immediately following the construction of the yarn journey was rich with identifying the delays that typically occur along the production process and the frequency at which they happen (*fig. 5*). Employees from the factory floor also added their own contributions to the detail in the yarn journey with post-its. A video was also requested to explain the journey to board members.

The process then focused on identifying how the group could achieve 'quick wins' among the problems and delays identified. The designers introduced six hats, mind mapping (*fig. 6*) and methods of scoring issues across multiple criteria. The design team spent a long time with the slice with these techniques and how to action the quick wins, prompting an entire session to practice them and create guidelines on how to perform them.



Fig. 7 'Journey with Quick Wins'

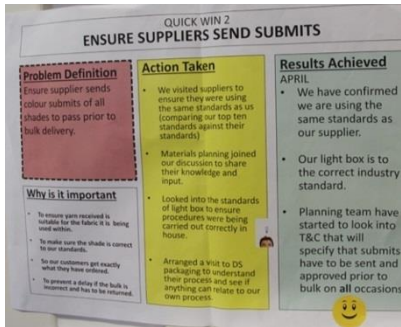


Fig. 8 'Reformatted Quick Wins'



Fig. 9 'Populating the Honeycomb'

Three quick wins were selected with attempts across the group to action them. The mind maps and action points for each one were encouraged to be displayed alongside the yarn journey (fig. 7). This produced a messy display of large flip chart sheets positioned below and above the central journey, which was deemed to be unclear for the rest of the factory.

To address this lack of clarity, the slice developed a new format of A4 single sheets for each quick win with coloured panels containing: the problem identified, why it was important, the action taken and the results achieved (fig.8). This was seen as an improvement by the designers, but still not an exciting way of communicating the achievements of the slice with each quick win.

In the very first session, the design team had introduced an A0 printed 'honeycomb' diagram, based on the Design Council's double diamond, as a scaffold of the process the slice would learn to undertake and related to the aims of the underlay. The honeycomb was used in session 6 to reflect on the progress the slice had made. The group annotated and positioned polaroids of earlier activities onto the honeycomb to understand their relation to each other in the process and present this to others in the factory (fig. 9).



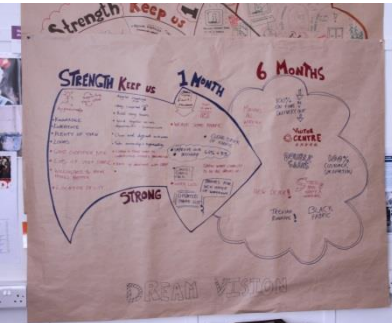
*Fig. 10 'Quick Wins on the Honeycomb'*

The honeycomb template was then provided on A3 sheets to reflect on the process for each of the quick wins (*fig. 10*). Slice members would use the language from the honeycomb to describe the activities they undertook. Wider members of the factory asked for this to be disseminated as a reference to engage with the slice.



*Fig. 11 'Quick Win Fabric Board'*

There was a perceived lack of celebration of the fabric in the factory and within the slice. The design team requested a further iteration of communicating quick wins, challenging the slice to use fabric from the factory on pin boards. The slice split into three groups, each following different approaches. The most appreciated used the original problem fabric of the yarn journey, re-visualised two quick wins as diamonds and mounted it on the entrance to the yarn store (*fig. 11*).



*Fig. 12 'Dream Vision'*

A late method introduced by the design team was the dream vision (*fig. 12*), which responded to requests from the slice on how to recruit members across the factory into the process. A visual structure was devised by which to capture what workers thought was possible and the assets needed to get there. The slice immediately adopted it with management to reiterate their own vision and members began to find hooks to which they could assign methods they had learnt.

### ***Insights and Opportunities***

The summarised observations above represent only a selection of the techniques used around the development of quick wins. A key challenge during the intervention was relating the tools and techniques to each other and understanding how they can flow to achieve the goal of developing the workforce around issues of yarn stock. The process of constructing plans of action developed slowly through trial and error, pointing towards a need for deeper articulation of how they perform together. The honeycomb and dream vision emerged as key artefacts in representing that need and are perceived as central means of embedding some of the activities across the wider factory.

Each activity was introduced at a democratic level where each participant had an equal stake in the process, but once details and processes of decision-making arose, a core group of management staff often took control of discussions. Part of this behaviour was recognised in the variation in language across the group. When managers were referencing their current projects as already addressing issues identified, they referred to intangible processes of assessment or performance improvement that abstracted the matters of concern. When the weavers, darners or yarn store workers demonstrated their knowledge, reference to disruption in their equipment, tasks or techniques would inspire questions across the group to understand the process more. This was facilitated in part through constructing the yarn journey and discussion centred on understanding specific delays or issues. Seeing a problem in relation to the entire process, as well as the workers day-to-day routine, has helped articulate it as a more immediate matter for concern. The problem is immediately expressed in relation to potential causes, or at least signposts where to investigate the causes.

Building confidence in adopting and adapting a flow between the methods and wider process introduced during the intervention has been slow to take hold. There have been multiple occasions when the preparation work asked from the slice between sessions had not been fully or accurately done, indicating that the required leadership from participants was not happening. Few participants would lead in taking the activities to the wider factory. From a service innovation perspective this would look to build in additional responsibilities and requirements for workers, through the relevant design artefacts, to help facilitate each interaction. In an exploratory intervention such as this, however, such organising principles needed to emerge as an outcome at the end of the process. With the



delivery team there for no more than a couple of days a month, this depends on members of the slice understanding and repeating parts of the process to gain confidence.

Capturing knowledge on how best to perform activities was encouraged for the slice, with guidelines and criteria being produced on activities such as mind mapping and discussions following reflections on early attempts. The intention was for them to be a reference each time, but they often got forgotten among multiple sheets of flip chart paper and post-its. The performative qualities of such information struggled to translate effectively outside the sessions, raising the question of whether the visualisation, the scripting, the staging, the roles around such activities could be more explicitly represented.

In the design team meetings between sessions, the underlay was seen as an important reference tool by the lead designer for discussing and designing each session. A printed A4 page summary of each session plan was brought as reference, but more often than not a new plan would evolve on the day in response to how the slice progressed with preparation work left from the previous session. When the quality of the work performed by the slice on individual activities would become the focus it disrupted an experience of the flow of how the techniques relate to each other. Discussions around the underlay were limited in representing the actor-networks of participants in adopting techniques, but the opportunity would be to make a structure such as the underlay more explicit within such actor-networks and account for these emergent indicators.

### *Early Impressions*

The ANT account of the work performed in the intervention brings the design artefacts into sharper focus in relation to the wider goals and behaviours of the design team and the participants. The dynamism of certain artefacts, such as the visualisations of the yarn journey or the dream vision, emerge as initial evidence of performative agency. The yarn journey helped reveal key matters of concern such as the impact of delays across departments. The visual nature was easily understood by people from the factory floor to the boardroom and potentially even suppliers, gathering interest and insights that built up a demand and potential to integrate it into the wider factory process. The dream vision emerged late on, after reflection on the intervention, to become a crucial representation of the context of the process. The managing director even began referring to the honeycomb and dream vision as potentially shaping their business model,

assessing current management projects with the stages it represents, identifying the value such artefacts could provide.

In contrast, but just as compelling, there was initial discomfort in trying to mind map the complexity around the quick wins identified on the yarn journey. Emergent matters of concern included externalising blame, departmental language and low communication skills within the quick wins activities. More often than not the slice fell into old habits of talking around problems with some of the management or department-specific language infiltrating discussions. The identity of the slice, Culture Club, also showed limited impact on the rest of the factory, rather than an embraced part of the intervention. When design artefacts are not made explicit in relation to the matters of concern as they arise they can become lost, forgotten or ill understood. Their performative agency is bound by the meaning gathered in their repeatable nature in context and translation into the wider organisation.

The challenge an ANT approach represents to the designers is not only how to embed design artefacts and methods within the existing flow of work so that it gathers interest in the arising matters of concern, but that the quality of that representation translates across those actors that are gathered to inform calls to action.

### *Research Limitations*

As an embedded researcher within the intervention, the lead author has only been able to observe the participants during each monthly one day session. The work between sessions has not been able to be followed according to the immersive demands of actor-network theory. As a result, only a second-hand insight into the uptake and engagement with tools and design artefacts was possible for these long periods in between. While presentations of this work, and reflections on their value in sessions, have provided some data in this regard, much of the influence on the factory is largely anecdotal and subject to interpretation in the account obtained.

The tone of the intervention has been exploratory, with a mix of design methods and management methods provided alongside each other. This means any interpretation by the lead author into the performativity of certain artefacts has to be quite specifically situated and associated to the activities using management methods. The identification of design artefacts is therefore a fluid process after the event as identified by participants and the delivery team.

There was no prior audit of the existing culture at the company done by the authors, so any attempt to infer the influence of the intervention on the wider company can only be contrasted by the emergent impressions of the existing culture during the intervention and impressions of change offered by participants themselves. Any full assessment of design successfully eliciting meaningful change within the organisation can only be gleaned after the intervention is complete with a visit planned for January 2015, six months after the final session.

### *Future Research*

The research for this case study is part of a wider thesis continuing to collect data up until the final session is complete and will conclude with interviews with selected participants from the slice, wider members of the organisation, as well as the delivery team. A more thorough analysis of the performative agency captured in the ANT account uses methods from grounded theory to evidence and identify design's capacity to implement new ways of working within an organisation.

While the role of an embedded researcher in the sessions themselves has produced rich data for the purposes of ANT, the lack of data acquired in between the sessions represents a significant gap in telling the wider story of the intervention. Future research on similar interventions would look to obtain continuous data from the organisation during and in between sessions in order to more accurately represent the flow and nature of the work being performed by the participants and, more importantly, the work performed with the methods within the actor-network of the organisation.

Finally, the aim of this research was to capture some indicators of innovation to help make design explicit for the purposes of reflective design practice and thus reduce the rhetorical detour engaged by many designers. As a result, future research would look to bring ANT explicitly into a strategic design intervention for SMEs as action research, in order to test how some of the insights can be folded into the production and delivery of design strategy.

### *Conclusion*

This paper set out to explore a Latourian approach in addressing the challenge for design management to express design strategy within SMEs. The paper presented a gap in literature within change management and cultures of innovation where design has sought to demonstrate value, aligning to the direction and gap in literature of Participatory Design and

Service Science. The paper then presented a position around actor-network theory (ANT) in relation to design and the organisation, the effects of agency through the network of associations between people and things, and argued it provided a method articulating the performative agency of design. An on-going case study was then presented representing a situated account of design work within a strategic design intervention with an SME, summarising the interrelations and trials of strength across key methods. Finally, the paper provided key insights and outcomes from the case study to argue how an ANT approach can make design more explicit and how this could inform the delivery of design interventions for organisational change. This has been presented in response to the call seeking contributions on understanding collaboration, coordination and cross-functional integration processes as essential for effective innovation performance.

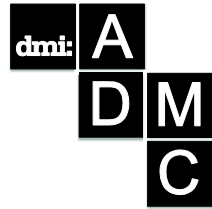
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## The Impact of Space on Innovation Teams

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*Thinking in Potsdam Design thinking is an approach addressing wicked problems in the age of disruption. A flexible working environment enables the ability of teams to innovate, create and design. This paper outlines the impact of space on the team wellbeing and performance as an outcome of the interaction of team members with their environment. The pilot study used a multi-method approach. It includes qualitative interviews with facilitators of design processes and non-participatory observations of innovation teams in design workshops while they set up and interacted with their team spaces. The results indicate that conducting innovation workshops outside the usual corporate environment in an atmosphere that is rather perceived as self-made than perfectly designed is very beneficial. Further promoting factors include: access to raw material for prototyping, the spatial division between different teams, the possibility to use walls as presentation surfaces and flexible furniture. The opportunity to create the own team space proves highly beneficial for innovation teams. However, evidence was found that more advanced design thinkers showed a higher iterative interaction with their environment throughout the process. The authors conclude that there is a need for teams to develop a core competence in terms of creating, adapting, iterating and evolving the innovation space due to the team's changing needs throughout the process.*

**Keywords:** Design thinking, team performance, space

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## Introduction

Globalization, the acceleration of technology innovation, and the dramatic increase of interconnectedness through communication and transportation raise challenges of a vast scale for leaders and designers alike. They result in the trends of dramatically increasing complexity (IBM, 2010, p. 15) and speed (Mootie, 2013, p. 3). The immense complexity is determined by the substantial number of multifaceted interdependencies. These interrelationships cause so-called wicked problems. Wicked problems are defined as a "class of social system problems which are ill-formulated, where the information is confusing, where there are many clients and decision makers with conflicting values, and where the ramifications in the whole system are thoroughly confusing" (Rittel cited in Buchanan, 1992, p. 15)

Beside complexity, the dramatic increase of speed causes another business and design challenge: disruption. Design thinking is one of the approaches addressing wicked problems in addition to disruption, and has gained significant popularity in the context of higher education and business (Dunne & Martin, 2006, pp. 512-523). Buchanan (1992) formulates a broad definition of the term as a method to attend to intractable human challenges through design. Large organizations increasingly adopt the approach in order to sustain competitiveness (Mootie, 2013, p. 3).

A flexible working environment enables and supports the ability of design thinking teams to innovate, create and design (Thoring & Müller, 2011, p. 137). Beside the rising number of design thinking spaces in organizations, there seems to be a current overall trend in the corporate world to establish effective workspaces in order to enable appropriate spatial interactions as well as to create physical environments for diverse innovation activities (Moultrie, Nilsson, Dissel, Haner, Janssen, & Van der Lugt, 2007, p. 53). Peters (1992, p. 413) depicts space management as probably the most ignored and simultaneously the most powerful tool for the implementation of cultural change and to foster innovation and learning within organisations.

Regardless of the importance of the topic and the increasing emergence of innovation environments within organisations, there is limited scientific proof of their benefits or the wider effects on team performance. Moreover, there seems to be only insufficient and rather fragmented academic research on the attributes of effective physical environments supporting creativity and innovation. Seemingly, organisations tend to design innovation environments based on intuition and personal judgement or in



general highly rated examples of best practice (e.g. IDEO in the 2000s, now Google), rather than on well-founded research indications. (Moultrie, Nilsson, Dissel, Haner, Janssen, & Van der Lugt, 2007, p. 54)

The overall goal of the research project is to identify beneficial and unfavourable spatial factors of creative spaces in order to generate a practical framework and a catalogue of guiding criteria for the design and use of spaces that support collaborative design processes. The following paper focuses on the basis of the topic and aims to lay the groundwork for further academic research. The first section of the article presents the terms used and a literature review. It delineates the role of space in design thinking. The segment describes the working modes typically transported with innovation environments as well as the factors influencing the creation and use of such environments. The authors demonstrate the definitions of the terms “team wellbeing” and “performance” used in the context of this paper. The theoretical section concludes with the topic of spaces as a medium and an outcome of interaction and the need for more academic research on their impact on team wellbeing and performance.

The second part focuses on the methodology of the applied multi-method approach of a pilot study as it applies to the large research project on innovation spaces. It includes five qualitative interviews with facilitators of collaborative design processes as well as an observation of eight teams of design thinking workshops while they set up and interacted with their team spaces. The pilot study participants were selected based on their diverse or lack of respective experience in design thinking as well as their wide age range, working experience and educational background. The analysis of the pilot study focuses on the general estimation of the impact of space on the working process, key moments in the interaction between individuals and their environments as well as specific beneficial and unfavourable spatial characteristics. The interpretation of the conducted research includes insights on the need of facilitators and teams to design and adjust their space according to their own requirements as well as the difference of interaction with the space based on the different experience with design thinking. The authors first outline findings that reflect the needs of facilitators and team need for spaces, which support the overall and specific requirements as well as the different phases of the design process. The conclusion summarizes the study insights in terms of interior design (atmosphere and mobility), the use of creative team spaces (diversity of tasks and behavioural patterns) as well as the need for further academic research.

## Theoretical Background

The following section introduces the role of space in design thinking. It presents the working modes typically transported with innovation environments. The authors depict the factors influencing the creation and use of such environments. They are followed by the definitions of team wellbeing and performance used in the context of this paper. The theoretical section concludes with the topic of spaces as a medium and an outcome of interaction and the need for more academic research on their impact on team wellbeing and performance.

### *Design thinking and space*

As outlined in the introduction, design thinking has gained popularity in the business context as a way to address wicked problems resulting from rising complexity and to sustain competitiveness in the high-speed age of disruption. Brown (2008, p. 85) argues that design thinking could 'transform the way corporations develop products, services, processes- and even strategy'. He defines the approach as a discipline that uses the designer's sensibility and methods to match people's needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity.' (Brown, 2008, p. 86)

The facilitation of design thinking is enabled and supported by four basic aspects:

- a multi-step iterative process,
- multidisciplinary teams,
- a setting of the work environment, such as the work space and specifically used and produced artefacts and prototypes, and
- A particular (team) culture.

These elements are perceived as essential to every design thinking project. However, they might vary depending on the organization in which they are implemented (Thoring & Müller, 2011, p. 137). The current paper focuses on one of the aspects of design thinking: the work environment. It is a crucial and often underestimated factor in the effort to foster innovation.

### *Working modes transported through spaces in innovative organizations*

Groves (2010) assessed innovative organisations and detected spaces for knowledge creation enabling four different working modes: stimulation, reflection, collaboration and play. In order to empower the staff in their process of knowledge creation Gensler (2008) underlines the need for facilities that enable socialising, sharing, learning and connecting.

### *Creation and use of innovation environments*

Beside the working mode that should be promoted through the space, there are multiple factors influencing the creation and use of innovation environments. The process of creation incorporates the envisioned use of facilities such as the intended links within the innovation process, the planned creative activities, the potential users of the space, the allocated resources as well as the intended events. After the creation phase, innovation spaces typically evolve in order to accommodate multiple uses. Such developments aim to enable, support and serve the actual innovation, creative activities, design and events taking place as well as the concrete users and facilitators (Moultrie et al., 2007, p. 58).

### *Spaces, team wellbeing and performance*

There appears to be a general consensus that the office environment has an effect on productivity (Oseland, 1999; Clements-Croome, 2006; Leaman & Bordass, 2006).

For the purpose of the pilot study as the starting point of a large research project, the authors decided to focus on the influence of innovation environments on the broad terms of team wellbeing and performance. The Chartered Institute of Personnel and Development (CIPD), a professional association for human resource management, promotes the effort of creating wellbeing in companies as the balance of the employees' needs with those of the organisation. This encompasses 'creating an environment to promote a state of contentment which allows employees to flourish and achieve their full potential for the benefit of themselves and their organisation' (CIPD, 2007, p. 4). Furthermore, wellbeing 'represents a broader bio-psycho-social construct that includes physical, mental and social health' (CIPD, 2007, p. 4). Corporations focusing on employee wellbeing increase the opportunity for organisational success. Studies indicate that environments focusing on wellbeing have a positive effect on employee engagement. This results in higher employee retention, customer

satisfaction, financial productivity and profitability (Harter, Schmidt, & Keyes, 2003).

### *Spaces as a medium and an outcome of interaction*

This paper concentrates on the use of already created spaces and how they evolve in the course of the team's innovation activities. McEwan (2013) depicts value- and knowledge-creating processes as dynamic and developing through the interaction among individuals and their environments. Hence, 'space is both the medium and outcome of the actions it recursively organizes: what space is experienced as being limits and enables the possibilities of further social construction within it.' (Rosen, Orlikowski, & Schmahmann, 1990)

There is a current research gap on the effects of the physical innovation environment and the teams' interaction with it. Furthermore, there is a need to investigate the consequences of these interrelations for the team's wellbeing and performance in terms of creativity and innovation effectiveness. The next section of the article presents the methodology of the conducted pilot study.

## **Research Approach**

As already described above, a working environment supporting the team and execution of the iterative process is a crucial part of the method of design thinking. The outcome of this qualitative pilot study serves further investigation and experimental research in the future.

The research team formulates the following questions: How do environments, designed for design thinking activities, influence teamwork? How do the spaces evolve throughout the process of use as a result of the team interaction within them? Which spatial factors hinder or foster creative teamwork? Which challenges and recommendations for further courses of action can be derived from the outcomes of these research questions?

The team conducts a pilot study in the form of a multi-method approach, including two parts:

1. Five qualitative interviews with facilitators of creative collaborative processes

2. Non-participatory observation of workshop participants setting up and interacting with their own team workspace for a Design Thinking Workshop, and spatial adjustments throughout design thinking process.

On the one hand, the interviews generate an overview of knowledge hold by workshop moderators as representation of a meta-level of spatial factors. On the other hand the observation of workshop participants provides insights on hidden aspects about the behaviour in and interaction with space.

### *Qualitative interviews*

Altogether five qualitative interviews with facilitators of collaborative (work-) methods for creative processes were conducted. The interviewees were selected based on their diverse or respective lack of experience in design thinking and other collaborative methods, as well as working experience in different spaces.

The interviewees included three coaches of design thinking workshops, one workshop moderator for agile working methods and one kindergarten teacher. If similarities were found in spite of the diverse experience of the chosen interviewees, this would indicate a general tenet. The interviewees were between 28-64 years old with 3-30 years of work experience. The structure of the interviews was threefold. The first part included open-ended questions about key positive and negative experiences with spatial settings. The second part consisted of a questionnaire with 48 questions about characteristics of workspace set-ups. The selection was based on previous interviews and previous studies (von Thienen, Noweski, Rauth, Meinel, & Lang, 2011; Stegmeier 2008; Flueglstaller, 2005). The moderators were asked to evaluate the characteristics as very hindering, hindering, neutral, beneficial or very beneficial for the outcome of collaborative creative processes.

The 48 characteristics were grouped in three dimensions of spatial design, ranging from fixed to adjustable:

- 1) Architecture – referring to the building, including fixed, and/or build in elements
- 2) Furniture – referring to interior design elements such as movable furniture
- 3) Resources – further equipment and work material

The third part of the interview addressed the importance of spatial settings by using the laddering technique (means-end-analysis; Grunert/Grunert 1995). The interviews were recorded and transcribed.

### *Observation of design thinking workshops*

The other part of the pilot study consisted of a non-participatory observation of two Design Thinking Workshops at the Hasso Plattner Institute School of Design Thinking in Potsdam, one for design thinking beginners and one for more experienced design thinkers. Both workshops consisted of 4 teams of 5-6 members each. The design thinking beginners, all rather used to classical office configuration, received an introductory presentation on the influence of space on work processes. The group of experienced design thinkers was used to typical HPI D-School set up. All teams were asked to each set up their own team space that was best suited for a collaborative creative work process.

The teams could choose from the following furniture: stand-up tables and chairs, cubes to sit on, movable whiteboards, movable sofas and beanbags for seating. Additionally, flowers, soft cloth in different colours and other material could be added to adjust the atmosphere and appearance of the team's space. The selection of the items was based on the experience from best practice at HPI D-School.

The different workspace designs and their adjustments throughout the workshops were documented by a non-participatory observer and documented by means of field notes and photography.

## **Analysis**

The following section describes the findings from the two applied methods, semi-structured interviews and non-participatory observations. Based on our qualitative approach we will highlight identified spatial aspects that foster team wellbeing and performance as described in the section on the theoretical background.

### *Qualitative Interviews*

The aim of the semi-structured interviews with facilitators was to identify hindering and beneficial spatial factors that influence creative teamwork in order to foster innovation processes.

### **The Importance of Space**

Overall all interviewees evaluated the influence of space on collaborative creative processes as 'very important'. Quite often the atmosphere and the interplay of different spatial factors were mentioned as playing an important role to foster collaborative teamwork: 'Not a single factor is important, it is rather the whole atmosphere including size, light, and space climate.' Additionally, the transformability and flexibility of the workspace and the possibility to adjust it to different working modes during the innovation process were mentioned as well. Besides that the influence of spatial settings on individual wellbeing was highlighted: 'The space represents my inner self - both are related to each other. A transformation of space brings along a transformation of me.'

When asked for key positive and negative experiences of facilitating innovation processes in different spatial settings two interviewees referred to experiences outside the usual workspace in the company: 'I remember a setting in a town that was very provisional with construction fences, beer crates, wooden boards, etc. The reason for the exceptional results and atmosphere within the teams was, as it seems, that everyone was taken out of his or her out of their usual behavioural comfort zone.' A moderator for agile work methods remembered the following: 'The worst case was: the workshop is located in the basement, with only artificial neon light, heavy curtains, fixed conference tables and chairs that cannot be moved, and little space around them; musty and impossible to ventilate with fresh air. Even worse it get's if the chairs are fixed, then the whole process becomes stuck. You don't get close to the people if furniture is always in between.'

### **Evaluation of Spatial Elements**

In the following the moderators were asked to assess the influence of different spatial elements as hindering or beneficial for the collaborative teamwork of innovation teams. Interestingly out of 48 presented elements only 14 elements were assessed as 'beneficial' or 'very beneficial' on average and only 8 elements were assessed as 'hindering' or 'very hindering'. 6 spatial elements received contradictory evaluations, thus they were perceived as fostering or hindering innovation processes. Figure 1 shows the spatial elements assessed as 'beneficial' or 'very beneficial'. The sum is based on the ratings as 'very beneficial'(2), 'beneficial'(1), 'neutral'(0), 'hindering'(-1) and 'very hindering'(-2).

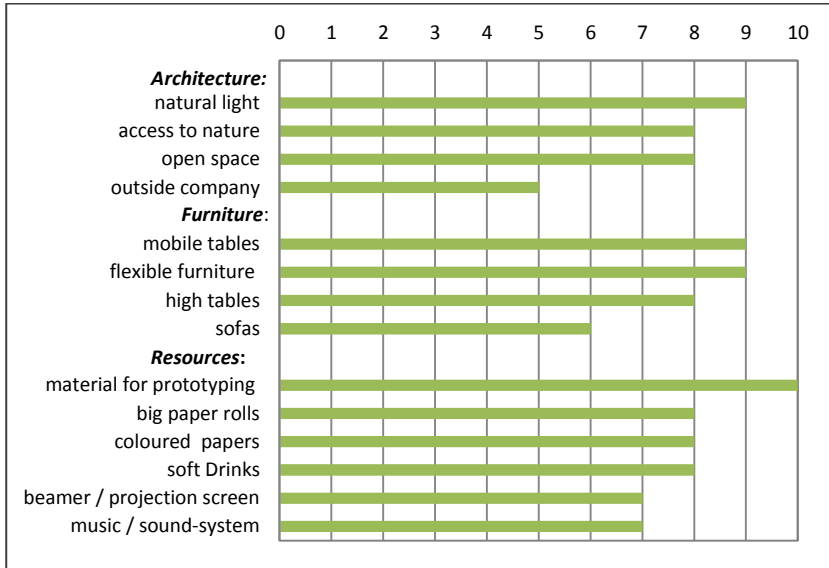


Figure 1 Promoting Spatial Factors for Creative Teamwork in Innovation Teams

It is interesting to notice that an open space at a different place than the usual setting within an organisation that offers a flexible setting of furniture and is well equipped with resources is seen as most supporting for collaborative teamwork of innovation teams.

With regard to spatial elements that are hindering collaborative teamwork the innovation experts focused in particular on the architectural element of an ‘over-designed space’ that quite often comes along with perceiving it as a space not inviting to touch it or to move anything (design expression – ‘do not touch’). The other spatial elements perceived as ‘hindering’ or ‘very hindering’ can be described as an expression of different aesthetical preferences: some interviewees do not like cold or warm colours, some do not like vinyl or carpet as a spatial setting. Figure 2 summarizes the evaluations.



### The Impact of Space on Innovation Teams

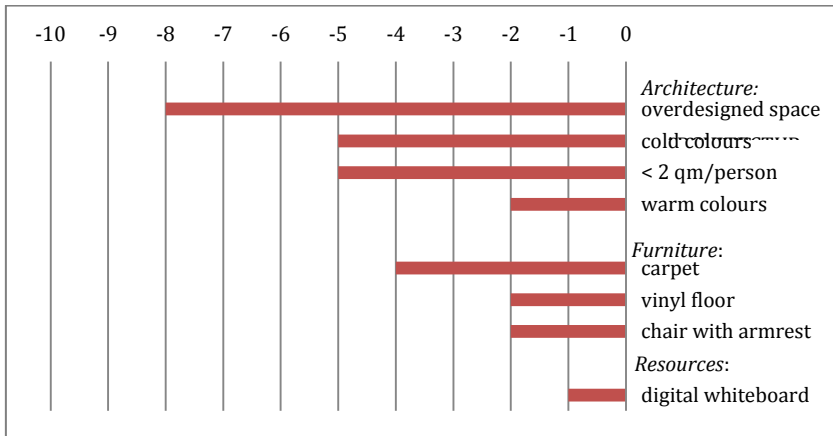


Figure 2 Hinderling Spatial Factors for Creative Teamwork in Teamwork

The influence of aesthetical preferences on assessing an innovation space as promoting or hindering collaborative teamwork can also be found by having a closer look at those elements that were evaluated in both directions by different interviewees: e.g. the elements of indoor plants, decoration, and wooden walls. Regardless the differences in professional backgrounds and work environments, the interviewees over all shared a common perception concerning spatial factors for collaborative team processes.

### Identifying Patterns of Spatial Settings

Based on the qualitative content analysis of the interview transcripts the authors identified three key insights due to their frequency of mentions. The findings are in many aspects interrelated, but have their unique attributes that are underlined by using quotes from the interviews.

### Outside: Getting out of the Company and the Comfort Zone

Innovation processes and teams seem to be supported by an environment that is new to the participants and located outside their typical workplace: 'Getting out of the usual environment – I think is crucial to create something new.' 'Outside, it's easier to find a good working atmosphere, the best are surprising things.' 'If I want to build the team or solve a conflict, I always do it outside of the company, e.g. in a cabin, a tent – everything that's simple. If a workshop lasts only one day, I would start in

the afternoon. You always get different results, if they exchange their thoughts in a different setting at night. One day within the company is fine, but if it's too close to the usual work environment, there's too much distraction.'

Additionally having access to nature or being able to relocate the teamwork outside was evaluated as a beneficial enhancement of innovation spaces: 'Working outside, fresh air, sun - all widens the sphere of thoughts – the best is on ground level: beanbag for seating, whiteboard, chairs, cubes, table outside, up to 30 minutes is perfect.' 'Warm-ups outside bring an additional push of energy.'

### **Inside: Creating an Open Atmosphere**

A design expression and atmosphere that supports creative teamwork is rather self-made than perfectly designed: 'A space with a design expression "don't touch" does not work for being creative.' 'Nothing ready-made and no laboratory white; rather raw steel, wood – oiled or waxed –, something like that.' 'Rather back-to-basics than over-designed, a self-made atmosphere. Everything that's loaded with meaning from the outside, I find difficult. Neutral is better: Wood, stone ... elements that get "painted" during the process.'

Nonetheless a self-made space should provide orderliness in order to be able to function as an inviting space for collaborative teamwork: 'In disorder, nothing new can evolve. Concentrated work and play is, I believe, a precursor of innovation. If a team comes into a messy and covered room, it cannot create anything anymore. On the other hand, team has to be allowed to make a certain mess, in order to be able to play and create.' 'It depends on the setting - prototyping plus disorder is fine. Bricks, stone, exposed concrete plus disorder would be a clash.'

### **Change: Enabling Different Work Modes**

Specific spatial elements, lighting, surfaces, and colours, are perceived as in particular helpful to foster not only collaborative teamwork, but also to trigger the needed changes to different work modes during the innovation process. The key enabler is that these elements have to be easily adjusted by the innovation teams themselves.

The lighting should be adaptable to create different illuminations at the work place of a team: 'It depends on the source [of light]. Light from the ceiling with very bright light doesn't work at all. Standing lamps are better, ceiling light presses you down, takes your air to breeze, and destroys the

atmosphere.’ ‘I prefer to make the change physically comprehensible, so rather candle light or standings lamps for mindfulness reflection.’ ‘Window blinds for obscuration are crucial to change the work mode.’

The surface of the floor has to be inviting to change between work-modes: ‘Switching between working modes at a table and on the floor keeps teams focused. This resonates with their different needs. New ideas come up, if one does something that makes them see the room from a different perspective – lying on the floor, standing on a ladder.’ ‘Prototyping on floor has a better atmosphere, it’s warm and grounding.’ Wooden floors and carpet seem to be good for sitting right on it to change perspectives and mode.

The colours and colouring of a space seems to influence the team mood and wellbeing: ‘One needs different colours, for different expressions. Warm colours foster emotion, cold colours foster rationality. Too many colours are not ideal.’ ‘Possibility of changing colours is important. It is the task of the teams to design these.’

### *Non-Participatory Observations*

An experimental design with non-participatory observation was conducted in order to better understand if and how different spatial settings affect team wellbeing and performance of innovation teams. The research participants were divided in two groups: one consisted of young professionals working in innovation departments in different industries with no experience in the design thinking (design thinking novices). The second group went through a six-month training program in design thinking (design thinking experts). Each group was divided into four teams. Both groups were assigned to an innovation project. For the duration of the innovation project the teams were asked to set up and alter their own creative workspace of approximately 20 m<sup>2</sup> in the same open space environment. All four teams in both groups were working next to each other. During the experiment the observers were passive and had minimal interactions with the research participants (Spradley, 1980). Both groups had access to the same repertoire of furniture and resources.

Furniture included:

- High chairs, normal chairs, sofas, sitting cubes and beanbags,
- Normal rectangular tables, moveable rectangular high tables,
- Mobile whiteboards.

Resources included:

- Prototyping boxes,
- Time timers,
- Snack and drinks.

### **Creating and Changing Spatial Settings: Design Thinking Beginners**

The innovation teams of design thinking beginners used all the available furniture – except the normal chairs and the normal rectangular tables – and all provided resources to equip their innovation team space. Except one team the initial spatial setting remained untouched for the duration of the innovation project, although all furniture was easy to move (both lightweight and easy to carry around or flexible and on wheels). All teams set up their team spaces at a window and surrounded their team space with mobile whiteboards on two sides. They left one side intentionally open to face the sharing space (see Figure 3).



*Figure 3 Using the Team Space: Design Thinking Beginners Team (Ideation)*

Most of the teamwork happened around the high table with team members either standing around the table or sitting at the table on high chairs. No changes were made for the different work modes including analysis and synthesis, brainstorming and ideation as well as team-reflections. Therefore, during active team sessions the team members sitting in front of one of the two whiteboards in use became more active than the team members on the opposite side of the table (e.g. writing on the whiteboard, putting their own post-it's and post-it's with ideas and thoughts of other team members there). Thus, these team members became moderators or facilitators due to the spatial setting and not due to the team's 'official' assignment. The sofas, sitting cubes and beanbags were only used during team breaks to relax or to do some individual work on a personal laptop – on other projects.

### **Creating and Changing Spatial Settings: Design Thinking Experts**

Overall, the innovation teams of design thinking experts spend more time on setting up their workspace compared to design thinking beginners. Nonetheless they ended up with using the same selection and amount of available furniture. The main difference was that three of four teams divided their workspace into two separate parts: the sofa, the sitting cubes and the beanbags were used to create a comfortable looking sitting area arranged in the form of a circle at the window side. The mobile standing table was standing at the opposite end of the team's space; and was facing the open side to the sharing space in one team. Thus the table itself created the 'natural boundary' to the open space. Mobile whiteboards were used as well to separate the team space on two sides from other teams. In contrast to the design thinking beginner's teams the design thinking expert teams used individual artefacts to 'decorate' their team space. These items fall into two categories: individual decorating items (e.g. plants and a carpet) and items intentionally brought in by team members related to their innovation challenge (e.g. posters, a dummy and two artificial limbs for a health care project on lower limb loss). During the process they added first low-resolution prototypes built by the team themselves.

The sofas were also not used as places to sit – neither for teamwork nor for relaxation. They turned into the storage space for personal belongings (e.g. coats and bags). Compared to the spatial settings of the design thinking beginners teams their spaces looked more 'messy' because they were filled with more objects.



*Figure 4 Using the Team Space: Design Thinking Experts Team (Ideation)*

During their teamwork sessions the teams switched frequently between two or more spatial settings (see Figure 4 and Figure 5). Working on analysis and synthesis was quite done at the high table while sitting on high chairs or standing in front of the whiteboard. Brainstorming and ideation was most often done either sitting or standing in front of one or two whiteboards. For team reflection the teams preferred to use the circular sitting area. The sitting area was also used for individual project work. The set-up of the workspace was constantly changing throughout their work process. The teams changed their working position every 10 – 40 minutes.



*Figure 5 Using the Team Space: Design Thinking Experts Team (Team Reflection)*

## **Interpretation**

Our pilot study has shown that innovation experts, moderators and facilitators of innovation teams are considering the spatial setting as an important success factor of innovation processes. Despite the fact that they were able to identify and describe the qualities of some promoting and some hindering factors of spatial settings, even these experienced people had difficulties to address the influence of space on team wellbeing and performance on a meta-level. By using non-participatory observations we were able to identify and compare work modes of innovation teams in a given architectural setting; thus we could control the influence of architecture and were able to observe the usage of the two remaining categories: furniture and resources.

### *Spatial Settings Supporting Innovation Teamwork*

That nature fosters wellbeing and creativity is nothing new (Flade 2010, p. 197), nor the assumption that humans are more creative while being outside of their usual environment (Flueglister 2005). Writable surfaces

and flexible furniture are also already used in practice (Doorley & Witthoft 2012, p. 76).

It was surprising that a general ambience appearing as rather „styled through“ than „self-made“ was evaluated as the most hindering spatial factor out of 48 factors, regarding a space for creative teamwork. According to the outcome of the pilot study, additional to the ‚self-made‘ atmosphere, the ideal ‚creative work space‘ should not be already marked by means of colours and firmly installed accessories. The results evoke the association of a studio or new apartment that has to be filled with life by the inhabitants over time.

As entry into the new work mode, standing tables and high chairs appear to be suitable. They lead to more activity and mobility and are easy to combine with a mobile whiteboard. The shift from a horizontal to a vertical working surface, evidently are further spatial adjustments that are easy to adapt to. Employees of companies appear to be conditioned in a more static work mode. The beginners of design thinking have shown in the workshop that these changes from their work routine are easy to adopt.

### *Adapting Spatial Settings for the Innovation Process of Teams*

It appears as if workshop participants and team members first have to learn to make use of the space as help for their work. Spatial possibilities only become conscious through new experiences. On the one hand, setting up the team space is crucial. On the other hand, the experience of transforming and adapting the work environment according to the requirements of different phases in the innovation process (analysis vs. ideation and solution building) turned out to be equally important.

Especially the possibility to work without a table and sit on the floor, as well as the intuitive switch between relaxed and slow versus concentrated and fast modes of working, seem to be rather unusual to less experienced workshop participants. Among design thinking experts it is more popular.

Experienced teams individually decorate their workspace with artefacts, posters, and pictures. They surround themselves with (important) work results and constantly change their space throughout their work process. The visibility of selected works on surrounding walls seems to be beneficial for further developing their project as shown by the advanced design thinkers. The constant change of the working mode of experienced teams between different parts of their team spaces is striking. Different settings were used for phases of verbal communication compared to those of



ideation and building prototypes. The switch from focused teamwork in front of a whiteboard to more reflective work when sitting in a circle seems to be helpful for many experienced teams.

Even experienced teams had difficulties to adapt spatial settings to the appropriate phase in their work process. Here, further research and practical experience is needed. Coaches could also facilitate and support the initial setup and the adaptations of the spatial factors of their teams (the aspect of appropriate use and design of spatial factors as support). Additionally the use of different settings for beginners vs. experienced innovation teams needs further elaboration.

## **Discussion and Conclusions**

Based on the model of cultural layers developed by Edgar Schein, common material artefacts influence the behaviour and mind-set within a culture (Schein, 1985). Hence, the provided furniture will affect the ability of innovation teams to use and adapt their work space according to their specific team requirements of wellbeing and performance. The use of lightweight, modular or mobile furniture seems to be easily implementable. However, a greater variety of such furniture is missing on the current market.

Furthermore, if the atmosphere of the innovation space is perceived as important and the design expression of 'don't touch – too perfectly designed' hinders the interaction of innovation teams with the space, it becomes clear that the spatial settings of innovation labs have to be rethought and redesigned.

Although the findings of the current study have been limited due to the small sample size as pilot study, different aspects to be considered for further research were identified.

The study focused on the mobile furniture developed and used at one specific location. It would be worth considering other spatial settings and to develop and test different lightweight, modular and flexible pieces of furniture to compare their impact on team wellbeing and performance. In particular the spatial elements of lightning, sound and noise have not been investigated in this study and need further exploration to test their effects on teamwork, team wellbeing and performance.

Additionally this study has only focused on innovation team spaces for design thinking. Unfortunately not all companies can provide the resources and spatial set ups as are found in innovation labs. The impact of other

spatial configurations at innovation labs (e.g. workshops for prototyping, sharing spaces for presentations, design review and feedback sessions, lounges spaces for communication and interactions) has to be further investigated as well. Furthermore, the influence of the architectural setting on team wellbeing and performance can be addressed in future studies.

Another important aspect to consider is the configuration of individual creative workplaces and team workspaces and the relationship between both. The change between different, physically active and team-oriented working phases and quiet individual-oriented, work phases and work positions seems to be a natural human need. This can be related back to the observations made by the facilitators as well as by the workshop observations. After decades of concentrating on optimization of seating position in front of a desk (Stegmeier 2008), it could be time to support the natural switch between body positions through offering different options in workspaces. Different possibilities concerning the design and creativity of work belong to main characteristics of „good work“ (Schröder, 2010 p. 264). Therefore, new workspaces with more design options that foster creativity could lead to more satisfaction at work. This has to be investigated further.

This rather descriptive pilot study was able to identify different patterns of designing and adapting creative work environments for innovation teams. A German study on the transformation of office work identifies that in the year 2025 the spatial design of office and knowledge work will be largely self-organized (Spath, et al 2012). Due to this study there will be an increasing need for the development of design competences such as the selection and creation of physical workspace. Considering the use of design thinking as an approach for innovation processes, further research is needed that provide insights about the appropriation of spatial situations for certain phases in the innovation process. Thus, research questions to be addressed in the future are: how to measure the influence of the spatial setting on team wellbeing from an internal perspective of the individual team members and how to measure the influence of the spatial setting on performance in order to define requirements for effective and creative teamwork as well as innovative outcomes.

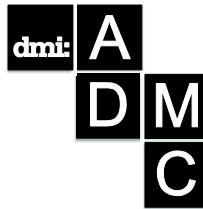
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## Discovering the Real Needs of the Client – possibilities of grounded theory in design processes

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*As service providers for SMEs, designers usually have to adapt to various needs when working in cooperation with different clients. However, these needs and requirements are often not transparent and cannot be determined in a structured way. In this investigation, data is collected through narrative interviews, which often reveal information the interviewees themselves are unaware of. Furthermore, grounded theory will be discussed as a possible basis for a profound, empirical research method that is also applicable to the field of design. The present contribution analyzes the fields of ‘motivation for change’, ‘communication structure’ and ‘project management’. On the basis of these three fields, various forms of cooperation among designers and clients will be described and compared. Research questions considered are: What kind of designer best fits the requirements of a company? Do entrepreneurs need a visionary leader or a structured realist for their tasks? Do designers need the leadership qualities of a team player or rather of a steersman? Do companies need designers to act as psychologists or educators? A concluding overview/summary will describe different characteristics of designer skills in relation to job requirements – all excerpted from the empirical field study.*

**Keywords:** *Collaboration of designers and entrepreneurs; narrative interviews; grounded theory*

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## **Introduction**

When designers and entrepreneurs – especially CEOs or Managing Directors of SMEs – work together, there are often disruptions in their collaboration process. They may well have different targets and needs, and sometimes it seems they just don't fit together. Furthermore, entrepreneurs of small companies are often skeptical about finding a suitable associate for their tasks, while on the other hand designers are not informed about the specific needs of the client on which they will have to focus in the design management process. The present field study focuses on the collaborative interface between designers and entrepreneurs (or companies). The main questions here are:

- How do designers and entrepreneurs work together?
- What are their essential requirements?
- When is the cooperation successful?

## **Collaboration in design processes – an investigation of disruption**

Research on the collaboration process in entrepreneurship is a recent phenomenon. Indeed, scholarly research on entrepreneurship was only a generation ago virtually non-existent (Audretsch, 2012). Recently, however, entrepreneurship has emerged as one of the most dynamic, vital and relevant fields in management (Wiklund, Davidson, Audretsch and Karlsson (2011)). Audretsch emphasizes its multiplicity and breadth when he sees the current focus of entrepreneurship as 'more on the characteristics of the individuals and organisations that exhibit entrepreneurial behavior [...] Entrepreneurship is anything but unified and singular'. On the contrary, it is 'heterogeneous and differentiated [...] in a rapidly emerging field that is rich and dynamic, and appeals to theory, practice and policy' (Audretsch, 2012).

But what of the collaboration process itself, when two entrepreneurs – the designer on one hand and the CEO of an SME on the other – are working together? Some commentators suggest the field is fraught with misunderstanding. Here are two insights from Brigitte Wolf (Professor of Design Theory, Industrial Design, University of Wuppertal):

'The existing communication problems have something mystic and are bewailed by many designers but also by SMEs' (Wolf, 2008, p. 48). This may be because designers, as service providers for SMEs, generally have to adapt both their aims and their working methods to the diverse needs of their

various clients. But these needs and requirements are often not transparent and cannot be determined in a structured way. 'Understanding the thoughts and activities of SME leaders is the key to all further collaboration' (Wolf, 2008, p. 48).

The field study presented here was launched in order to learn more about the relations and interactions between designers and entrepreneurs, and to investigate the role of design as a key element in the innovation process – especially in SMEs. In addition to the 10 (measurement) design framework categories developed by Thomas Lockwood, there may be some further, as yet unidentified issues worth pinpointing (Lockwood, 2007). The study aims, therefore, to provide a full description of the interface between designer and entrepreneur. According to Audretsch (2012): 'The methodology involving the behavioral approach to entrepreneurship typically does not involve large-scale comprehensive data sets [...] rather, the experimental methodology offers a viable way to identify (observe) and analyze entrepreneurial behavior.' Reflecting Audretsch, an open instrument consisting of a qualitative empirical field study was chosen. Designers and SME entrepreneurs were interviewed with a view to gaining information about their collaboration processes and the value of successful design projects. Key questions here are: what specific designer skills do SMEs consider important; and what skills are rated highly by designers? The aim was to determine and examine different points of view, new approaches, and empirical findings that describe highly valued design abilities – i.e. abilities that give rise to successful cooperation between designers and SMEs (or their CEOs) and generate high added value.

## **Narrative interviews and Grounded Theory – how to improve a theoretical construct from inductive data**

### *Aim of research*

Individuals are only limited informants about their subjective points of view. When interviewing people, aspects and details hidden from the interviewee cannot be discovered by a simple request for information. An open instrument like a qualitative social research field study is a more appropriate instrument for revealing such hidden aspects – not least because of the lack of necessary knowledge to serve as a guideline.



This study therefore uses narrative interviews for investigation. These allow a full description of the interface between designer and entrepreneur, and shed light on the way in which SMEs and designers (subjectively) experience and evaluate new and hidden things about their cooperation. The questions considered are:

- How do entrepreneurs and designers work together?
- What are their specific goals and expectations from the collaboration?
- What are the main potentials and problems of cooperation?
- What are the potential conflict and/or risk situations, and how do they relate to the gain of the teamwork/collaboration?
- What are the decisive criteria for successful and satisfying work?

For the analytical phase, this research study used an open instrument, which was able to develop a theory and description of needs and expectations step by step from the data. Grounded theory fulfills this requirement in to a high degree. It enables 'discovery from data' – i.e. reveals information hidden in the data. It takes account of comparisons and provides an open process throughout the investigation.

The methods of narrative interview and grounded theory were both initially developed by the Chicago School (Alfred Schütz, Barney Glaser and Anselm Strauss) in the early 20th century, and focused on symbolic interactionism and phenomenology (Bohnsack, (2003), p. 91; Apitzsch & Inowlocki (2000) pp. 53, 58). In general, grounded theory – with the general mechanism of theoretical coding, comparative analysis, and theoretical sampling (Strauss, Corbin, (1996) p. 163) – is not the way to analyze narrative interviews, but even Flick named theoretical coding as a possible method for this purpose, as it can access a subjective point of view (Flick 2011, p. 550). The present investigation has brought narrative interviews and grounded theory together as a time-effective toolkit derived from qualitative empirical social research for discovering hidden things.

This relates to the working hypothesis: We assume that a careful analysis and description of the needs and expectations, as well as the characteristic performances and reactions of both designers and entrepreneurs may open up new ways to bridge the gap between their partly incompatible demands.

## Sample Study: Faces of Cooperation – designers and entrepreneurs

Designers (with management tasks) and SME entrepreneurs (including managing directors and heads of marketing) were interviewed with a view to gaining information about their collaboration processes and the value of successful design projects. The designer and entrepreneur spoke in individual narrative interviews about a specific design project chosen by the interviewer before the interview started. Selection criteria for the sample were that it should be as representative as possible and cover all relevant aspects. In order to achieve this, an initial pilot sample was taken and the results analyzed and used to develop a wider range of variations. The theoretical sample, unknown in its overall dimensions at the beginning, was developed step by step in separate interviews.

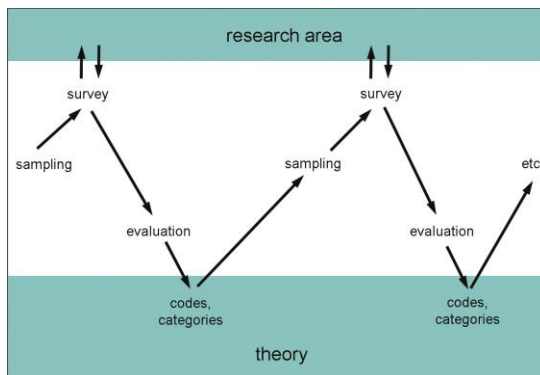


Figure 1 The iterative Grounded Theory Method research process (adapted from Haller, 2000, p. 14).

Data was collected through narrative interviews (following Schütze), which fulfil the requirements of an open instrument to a high degree. A narrative interview should have three parts:

- open narrative with stimulus (narrating stimulus) from interviewer but without additional questions; narrator closes the narration by

him/herself; pauses (and conclusion) should not be filled/prompted by interviewer;

- narrative with immanent probing questions (in-depth interview technique supported by notes and note-taking);
- narrative prompted by generic guideline questions (for completion).

So far 6 entrepreneur interviews and 6 designer interviews have been evaluated. Interviews were electronically recorded and subsequently transcribed so that the material gathered could undergo a detailed analysis.

## **Narrative interviews – what can they accomplish?**

### *The aim of narrative interviews as investigative method*

This investigation makes use of the possibility of narrative interviews which often reveal information the interviewees themselves are unaware of. This is due to the immediacy of the narrative situation that draws the interviewee into its own logic where one detail prompts the disclosure of another. By being put on the spot, interviewees are prompted to describe the whole of a particular process. It has recently been demonstrated that even managers who are specialists in communication will disclose hidden things in narrative interviews (Holtgrewe & Taffertshofer (2009) p. 60).

### *Function of narrative interviews as investigative method*

The disclosure of hidden things is achieved through so-called enmeshments or entanglements and by maneuvering the interviewee into a tight spot (Flick (2011), Helfferich (2011), Küsters (2009)). The technique has three strands, each of which generates a different type of compulsion to talk (Kallmeyer & Schütze (1977) p. 162, 168):

- compulsive detail – the interviewee focuses on the historical sequence of events being described and their connections; this creates pressure to go into enough detail to make the story intelligible and credible.
- compulsive form – the interviewee strives to round off the cognitive structures of the narrative and create closure from other stories.
- compulsive compression – the interviewee is confronted with a mass of detail that must be edited and compressed by constant evaluation and omission on the basis of greater or less relevance.

During the interview it is necessary to take the interview partner by surprise, so that they tell their story spontaneously. They are told about the process but not about its specific aim, and they are allowed to choose the development of the narration themselves. Interviewees should be active project partners from the pilot project. They will then click into their earlier story and revitalize its structures and details. It is important that they narrate the processes they are describing as timelines or content connections to make the story easier and more coherent. The process begins with a carefully prepared trigger question that stimulates a process of narration. The question should be the same in all interviews and should contain (or at least be connected with) the invitation 'tell...'

In the study described here the trigger question was, for the designer: 'Tell me how you came to work together with your client, how you got to know him/her and how the cooperation went.' For the entrepreneur the question was simply the other way round: 'How you came to work together with your designer, etc.'

This allows the interviewee to freely select the structure, figures and values of the narrative without having to follow a set of questions or instructions. The story can stray into contexts unexplored by either interviewer or interviewee, or which the interviewee would not otherwise be prepared to embark on (Schütze (1976), p. 222). Thus it regularly reveals new information. The interview form requires patience and tolerance from the interviewer, as well as openness to new areas of knowledge (Köttig & Völzke (2004)).

## **Grounded theory – what can be discovered by analyzing interview data?**

### *Why use grounded theory?*

Purely quantitative procedures cannot adequately grasp complex social realities. Moreover, they can only formulate what established theory and the hypotheses derived from it allow. But the development of new theories is just as important as the demonstration of established ones: indeed, on them frequently depends 'the accessibility of the 'new'' (Mey & Mruck (2011) pp. 11, 33). Grounded theory techniques are eminently suited to this task. Grounded theory is not so much concerned with the demonstration of any established theory but with 'the discovery of theory from the data' (Glaser & Strauss 1967 p. 1; see also Mey et al. (2011) p. 14). Its object is not

‘that data should fit the theory’, but that ‘the theory should fit the data’ (Glaser et al. (1967) p. 261; see also Mey et al. (2011) p. 16). Grounded theory is a method of reflecting on social reality and awakening to life the theory that lies dormant in the data. What it offers is a set of useful procedures, not of rigid instructions.

Grounded theory does what it says: it develops step by step a theory that is grounded in the data. As a scientifically established method it can address any type of data – interviews, field observations, documents, or statistics – and it has in fact become one of the commonest qualitative research strategies not only in sociology, pedagogics and psychology but also more recently in health studies and in management action research (Strauss, A., Corbin, J. (1996); see also Mey et al. (2011) p. 11; Titscher, Meyer, Wodak & Vetter (2000) p. 74).

Grounded theory is, therefore, particularly appropriate to situations in which specific guidelines for action, and recommendations for change, are called for. Practical disciplines like training, healthcare (at all levels), marketing etc., and indeed any discipline that transcends the purely descriptive, can benefit from a methodology that takes the perspective of the participant as its starting point and arrives at a theory that ‘fits, is relevant and works...’ (Glaser, in Mey et al. (2011) p. 56). For when it comes to introducing change and stimulating decisions, a theory is stronger than a description. And many professionals are in this position: they must change the realities with which they are confronted, and must do so with the confidence that they have a solid theory behind them.

### *What does grounded theory mean?*

Grounded theory is a method of developing relevant and effective concepts from data (Glaser, in Mey et al. (2011) p. 66) by means of systematic observation and analysis (Strauss, et al. (1996) p. 8). Derived inductively from the observed phenomena, it is firmly anchored in reality. ‘At the beginning [of the process] stands the area under investigation. What is relevant here will only become apparent in the course of the research process’ (Strauss et al. (1996) p. 7): The systematic development of concepts leads to the systematic development of theory. Strauss and Corbin comment:

*The development of a grounded theory seeks to capture as much as possible of the complexity and dynamics of the real world. We know, however, that this attempt can never be entirely successful. [...]*

*Grounded theory is not concerned with counting frequencies, even when we are looking to prove our theory. The perception and specification of similarities and differences within and between categories is, on the other hand, of the utmost importance. This is the core of grounded theory. (Strauss et al. (1996) p. 89)*

The perception and naming of phenomena leads to the perception and naming first of categories, then of core categories, and from there to the theory that explains them. This is a step by step process: 'Data are indicators for a concept that is at first provisional, but gradually emerges with more certainty from the data' (Strauss (1991) p. 54). The constant to and for between inductive hypothesis and deductive checking ensures the grounding of these various steps, right up to the construction of a theory, in phenomenal reality.

The computer program MAXQDA (Verbi Software, 2014) provides useful technical backup for the gradual development of codes and categories. A wide spectrum of encoding functions facilitates the analysis and assimilation of extensive (even heterogeneous) material like interviews, films, images etc.

As one does not know in advance what theoretical codes and categories will emerge from the process of observation and analysis, this remains open-ended (Glaser in Mey et al. (2011) p. 66-67), but at the same time not entirely controllable. A key characteristic of this method is that assumptions and premises, whether prior to or developed during the research process, must be broken – indeed it is this breaking that (as in all intellectual activity) constitutes the threshold from one step of the inquiry to the next. At the end of this iterative process, composed of inductive development and deductive demonstration, stands a theory rooted in – because derived immediately from – the data: in other words a grounded theory.

### *How does this work?*

In the project reported here, entitled 'Faces of Cooperation – Designer and Entrepreneurs', the data was gathered in successive instances of sampling. The sample, that is to say, was not known in its entirety from the beginning: it arose out of and during the investigative process. In this way it was ensured that the most relevant aspects had been uncovered. The sequence of the interviews would not produce any different results. Hence it was important to start the analysis and evaluation, the composition of memos and formulation of hypotheses, directly after the first interview. This

formed the basis for the selection of the next interview. The data transcribed from the theoretical sampling process was then encoded via the MAXQDA program. Individual data-incidents were bundled and designated with an appropriate concept (the 'code'). These codes were then singled out on the basis of their recurrence or non-recurrence in the body of data-incidents, or of their ability to generically incorporate other codes (in vivo code), and similarly bundled to generate categories. In the case of in vivo codes, the generic code would provide the name for the category; in other cases an appropriate category name would be supplied from the range of technical terms available in the discipline.

In the course of this theoretical sampling, the codes and categories became increasingly compressed until in the end three core phenomena appeared. Abstracted from the empirical field study, these generic phenomena provided a level of theoretical explanation for the dense mass of data. They describe different characteristics of designer skills in relation to job requirements – and hence different types of cooperation and collaboration among designers and entrepreneurs – in fields like motivation for change, communication structures, and project management. They answer questions like: What kind of designer best fits the requirements of a company? Do entrepreneurs need a visionary leader or a structured realist for their tasks? Do designers need the leadership qualities of a team player or of a steersman? Do companies need designers to act as psychologists or educators?

## **Results and Findings: Three main areas of disruption addressed by the theory**

The three main (generic) categories determined by the research project were motivation for change, project management, and communication structures.

### *Motivation for change*

Questions in this field include: What type and dimension of change do entrepreneurs want in relation to designers? Do they have the same targets? Which targets are most common, and when do they match? Findings range from the antipodes 'conservative/protective' to 'visionary'.

### *Project management*

Questions in this field include: Do designers need the leadership qualities of a team player or rather of a steersman? What are the requirements of different companies? Do designers have to fit into an existing team or must they fight alone for their design project both in and outside the company? Two dimensions are explored as antipodes: 'design integration' and 'design leadership'.

### *Communication structures*

Questions in this field include: How do entrepreneurs and designers communicate with each other? Do companies need designers to act as psychologists or educators? What specific skills could be important for different kinds of entrepreneur? Findings range from the antipodes 'psychology' to 'design education'.

### **Dimensions of collaboration**

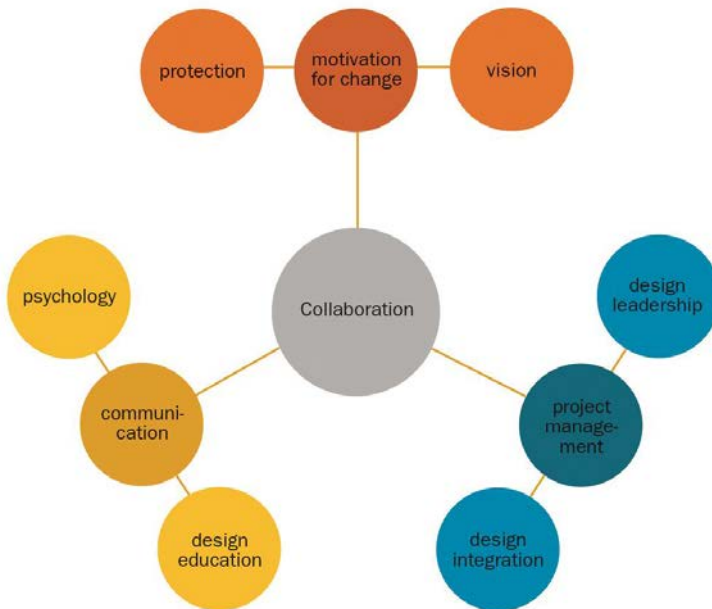


Figure 2 *Dimensions of collaboration – derived from narrative interviews via grounded theory.*



## Motivation for change

Motivation for change varies from the conservative or protective to the visionary.

### Motivation for change

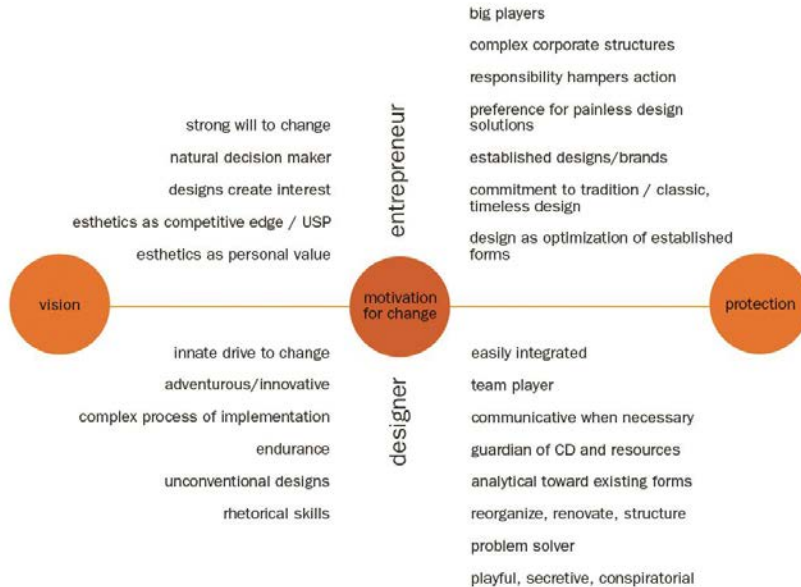


Figure 3 Motivation for change – between the antipodes 'visionary' or 'protective'.

### Entrepreneurial perspective

Fundamental or visionary change requires a powerful decision maker and a strong will to see it through. A design esthetic may either be a personal value of the decision maker or provide a competitive advantage for the enterprise. Design should in any case be calculated to stimulate market interest. CEOs of large companies with complex structures are often defensive or protective. Their wide responsibilities tend to restrict their decision-making, and they as a rule prefer smooth and painless change processes. Their company will often have an established classical and

timeless design tradition. Design in this context is generally understood as optimization of existing forms rather than as radically innovative.

### *Designer perspective*

Visionary designers have an innate drive to create radical change. Motivated by exploration and adventure, they are realistic about the time needed to put their vision into practice, and they possess the endurance necessary for this task. Their designs break conventional boundaries, but their rhetorical skill and (later) reputation enable them to convince others through both presentation and verbal argument. Conservative designers are easy to integrate into a team, and their approach to design is also conservative. Thus they will work willingly within existing corporate design structures and resources. Their first step will be to observe and analyze those structures, which they will then often seek to reorganize and renovate. They are good at problem solving and may often seem playful and secretive or conspiratorial.

In general, if both designer and entrepreneur belong to the same antipode, their cooperation could be more successful. The described way of careful analysis and description of the needs and expectations, as well as the characteristic performances and reactions of both designers and entrepreneurs, may open up new ways to bridge the gap between their partly incompatible demands.

## **Project management**

The field of project management varies between the dimensions of design integration, design management within established structures, and design leadership in which the designer assumes wider responsibility.

## Project management

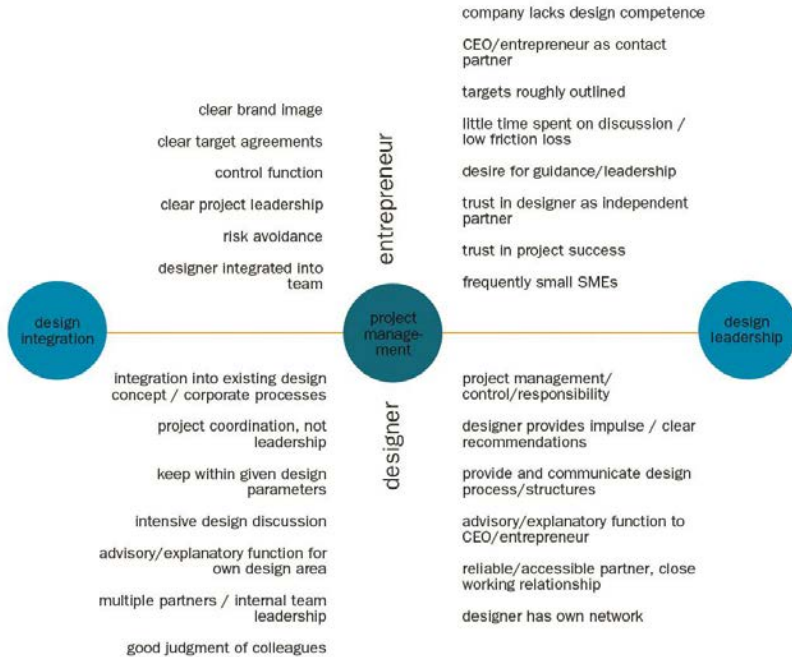


Figure 4 Project management – between the antipodes 'design integration' and 'design leadership'.

### Entrepreneurial perspective

If a company has a clear brand image, management will often be interested in updating existing design. Clear goals will be agreed and targets defined; project leadership and responsibility will be allocated within the company; the designer will be treated as a team member and subjected to fairly strict control. Every effort will be made to exclude unforeseen risks.

Entrepreneurs will generally need a designer as project leader/manager if they have no design competence themselves or in their company. They will themselves be the direct contact partner for the designer. The design goal will only be roughly outlined, as they will not be able to formulate it more clearly. As they can invest little time in the project, and are looking for

a smooth-running operation, they will want to be guided. They trust in the value of cooperation and in the success of the designer-led project.

### *Designer perspective*

Design integration demands a thorough grasp of existing design parameters and of internal corporate processes. The designer will coordinate the design project, but overall responsibility will generally be taken by another company employee. The designer will be expected to conform to established design parameters and to concentrate on the specifics of the project in hand. He/she must be able to explain and advise, and to coordinate the project with a wide range of partners in the company. This calls for tact and good judgment of colleagues.

Design leadership entails project management and associated responsibility. It entails providing the impulse for design innovation and the plan for the design process, and communicating these to project partners and company management as required. Again the designer must be able to explain and advise, and to agree the project with the CEO/entrepreneur, with whom he/she constitutes a team. In this setup the designer is constantly in touch with the CEO, and will have her/his own network of cooperation partners.

## Communication structures

The art of communicating varies between the dimensions of psychology (or empathic communication) and design education (didactic communication).

### Communication structures

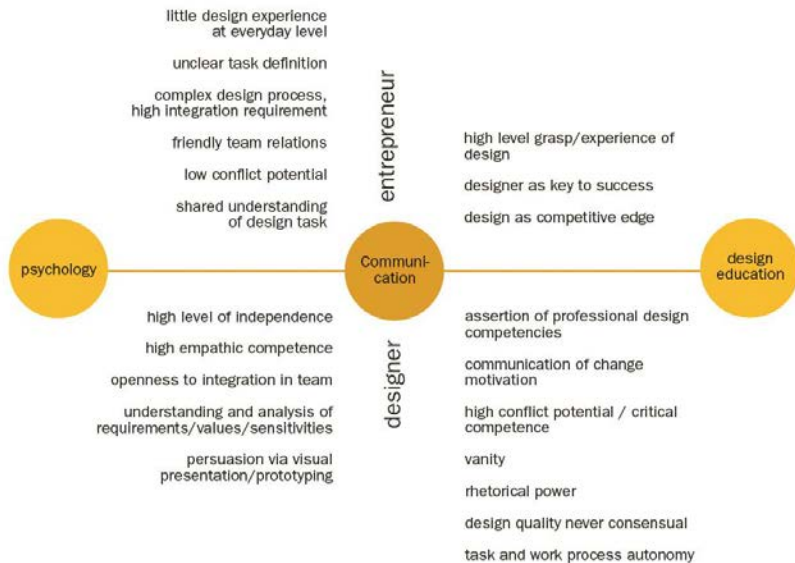


Figure 5: Communication structures – between the antipodes ‘psychology’, ‘design education’.

### Entrepreneurial perspective

Companies with little experience with design or commissioning of design usually need high empathy to establish real requirements. The design task is not clearly defined so the designer has a lot of scope. Relations remain friendly with few conflict situations. CEO/entrepreneur shares/accepts designer’s professional perspective. A didactic approach will be accepted by CEO/entrepreneurs who have high level design awareness and experience when they see the designer as a key player for corporate success. Design

guarantees competitive edge. Few examples of didactic communication occurred in the current sample.

### *Designer perspective*

Empathic communication competencies are useful for designers who work largely independently but must dovetail into existing design and corporate structures (teams, cooperation partners etc.). The designer must ascertain the values, sensitivities, and real as well as expressed requirements of the company and its teams etc. Frequent use of visualization and prototyping for communication.

A didactic approach will be used to assert the designer's professional perspective and achieve change. High critical competence, conflict potential, personal vanity and rhetorical competence. Design quality never viewed as consensual. Designer's work processes will generally be autonomous and distinct from (other) corporate processes and structures.

## **Discussion/Conclusion**

The research study outlines the requirements of the designer and entrepreneur (or CEO) as cooperation partners in the three areas of 'communication', 'design management', and 'motivation for change'.

In each of these areas it reveals two starkly opposed attitudes like antipodes. If both designers and entrepreneurs belong to the same antipode, their cooperation could be more successful. The cooperation will turn out to be much more complicated if designers and entrepreneurs belong to opposite/ crossing antipodes. Lack of awareness of these diametrical oppositions may lead to misunderstanding and unfulfilled expectations. The present study is therefore important in order to improve the relation between designers and entrepreneurs. Whether it can generate a concrete catalogue of needs and expectations for the two cooperating partners is another question. If we are able to get more awareness and describe skills more detailed the cooperation could be easier. Thus, a careful analysis and description of the needs and expectations, as well as the characteristic performances and reactions of both designers and entrepreneurs, may open up new ways to bridge the gap between their partly incompatible demands.

Further questions concern the relevance of these findings for designer education, and their extension through further theoretical sampling to other disputable aspects of cooperation. Design research could also benefit from

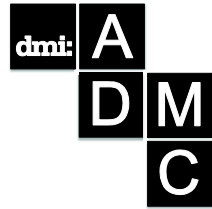
the application and analysis of narrative interviews in combination with grounded theory to other observation, survey and development processes in design.

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## Process, Problem and Theory in the Design Discourse of Brazilian Product Designers

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*We present an analysis of the design discourse of Brazilian product designers aiming to contribute to the question: 'how do designers work?'. Our start point is the gap between academic design methods and methods used in practice. We interviewed eighteen product designers in Rio Grande do Sul (Brazil) using an in-depth interview protocol that comprising different aspects: professional life, influences, theoretical approach, barriers and difficulties, perceived challenges, vision of design, and design process. Those designers work in different contexts (design studio, external designer, freelancer designer, internal designer, own store), have different levels of expertise (experienced, intermediate, novice) and have different academic background (Architecture, Arts, Product Design). Results we present refer to: Design Process (how they describe and model their design process), Problem Definition (how they frame the design problem) and Design Theory (which theory supports their practices). We found different approaches for design processes and problem definition, and we observe that none of them adopts an explicit theoretical approach. We believe that the wide field of idiosyncrasies among professional designers is a consequence of the lack of a consistent and shared theoretical background among Brazilian design schools. Certainly it affects how Brazilian society and companies perceive Design as a profession.*

**Keywords:** Design Process; Problem Definition; Design Theory; Design Discourse

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## Introduction

Our start point is a commonly recognized problem: the gap between academic design methods and methods used in practice. Bonsiepe (1978) and McCormack (2006), in different decades, pointed that what is taught in undergraduate courses sometimes is far from what designers need to work. Studies about how designers think and work (Jones & Thornley, 1963; Jones, 1976; Lawson, 1980; Christiaans, 1992; Dorst & Dijkhuis, 1995; Cross, Christiaans & Dorst, 1996; Lloyd & Snelders, 2003; Perks et al., 2005; Cross, 2007; Christiaans & Almendra, 2010) have increased available knowledge about designerly ways of knowing and doing. For example, Christiaans and Almendra (2010) suggested that designers may adopt different strategies: problem-driven (problem descriptions by means of abstract relations and concepts); solution-driven (one or more possible solutions are the drivers); and integration-driven (problem and solution co-evolution). Perks et al. (2005) proposed a taxonomy of design role in new product developments: Design as Functional Specialism; Design as Part of Multifunctional Team; and Design as NPD Process Leader. These works offers useful tools to analyse designers' practices.

On the other hand, despite a great effort that researchers have developed during decades, there is not yet a General Theory of Design and probably it will never exist. Between an academic theory, specific or general, and a personal or idiosyncratic theory, there exists a wide field of possibilities. Knowing how practitioners theorise about themselves is a rich source for design theory. In the 1950s, American industrial designer Henry Dreyfuss authored a book in which he described his experiences (Dreyfuss, 2003). Recently, Conran and Fraser (2004) interviewed around a hundred designers asking them about influences, challenges and some other aspects of professional life; and McCormack (2006) stressed the difficulties he experienced to deal with professional world.

Our focus is on design discourses in Brazil, a country where product design practice and design education are recent, dating from the 1950s and 1960s when governmental policies led to industrialization. As in that time in Europe the Design Methods Movement was happening, since its beginning Brazilian design education was affected for ideas concerning methodological issues. The main source for this was the Hochschule für Gestaltung Ulm (HfG Ulm), German design school that had a major influence on the first Brazilian design school conception. Max Bill and Tomas Maldonado, both working at HfG Ulm, contributed to the debate regarding design education in Brazil in the 1950s and 1960s (Niemeyer, 1998).

As a consequence of the cultural scenario in the 1970s, first Brazilian design theorists presented noticeable influence of European authors. In 1980, Austrian-American designer Victor Papanek visited design schools in Rio de Janeiro and disseminated ideas about ecology. In the 1980s, books authored by German design theorists Gui Bonsiepe and Bernd Löbach, British design methodologist John Christopher Jones, and Italian designer Bruno Munari, started to be known in Brazil by means of Gustavo Gili, a Spanish publishing. In that decade Gui Bonsiepe developed an important role in Brazil as an invited consultant and teacher, working for CNPq (federal agency for supporting R&D) and since then some of his books have been used as textbooks in Brazilian design schools. In late 1990s, when industrial environment changed and product design became an important activity, books authored by Bernard Bürdek (German design theorist), Bernd Löbach and Mike Baxter (British design researcher) were translated into Portuguese and were adopted as major references in design methodology.

After a fifty-year evolution, in our vision, design education and design practices in Brazil are still distant and sometimes unrelated fields. Brazilian design schools tend to adopt old-fashioned theories and to be more oriented to design skills than to integrative competences. We believe that it affects the way how design and designers are perceived by managers, engineers and some other stakeholders in the product development process.

Anyway, it is possible to talk about history of design education in Brazil, and it could be expected that professional designers from a region should share the same theoretical background, following a mainstream approach. Based on this hypothesis, we present an analysis of the design discourse of a sample of product designers that work in Rio Grande do Sul (Brazil).

## **Method**

We selected experienced designers, not considering their academic background, and designers who have an undergraduate degree in product design. Our sample comprises eighteen designers: seven of them are experienced designers (working for more than 15 years at local market); seven have less than five years as professional designers; and four in an intermediate group. They act as product designers in different ways: in a design studio, in a company as an external designer, in a company as an internal designer, as a freelancer or in his/her own store. We define acting in

a Design Studio differently of working as an External Design considering the higher involvement with industrial processes in the second case.

*Table 1 Subjects' academic background and experience as designer.  
\*(year) informs when he/she started working as product designer for whom that do not have a Product Design academic background.*

Subjects	Academic Background	Year of graduation	Experience as designer
DES_1	Arts	2004 (1989)	External designer and internal designer
DES_2	Prod.Design	1990	Design studio and own store
DES_3	Prod.Design	1990	Design studio and external designer
DES_4	Prod.Design	1992	Design studio and external designer
DES_5	Architecture	1984 (1993)	Design studio and external designer
DES_6	Architecture	1969 (1996)	External designer
DES_7	Architecture	1983 (1996)	Own store
DES_8	Prod.Design	2005	Internal designer
DES_9	Prod.Design	2005	Design studio and internal designer
DES_10	Prod.Design	2006	Design studio and internal designer
DES_11	Prod.Design	2007	Internal designer
DES_12	Prod.Design	2009	Internal designer and design studio
DES_13	Prod.Design	2009	External designer
DES_14	Prod.Design	2009	Design studio
DES_15	Prod.Design	2010	Internal designer
DES_16	Prod.Design	2011	Design studio
DES_17	Prod.Design	2012	Freelancer designer
DES_18	Prod.Design	2012	Design studio and external designer

We developed an in-depth interview protocol comprising different aspects: early professional life, influences, theoretical approach, barriers and difficulties, perceived challenges, vision of design, and design process. In-depth interviews were recorded by digital video, and the designers were encouraged to use paper and pencils or pens to draw while he/she was answering. The question 'How do you work?' was done after some others that deal with career and self-evaluation. In some cases, when the designer did not understand that the focus was his/her methodological approach, the question was complemented: 'How is your work process? How would you summarize your approach to design?'. Data we collected were analyzed by means of qualitative Content Analysis, according to Bauer and Gaskell (2000) and Gibs (2007).

### **3. Design processes they described**

#### *Experienced designers*

These designers present different academic backgrounds (one has a degree in Arts, three are Architects, and three have a degree in Product Design) and work in different contexts. DES\_1 has worked for years both as an internal designer and as an external designer, and recently he got a Master's degree in Design. DES\_2 has a long career that started as an interior decorator and changed to a furniture designer and furniture store owner. DES\_3 started working for an event planner company during his undergraduate course and after some years he has joined an architect to create a design studio. DES\_4 has worked mainly as an external design in his own design studio (he also has a Master's degree in Design). DES\_5 has a long career as an external designer working for industrial and service companies. Nowadays he acts in his design studio designing mainly corporate furniture and shopping mall decoration. DES\_6 started his career as a product designer after some years working as an architect, when he took the opportunity to work as external designer for a furniture company. Nowadays he owns a major design and innovation studio. DES\_7 worked some years as an architect before changing her carrier to work as a furniture designer and a furniture store owner.

DES\_1 described his process as interactive and iterative product development process. First activities involve problem understanding together with client. After problem clarification, an exhaustive research is undertaken to know all significant aspects about production, users, competitors, sales, logistics, etc. Based on these data, first concepts are developed to be presented to main internal stakeholders, starting an intensive iterative and interactive evaluative and evolutionary process. Concept design definition leads to embodiment stage: 3D models, mock-ups and prototypes development in a quasi-linear process. Production and launching stages complete his process. His process can be summarized as follow: problem clarification, research, conceptualization and testing; embodiment; production; and launching.

DES\_2 described his design process as a creative process to respond to a demand. Initially he performs formal and functional experiments by means of first roughs and after he develops 3D models to explore adjustments and tests. After this stage, prototypes are used to final formal adjustments and to solve production's problems. A summary of his process could be:

demand; formal and functional experiments; modelling; prototyping; and detailing.

DES\_3 stated that he adopts a design process based on theory and practice. It usually involves: briefing (to understand client's vision), brainstorming (to define the initial concept), market research (to analyse trends), 2D and 3D modelling (to explore alternatives), physical prototyping (to test products) and detailing.

DES\_4 described that he starts 'thinking beyond the brief', asking himself about what could be done in order to exceed client's expectations. The next step is to know the target group, considering formal and functional issues. Based on research results, he is able to reframe the brief. This leads to a concept, that defines marketing, advertising strategies and production strategies development. After this, the concept is developed considering aesthetic, functional and market aspects, in a interactive and iterative process, until a final decision. After general conception, product parts are detailed. His process can be summarized as follows: thinking beyond the brief; target group research; brief reframing; conceptualization; strategies development; and concept development.

DES\_5 described a process that reflects his current activity and his background as an Architect. His process starts in a preliminary meeting with client, usually in the place where the design will be implemented. The research is based on searching for similar situations by means of internet research and specialized books. He uses to return to the place for which was commissioned the project to analyse local restrictions and verify client's expectations. After this, he develops design concepts, initially by means of hand drawing and as soon as possible by using 3D modelling software to evaluate dimensions and arrangements. It finishes when he gets client's approval. The last steps involve detailing the approved concept and following production and implementation. A summary of his process could be: knowing client needs; searching for references; checking restrictions and expectations; conceptualizing; modelling; detailing; and production and implementation.

DES\_6 described his work as a three-stage design process. The first stage, he considers the critical one, involves knowing company's technological base and business strategy. Concept development is the second stage, an interactive and iterative process that engages all the internal stakeholders and involves product conception, embodiment and detailing. The final stage, commercial stage, corresponds to pre-production, launch and monitoring, following an iterative process in order to solve some

problems related to production and sales. He summarized his process as follows: knowing the client; concept development; and commercial stage

DES\_7 described a creative process, that always starts with an idea, either when she is working for a client or not. She stated that the initial idea leads to the final idea: her work involves idea's improvement in order to reach the desired result and to make it a feasible. She explores concepts by means of hand drawing and 3D modelling software, when she tries to get formal solutions and to solve functional and production problems. She uses to construct prototypes as early as possible to refine her concepts and to develop new paths. Summarizing, his process is: idea; formal and functional experiments; modelling; prototyping; and detailing

We found that only DES\_2 and DES\_7 adopt a common approach. The remaining designers do not share an approach (Table 2).

*Table 2 Experienced designers' design process.*

DES_1	Problem clarification > Research > Conceptualization and testing > Embodiment > Production > Launching
DES_2	Demand > Formal and functional experiments > Modelling > Prototyping > Detailing
DES_3	Briefing > Brainstorming > Modelling > Prototyping > Detailing
DES_4	Thinking beyond the brief > Target group Research > Brief reframing > Conceptualization > Strategies development > Concept development
DES_5	Knowing client needs > Searching for references > Checking restrictions and expectations > Conceptualizing > Modelling > Detailing > Production and implementation
DES_6	Knowing the client > Concept development > Commercial stage
DES_7	Idea > Formal and functional experiments > Modelling > Prototyping > Detailing

### *Intermediate level designers*

These designers have the same background and work in similar contexts: all of them have a product design degree and work for industrial companies. DES\_8 has worked for an industrial company since he was finishing his undergraduate course, where he designs tools for painting, and nowadays he is the designer-chief. DES\_9 started her career working for a design studio and since years she has worked for an industrial company, which produces home utilities. DES\_10 worked for a design studio for some years before he started working for an industrial company, in the sector of home

utilities in plastic, as a member of the product development team. DES\_11 has started her career as a product designer for an industrial company in the sector of home utilities in plastic, where she was working at the time of the interview.

DES\_8 described a design process that follows a quasi-linear path: *i*. initial research (leads to a preliminary concept); *ii*. opportunity evaluation (board of directors evaluates first concepts); *iii*. product project (starts by means of a deeper research - users' needs, competing products' performance, materials and processes - formal/functional conceptualization, cost estimative and first prototype tests - activities developed closely with marketing and engineering teams); *iv*. product evaluation (company's board of directors evaluates the product proposal); *v*. production planning (logistics and product engineering are involved in order to produce a pilot batch); *vi*. pilot batch (company's board of directors evaluates results); *vii*. launching (final processes are started and marketing team finishes launching planning - design team follow this process). It is a tacit-shared process that follows steps and uses well-defined techniques (Task Analysis, Usability Tests, Mood Board, Brainstorming) that are applied in a flexible way, in order to meet different products and contexts they work for.

DES\_9's design process starts with research in order to get visual references (by means of internet and magazines) and to analysis of competitors. Results leads to the development of concepts by means of an iterative process involving hand-drawing and 3D modelling. Technical detailing, prototyping, corrections and adjustments, and engineering validation comprise final stage of her design process. We summarized her process as: *i*. research; *ii*. concept development; and *iii*. finalization.

DES\_10 described his design process as a well-structured process: *i*. opportunity exploration (by means of a Brainstorming involving trade, marketing and production); *ii*. research (by internet: references and competitors; field research: users and market); *iii*. concept evaluation (presentation describing target group and product language); *iv*. product development (conceptualizing, technical detailing and validating); *v*. product evaluation; *vi*. injection mould development *vii*. pilot batch evaluation; and *viii*. launching. He stated that his design process is based on academic references, but he did not remember the authors influenced him.

DES\_11's design process is based on research, mainly focused on people, culture, market and materials. Initial research results uses to generate new questions that leads to deeper researches in a narrowed focus. During final research processes results she starts developing concepts by means of hand-



drawing (roughs and sketches). Research results and preliminary concepts are presented and evaluated during a meeting that involves company's board as well as marketing and commercial teams. After product concept definition she details it by means of 3D modelling software aiming to solve formal and production issues. As products are made by injection, moulds development is a relevant activity in her process. Before launching the product to the market, pilot batch is used to perform a market test in order to refine the product (mainly formal aspects and consumer reactions are considered at that moment). Her processes can be summarized as follow: *i.* research; *ii.* concept development; *iii.* concept evaluation; *iv.* detailing; *v.* injection mould development; *vi.* market test; and *vii.* launching.

These designers do not share a common methodological framework (Table 3).

*Table 3 Intermediate level designers' design process.*

DES_8	Initial research > Opportunity evaluation > Product project > Product evaluation > Production planning > Pilot batch evaluation > Launching
DES_9	Research > Concept development > Finalization
DES_10	Opportunity exploration > Research > Concept evaluation > Product development > Product evaluation > Injection mould development > Pilot batch evaluation > Launching
DES_11	Research > Concept development > Concept evaluation > Detailing > Injection mould development > Market test > Launching

### *Novice designers*

These have a degree in product design and work in different contexts. DES\_12 was working for a design studio at the interview moment, before she worked for an industrial company for few months. When we realized the interview, DES\_13 was working as an external designer for an industrial company and presented some traces of an entrepreneurial profile. DES\_14 started working for a design studio when he finished his undergraduate course, and there he has designed different kinds of product. DES\_15 was working for an industrial company as an internal designer at the time he was interviewed. DES\_16 was a graduate student in a Design Program and she was working for a design studio, when she was interviewed. DES\_17 never worked for a design studio or for a company, he was working as a freelancer product designer. DES\_18 was working as a partner of a new design and architecture studio.

DES\_12 described his process as a quasi non-stop flow that starts with problem identification and follows a divergent-convergent cyclic pattern of: *i.* research; *ii.* analysis; *iii.* alternatives generation; *iv.* evaluation; *v.* research; *vi.* analysis; *vii.* alternatives generation; and so on. She believes that it 'has no finishing point: time and resources defines when it finishes'.

DES\_13 described his general design process as: *i.* research (to know product evolution and variations; to know consumer and/or user; to know market and competitors); *ii.* concept development (based on research findings); *iii.* concept evaluation; *iv.* concept refinement (focus on ergonomic and technological issues); *v.* final evaluation.

DES\_14 stated that for him the first step is to know suppliers' limitations; knowing what he needs to consider, the second step is to develop a visual references research. Based on limitations and references he starts to develop the concept in a iterative process by means of sketches. At final steps, he uses 3D printer to prototype and conduce an evaluation test. He states that he never follows a single linear process. We summarized his process as follow: *i.* research; *ii.* concept development; *iii.* concept evaluation; *iv.* concept refinement; *v.* final evaluation

DES\_15 described his process as following: *i.* demand; *ii.* knowing the client (resources and needs); *iii.* research (similar products, target group preferences and behaviour); *iv.* concept development (product requirements and restrictions, functional and aesthetic references, alternative generations); *v.* concept evaluation; *vi.* concept refinement (interactive and iterative process: prototyping and testing); *vii.* product evaluation; *viii.* detailing (materials and production).

DES\_16 developed a mixed and flexible approach that she calls a 'five-phase methodology': *i.* informational analysis (synchronic analysis, diachronic analysis, life cycle analysis, ergonomic analysis, use analysis, functional analysis, etc.); *ii.* informational project (conceptual, preliminary and detailed); *iii.* alternatives generations (1D initial idea, 2D roughs, 3D modelling - modelling software or hand drawing); *iv.* detailing (developing alternatives); *v.* finalizing the product.

DES\_17 stated that he adopts two different processes: a deconstructive process and a linear process. In the first case, he uses to dismantle the product and analyse all components and parts aiming to understand its function and usage. After deconstruction, he classifies and organizes collected information into a set of requirements. He calls this approach a 'problem-solving method' and argues that is adequate for new product development. The second approach is a classical engineering design process:

*i.* informational project; *ii.* conceptual project; *iii.* preliminary project; and *iv.* detailed project.

DES\_18 described the process he and his colleagues developed to meet their design studio needs: *i.* research (products analysis, competitors analysis, trends and new materials); *ii.* concept; *iii.* concept evaluation (if it meets client's expectation); *iv.* alternatives generation (sketching and 3D modelling); *v.* alternatives evaluation (iterative process until reaching an optimal solution); *vi.* prototype development (adjustment and tests); *vii.* pre-production; *viii.* production monitoring. From research to prototype development, this process may be considered as a continuous searching for get information about client's needs and possibilities (technology, network, suppliers) and to optimize product features.

*Table 4 Novice designers' design process.*

DES_12	Problem identification > Research > Analysis > Alternatives generation > Evaluation > Research > Analysis > Alternatives generation > ...
DES_13	Research > Concept development > Concept evaluation > Concept refinement > Final evaluation
DES_14	Know suppliers > Visual research > Concept development > Prototyping > Evaluation
DES_15	Demand > Knowing the client > Research > Concept development > Concept evaluation > Concept refinement > Product evaluation > Detailing
DES_16	Informational analysis > Informational project > Alternatives generation > Detailing > Finalization
DES_17	Informational project > Conceptual project > Preliminary project > Detailed project
DES_18	Research > Concept > Concept evaluation > Alternatives generation > Alternative evaluation > Prototype development > Pre-production > Production monitoring

Novice designers do not share a common methodological framework (Table 4). Despite having common elements, each process follows a particular way. Five of those designers perform some kind of research as an early activity; most of them develop concept after researching. Next steps vary according to each designer process.

## 4. Process, problem and theory they described

We followed for patterns that could describe some shared approach, in design process (how they describe and model their design process), problem definition (how they frame the design problem) and design theory (which theory supports their practices). For the second and the third we adopted predefined categories, but for design process we are using categories that emerged from designers discourses and we considered that are adequate to frame our analysis. Having presented design process in last section, here we focus on analysing characteristics that each process has concerning three main stages: research (R), conceptualization (C) and development (D). We analysed designers' approach to problematization in two aspects: problem definition (Df) and design strategy (St). For theory we consider: theoretical approach (Ap) and design authors (Au).

### *Experienced designers*

Among experienced designers we found three qualitative clusters, according the variables we are considering: a corporation-oriented approach, a designer-oriented approach and a design-oriented approach. In the first, designers develop they work in a close relationship with companies' high level staffs and are involved with strategic decisions. The second case corresponds to an authorial approach, in which the designer is also a brand. And the third cluster includes designers that work for industrial and services companies acting in a tactical level (Table 5).

The corporation-oriented approach we found in cases of DES\_1 and DES\_6, both of them are highly concerned with corporative culture and may affect corporate strategy. They developed methodological approaches that enable them to deal with internal stakeholders, within the context they work, mainly constituted for medium and large industrial companies. Processes that they described are distinct if we consider only the stages, and they differ concerning research activities and problem definition activities. But when we analysed the whole approach we found some similarities. Both of them perform conceptualization and development by means of interactive and iterative activities that involves all internal stakeholders, that characterizes an integration-oriented strategy.

We classify the approach that DES\_2 and DES\_7 share as a designer-oriented approach. They start in a similar way, from an idea or a demand and develop exploratory activities. Materials possibilities research and functional and formal exploration have the role of problem definition. Solutions emerge and are followed and refined in both cases. To reach the

feasibility of an idea they like, they adopt a production's problem-solving and solution-oriented strategy characterize a way.

*Table 5 Experienced designers*

*(R) Research, (C) Conceptualization, (D) Development, (Df) Problem definition, (St) Design strategy; (Ap) Approach and (Au) Authors*

Designer	Process	Problem	Theory
<b>Corporation-oriented approach (strategic)</b>			
DES_1	(R) users activities and product (C)(D) interactive and iterative	(Df) research (St) integration-oriented	(Ap) some traces (Au) Löbach
DES_6	(R) technology and business strategy (C)(D) interactive and iterative	(Df) research and company's goals (St) integration-oriented	(Ap) no traces (Au) none
<b>Designer-oriented approach (authorial)</b>			
DES_2	(R)(C) materials possibilities (D) production's problem-solving	(Df) functional and formal exploration (St) solution-oriented	(Ap) few traces (Au) none
DES_7	(R)(C) materials possibilities (D) production's problem-solving	(Df) functional and formal exploration (St) solution-oriented	(Ap) no traces cultural references (Au) none
<b>Design-oriented approach (tactical)</b>			
DES_3	(R) client's needs (C) trends and brainstorming (D) exploring and testing alternatives	(Df) briefing (St) problem-oriented	(Ap) some traces (Au) none
DES_4	(R) client's and target group needs (C) (D) interactive and iterative	(Df) reframing client's brief (St) problem-oriented	(Ap) some traces (Au) Munari, Löbach, and Baxter
DES_5	(R) client's needs and references (C) formal exploration (D) production's problem-solving	(Df) briefing (St) problem-oriented	(Ap) some traces (Au) Bonsiepe

The third approach, design-oriented, may describe DES\_3, DES\_4 and DES\_5. In this approach, design solutions are explored in order to meet client's needs, but corporate strategy is not affected by designers' work. In their processes, they share the focus on clients' needs when they perform initial project activities, but they differ regarding the approach they adopt to conceptualize and develop the product. We consider the three of them as problem-oriented, but DES\_3 and DES\_5 tend to follow the brief and DES\_4 tries to reframe the brief ('thinking beyond the brief', in his words).

Analysing theoretical approach led us to complex room: none of them adopts a formal approach, none of them follows a school of design. Almost all of them present in his/her discourse traces from different theories that reflect his/her formal and informal apprenticeship. We registered cultural references in the discourse of DES\_2 and DES\_7, what we consider is associated with the context they work.

Among these designers, only three mentioned some design author as a reference for his/her work. It is relevant to comment that two of them do not have a background in product design; also, two have a Master's degree in design and the third one has an specialization diploma, i.e., only designers who have attended a postgraduate programme mentioned an author.

### *Intermediate level designers*

Among intermediate level designers we found two qualitative clusters, according the variables we are considering: a corporation-oriented approach and a design-oriented approach (Table 6). It is relevant to remember that these designers work for industrial companies, in this case it would be supposed that they would adopt an approach oriented to corporate strategy.

We found the corporation-oriented approach in DES\_8 and DES\_11 cases. Working internally, they have developed methodological approaches that allowed them to perform interactive product development activities. DES\_8 nowadays is involved with strategic decisions, as a member of product development board; DES\_11 has not a similar role, but she is conscious about this possibility and has developed efforts in order to play a strategic role in product development process. Methodological approaches they described are distinct and they also differ concerning research activities and problem definition activities. But they share some characteristics, as: both of them perform conceptualization and development by means of interactive and iterative activities, they present an integration-oriented

strategy, and they search for information and methodological tools by means of books.

*Table 6 Intermediate level designers  
(R) Research, (C) Conceptualization and (D) Development; (Df) Problem Definition and (St) Design strategy; (Ap) Approach and (Au) Authors*

Subject	Process	Problem	Theory
<b>Corporation-oriented approach (strategic)</b>			
DES_8	(R) users' activities and competitors (C)(D) interactive and iterative	(Df) marketing and design research (St) integration-oriented	(Ap) some traces (Au) Baxter
DES_11	(R) users life; (C)(D) interactive and iterative	(Df) research (St) integration-oriented	(Ap) some traces (Au) Verganti and Norman
<b>Design-oriented approach (tactical)</b>			
DES_9	(R) visual references and competitors (C) formal possibilities (D) production's problem-solving	(Df) own perception (St) solution-oriented	(Ap) some traces (Au) none
DES_10	(R) competitors and/or users; (C) formal possibilities (D) production's problem-solving	(Df) brainstorming (St) problem-oriented	(Ap) some traces (Au) none

In a design-oriented approach, DES\_9 and DES\_10 present different methodological approaches. Their similarities are in conceptualization and development, stages that they perform-oriented to explore formal possibilities. They differ about problem definition and strategy, and it may affect the focus they have in research activities. As a solution-oriented designer, DES\_9 searches for visual references, while DES\_10, a problem-oriented designer, tries to understand the users.

As the experienced designers, intermediate level designers do not adopt a formal approach or follow a school of design. Their discourses present traces from different theories, but we did not identify cultural references in this group. Two of them, DES\_8 and DES\_11, mentioned design authors as a

reference for working. It is relevant to observe that those are who presented integration-oriented strategies.

### *Novice designers*

In this group we found mainly, as among intermediate level designers, we found two qualitative clusters: a corporation-oriented approach and a design-oriented approach (Table 7).

*Table 7 Novice designers*

*(R) Research, (C) Conceptualization and (D) Development; (Df) Problem Definition and (St) Design strategy; (Ap) Approach and (Au) Authors*

	Issues	Problem	Treaty
<b>Corporation-oriented approach (strategic)</b>			
DES_15	(R) users' experience (C)(D) interactive and iterative	(Df) research (St) integration-oriented	(Ap) some traces (Au) none
DES_18	(R) product, competitors, trends and materials (C) (D) interactive and iterative	(Df) research (St) integration-oriented	(Ap) some traces (Au) Baxter
<b>Design-oriented approach (tactical)</b>			
DES_12	(R) users and competitors (C) iterative solutions exploring (D) production's problem solving	(Df) research (St) problem-oriented	(Ap) some traces (Au) Bonsiepe, Bomfim and Kelley
DES_13	(R) users and competitors (C)(D)	(Df) research (St) problem-oriented	(Ap) few traces (Au) Bonsiepe and Redig
DES_14	(R) client's possibilities and visual references (C) (D) meeting functions	(Df) research (St) problem-oriented	(Ap) some traces (Au) Norman
DES_16	(R) product analysis (C)(D) meeting functions	(Df) product analysis (St) problem-oriented	(Ap) some traces (Au) Papanek, Bonsiepe, Baxter and Redig
DES_17	(R) materials (C)(D) meeting	(Df) product analysis (St) problem-oriented	(Ap) some traces (Au) Löbach,



	functions		Bonsiepe, Baxter and Redig
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DES\_15 and DES\_18, working in different contexts, share a corporation-oriented approach, as they perceive their work as a strategic activity. Both have integration-oriented strategies that are closely related to their methodological approaches. Their youth and lack of experience are compensated by a clear vision of their roles and their possibilities.

Remaining novice designers tend to be design-oriented, as they are mostly focused on solving design problems. DES\_14 deviates slightly from this approach, as he stated the importance of knowing client's possibilities. But he adopt a problem-oriented strategy and we consider that it affects the way he frames the design problem.

Like all other designers in our sample, novice do not adopt a formal approach or follow a school of design. In the same way, we found traces from different theories in their discourses. Differently, almost all of them mentioned at least a design author as a reference for his/her work. Only DES\_15 do not mentioned an author, despite the fact he stated he is influenced for design authors.

### *Design authors*

Books and authors that designers mentioned are commonly adopted in Brazilian design education, despite the fact that some of them are outdated for use in undergraduate programmes:

- Design for the Real World (Papanek, 1971);
- *Sobre desenho industrial* [About industrial design] (Redig, 1977);
- *Das coisas nascem coisas*. [From Things are Born Things](Munari, 1981);
- *Sentido do design* [Sense of design]( Redig, 1983);
- *Metodologia para desenvolvimento de projeto* [Methodology for product development](Bomfim, 1984);
- *Metodologia experimental* [Experimental Methodology] (Bonsiepe et al. 1984);
- *Projeto de Produto* [Product Design] (Baxter, 1998);
- *Design Industrial* [Industrial Design] (Löbach, 2001);
- *A arte da inovação* [The art of innovation](Kelley, 2001);
- *Emotional Design* (Norman, 2004);

- *História, teoria e prática do design de produtos* [History, theory and practice of product design] (Bürdek, 2006); and
- Design-driven Innovation (Verganti, 2009).

## Discussion

Results we presented refer to the analysis concerning Design Process (how they describe and model their design process), Problem Definition (how they frame the design problem) and Design Theory (which theory supports their practices). We found different approaches for design processes there are related to designers' field of activity and experience level. Some of them, mainly companies' internal designers, use formal and quasi-structured process but most of them adopt a flexible and intuitive approach. Also problem definition approaches vary among designers. Marketing and user research, brainstorming, product analysis are some of their approaches for defining a design problem. Finally, we observed that none of them adopts an explicit and formalized theoretical approach. All of them reflect about hers/his work, but each one uses a personnel discourse, instead of assuming a field related generic discourse.

From our results emerged a taxonomy concerning the approach designers adopt: *corporation-oriented* (strategic), *design oriented* (tactical) and *designer-oriented* (authorial). Considering Perks et. al. (2005) taxonomy, *corporation-oriented* may be related to Design as NPDP Process Leader and Design as Part of Multifunctional Team; similarly, *design-oriented approach* may be related to Design as Part of Multifunctional Team and Design as Functional Specialism. *Designer oriented* approach does not fit that taxonomy.

Experienced designers' discourses demonstrated the role of self-education and informal education even for designers who have a product design background. Probably it is a consequence of theoretical weakness design education had in first three decades. Only recently, after 1994 when started the first Master's Programme in Design and when it happened the first academic design conference in Brazil, theory has been considered as relevant as practice in Brazilian design education. Intermediate level and novice design discourses confirm our interpretation, as most of them made use of design authors to talk about their design processes.

Our start point remains as our finish point: there exists a gap between academic design methods and used in practice. Our findings may suggest that the wide field of idiosyncrasies among professional designers is a

consequence of the lack of a consistent and shared theoretical background among Brazilian design schools. Certainly it affects how Brazilian society and companies perceive Design as a profession.

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## Collaborative Evaluation of Design Concepts

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*The purpose of this study is to explore the possibilities and constraints of applying the quality function deployment (QFD) method during the early phases of a product development process in order to facilitate collaborative design concept evaluation.*

*We investigated the potential of utilizing the QFD method throughout an iterative design process without introducing too much complexity to the agile development process through participatory action research. As active members of a product development team that works on a specific system component of a complex medical device, we were able to probe and further develop a QFD-based method in practice. Two separate experiments were conducted to test the applicability of QFD to facilitate the evaluation of different design concepts.*

*This study highlights how the QFD method allows for communicating design concepts across different functions and partly facilitates the evaluation of design concepts during the early product development stages. It also presents the benefits and limitations of the QFD-based method we developed and tested in practice throughout this study. The study concludes with suggestions how the method can be further developed to better manage design concept evaluations in the future.*

**Keywords:** *Design concept evaluation; cross-disciplinary collaboration; QFD method*

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## Introduction

Involving different functions in a new product development (NPD) process potentially leads to high-performing new products (Nakata & Im, 2010; Chen, 2007; Song, Montoya-Weiss, & Schmidt, 1997). However, cross-functional development teams also imply that there are different mindsets, backgrounds, and priorities coming together (Dougherty, 1992), which possibly hinders effective communication and collaboration among the team members. In order for these different thought worlds to stipulate each other and not hinder the collaborative efforts, the different functions involved 'must actively contribute to the product design, and actively challenge each other, or the final design will be awry' (Dougherty, 1992, 195). McDonough (2000) presents a model that provides an overview of several contextual factors that support cross-functional team success, including project goal setting, team leadership, and cooperation.

The purpose of this study is to look at the individual team level and explore the applicability of a QFD-based method to facilitate cross-functional evaluation of design concepts. The expected contribution of this study is to (a) provide a description of the QFD-based method we developed in order to allow scholars and practitioners to apply and further build on this method and (b) highlight the benefits and limitations of the method for evaluating design concepts in a real case product development process.

In the following, we introduce the QFD approach and why it is applicable to probe its benefits and limitations in practice. Then, we describe the methodology of this study followed by a detailed description of the QFD-based method we developed and probed in practice. Figure 1 provides an overview of the symbols used throughout this study. Afterwards the findings are presented, which lead to the discussion and recommendations for further research.

QFD is a well-studied method applicable to integrate the voice of the customer into product design and support development teams. This is achieved by translating customer requirements into optimal design requirements, which are referred to as performance criteria in this study. QFD can be used as a tool for planning, evaluation, and, consequently, decision-making. Figure 2 illustrates that results (how much's) are derived by using defined performance criteria (what's) to quantify qualitative product features (how's), hence making them measurable or comparable (Chan & Wu, 2002; Govers, 1996).

Collaborative Evaluation of Design Concepts



Figure 1 Symbols used in this study to illustrate processes and tools.

The intention is to explore to which extent QFD can be applied during early stages of a product development process in order to compare novel design concepts and decide on which concept to develop further. Especially in the case of small, cross-functional development teams that work on highly complex systems it is necessary to compare design concepts as early as possible and include different perspectives throughout the evaluation process. Thus, it becomes necessary to investigate different methods that can be applied throughout an iterative design process without introducing too much complexity to the agile development process.

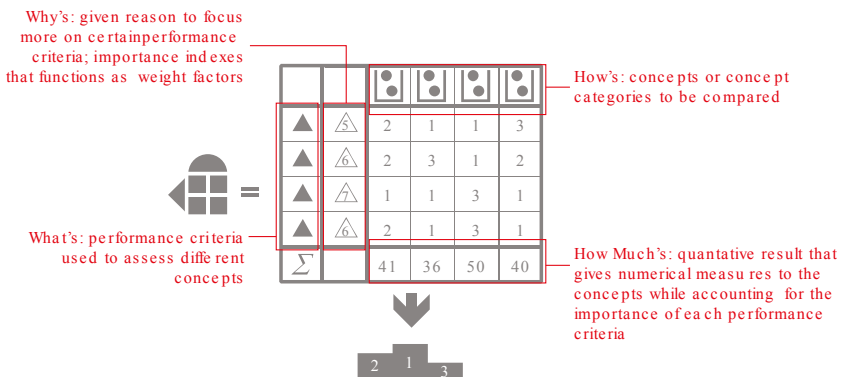


Figure 2 Format of the applied QFD.

In order to decide which concepts to further develop it was necessary to find a proper method that would include several team members from different disciplines in the decision-making process. At this stage of the design evaluation process more than one concept could be chosen for further design iterations, which means elaborating on the chosen concepts and possibly building mock-ups for initial testing. However, eventually one concept should stand out as the winning concept that serves as basis for building a functional model or prototype of the system component.

## Methodology

This study emerged from a real-case product development process and focuses in particular on the concept development and evaluation stages of a medical device system component. According to Whyte (1991), the study is based on participatory action research since we were actively involved in the development and probing of the QFD-based method presented in this study as well as the interpretation of the empirical knowledge we gained through observation and active participation. Such proximity to practice and the ongoing processes allowed us to generate practical knowledge according to the observed phenomena (Brydon-Miller, Greenwood, & Maguire, 2003; Kolko, 2010) because we were able to inquire insights “about the real, material, concrete, and particular practices of particular people in particular places” (Kemmis & McTaggart, 2005, p. 564). We chose this approach to make our study relevant for academia as well as industry and stimulate or even create change (Gustavsen, 2001).

We followed the process proposed by Kemmis and McTaggart (2005), in which action research takes place in three principal phases: planning the intended course of action, putting it into practice as well as observing the consequent occurrences, and reflecting on the emerging phenomena (see figure 3). Going through the complete research process together, discussing, and reflecting upon it highlights the collaborative effort of this study and adds to its validity since “each of the steps outlined in the spiral of self-reflection is best undertaken collaboratively by coparticipants in the participatory action research process” (Kemmis & McTaggart, 2005, p. 563).



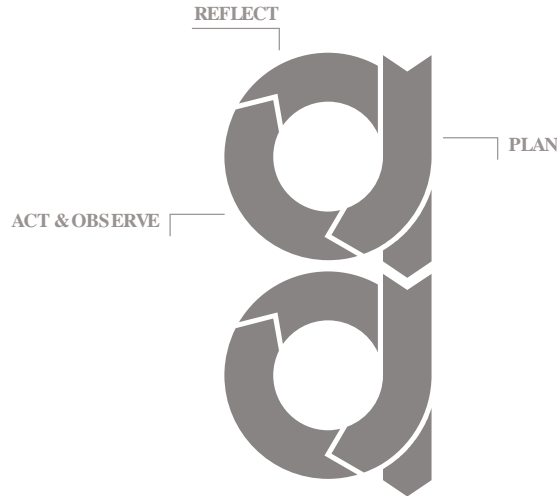


Figure 3 The action research cycle of self-reflection. Source: based on Kemmis & McTaggart, 2005.

Since we assume that reality is subject to perception and cognitive processes that allow people to interpret what can be known (Guba & Lincoln, 1994), we do not claim here that our research provides a singular truth that can be repeated in different contexts. However, it is our ambition to address a certain phenomenon in practice and describe the steps of our research approach in detail in order to ensure our ‘research process is recoverable by interested outsiders’ (Checkland & Howell, 1998, p. 20).

## Research process

### *Introducing QFD for evaluating new design concepts*

The overall process is illustrated in the adapted action research cycle in figure 4. Based on the literature review about product development decisions by Krishnan and Ulrich (2001), we focus on the concept development and selection process of a medical device system component. Prior to the concept evaluation process, during which we applied a QFD-based method, we had a meeting in order to develop a variety of possible concepts for the system component. Throughout this meeting we brainstormed, sketched out, and discussed several ideas. Participants of this meeting included two mechanical engineers, two industrial designers, one human factors engineer, and the lead designer of the system component. At

the beginning, the lead designer introduced the overall system design. It was made clear that it is required the component to-be fits to the given system design and meets a certain standard of functionality.



Figure 4 Overview of the research process.

Following, all participants made sketches on their own, which were shared afterwards with the group. The ideas that were similar or complemented each other were then grouped into a total of seven overarching concept categories. It was decided that in order to rank the concepts, performance criteria needed to be established that are crucial for the component's quality in practice. Therefore, all participants decided on performance criteria that would serve as basis for comparing the different concept categories based on a QFD approach (see figure 5).

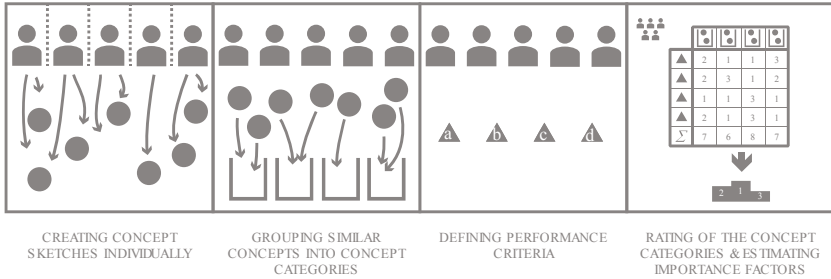


Figure 5 Concept development and first concept evaluation.

We compiled a list of twelve performance criteria. These criteria were ranked accordingly from one to twelve, depending on which one was seen more or less important. The assigned number in the ranking, called the importance index, was the weight given to the respective criterion. Then, we went through the concept ideas one by one in the group, assigning a score from one to three (1=bad, 2=neutral, 3=good) to each of the performance criteria and concepts. The score assigned to a criterion of a concept idea was then multiplied by the weight of the respective criterion. The final score of a concept was the sum of these products. After this exercise we had a winning concept and two successors that ought to be further developed (see figure 6).

An interesting note is that after the ranking using the QFD method, each participant was asked to state his or her favourite concept independently from the result. It turned out that three out of six participants favoured a concept that was only ranked as the third favourable concept according to the table. That means that half of the participants had a positive feeling about this particular concept despite the arguably rather objective ranking. It showed that based on the participants' professional backgrounds, the designers and engineers involved in the template development and concept evaluation phase had a different ambition and preference as opposed to the performance criteria that have been established and ranked previously. This led to the assumption that it might be necessary to involve different disciplines and especially actual operators of the system and the component in particular in this concept evaluation process.

Performance criteria	Importance index	Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6	Concept 7
Criterion 1	5	2	1	1	2	3	2	1
Criterion 2	6	2	3	2	3	1	2	2
Criterion 3	4	2	2	2	3	2	3	2
Criterion 4	3	2	2	1	2	3	2	1
Criterion 5	12	2	3	2	1	3	2	2
Criterion 6	1	2	3	1	2	3	3	2
Criterion 7	10	1	2	1	2	3	1	2
Criterion 8	9	1	1	3	3	2	3	2
Criterion 9	8	3	2	3	3	1	2	1
Criterion 10	2	3	2	3	2	1	3	1
Criterion 11	7	2	2	2	2	3	2	1
Criterion 12	11	2	1	2	3	1	3	1
<b>Total:</b>		<b>147</b>	<b>150</b>	<b>156</b>	<b>182</b>	<b>167</b>	<b>173</b>	<b>120</b>

Figure 6 Simplified QFD for concept comparison.

### Customizing QFD method

Based on the simplified QFD-based approach used in the first concept evaluation process, we developed the method further and customized it to the specific system component and applied it to evaluate the concepts a second time with different stakeholders of the development team that were not involved in the initial development of the concepts. First, we extended the number of performance criteria since we realized after the first iteration that more factors need to be included in order to evaluate the concepts more holistically and from different perspectives, including criteria related to manufacturing cost, aesthetics and perceived likeability of the component, as well as future marketing potential. Furthermore, we categorized the criteria into four sections that we established based on the primary knowledge specific functions within the development team have on specific criteria in order to allow the persons that are supposed to be the most knowledgeable in a certain criterion to make the final call if there are discrepancies among the other functions. For example, if a specific concept criterion is ranked very differently by the people involved, the persons

whose main responsibility and expertise lies within that criterion have the final say about the evaluation score allocated to it.

One change we made in the new version of the QFD was the assignment of weight to the performance criteria using a criteria comparison table. As opposed to ranking the criteria and assigning the importance index based on their respective rank number, which is the way we did it in the first workshop, we developed another table that allowed us to compare every single criterion with each of the other criteria (right box in figure 7). In this case we assigned scores from one to three (1=less important, 2=equally important, 3=more important) to each criterion compared to all of the others. The sum of the accumulative score makes up the importance index for each criterion that could then be used in the QFD table (left box in figure 7).

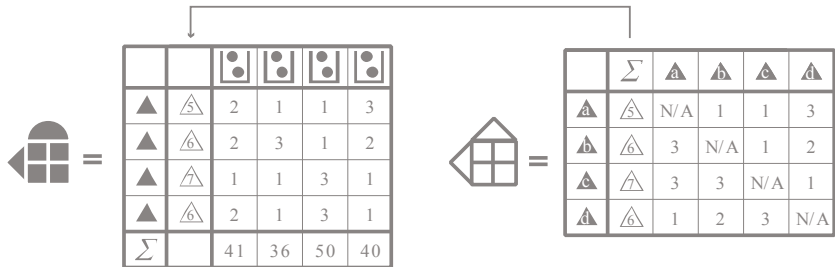
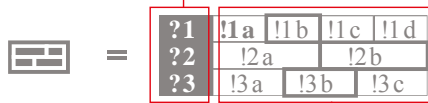


Figure 7 Using a criteria comparison table to define importance index weights.

In addition, a single morphological table was developed and adapted for each of the concepts to highlight the possibilities and constraints each concept category implies. As illustrated in figure 8, the morphological table is a table in which the primary column represents the features or functions of the system component's general architecture, and the items on the rows represent the alternative design solutions or component type (Wang & Chou, 2007). The morphological table used in this study is an adapted morphological box, which is commonly used for structuring complex, non-quantifiable relationships (Ritchey, 1998). It follows that abstract interrelations between the concepts can be studied.

**FEATURES / FUCTIONS**  
of the system component's  
general architecture



DESIGN SOLUTIONS;  
documented alternatives for  
implementing the respective  
features / functions

Figure 8 Morphological table.

In product concept development, the morphological table is used to determine the combination of design solutions that yields the highest value (Wang & Chou, 2007). However, in this study the morphological table is used to describe the combination of design solutions that formulate a concept.

Because the concept categories presented are difficult to compare and communicate accurately, structured concept descriptions are made using the morphological table and visual concept descriptions (figure 9). The same base morphological table is reused in each concept description, the only difference being highlighted features from the table. In other words, the created morphological table can be used to describe any of the presented concepts.

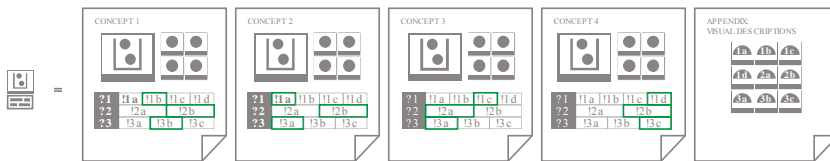


Figure 9 Structured concept description document

In this second round of concept evaluation, we probed the QFD approach to discuss and evaluate the concepts in a group that included stakeholders who were not involved in the initial creation of the concepts. This served as a good opportunity to explore the method's applicability for communicating design concepts to team members within the product

development process and have them evaluate the concepts from their distinct functional perspective. Apart from customizing the QFD method, we introduced it to the different team members who were chosen by the lead designer to participate in the concept evaluation process, and guided through the different activities of this second round of concept evaluations. Figure 10 highlights the steps from (1) introducing the six remaining design concept categories, (2) creating structured concept descriptions, (3) comparing the defined performance criteria and giving them different weight factors, (4) having participants rate the concept categories individually first, to (5) finally accumulate their scores to one final QFD model that served as basis for the discussion about which concept to develop further. The different functions involved included two system mechanical engineers, one system component mechanical engineer, one user representatives, one human factors engineer, the overall system lead designer, and the system component lead designer herself.

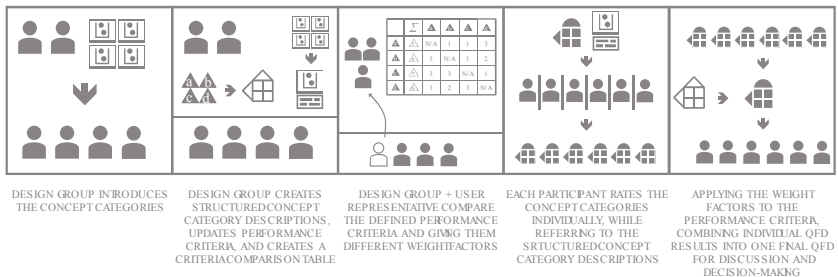


Figure 10 Second concept evaluation process.

### Introducing the concepts

All people who were chosen to participate in the concept evaluation process were invited to a meeting in order to introduce the design concepts we wanted to compare and explain the evaluation method itself. After briefing the rest of the team on the initial workshop and how the concepts have been established, the six resulting concepts were presented. One of the seven concept ideas that scored the lowest when we applied the QFD method in the first workshop was already excluded beforehand. We discussed the presented concept ideas verbally and then evaluated them for the first two performance criteria in the group to make sure everyone understands the approach and knows how to read and fill out the table.

		Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6	Comments
Main topic of criteria Final say: function A	Criterion 1							
	Criterion 2							
	Criterion 3							
	Criterion 4							
	Criterion 5							
	Criterion 6							
	Criterion 7							
	Criterion 8							
	Criterion 9							
	Criterion 10							
Main topic of criteria Final say: function B	Criterion 11							
	Criterion 12							
	Criterion 13							
	Criterion 14							
	Criterion 15							
	Criterion 16							
	Criterion 17							
	Criterion 18							
	Criterion 19							
Main topic of criteria Final say: function C	Criterion 20							
	Criterion 21							
	Criterion 22							
	Criterion 23							
Main topic of criteria Final say: function D	Criterion 24							
	Criterion 25							

Figure 11 Second concept evaluation process.

**Individual rating of concepts**

We prepared a blank QFD table, only having the criteria and the different concepts stated, including a comment column where people could give feedback to the respective criteria (figure 11). This table was sent by email to all seven people that were supposed to give their opinion on the concepts. Additionally, the morphological tables with the concepts' visuals were shared in the same email in order for recipients to better understand the concepts. Each participant was asked to fill out the table individually and send it back to us for compiling the results for further discussion. Some participants did not score on all criteria and one participant did not send the scores. The participants that did not score on all criteria mentioned they either did not understand the criterion or felt their expertise was not sufficient to give a score to some criteria.



	Variance							Average					
	Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6		Concept 1	Concept 2	Concept 3	Concept 4	Concept 5	Concept 6
Criterion 1	0.3	0.3	0.4	0.2	0.2	0		2	2	2	2	2	3
Criterion 2	0.7	0.7	0.3	0.3	0.2	0		2	2	3	3	2	3
Criterion 3	0.4	0.3	0.7	0.7	0.2	0.3		2	2	2	3	1	3
Criterion 4	0.2	0.6	0.3	0.6	0.3	0.7		3	2	1	2	2	1
Criterion 5	0.5	0.2	0.7	0.7	0.5	0.2		2	2	2	2	2	3
Criterion 6	1	0.3	0.8	0.8	0	0.3		2	2	2	2	2	3
Criterion 7	0.3	0.2	0.3	0.7	0	0.6		3	2	2	3	2	2
Criterion 8	0.3	0.2	0.3	0.3	0.3	0		1	2	2	1	2	3
Criterion 9	0	0	0.3	0.3	0.3	0.3		2	2	2	3	2	3
Criterion 10	0	0.3	0.3	0.3	0.9	0.3		2	2	2	2	2	3
Criterion 11	0.3	0.2	0.3	0	0.3	0.6		3	2	2	3	2	2
Criterion 12	0.3	0.2	0.2	0.3	0.2	0.2		2	2	2	2	2	3
Criterion 13	0.7	0.3	0.4	0.3	0.2	0.3		3	3	2	3	2	3
Criterion 14	0.3	0.7	0.2	0.7	0.4	0.3		3	2	2	3	2	3
Criterion 15	0.7	0.2	0.3	0.7	0.3	0.2		1	2	1	1	2	2
Criterion 16	0.3	0	0.3	0.7	0.3	0		3	2	2	3	2	1
Criterion 17	0.3	0.3	0.3	0.3	0	0.3		2	2	2	2	2	3
Criterion 18	0.3	0.3	0.3	0.3	0.3	0.3		2	2	2	2	2	2
Criterion 19	0.2	0.2	0.3	0.3	0.3	0.2		3	2	1	2	2	1
Criterion 20	0.3	0.3	0.3	0.3	0.2	0		1	2	3	1	3	3
Criterion 21	0.2	0.2	0.7	0	0.2	0.2		1	2	1	1	3	3
Criterion 22	0.2	0.3	0.5	0.8	0.2	0.3		2	2	2	2	2	1
Criterion 23	0.3	0.3	0	0.2	0.3	0.2		3	3	2	1	3	1
Criterion 24	0.3	0.3	0.2	0.7	0	0		3	2	2	3	2	1
Criterion 25	0	0	0.3	0.3	0.3	0		2	2	3	2	2	3

Figure 12 Variance between individual scores.

**Discussion of score results**

After receiving the individual evaluations, a meeting was scheduled to discuss the outcome in the group. The final result of the scoring exercise was presented to all seven participants in the group discussion. The averages from the individual results were multiplied by the previously established importance index to make up the total score of a given concept.

In addition, we included a table showing the average scoring as well as the variance between the scores (figure 12). The intention was to discuss during the meeting that involved all different functions involved in the development process the criteria that had the most variance to better understand why people ranked specific criteria for a concept differently.

In the end, there was one winning concept but it was decided that this particular concept was technically too difficult to implement and due to the project's time constraints the winning concept was put on hold and would be considered for future design iterations throughout the development process. Besides the winning concept, also the other rankings were challenged by the team members especially because people did not agree with the weight given to some criteria and the concepts are still a bit open and vague, which in turn made it difficult for participants to give scores for certain criteria.

## Findings

The variance table was a beneficial add-on to the initial QFD table and led to fruitful discussions during the concept evaluation phase since it enabled to identify where opinions between team members differed and gave the individuals a chance to explain their scoring. In particular, using the variance table had several benefits: (1) discussing the variance in scores fostered the common understanding of the criteria as well as the concepts at hand, (2) explaining why one has given high or low score in particular helped clarify the concepts in a more detailed level, and (3) identifying these specific criteria or concepts that had a high variance will help to improve the descriptions of such in future evaluation phases.

Visual attachments to the concepts supported introducing them to stakeholders that have not been involved in the initial concept creation. The method was complemented with visuals and additional concept explanations to reduce ambiguity and misunderstandings among the stakeholders. However, it was still perceived as difficult to fully understand the concepts and evaluate them utilizing the QFD method and required further explanation.

Categorizing the performance criteria according to the functions that have specialized knowledge the respective category that is attributed to them did not have an impact on the decision-making process. The initial idea was that the function responsible for a certain criterion has the final say if there is disagreement among the cross-functional team members. But as it turned out, score variances across different functions resulted in open discussions rather than the person who represents a certain function making a final call.

We discovered one limitation of the QFD method we probed in this study, which concerns the process of defining and weighing of the

performance criteria. It became evident that in the final group discussion members from different functions disagreed on the importance index we defined after comparing every 25 criteria with each other. The issue we identified was that we determined the importance index prior to the group discussion and did not involve members from all functions that participated in the evaluation process eventually.

When we used the QFD method in the first concept evaluation phase it was not the decisive factor of which design concept to select in the end. It supported the ranking process and triggered discussions among the participants but after deciding on a winning concept in a group based on the QFD, each participant was asked individually to state their preferred concept independently from the performance criteria. The opinions differed from the group rating, which means that the performance criteria we chose initially were not adequate enough, the weight given to them was incorrect, or the QFD method itself had minor flaws and needed to be adjusted accordingly, which we did in the second iteration.

In the second concept evaluation process, the eventual decision which concept to develop further was also not made solely based on the QFD results but after a further group discussion that was centred around the outcomes of the QFD method. The reasons for not going ahead with the winning concept was partly because it was the most futuristic and thus, risk-averse concept to develop further. Mainly the complexity of the system itself, which the component would become part of, as well as the timeframe given by the development project and the strategic intention to build on core competences instead of reinventing the whole system design were the causes that led to neglecting of the concept with the best score. That means there was no definite decision made solely based on the QFD approach. However, the lead designer proposed to keep the winning concept in mind for future stages of the project since all team members recognized the potential value of the winning concept for future development projects.

## **Discussion and future research recommendations**

The process of decision-making during the early and conceptual development phases can be difficult for complex, non-quantifiable design alternatives and using methods like morphological analysis and QFD adds the possibility of creating an “audit trail” that can be traced back if and when design history is needed (Ritchey, 1998). Therefore, documenting the design concepts that are evaluated in a visual and descriptive manner allows

companies to go back to and reuse the created solutions at a later stage or even within a different NPD project. Furthermore, utilizing the QFD method in order to facilitate cross-functional communication and document the design concept evaluation process accordingly allows for 'improved prototype development proficiency and product launch proficiency' (Sherman, Berkowitz, & Souder, 2005, p. 407) since the recorded data can be retrieved again at later stages of the NPD.

Having cross-functional development teams leads to different perspectives and areas of expertise coming together, which may "prelude the development of an optimal design" (Dougherty, 1992, 196). Applying a QFD-based approach in a NPD project enables companies to include objectified views from different stakeholders when evaluating design concepts. That potentially enables collaborative design concept evaluation if the method does not overcomplicate the decision-making process but facilitates discussions and allows for a better documentation of the design concepts. Especially in the case of discussing variances in ranking design concepts across different functions, the development team can utilize this input to further build on the concept at question.

Further research can be conducted in order to improve the tools created for this study, or to create process-enhancing groupware. Groupware is software that is designed or used to support groups (Grudin, 1994). From a corporate point of view, the value of this study can be harnessed by a practical groupware tool, that supports teams in generating creative design solutions, documenting their efforts and process, exploiting archived solutions for inspiration and possible solutions, and collaboration.

Since the system in question is a medical system, strict standards and regulations apply. The regulatory environment requires that medical devices meet clinical and engineering specifications. Furthermore, medical devices must also prevent human and technical error by detailing usability and maintenance that assures safety. As a result, the fulfilment for safety requirements should be taken into account in the early stages of the design process (Grant, 1998). Therefore, further research reflecting on this study could examine when and how the regulatory environment for medical systems should be taken into account during the design process. The assumed challenges would include accounting for the regulatory environment in the design process of medical device design, without limiting or risking potential solutions.













	ADJUSTABLE INDEX				
		2	1	1	3
		2	3	1	2
		1	1	3	1
		2	1	3	1
$\Sigma$		VAR	VAR	VAR	VAR

Figure 12 Idea of a dynamic QFD with interactively adjustable importance indexes.

Another possibility for further study of weight factors was identified, when participants asked to see the calculated outcome that followed from manipulating the weights of the importance indexed. Some of the participants were interested in the dynamics of the QFD and how alternative strategies affected the outcome. To aid the discussion and get an overview of these “what if” outcomes, adjustable importance indexes can provide a powerful tool for evaluating the weight of importance criteria, and comparing strategies during the group discussion in real-time (figure 12).

A dynamic QDF analysis as such, is an alternative to the use criteria comparison table, or can be used as an extension of it. Furthermore, it raises the question on whether the definition of importance index weights should be user-driven, as it was in this study, or strategy-driven. In this study the definition of the index weights was user-driven in the sense that the user representative was the only stakeholder outside of the design group who was included. For a strategy-driven approach, a managing director may best represent the stakeholder involved in the definition of the index weights. Including more than one stakeholder is an option as well. However, it may be less efficient in regards to time and resources (Romano & Nunamaker, 2001). On the other hand, an easy-to-use, time-efficient implementation of adjustable indexes may make the criteria comparison table obsolete, while including all stakeholder approaches equally. Benefits and challenges of doing this would require further study.

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**Section 2c: Managing Consumer Involvement  
in Product Development**

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# **Editorial: Reinventing the customer's role: How customers can create innovation in organization's business models**

Paola PISANO, Alison RIEPLE, Ian CAMPBELL and Matthew SINCLAIR

Throughout the last decade, the focus in innovation studies and practice has shifted from the product to the business model, or rather to the elements surrounding the core offer of innovating companies. Game-changing and popular contributions such as the Business Model Canvas (Osterwalder et al., 2005) and the Ten Types of Innovation (Larry Keeley et al., 2013) have convincingly evidenced not only the importance of creating customer value, but also the seamless integration of entrepreneurial action on the one hand and disciplined innovation management on the other which characterize high innovation performers over time. As Osterwalder (2013) said "business model innovation is about creating value for company, customer and society. It about replacing outdated models." Practitioners need to start putting the innovation accent not only on the features and functionalities of the offer but also in the business model that encases the product or service. Successful disruptors feature new revenue or profit models: they have the ability to make money at low price points or to serve a small market profitably, or they play in a very different value chain with new partners, suppliers and channels to market. Within this trend the changing nature of customer participation has given rise to a lot of research, but mainly in the field of service, marketing and management. While Kelly et al. (1990) introduced the importance of the customer to many services "to contribute information or effort before the service transaction can be consummated", Dabholkar (1990) and Bettencourt (1997) highlight the importance of the customer's involvement "in producing and delivering services". Namasivayam (2003) and Luch and Vargo (2006) started "speaking about production and co-production where customers are involved in the creation of the core offering itself". Reinventing the customer's role, different business models are coming out from practitioners, but they have not yet been in existence long enough for researchers to study and analyze these innovative models.

This editorial goes some way to collecting researchers' efforts to understand the new business models that have emerged in recent years and design managers' roles in these. The list is long: From Airbnb to Lyft to Tinder, the share economy is rewiring the way customers interact with each other, Kickstarter has defined a new role as investor as well as customer, businesses such as Quirky and I.materialise, based on a sharing economy, have structured the business model on a crowdsourcing concept, and so on.

In the following papers authors have analyzed how there is a new role for customers to participate in the creation of novel business models. In the first paper, an "In depth case study exploring innovative web-based methods for 'designing-with' customers in a global watch manufacturing firm", it revised the importance of collaborating with customers through using internet enabled methods. This research demonstrates an original mechanism of designing---with customers using web---based methods and specific resources needed for supporting processes. The web- based platform has significantly improved the absorption of customer knowledge, although the company may also need to provide training sources and support, which would help steer customers in their submission of solutions using the platform. The case company uses the mechanism for generating product ideas and designs, using viral marketing and also for making decisions on the production process. Advantages are distinct but challenges also exist, not only for the case company but also for other companies.

"Specification of an Additive Manufacturing Consumer Design Toolkit for Consumer Electronics Products" reports on ongoing research which aims to understand the ways in which brands with mass-customisation offerings manage their identities across product portfolios, and the impact which AM might have on these management strategies.

In "Reducing uncertainty of New Product Development by leveraging the power of experiment" the authors highlight the importance of customers' involvement in the testing process though a "disciplined experimentation" for identifying the needs of customers, reproducing the key features of the new product/service to satisfy these needs, and simulating a realistic customer journey directly with the final customer. A rigorous testing protocol and a continuous improvement process support these experimental steps. This approach allows testing of the main working hypotheses, pivoting them continuously to verify their value growth (how to scale up the tested hypotheses up to the entire target segment) and sustainability (how to enable the needed change in internal culture and prevent direct competitors to quickly replicate the value proposition).

The article presents two concrete cases of “action research”, where researchers have been directly involved within the design and delivery of the this methodology in two different industries, fast fashion and heating systems' manufacturing, and the lessons learned from them.

In “Participatory Mechanisms in Crowdfunding” and “Business model adaptation to a new digital culture” the authors highlight a new digital role for customers in the business model: customers get involved in an internet business through finding the right idea, developing it but also financing, producing it: the customer become creator, designer and investor.

The paper examines 600 successful design-centred projects on Kickstarter from the project categories of Design, Technology, Games, and Fashion in order to classify and quantify the different types of participation leveraged by project founders in the sample. Authors define five ‘participatory mechanisms’ through which founders can leverage crowds, and further find that projects’ context and proposed outcomes are significantly related to participation. Participatory mechanisms were most often observed in the technology and games categories, and in software and hardware projects. Given the broad and explorative aims of this research, the authors encourage further verification of our findings in order to challenge and strengthen the relationships between participation other project variables.

“Business model adaptation to a new digital culture” defines a new business model based on different type of users becoming designers and makers of small quantities of different products selling to few customers thanks to digital platforms. Examples are companies such as Quirky and I.materialise. The underpinning process is based on the concept that a collaborative community outside the organization can develop an idea into a product ready to be sold.

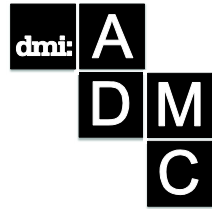
The new model combines the open innovation and the long tail models, and identifies a number of “knowledge brokers” and “bridging ties” which link actors and allows them to propose new knowledge in the form of new ideas and products. This business model, supported by the new digital technologies, enables companies to carry far more product items in their catalogues: most of the items exist solely as descriptions in an electronic database that can be digitally distributed. This enables a long tail model, too.

As readers can discover in the paper “Business model innovation through new customer roles. Inspirational cues and insights from a design-driven case study analysis” the customer role is defined as a market bridge,

attracting new potential contacts and customers; as a company “showroom,” where the customer’s home setting is designed to convey the company’s product language mood; and finally as an external company design lab, where the customer hosts events to seek for new language moods and product propositions. Through a practice case analysis LAGO a fast-growing company in the Italian furniture landscape a new business is investigated and evaluated. LAGO pinpoints how business model innovation can be fostered by engaging customers with new roles and logics. At LAGO, the customer acts as the company’s market bridge, forming an “inner circle” that enables the company to access different market segments. The apartment of the tenant customer furthermore acts as an exhibition platform where events and workshops are organized to host potential customers in a sort of “living showroom.” Additionally, customers, by submitting their “apartment ideas” to the company, provide their own perspectives and aesthetics for LAGO apartments, acting as an external design lab and innovation promoters.

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# In Depth Case Study Exploring Innovative Web-based Methods for ‘Design-With’ Customers in a Global Watch Manufacturing Firm

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*This paper describes an innovative mechanism used by a company that designs and manufactures watches for a global market to engage customers in the design and development of new products.*

*The importance of collaborating with customers in the development of products and services has been recognised for many years. The advent of information technology has presented a revolutionary change in the way that customers can be involved. However, knowledge is still lacking on how companies can ‘design-with’ customers by using the internet-enabled methods. This paper describes results from an in-depth case study with a watch manufacturer, which has successfully introduced customer-designed watches to the market. By presenting a unique data set gathered from this company, this research illustrates an original mechanism of designing-with customers through web-based methods. The new process enables the company to integrate more customers and to obtain a higher quality and quantity of ideas. In addition, the customer can also be a decision maker on whether a design should be produced. A theoretical model is introduced which positions this innovative approach of involving customers. In addition, this paper also characterises the capabilities required to use this approach.*

**Keywords:** *design with customers; web-based methods; new product development*

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## Introduction

Working closely with customers to obtain deep insights and to identify potential needs has been recognised as one of successful factors for developing new products (Gruner & Homburg, 2000; Cooper & Kleinschmidt, 1994). Although involving customers in the new product development (NPD) process may not always have a promising outcome (Schulze & Hoegl 2008; Brockhoff, 1998), the positive effect of customer involvement has been supported by many empirical studies and has been identified as a critical success factor (Poetz & Schreier, 2012; Von Hippel, 2005; Lilien *et al.*, 2002; Hanna *et al.*, 1995; Johnes & Snelson, 1988; Maidique & Zirger, 1984; and Cooper, 1979). Listening to the 'voice of the customer' is a key imperative in traditional NPD (Nishikawa *et al.*, 2012; Roman, 2010), but the process of constantly collecting and testing information on needs can be costly and time-consuming (Dahan & Srinivasan, 2000). Highly competitive environments demand that firms obtain holistic customer knowledge, not merely importing the customer's 'voice' through traditional market research approaches (Sawhney *et al.*, 2005). Solution information from customers, other than need information, is especially desirable when needs are heterogeneous, complex and fast-changing (Thomke, 2003).

With the development of Internet technology and associated toolkits, both the individual and social knowledge of customers can be followed and analysed. There is a huge growth in the range and richness of on-line interactions between the company and the customer. The Internet, as an open and ubiquitous network (Afuha, 2003), has created new approaches and opportunities that enable customers to be involved in NPD. Specifically, the Internet enhances the absorptive capacity of a company to obtain market knowledge (Prandelli *et al.*, 2006) and provides easier access to the knowledge of customers (Füller *et al.* 2007) at a lower cost (Sawhney *et al.*, 2005; Nambisan, 2002). Hence, recent attention has been given to web-based mechanisms which enable firms to interact with customers more broadly, richly and efficiently (Füller, 2010; Prandelli *et al.*, 2006; Nambisan, 2002).

With this trend, in addition to the traditional methods which are transformed into on-line forms, such as on-line interviews, on-line surveys and on-line focus groups (Ryzhkova, 2012; Prandelli *et al.*, 2006), new web-based mechanisms, such as crowdsourcing (Howe, 2006), virtual



communities (Füller *et al.*, 2007) and design toolkits (Janssen & Dankbaar, 2008), have been introduced to support the customer-engaged NPD process.

Customers may experiment and design new products using innovative toolkits where information on possible customer conceived solutions might be captured (Thomke, 2003). Consequently, apart from serving as information providers (Fang, 2008), customers are gradually becoming co-designers of products (Prahalad & Ramaswamy, 2004). This provides a distinct contrast to the previously 'company-dominated' world of product development (Füller, 2010). Recent examples of this change include:

- LEGO has developed design toolkits and virtual communities for creative consumers from all over the world to participate into product design activities (Antorini *et al.*, 2012);
- Eli Lilly, a pharmaceutical firm, has established an on-line innovation platform for the new drug discovery (Sawhney *et al.*, 2005);
- video game designers encourage customers to be co-developers of new gaming ideas and participate in the development and testing process (Jeppesen & Molin 2003);
- Harvard Medical School has stimulated collaborations with other departments by launching an open platform named 'Harvard Catalyst' (Guinan *et al.*, 2013).

There is some evidence to suggest that 'designing-with' customers can have significant commercial benefits. The research of Nishikawa, et al. (2012) revealed that at Muji, a Japanese consumer goods brand, products designed with customers generated approximately 16 million dollars more revenue than the sales of products designed by the company; a five-fold increase. They observed empirically that customer-generated products were more likely to survive than company-generated products in a three-year observation period. They demonstrate that customer-generated products can outperformed company-generated products on key market performance metrics. In another study, Poetz & Schreier (2012) compared the quality of ideas for baby products generated by a company to those generated by customers in an idea contest. The result confirms a positive benefit of engaging the customer in idea generation. These promising cases suggest that other firms might also benefit from adopting similar approaches.

New mechanisms, driven by on-line technologies, are springing up and attracting attention. However, knowledge is still lacking on how companies can effectively 'design-with' customers by using these internet-enabled methods and how the new product development process is changing as a result (Greer & Lei, 2012). These new methods enable customers to be proactively involved in the generation, design, test and refinement of ideas for new products. But there is little empirical evidence to describe how firms might achieve those goals through the synergistic usage of different methods, (Sawhney *et al.*, 2005). In addition, there has been little research exploring the pre-requisites needed to 'design-with' customers in NPD (Nishikawa *et al.*, 2012).

To address these gaps, this paper describes results from an in-depth case study with a watch company, which has successfully introduced customer-designed watches to the market. By presenting a unique data set gathered from this company, this research seeks to understand how this firm has incorporated these original web-based mechanisms to enable customers to be incorporated into the new product development process. Specifically, this study aims to answer the following questions: *how is the NPD process projected to achieve design-with customers? What methods for involving customers are used? and what are the key support needed to design-with customers using internet enabled technologies?*

## Study Method

### *Overview*

As the aim of this study is to understand how a company can design-with customers using web-based methods, an exploratory approach is adopted to derive patterns and implications. A single case-study methodology is employed for developing insights on this contemporary phenomenon within real-life context (Yin, 2003; Eisenhardt, 1989), as the uniqueness and representativeness of a single case facilitate knowledge and theory building, and also help to focus future investigations and inquiries (Yin, 2003). It also enables issues to be explored in depth, to address both 'how' and 'why' this phenomenon is addressed in practice.

To select the case study, the following criteria were first established: (1) the firm had been designing-with customers in developing new products through internet enabled technologies; (2) it had already produced and sold customer-designed products to the market; and (3) it is a leading practitioner in designing-with customers through the Internet. With these

criteria in mind, a firm that designs and manufactures watches was selected. This firm has an international market and is recognised for its radical designs.

Data was collected through documentation, observation, on-line questionnaires and a series of in-depth interviews over a six-month period with the CEO, design & development manager and marketing manager. The interviewees were selected by a key informant approach (Kumar *et al.*, 1993). Interviews followed a semi-structured format, and each lasted between 60 to 85 minutes, which enabled detailed exploration of the perceptions of complex issues and enabled the interviewer to probe further for additional clarification (Barriball & While, 1994). All interviews were recorded and transcribed. In addition, data was collected from customers whose designs were produced, using a semi-structured questionnaire. By gaining data from these customers, we sought to gain an understanding of their motivations and experiences in engaging with the firm in this way. Finally, different types of data were subsequently analysed to identify key issues and patterns following the logic of the grounded theory (Glaser & Strauss, 1967).

### *Company Background*

The watch first appeared in the 15th century as a mechanical system for showing time (Usher, 2013). In the middle of the 20th century, the quartz watch was invented and this subsequently became the dominant technology, although mechanical watches remained dominant in the premium, high-end watch market. More recently, breakthroughs in display technology such as e-ink, LEDs and LCD screens have enabled new forms of watch to be produced.

Wearing a watch not only provides the functional benefits of telling the time, but may also reveal additional insights, such as one's social status, fortune or personality. Cheap watches have become commodity products, whilst more bespoke watches are a statement of identity and can increasingly be personalised. Watch companies, are increasingly exploring how new technologies can be used to deliver unique watches that provide users with a strong sense of personal identity. In some firms, this is being done in collaboration with the customers.

The focal company in this study is reputable and well-known for its successful LED and LCD watch products that show the time in unique ways. Although it is a micro-firm with only 8 employees, the company has become

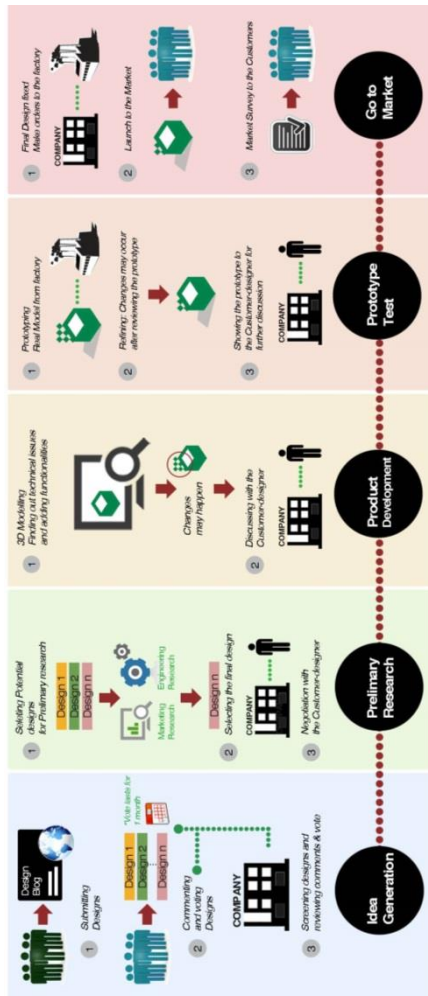
a leading company in the niche market. Without any stores and agencies, it sells 20,000 to 40,000 watches per annum in over 65 countries on six continents, primarily through the Internet. The firm has over 15 years in producing LED/LCD watches, and underwent a significant transformation at the end of 2010 due to the decreasing product sales partly caused by product designs which were not sufficiently appealing to their customers. To address this, the firm started to accept customer-generated designs through an on-line platform. The firm selected designs which could then progress to detailed design and production. As a result, these customer-generated products have gained very positive responses from the market and strong sales performance has encouraged the firm to continue with this new strategy and mechanism.

## Findings

### *A New Mechanism for designing with Customers*

In the new scheme of product development, customers are first invited to submit their design ideas through an on-line platform: a design blog. There is no special theme or deadline for submissions, but there is an expectation that the designs will embrace a unique approach to telling the time. The firm accepts new customer-generated designs throughout the year. Submitted designs are published on the design blog for a period of 30 days and during this time, there is public feedback and also voting. At the same time, the company screens the feedbacks and votes. Designs with the highest score are selected for further evaluation, market analysis and production feasibility by the company. The designs might include complex technology and the firm must also test to determine whether the proposed ideas have feasible mechanisms. Potentially acceptable designs undergo comprehensive marketing research and engineering research, which are conducted in parallel. Market research includes voice of the customer information. In addition, the company also reviews past sales performance, to reveal which previous products have been best sellers. This helps to reveal important information about favourite elements of different watches.

*In depth Case Study exploring innovative Web-based Methods for 'Design-With' Customers in a global Watch Manufacturing Firm*



*Figure 1 The new product development process for designing with customers in the focal company*

In engineering research, the durability of the design is a prominent issue. Putting the various pieces of evidence together, the company develops a holistic understanding of how the design can be implemented and how the potential market would react. This enables the firm to make a go/no-go decision regarding commercialisation. For the successful designs, the

product team in the company then refines the design, to select appropriate materials and develops the product in detail in CAD.

Meanwhile, the firm and the customer-designer maintain close communication, to discuss any changes recommended by the firm for practical or production reasons. These discussions are facilitated by 3D CAD models and physical prototypes. Finally, the modified design is moved to the full production stage. In return, the customer-designer can earn commission on sales. They can track the watch sales everyday on-line and obtain commission quarterly. An overall customer-generated product development process is illustrated in figure 1.

### *Web-based methods used to involve customers*

Ensuring consistent customer engagement, throughout the development cycle is of great importance in ensuring that the overall process works. The company has used different approaches for exchanging information along the product development process (Figure 2). All the methods used for involving customers are web-based, through which the firm may obtain rich customer knowledge at a low cost. At the beginning stage of NPD, the company uses the design blog as an interactive 'window' calling for new watch designs, attracting customers by advertising and embedding quick links on social media and design-oriented websites. The virtual community formed from the design blog also plays the role of a 'judge' for distinguishing the best designs from the rest. Individual designs might receive many comments and votes from this peer network. In some cases, contributing designers might submit more refined designs as a result of this feedback. In addition, social media such as Facebook and Twitter is also used for collecting feedback on concepts. When developing the designs, the company maintains contact with the customer-designers using emails whenever there are slight changes in the design. If there are specific design problems which may be caused by unclear design explanations or there are difficult technical problems which are hard represent through emails, or if there is a need for input from different specialists, then a video-call would be a preferred choice for communication. However, communication during the development stage is generally rare as customer-designers do not have equal professional knowledge with the team inside the company. In most cases, the company shows its solutions for a certain problem to the customer-designers and asks for their feedback. After launching the products, the firm uses on-line questionnaires for collecting feedback.

Customers are invited to participate in the survey immediately after purchasing the products.



Figure 2 Web-based methods used for involving customers in this mechanism

### *The Design Blog*

The primary mechanism in the customer-generated design scheme is the design blog, which has been serving as a platform for calling for designs, advertising designs, exchanging ideas and collecting feedback. In the past 2 years, the design blog has received thousands of submissions. Over Approximately 1000 designs are posted in the blog, after an initial filter to eliminate those of poor graphic or display quality. This collection of submitted designs has been the most important source of inspiration for developing innovative products in this micro small firm. In addition, this dynamic website provides the capability to enable customers to comment and vote on every design. Through this virtual platform, communication and discussion about the submitted design may increase the user's stickiness to the website. Gradually, a virtual community with loyal participants is forming and continuing growing through viral marketing.

### *The Customer-Designers*

The submitters of new designs are not necessarily from a design or creative background. The on-line questionnaires to all customer-designers whose designs have been selected revealed that their occupations are extremely diversified, such as engineer, designer, medical researcher, port authority officer and even maths teacher. However, they all possess the capability to deliver a 3D or 2D design rendering to the company. These

customer-designers use both open design tools or professional software, including Blender, Inkscape, Photoshop, 3D Max, Solidworks, etc. In addition to the ones with professional education in design, most of these customer-designers have trained themselves through on-line open educational resources or training courses.

The motivation most frequently mentioned their design involvement is the 'hobby' for designing a watch (80%). This might also be proved through their on-line time on the specific websites, as 80% of them confirmed that they frequently surf the design blog and company websites. Other selected motivations encompass earning money (60%), skill development (60%), recognition (40%), having fun (40%) and dissatisfaction with current products (20%).

The most significant challenge discussed by all the customer-designers investigated is a lack of technical knowledge in the electronic watch design. On one hand, they are reluctant to use much time on learning the basic technical knowledge; on the other hand, they have limited understanding of the feasibility of their designs and the technical challenges that there might be in turning their concepts to a production reality. With limited technical knowledge and requirements in mind, the customers tend to emphasise the conceptual features of the design.

### *The key Support for this Mechanism*

**Web-based Foundation.** As an e-commerce business, the company communicates with its customers only through virtual store-fronts and on web-sites where advertisements and transactions are being processed. Good performance on both web-based 'windows' and on-line reaction to the customers is required. With prior on-line business experience, the firm takes the advantage of its e-commerce foundation and concentrates its effort on developing web-based platforms for involving customers.

**Organisation Structure.** Small company size and a limited number of employees facilitate a flexible and flat organisation. The work place is an open area without individual offices, which is surrounded by prototypes, material samples and 3D-printed designs. The firm can behave as a cross-functional team and have ad-hoc discussions whenever a problem emerges, which also improve the work efficiency to a customer's demand or a certain problem. The average experience of the employees is over 6 years, which has a positive impact on both the business and the teamwork due to the familiarity on the product and the company.



**Quality Control.** Whilst the company relies upon ideas from the customers, this emphasises the importance of product quality, especially the need for high engineering quality in achieving the designs. With over 15 years history in the LED/LCD electronic watch industry, the firm and its employees have collected a significant amount of holistic experience in development and production. Although every conceptual design may bring new engineering problems, the rich experience enables the quick learning and efficient problem-solving.

**Intellectual Property.** A fundamentally sensitive issue in the open innovation area might be intellectual property (IP). As the submitted designs may be selected or rejected, an appropriate approach of coping with IP for the customers is necessary. Generally, if the designs are novel and unique enough, the company files for either a Patent or Registered design and the ownership of these rights are joint, between the firm and the customer-designer, protecting the rights for both sides. In other circumstances, the firm may think that the designs may not merit any formal intellectual property, so they will negotiate with the customer-designer to agree a basis for sharing the rights. In fact, within this company, only 40% of the customer-designers investigated tended to request any IP for their designs, as they think the watch designs are more stylistic than technologically innovative and as a result, might not be patented. The low interest in applying for patents enhances the efficiency of cooperation in product development. On the other hand, the property of the rejected designs is still owned by the original customer-designers.

## **Discussion**

The purpose of this study is to explore the mechanisms by which a company can 'design-with' its customers through the Internet. The case study firm illustrates a synergistic and dependent use of different web-based methods for obtaining rich insights into its customers and innovative new watch designs. The mechanisms used provide the company with abundant ideas in addition to a community of designer contributors who both support and critique the designs submitted by this community, increasing the overall efficiency of NPD process. The online tools also enable efficient communication with the customer-designers throughout the development process, despite language and geographical differences.

Inviting customers to vote and comment on the submitted designs increases customer engagement in developing products and supports the

decision-making process of the company. However, with such a large number of comments and votes, the firm cannot easily review them all and consequently, they might miss valuable information due to the limited time and employees. A possible solution might be to enable the customer-designer to submit iterations on the design, based directly on this feedback.

By enabling submitted designs to be open to public voting (not just feedback from other customer-designers), the firm gains substantial evidence of market acceptability and interest in the different designs. This level of pre-market testing is a capability not typically seen in a majority of traditional NPD projects. However, the company and the customer-designers have to aware the risk that this open resource of designs might be copied by unscrupulous competitors, as the designs are not protected at the point of submission. Consequently, dispute of intellectual property might occur. This issue might be somewhat mitigated in a more technology-intensive industry, such as pharmaceuticals or software, where the embedded knowledge is more complex. In such firms, an open voting mechanism might not be as suitable. Hence, for different product categories and industries, the extent to which customers can be directly involved in designing, reviewing and selecting new products might vary.

The web-based platform has significantly improved the absorption of customer knowledge, while the company may also need to provide training sources and support, which would help steer customers in their submission of solutions using the platform. A user-friendly interface is essential. In addition to the support on using the platform, the firm might also consider publishing non-sensitive technical data in an easy-to-understand way which may help the customers to achieve the design work effectively (e.g. materials and production process data). With this sort of support, the feasibility of the submitted designs might increase. Releasing relevant data to the customer-designers would probably accelerate the speed of product development and would further decrease the risk of realising a conceptual design. On the other hand, open concentrated resources and guidance for design software or toolkits would also be demanded, as the customer-designers tend to train themselves through on-line free training courses for accomplishing their design work.

## **Conclusion**

This inductive research demonstrates an original mechanism of designing-with customers using web-based methods and specifies the

resources needed for supporting the process. The case company uses the mechanism for generating product ideas and designs, using viral marketing and also for making decisions on the production. Advantages are distinct, but challenges also exist.

Other companies might also benefit from such an approach, but further empirical evidence is required to explore the conditions which might guide the selection of appropriate tools for firms of different types.

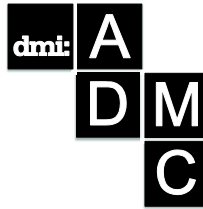
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## Participatory Mechanisms in Crowdfunding

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*This research seeks to investigate the convergence of crowdsourcing and crowdfunding practices to affect co-design activities between project founders and user-investors through reward-based crowdfunding. To that end, it examines 600 successful design-centred projects on Kickstarter from the project categories of Design, Technology, Games, and Fashion in order to classify and quantify the different types of participation leveraged by project founders in the sample. We define five 'participatory mechanisms' through which founders can leverage crowds, and further find that projects' context and proposed outcomes are significantly related to participation. Within our sample, participatory mechanisms were most often observed in the Technology and Games categories, and in software and hardware projects.*

**Keywords:** Crowdfunding, Crowdsourcing, Post-Industrial Design, Co-Design

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## **Introduction**

The emergence of the internet has facilitated tremendous communicative and collaborative opportunities amongst dispersed crowds of individuals. In the wake of this development, centralized organizations have utilized crowdsourcing as a method of directing crowds' intellectual resources and creativity towards specific predefined tasks or problems. Similarly, the practice of crowdfunding has enabled entrepreneurs to leverage crowds' financial resources towards project-oriented goals by incentivizing financial contribution. Reward-based crowdfunding platforms such as Kickstarter specifically target prospective users by offering project deliverables as investment incentives, leading to the formation of project-specific groups of active and motivated user-investors.

These collaborative practices have tremendous potential to garner useful input in design and development processes from a variety of stakeholder groups, particularly end-users. The recent growth of crowdfunding presents opportunities for designers to engage users in co-design practices via the establishment of participatory systems and methods to support and encourage such collaboration. Design can thus play a critical role in the further development of reward-based crowdfunding practices, borrowing from notions of participatory and co-design to enhance project outcomes.

This study aims to investigate, classify, and quantify the present participatory practices through which successful design-centred initiatives on Kickstarter incentivize and implement creative contribution from user-investors. It seeks to build upon existing literature from the fields of co-design, crowdsourcing, collective intelligence, post-industrial design, participatory cultures, participatory development, and entrepreneurial finance in order to synthesize a common language to describe participatory practices in crowdfunding.

### ***Overview of Major Concepts***

Crowdfunding is 'an open call, mostly through the Internet, for the provision of financial resources either in form of donation or in exchange for the future product or some form of reward to support initiatives for specific purposes' (Belleflamme, Lambert & Schwienbacher, 2013a). This emerging method of entrepreneurial finance dramatically alters the conventional role of financial stakeholders in the design and development of innovative products, services, and systems (Belleflamme et al., 2013a & 2013b;

Schwienbacher & Lerralde, 2010), though literature on the subject is presently in a nascent state (Burtch, G., Ghose, A., Wattal, S., 2012; Giudici, G., Guerini, M., Lamastra, C. R., 2013; Mollick, 2013). Reward-based crowdfunding offers project-specific rewards, generally in the form of tangible new products or services, as a way of incentivizing donations from prospective investors (Belleflamme et al., 2013a; Kim & Hann, 2013; Mollick, 2013). As such, successful reward-based crowdfunding projects are necessarily supported by groups of motivated and enthusiastic user-stakeholders rather than profit-driven investors (Belleflamme et al., 2013b; Schwienbacher & Lerralde, 2010). Kickstarter is the world's largest and most dominant crowdfunding platform (Mollick, 2013), and is increasingly viable as a platform for design projects (Kuppuswamy & Bayus, 2013).

Crowdfunding is sometimes described as a type of crowdsourcing, in which crowds of individuals are solicited to contribute labour or creative resources towards a centralized initiative (Brabham, 2012; Kleemann, F., Voß, G.G., & Rieder, K. 2008). This resembles participatory or co-design, which refers to the practice of integrating users or primary stakeholders into the design and development of products, services, and systems (Sanders & Stappers, 2008). Early research on user participation combined the design expertise of professional designers with the localized expertise of users, enabling users to assist in defining the problem and suggesting potential avenues of design and development (Bødker, 1996). It has since been found that users are capable of innovative co-creation when motivated by self-interest and guided by designers or generative design tools (Kleemann et al., 2008; Sanders, Brandt, & Binder, 2010; Sanders & Simons, 2009; Tufte & Mefalopulos, 2009).

In the emerging post-industrial context, innovation and creativity are of critical importance to success in the competitive global marketplace, and creative labour is able to generate significant value in the place of material goods (Imbesi, 2011). The dispersion of the means of production through technological advances and the internet has democratized design and production processes on a massive scale, as evidenced by open source and peer-to-peer models (Imbesi, 2011). This has shifted the role of the design profession, away from simply creating or styling products and towards formulating strategic services, systems, and processes through which value can be produced and evaluated in terms of human experiences rather than market success (Imbesi, 2011).

By borrowing methods from crowdsourcing and co-design, reward-based crowdfunded design initiatives are able to funnel the enthusiasm and



collective intelligence of user-investors towards collaborative activities to improve the quality of project deliverables, simultaneously benefiting project founders and backers (Belleflamme et al., 2013b; Schwiendbacher & Lerralde, 2010). Recently, prominent crowdfunding campaigns such as the Oculus Rift, a virtual reality hardware development project, have combined crowdfunding with crowdsourcing approaches by enabling early investors to participate in a collaborative design and development process. In the case of the Rift, the project's founders incentivized donation by offering hardware prototypes, software development tools, access to an exclusive developer forum, and centralized technical support to backers who contributed at least \$275 to the project. This enabled developers to get an early start on creating or re-appropriating software applications to work in tandem with the Rift's hardware, while also allowing the project's founders to gather feedback in order to optimize the hardware for both consumer and developer purposes. (Kickstarter, 2014). By externalizing the financing of hardware development, as well as the labour of software development and hardware testing, the Rift's founders were able to cover early development costs while simultaneously ensuring that their feedback originated from group of motivated supporters and self-interested user-stakeholders.

Collaborations such as the Oculus Rift indicate significant potential in the overlap of crowdfunding and crowdsourcing practices. As crowdfunding continues to grow, its capacity to enable collaborative communities through financial exchange may enable the development of participatory cultures, in which the open exchange of ideas, knowledge, and resources can be harnessed to co-create, co-produce, and collectively fund solutions to complex problems (Kleemann et al., 2008; Lévy, 2012; Manzini, 2013; Mortati & Villari, 2012).

### *Rationale*

This inter-disciplinary research investigates the convergence of co-design practices in crowdfunding and crowdsourcing in order to begin addressing the relative lack of academic attention in this area. Presently, while there is scholarly literature related to participatory and co-design practices, there is a significant lack of literature on these subjects in the context of crowdfunding. The influence of design on the combination of crowdfunding and crowdsourcing presents an opportunity to affect a significant positive impact on the development and subsequent value of products, services, and systems, which should be of particular interest to practitioners and researchers from the fields of design and entrepreneurship.

Our goal in this study was to synthesize a common language for the various activities and mechanisms through which participation was leveraged in our sample data, which may inform or suggest future research on this emerging phenomenon. While our study focuses specifically on successful design-centred Kickstarter projects, our findings and definitions on the subject of participatory mechanisms are relevant first steps towards affecting a comprehensive understanding of participatory practices and collaborative design in the crowdfunding context.

## Methods

This study examined 600 crowdfunding projects in order to observe and subsequently classify the varying participatory practices implemented by project founders. Due to the broad range of projects and contexts in which crowdfunding can be applied, we sought to investigate projects that displayed the following characteristics:

- **Design-Centred Goal:** Given our focus on participatory activities that influence project outcomes via the potential for co-design or crowdsourcing, we were primarily interested in crowdfunding projects that proposed to design or develop a novel product, system, or service. This was largely accomplished by limiting the categories of project that we investigated, as detailed in the following section, though we additionally omitted projects using crowdfunding to fund presentations or distribution of existing project outcomes.
- **Reward-based Incentivization:** In order to investigate the collaborative relationships between project founders and user-investors, we focused on projects that offered the aforementioned product, system, or service as a reward to prospective backers.
- **Run via a Crowdfunding Platform:** Crowdfunding platforms presently facilitate the majority of crowdfunding projects and funds raised. Due to the various tools and formats provided by different websites, we aimed to gather our entire sample from a single platform to reduce variability.
- **Successfully Funded:** A large number of varied factors can act as determinants of projects' fundraising success. While it is relevant to determine whether or not certain types of participation have an influence on project success, we must first classify the various participatory activities at work within the crowdfunding context.

This study did not aim to assess participatory activities as a determinant of project success, and as such only investigated successful projects in order to reduce variability.

In addition to meeting our other criteria, the crowdfunding platform Kickstarter was chosen as a starting point for our sample based on its increasing popularity and viability as a platform for design initiatives (Kuppuswamy & Bayus, 2013; Mollick, 2013), which we concluded would best allow us to observe current and emerging trends in reward-based crowdfunding efforts. We gathered data from 150 projects each from the categories of Design, Technology, Games, and Fashion, omitting projects that lacked explicit deliverable outcomes.

Project data was collected chronologically by fundraising end date, beginning with projects that concluded on September 1, 2013. This date was chosen to ensure that the data was relatively recent and representative of current trends. In order to locate projects that met these sample criteria, we used the external web service 'Kickspy', which allowed for searching and complex, specific filtering of Kickstarter projects.

### *Variables for Data Collection*

We recorded the following variables for each project in the sample:

1. **Participatory Activities:** This refers to the presence of crowdsourcing or co-design opportunities that were made available to the crowd by project founders. This variable was recorded via two supplementary values:
  - a. *Type of Activity:* Given that we began without clear definitions of participatory activities, we recorded the type of activity to be performed by participants via brief, qualitative descriptions. Examples include *beta access*, *voting*, or *proprietary developer kits*.
  - b. *Exclusivity:* The structure of Kickstarter encourages founders to offer participatory activities as incentives to donate, a process that potentially excludes certain members of the crowd from participation. While participatory activities can be *public*, they can be limited to *backers only*, requiring a donation of at least \$1 USD, or more specifically to *reward tiers*, which each have specific

donation requirements. Kickstarter further allows founders to implement *limited reward tiers* that have a maximum number of donors. This was recorded as a broad indicator of the exclusivity of a given participatory activity.

2. **Kickstarter Category:** This refers to the category that a project was classified under on Kickstarter’s website. The four categories that were recorded were Design, Technology, Games, and Fashion. This was recorded in order to investigate potential trends of participation within the various project categories, or significant differences between them.
  
3. **Project Outcome Type:** This refers to the type of product, service, or system that a founder proposed to produce and deliver to backers. *Software* refers to deliverables that are digital applications for one or more devices or operating systems, and which aim to deliver project outcomes through digital downloads rather than via physical artifacts. This category was created due to the low cost of distributing and testing purely digital rewards, which we anticipate could be correlated with the use of certain types of participation. *Hardware* refers to deliverables that are physical devices, which are either supplemented by software development tools or compatible with existing operating systems. This classification was defined due to such projects’ capacity to outsource the development of software applications, which we anticipate could be correlated with the use of certain types of participation. Finally, *standalone* refers to deliverables that did not fall into either of the prior classifications, and generally involve the development of physical products.

### *Classifying Participatory Mechanisms*

Upon examination, we found that several of the activities recorded during data collection were very similar to one another in terms of the input being provided by participants, and could be grouped into five distinct classifications. We subsequently defined each of these classifications as ‘participatory mechanisms’ in order to synthesize a concise list of the participatory practices leveraged by founders within the sample. These mechanisms are described in the Results & Findings chapter.

In order to further elucidate the properties of these participatory mechanisms, the values for variable 1a within our data were each recoded to one of these five classifications. We used binary indications for each mechanism in order to identify each project by the mechanisms it utilized. Given this binary measurement, multiple occurrences of activities within the same classification were redundant and only counted once. This recoded data was utilized for the remainder of the data analysis process, and can be found in the Appendix.

### *Determining Exclusivity*

We measured and compared the values for variable 1b for each instance of the five participatory mechanisms in order to determine the relative exclusivity of each mechanism. The percentages of each degree of exclusivity were subsequently charted for each mechanism. This revealed clear indications of each mechanism's level of exclusivity, providing insight into the implementation of participatory mechanisms within the sample.

### *Prevalence of Participatory Mechanisms*

We measured the incidence of participatory activities in the entire sample, counting the total number of projects that included affirmative values for variable 1a. In order to determine the average number of mechanisms used in these participatory projects, we then totalled the instances of participatory mechanisms and divided the sum by the number of participatory projects. We repeated these measurements within each of the four Kickstarter categories, as recorded in variable 2, and the three types of project deliverable, as recorded in variable 3. This allowed us to compare the prevalence of participation across a variety of contexts in order to determine whether the type of project or deliverable could be correlated to participatory practices.

Following this overall comparison, we repeated this process individually for each participatory mechanism, including only projects that included the associated value in variable 1a. This allowed us to determine which mechanisms had been used frequently or in particular contexts, potentially indicating their value to project founders or ease of implementation under certain conditions. All findings on prevalence were then graphically represented to facilitate comparison between the various participatory mechanisms established earlier.

## Results & Findings

This section details the findings derived from the collected Kickstarter project data. A complete record of the data can be found in the Appendix.

### *Classifying Participatory Mechanisms*

The first stage of our data analysis focused on examining the types of participatory activity found in variable 1a within the sample. The activities that we observed are listed, quantified, and described below:

- **Soliciting Feedback (36 instances):** Founders actively solicited participants to provide them with feedback on project outcomes via the project's Kickstarter page.
- **Open Source (32 instances):** Founders released or planned to release the entirety of their project outcomes' design or blueprint to the general public for purposes of open participation and peer production.
- **Partial Open Source (9 instances):** Founders released or planned to release some element of their project outcomes' design or blueprint to the general public for purposes of open participation and peer production.
- **User Testing (96 instances):** Founders gave participants early access to project deliverables for purposes of advanced testing and providing user feedback. This generally took the form of access to software betas.
- **Voting on Esthetics (16 instances):** Founders allowed participants to collectively decide upon a particular esthetic element of project outcomes via popular vote, either through Kickstarter, social media, or external web services.
- **Voting on Functionality (12 instances):** Founders allowed participants to collectively decide upon a particular functional element of project outcomes via popular vote, either through Kickstarter, social media, or external web services.
- **Proprietary Developer Kits (18 instances):** Founders created and distributed kits to allow participants to independently develop supplementary products or systems that would explicitly work in tandem with project outcomes.
- **Design Collaboration (123 instances):** Founders worked with individual participants to co-design some element of project

outcomes, though founders would maintain total control over such outcomes.

- **Direct Developer Contact (25 instances):** Founders met with individual participants via private channels to discuss project outcomes.
- **Design Team Membership (14 instances):** Founders allowed participants to join the team responsible for the project, enabling them to have an ongoing impact on the design and development of project outcomes.

Through preliminary examination of these participatory activities, we found that several of them involved very similar participatory processes, providing very similar types of creative input to founders. As such, we tentatively grouped the observed participatory activities based on participant input, as summarized by Table 1:

*Table 1. Sorting Participatory Activities by Participant Input*

Participatory Activities (# of recorded instances)	Participant Input
User Testing (96) Soliciting Feedback (36) Direct Developer Contact (25)	Participants and founders engage in 1-way or 2-way dialogue regarding project outcomes, though participants have no control over design decisions.
Voting on Esthetics (16) Voting on Functionality (12)	Participants collectively decide upon single elements of project outcomes from a limited set of options.
Proprietary Developer Kits (18)	Participants independently develop products, services or systems that supplement project outcomes provided by the founder.
Design Collaboration (123) Design Team Membership (14)	Participants individually communicate with founders to collaborate on the design of specific elements of final project outcomes.
Open Source (32) Partial Open Source (9)	Participants are enabled and encouraged to freely use, modify, and redistribute project outcomes to affect independent collaborative processes.

We found that each of these groupings revealed a distinct mechanism by which founders had enabled crowd members to influence project outcomes, generally via provision of some degree of participant agency.

For purposes of further data analysis, we chose to examine participatory activities within these groupings, rather than investigating each activity separately. In aggregating these activities, we sought to affect a common language for referring to the varied participatory activities in crowdfunding practice, in order to both inform future research and encompass activities other than those observed in the sample. To that end, we subsequently classified each of these groupings as a type of 'participatory mechanism', and synthesized definitions and descriptions for each. These definitions are as follows:

- ***Open-Ended Feedback:*** This describes any participatory activity in which project founders actively crowdsource feedback on non-specific project outcomes.

This mechanism is a form of crowdsourcing, in that founders are tasked with managing and filtering contributed content in order to extract value from the crowd. The crowd is free to provide feedback on any element of a project, though founders are not obligated to implement or even assess such input. While comments and suggestions are given on a volunteer basis rather than in exchange for compensation, this participatory mechanism still requires founders to employ managerial resources in order to aggregate and utilize such feedback.

Due to the mechanism's lack of extrinsic incentive, the resulting creative output indicates participants' intrinsic motivations, such as enthusiasm or an interest in improving project outcomes. This relates to the enthusiasm and potential creativity of users, ensuring that solicited feedback originates from a motivated, active group of stakeholders. The quality of participant feedback is further associated with the amount of pertinent project information available to the crowd (Mollick, 2013; Surowiecki, 2005). As such, most projects that actively sought feedback did so through rewards that enabled backers to participate in user testing prior to the distribution of project deliverables.

- ***Collective Decision-Making:*** This describes any participatory activity in which project founders enable members of the crowd to influence project elements via majority vote.

This mechanism is another example of crowdsourcing, in which crowd input is aggregated in order to inform the design of project deliverables. Members of the crowd are given a degree of collective agency through voting, though their range of influence is dependent on the subject of the



vote and their available options, which are determined by project founders. Within the sample, 42.9% of voting opportunities allowed participants to decide on some aspect of functionality in project outcomes, while the remainder dealt with purely esthetic components of final deliverables. In 2 cases, esthetic voting options were crowdsourced, indicating a rare intersection between the use of this mechanism and Open-Ended Feedback.

While other crowdfunding platforms may have implemented systems for voting, Kickstarter does not currently provide tools to explicitly facilitate the voting process. As such, founders are tasked with organizing and running the voting process independently if they are using Kickstarter. Instances of voting within the sample generally involved tallying votes through external web services or comments on the project's social media or Kickstarter pages.

- **Supplemental Development:** This describes any participatory activity in which project founders crowdsource the development of products or services that operate in tandem with primary project outcomes.

The distribution of proprietary development tools can be considered a form of crowdsourcing and peer production, as founders are leveraging and directing the crowd's creative resources to their mutual benefit. Given that contributions made with such tools are necessarily compatible with campaign deliverables, this mechanism has the potential to generate significant benefits for participants, founders, and project backers in general. Additionally, if developers are offered incentives for contributing content of high quality, these additions are more likely to enrich the user experience of final project deliverables (Surowiecki, 2005).

Access to developer tools provides crowd members with a great deal of individual agency, in that it allows them to act and create in a manner that is largely independent of project founders. However, this agency is typically restricted, in that participants must be able to leverage specialized skills, such as programming knowledge, in order to contribute. Additionally, founders maintain complete control over the implementation and distribution of participants' contributions, limiting the crowd's capacity to impact final project deliverables without founder approval.

- **Individual Collaboration:** This describes any participatory activity in which project founders work with individual crowd members to collaborate on particular elements of final project deliverables.

This mechanism is characterized by collaboration and iterative dialogue between founders and individual participants, ostensibly to generate outcomes that are desirable to both parties. This leverages principles from co-design by enabling participants to have limited collaborative influence over project outcomes, albeit with the guidance of project founders.

While participants are granted a degree of agency in regards to specific components of final deliverables, project founders typically maintain full creative control over the project and may choose to filter or modify participants' contributions through the collaborative process. It is important to note that participants' agency is somewhat restricted in that they cannot participate in defining problems or ideating broad solutions, limiting their involvement to a collaborative or consultative role.

- ***Open Collaboration:*** This describes any participatory activity that revolves around the open distribution and free modification of project deliverables.

This participatory practice revolves around explicitly enabling and encouraging the crowd to freely modify, add to, and redistribute primary project outcomes. Following the initial proposal and development phases, participants are given complete agency and independence via access to blueprints for development, enabling them to design and develop without the oversight of founders. This is most visible in the case of open source projects, in which founders seek funding as a means to initiate a collaborative project, but where external contributors can revise outcomes, redefine problems, and collaborate independently of the initial founders.

While Open Collaboration bears similarities to Supplemental Development, there are significant distinctions in the collaborative process and degree of agency afforded to participants. Proprietary development kits allow crowd members to participate in a subordinate capacity, where open source crowdfunded projects closely resemble the empowering ideals of creative communities or participatory cultures, enabling the open exchange of resources, knowledge, and expertise among enthused stakeholders.

### *Exclusivity of Participatory Mechanisms*

Following the generation of these participatory mechanisms, we sought to measure their exclusivity in order to more accurately understand the context of their implementation. To that end, we compared the values for variable 1a and 1b in order to measure the proportionate amount of each

level of exclusivity within the five mechanisms. The results of these measurements are summarized in Table 2:

Table 2. Exclusivity of Participatory Mechanisms



From these visualizations, we identified clear disparities in the relative exclusivity of each mechanism. These distinctions broadened our comprehension of participatory mechanisms, and are fully described below:

- **Open-Ended Feedback** was the only mechanism that showed no distinct trends in exclusivity, likely due to the numerous ways that founders incentivized channels for participant feedback. *User testing* and *direct developer contact* were the most exclusive forms of this mechanism, while *soliciting feedback* was the most inclusive.
- **Collective Decision-Making** was fairly inclusive, though voting rights were most commonly offered as incentives to potential backers. This is likely to ensure that project stakeholders had the most sway over project outcomes, relating to the value of user feedback.
- **Supplemental Development** was fairly exclusive in that it always required some degree of financial donation, potentially due to the proprietary nature of the associated rewards.
- **Individual Collaboration** was the most exclusive participatory mechanism, requiring individuals to opt into specific reward tiers, the majority of which had a maximum number of donors. *Design team membership* was more likely to be limited to a maximum number of donors. The exclusivity of this mechanism is possibly due to the relatively high degree of control ceded to participants, as well as the logistical costs of necessarily communicating with individual donors.
- **Open Collaboration** was the most inclusive mechanism, consisting entirely of public activities. Given that this mechanism relies on participants' freedom to access and modify project outcomes, this outcome was expected.

### *Prevalence of Participatory Mechanisms*

Within the sample of 600 Kickstarter projects, 250 (41.67%) utilized participatory mechanisms, as seen in Figure 1. Of the 150 projects within each category, we found 25 (16.67%) in Design, 87 (58%) in Technology, 104 (69.33%) in Games, and 34 (22.67%) in Fashion utilized participatory mechanisms. Further, of the 82 projects that were coded as 'software', 67 (81.71%) included participation, as did 45 (76.27%) of the 59 'hardware' projects. Conversely, of the 459 projects that had proposed 'standalone' project deliverables, only 138 (30.01%) included participation. We recorded 369 distinct instances of participatory activity in the sample, indicating that

some participatory projects used multiple mechanisms. Participatory projects used an overall average of 1.476 mechanisms, and more specifically 1.28 in Design, 1.41 in Technology, 1.68 in Games, and 1.14 in Fashion.

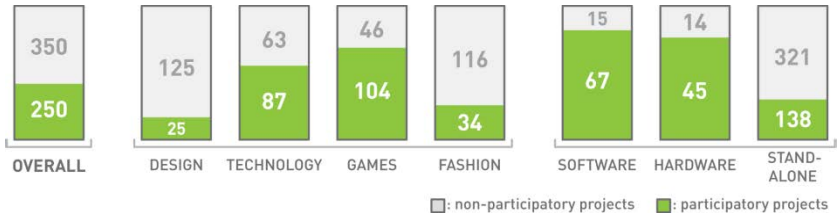


Figure 1. Overall Prevalence of Participatory Mechanisms

While these results indicate a fairly substantial amount of participation within the sample projects, it is important to note that participation was most common in the categories of Technology and Games, and was significantly more prevalent in the development of hardware and software projects. This suggests that implementing participation is easier, less costly, or more useful in certain contexts, dependent on the type of project outcome being proposed. Alternatively, it simply indicates that participatory activities are more or less popular amongst designers and entrepreneurs from varying fields, potentially reflecting differing professional or academic viewpoints on the value of user input.

In order to gain a more comprehensive understanding of the occurrence of participation in our sample, we then examined the prevalence of each participatory mechanism separately, as seen in Figures 2 to 6:

**Open-Ended Feedback** was recorded in 136 projects overall (22.67%). It was leveraged most often within the Technology and Games categories, occurring in 53 (35.33%) and 64 (42.67%) projects respectively, while only appearing in 9 (6%) Design projects and 10 (6.67%) Fashion projects. This mechanism was observed in 53 (64.63%) software projects, 20 (33.9%) hardware projects and 63 (13.73%) standalone projects.

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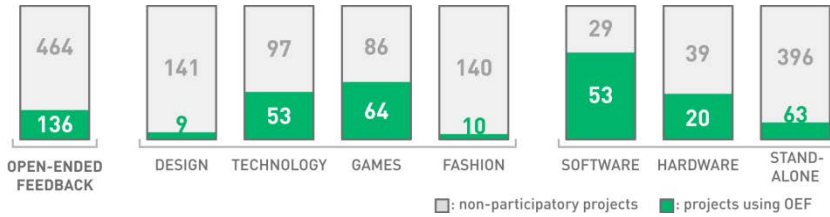


Figure 2. Prevalence of Open-Ended Feedback

**Collective Decision-Making** was recorded in 27 projects overall (4.5%), of which 9 (6%) were in Design, 3 (2%) in Technology, 7 (4.67%) in Games, and 8 (5.33%) in Fashion. This mechanism was observed in 7 (8.54%) Software projects, 1 (1.7%) Hardware project, and 19 (4.14%) Standalone projects.

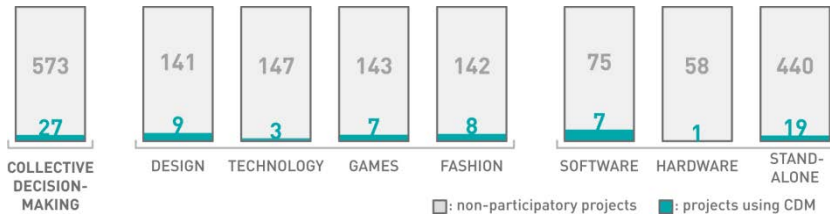


Figure 3. Prevalence of Collective Decision-Making

**Supplemental Development** was recorded in 18 projects overall (3%), of which 6 (4%) were in Design and 12 (8%) were in Technology. This mechanism was observed in 4 (4.88%) Software projects, 9 (15.25%) Hardware projects, and 5 (1.09%) Standalone projects. Interestingly, Supplemental Development was not observed at all in the Games and Fashion categories, potentially indicating severe difficulties in implementing such practices, or incompatibility with projects in those contexts.

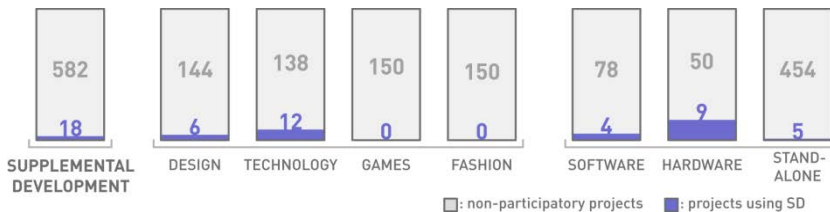


Figure 4. Prevalence of Supplemental Development

**Individual Collaboration** was recorded in 130 projects overall (21.67%), of which 8 (5.33%) were in Design, 11 (7.33%) in Technology, 90 (60%) in Games, and 21 (14%) in Fashion. This mechanism was observed in 46 (56.1%) Software projects, 3 (5.08%) Hardware projects, and 81 (17.65%) Standalone projects.

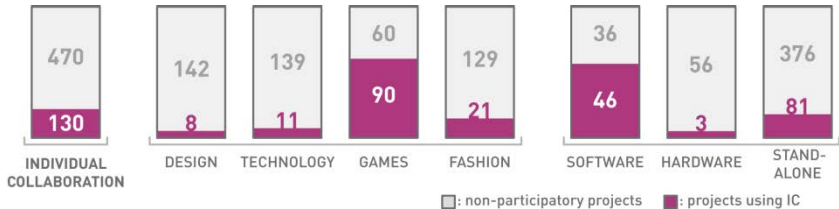


Figure 5. Prevalence of Individual Collaboration

**Open Collaboration** was recorded in 41 projects overall (6.83%), of which 40 (26.67%) were from the Technology category, with only 1 other instance, in Games (0.67%). This mechanism was observed in 4 (4.88%) Software projects, 30 (50.85%) Hardware projects, and 7 (1.53%) Standalone projects.

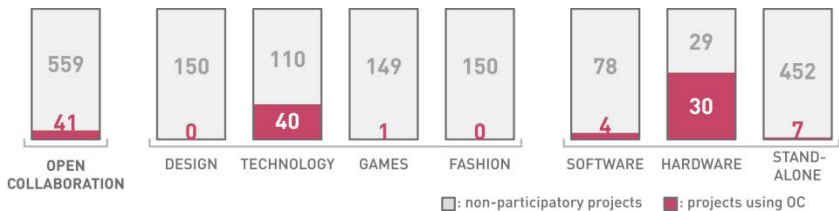


Figure 6. Prevalence of Open Collaboration

### Importance of Findings

Critically, our analysis found that each mechanism’s prevalence was correlated to particular project deliverables and Kickstarter categories, indicating that their context played a role in the mechanisms’ implementation. This suggests that different types of participation are more or less conducive to varying project types. The following are summaries of our findings on the prevalence of participator mechanisms and participation in general:

- **Open-Ended Feedback** was the most prevalent participatory mechanism. It was observed in 22.67% of sample projects, and accounted for 54.4% of all participatory projects. It was most prevalent in the Technology and Games Kickstarter categories and in projects that proposed software as primary deliverables, which we associate with a high incidence of *user testing* activities in those contexts.
- **Collective Decision-Making** was observed in only 4.5% of projects, and accounted for 10.8% of all participatory projects. While it was evenly distributed amongst most project categories and reward types, it was rarely implemented in the Technology category or hardware projects.
- **Supplemental Development** was the least prevalent participatory mechanism, observed in only 3% of sample projects and accounting for 7.2% of participatory projects. We only observed instances of this mechanism as backer rewards or reward tier opportunities, indicating a relatively high degree of exclusivity. They were only found in the Design and Technology Kickstarter categories, and were most prevalent in hardware projects.
- **Individual Collaboration** was observed in 21.67% of projects, and accounted for 52% of all participatory projects. It was most prevalent in the Games category, in which it was notably evident in 60% of surveyed projects, as well as in projects that proposed software or standalone deliverables.
- **Open Collaboration** was observed in 6.83% of projects, and accounted for 16% of all participatory projects. It was observed almost entirely in hardware projects and the Technology category, likely due to the influence of the technology-centric open source movement.

Overall, participatory practices were observed in 250 of the 600 surveyed projects. It was most prevalent in the Technology and Games categories, in which it was observed in 58% and 69.33% of projects respectively. This prevalence was even more pronounced when projects were broken down by their proposed deliverables, as 76.27% of hardware projects and 81.71% of software projects implemented participatory



elements. Participation was relatively uncommon in the Design and Fashion categories of Kickstarter, in which less than a quarter of projects were participatory. These measurements very clearly indicated disparities in the contexts within which participation and different participatory mechanisms were most often leveraged.

## **Conclusions**

The purpose of this research was to address what we identified to be a significant lack of crowdfunding literature pertaining to crowdsourcing or co-design practices. This study has provided broad, explorative insights into the contexts within which participatory practices, crowdsourcing, and co-design activities are leveraged in reward-based crowdfunding projects. Through our analysis, we have defined five 'participatory mechanisms' that represent the common methods leveraged by project founders in a sample of successful design-centred projects on Kickstarter. These descriptive mechanisms can be used as a basis for discussing participatory practices in alternative crowdfunding contexts.

### *Suggestions for Future Research*

The primary outcomes of this study suggest and frame future research in order to address gaps in literature related to design in the crowdfunding context. Given the broad and explorative aims of this research, we encourage further verification of our findings in order to challenge and strengthen our comprehension of the relationships between participation and other project variables. The following are prospective research questions that seek to address identified gaps in design and crowdfunding literature:

- *How does crowdsourcing and collaboration with user-investors impact the quality of project outcomes in reward-based crowdfunding projects?*

Presently, crowdfunding literature focuses largely on measurable variables as determinants of crowdfunding success, where success is defined by the achievement of funding goals rather than necessarily delivering proposed outcomes. Similarly, this research measures the prevalence of participation, but not the effects it has on subsequent design and development processes. While existing literature on co-design practices and crowdsourcing seem to indicate that their convergence with crowdfunding

would lead to positive project outcomes, this should be verified through in-depth case studies.

- *Is the presence of participatory mechanisms a determinant of successful funding in crowdfunding projects?*

Given that our investigation focused on Kickstarter projects that had been successfully funded, further research can address participatory mechanisms as a determinant of successful funding, both broadly and for each individual mechanism.

- *What factors influence founders of reward-based crowdfunding projects to implement crowdsourcing or other participatory mechanisms into the crowdfunding process?*

While our research indicates particular contexts within which participatory practice often occurs, the exact causes for this prevalence are not yet clear. Given that founders must actively opt into participatory practices by building participatory activities into their project proposals and reward structures, it is relevant to discover what motivates them to do so.

- *What are the demographic characteristics of participants in reward-based crowdfunding projects?*

Though we can observe and identify project founders that implement participatory mechanisms in crowdfunding projects, we do not currently know who engages in such participatory practices. Such demographic information could be pertinent in terms of promoting or facilitating participatory practices, which would be of interest to crowdfunding platforms and prospective project founders.

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## Appendix

This section contains our collected Kickstarter project data. They are coded as follows:

**P.M.:** Participatory mechanisms implemented (Variable 1a from Methods), coded as such:

- OEF = Open Ended Feedback
- CDM = Collective Decision-Making
- SD = Supplemental Development
- IC = Individual Collaboration
- OC = Open Collaboration

**Exclusivity:** Exclusivity of the associated P.M., which could be Public, Backer-Only, Reward Tier Only, or Limited Reward Tier Only (Variable 1b from Methods)

**Category:** The project's Kickstarter category, which could be Design, Technology, Games, or Fashion (Variable 2 from Methods)

**Deliverable:** The project's primary deliverable, which could be Software, Hardware, or Standalone (Variable 3 from Methods)

**End Date:** The date that the project concluded

**Project Name:** The name of the project's Kickstarter page

Participatory Mechanisms in Crowdfunding

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
OEF	Public	Design	Standalone	01/09/2013	BLAZAR: Aluminum Bluetooth Speaker & Artist Collaboration
IC	Ltd. Reward				
-	n/a	Design	Standalone	01/09/2013	Eco-Friendly Snowboards
-	n/a	Design	Standalone	01/09/2013	High Strength Titanium Locking D Shackle
OEF	Reward	Design	Standalone	03/09/2013	iblaaz
SD	Reward				
-	n/a	Design	Standalone	03/09/2013	Kordii
-	n/a	Design	Standalone	04/09/2013	Steep
-	n/a	Design	Standalone	04/09/2013	One Binding System
-	n/a	Design	Standalone	05/09/2013	Machine Era Wallet
-	n/a	Design	Standalone	06/09/2013	Violin: Carbon Fiber, Tooling and Engineering
-	n/a	Design	Standalone	06/09/2013	The MostRad Minimalist Wallet
-	n/a	Design	Standalone	06/09/2013	MapBak
-	n/a	Design	Standalone	06/09/2013	Pi Fans
-	n/a	Design	Standalone	06/09/2013	Mr. Toast: Dill - Vince
SD	Backer	Design	Hardware	07/09/2013	HOT Watch: Complete Smart Watch w/Revolutionary Private Calls
-	n/a	Design	Standalone	07/09/2013	Modern Makeup Organizer
-	n/a	Design	Standalone	07/09/2013	Fingersurfing
-	n/a	Design	Standalone	07/09/2013	Nota Ultralite Stylus
-	n/a	Design	Standalone	07/09/2013	Titanite Shield Multi-Tool
-	n/a	Design	Standalone	08/09/2013	Jewelry on the Edge
-	n/a	Design	Standalone	08/09/2013	Noso Slim Wallet
-	n/a	Design	Standalone	09/09/2013	Adjust-D-Weight Tip Pen
-	n/a	Design	Standalone	10/09/2013	Tuts: Flat Tools, Round World
-	n/a	Design	Standalone	10/09/2013	QooQi for your cables
-	n/a	Design	Standalone	10/09/2013	"Armature" Playing Card Clip
-	n/a	Design	Standalone	11/09/2013	Nube: The Perfected Hammock Shelter
-	n/a	Design	Standalone	11/09/2013	Firebox Nano Stove
-	n/a	Design	Standalone	11/09/2013	Mokey Key Brace & Pocket Organizer
-	n/a	Design	Standalone	12/09/2013	Synergos Wallet Mashup
-	n/a	Design	Standalone	12/09/2013	Last Resort Zombie Defense Ring
-	n/a	Design	Standalone	12/09/2013	Dollar Wallet
-	n/a	Design	Standalone	12/09/2013	Grow your own tail
-	n/a	Design	Standalone	12/09/2013	TISUSHI Sticks
-	n/a	Design	Standalone	12/09/2013	Mix Your Match! Handcrafted Jewelry
-	n/a	Design	Standalone	12/09/2013	The Scary Godmother Doll
CDM	Public	Design	Standalone	13/09/2013	Tubecore Duo
-	n/a	Design	Standalone	13/09/2013	Camelino Valet Stand
-	n/a	Design	Standalone	13/09/2013	FADER Boards
-	n/a	Design	Standalone	13/09/2013	Bike Dock
-	n/a	Design	Standalone	13/09/2013	The Menurkey
-	n/a	Design	Standalone	13/09/2013	CAVAR Leather Bags & Journal
OEF	Ltd. Reward	Design	Standalone	14/09/2013	Sound Band
SD	Ltd. Reward				
-	n/a	Design	Standalone	14/09/2013	Pour Mason Coffee Attachment
CDM	Backer	Design	Standalone	15/09/2013	Imperial Playing Cards

	P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
	-	n/a	Design	Standalone	15/09/2013	Ti2 Paa-Biner
	-	n/a	Design	Standalone	15/09/2013	Glideware
	-	n/a	Design	Standalone	15/09/2013	Business Card Dispenser
SD	Reward	Design	Hardware	Standalone	16/09/2013	Emotiv Insight
	-	n/a	Design	Standalone	16/09/2013	Alfano Shoulder Rig
	-	n/a	Design	Standalone	16/09/2013	Snap Watch
	-	n/a	Design	Standalone	16/09/2013	The Persian Empire Cards
	-	n/a	Design	Standalone	16/09/2013	Wally Case
	-	n/a	Design	Standalone	16/09/2013	Mo-To: Modern Vintage Toy Cars
	-	n/a	Design	Standalone	16/09/2013	Tenkara Rod Co.
	-	n/a	Design	Standalone	17/09/2013	Air Light Stories Shirts
	-	n/a	Design	Standalone	18/09/2013	Oungajungle Stands
	-	n/a	Design	Standalone	18/09/2013	Vesatool
	-	n/a	Design	Standalone	18/09/2013	Bandboard Modular Work Platform
CDM	Backer	Design	Standalone	Standalone	19/09/2013	Loop Organized Cables
	-	n/a	Design	Standalone	19/09/2013	The Butler Home Organizer
	-	n/a	Design	Standalone	19/09/2013	Ethical Products From A New Creative Business - Bright Stern
	-	n/a	Design	Standalone	19/09/2013	Mharajh Playing Cards
IC	Ltd. Reward	Design	Standalone	Standalone	20/09/2013	Animazoms Plusshies Series 1
IC	Ltd. Reward	Design	Standalone	Standalone	20/09/2013	Urbantrike
CDM	Public	Design	Hardware	Standalone	20/09/2013	Omate TrueSmart Smartwatch 2.0
SD	Ltd. Reward	Design	Standalone	Standalone	20/09/2013	Flanebike
	-	n/a	Design	Standalone	20/09/2013	NS Longboards
	-	n/a	Design	Standalone	21/09/2013	Better Bicycle Bell
	-	n/a	Design	Standalone	21/09/2013	SoapBox Bath Aids
	-	n/a	Design	Standalone	21/09/2013	15x20 Adventure Bag
	-	n/a	Design	Standalone	21/09/2013	Aerial Arts: Defense Discourses
CDM	Backer	Design	Software	Standalone	22/09/2013	BitGym: Interactive Trails, Tours
IC	Ltd. Reward	Design	Standalone	Standalone	22/09/2013	Triumph Pen
CDM	Backer	Design	Standalone	Standalone	22/09/2013	Minimo   A dim aluminium cooler with a difference
	-	n/a	Design	Standalone	22/09/2013	Stealth PSR Carbon Fibre Stand
	-	n/a	Design	Standalone	22/09/2013	Spirit Steels Beverage Cooling
	-	n/a	Design	Standalone	23/09/2013	The Modern American Opener
OEF	Reward	Design	Standalone	Standalone	24/09/2013	Together Farm Blocks Modular Garden
OEF	Ltd. Reward	Design	Standalone	Standalone	24/09/2013	Salt Cases
CDM	Reward	Design	Standalone	Standalone	24/09/2013	Blueblood Redux: Playing Cards
	-	n/a	Design	Standalone	24/09/2013	Handmade Cards for Men
	-	n/a	Design	Standalone	24/09/2013	Strong Like Bull Bottle Opener
	-	n/a	Design	Standalone	24/09/2013	3 Switch Revoking De-center
	-	n/a	Design	Standalone	25/09/2013	Slimfold MICRO Wallet
	-	n/a	Design	Standalone	26/09/2013	The Melies Playing Cards
IC	Reward	Design	Standalone	Standalone	27/09/2013	URBANIST Cycling Chamois Pantes
	-	n/a	Design	Standalone	27/09/2013	TILT Stealth Mac Cooling Station
	-	n/a	Design	Standalone	27/09/2013	Snapback Slim Wallet

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P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
-	n/a	Design	Standalone	28/09/2013	Neat Ice Kit
-	n/a	Design	Standalone	28/09/2013	Kingko solar tree, Solar Powered charger
-	n/a	Design	Standalone	30/09/2013	TITANIUM. Incredible 12 function Ultimate Pocket Tool
OEF	Ltd. Reward	Design	Standalone	01/10/2013	Cultiva's Raincloud
-	n/a	Design	Standalone	01/10/2013	hipjili
-	n/a	Design	Standalone	01/10/2013	3D Printer Test Kit GRAPHICA
-	n/a	Design	Standalone	01/10/2013	Rainbow Pensils
-	n/a	Design	Standalone	02/10/2013	Cable Anchor
-	n/a	Design	Standalone	03/10/2013	Hatch - Devote the Egg
-	n/a	Design	Standalone	04/10/2013	eleMount Stand
-	n/a	Design	Standalone	04/10/2013	Silverback 12- Function Multi Tool
-	n/a	Design	Standalone	04/10/2013	Key Wrench
-	n/a	Design	Standalone	04/10/2013	BARON FIG Sketchbooks
IC	Ltd. Reward	Design	Standalone	05/10/2013	Kartium: Race-Car Riding Cart
-	n/a	Design	Standalone	05/10/2013	Minke: A Fishing Multi Tool
-	n/a	Design	Standalone	05/10/2013	DOSF Coffee & Tea for Mason Jars
-	n/a	Design	Standalone	05/10/2013	Alva Lightbulb Lamp
-	n/a	Design	Standalone	05/10/2013	Imagine Font/Typeface
-	n/a	Design	Standalone	06/10/2013	Titanium Chopsticks
-	n/a	Design	Standalone	06/10/2013	MAGMODZ Magnetic Toy Cars
-	n/a	Design	Standalone	06/10/2013	Believe Playing Cards by USPCC
-	n/a	Design	Standalone	06/10/2013	Nautical and Sea Life Dinnerware
-	n/a	Design	Standalone	06/10/2013	Intrepid Bags
-	n/a	Design	Standalone	06/10/2013	EDCpen Minimalist Carry Pen
OEF	Ltd. Reward	Design	Standalone	07/10/2013	GIR Spatula
CDM	Reward				
IC	Ltd. Reward				
-	n/a	Design	Standalone	07/10/2013	Nova Wireless Flash for Phones
-	n/a	Design	Standalone	07/10/2013	The Circuit Ring
-	n/a	Design	Standalone	07/10/2013	Citizens of the US Custom Coin
-	n/a	Design	Standalone	08/10/2013	mCF mug Reversible Mug
OEF	Public	Design	Software	09/10/2013	AppSeed
-	n/a	Design	Standalone	09/10/2013	EasyGimbal Camera Stabilizer
-	n/a	Design	Standalone	09/10/2013	The COLT: Engineering a Better Hockey Stick
-	n/a	Design	Standalone	09/10/2013	Made to Measure Modern Furniture
-	n/a	Design	Standalone	09/10/2013	Zoetrope Animation Toy
-	n/a	Design	Standalone	10/10/2013	Tiny Wide Smiles Bilateral Cleft Doll
-	n/a	Design	Standalone	10/10/2013	Cold brew: Cold Brew Coffee System
OEF	Public	Design	Standalone	11/10/2013	STRUdittle filament extruder
SD	Ltd. Reward	Design	Hardware	11/10/2013	Little Robot Friends
-	n/a	Design	Standalone	12/10/2013	The Shackleton British-made banjo: Vital Mental Medicine!
-	n/a	Design	Standalone	12/10/2013	Urban Holster
-	n/a	Design	Standalone	12/10/2013	HereAfter Frames
-	n/a	Design	Standalone	12/10/2013	KeyStache - Magnetic Key Storage
-	n/a	Design	Standalone	13/10/2013	Project Lumia: an eighth art
-	n/a	Design	Standalone	13/10/2013	A Better Side-Mount Scuba Tank Strap

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
IC	Ltd. Reward	Design	Standalone	14/10/2013	Pressy - the Almighty Android Button
-	n/a	Design	Standalone	14/10/2013	vrAse: The Smartphone VR Case
-	n/a	Design	Standalone	14/10/2013	Keylayer - Multi-tools in Leather Keycase
CDM	Backer	Design	Standalone	15/10/2013	The Sapling Wallet
-	n/a	Design	Standalone	15/10/2013	Cord Taco, Cordite, Cordupa
-	n/a	Design	Software	16/10/2013	Nickster: Educational Toys & Apps
-	n/a	Design	Standalone	16/10/2013	Singular Puffin Fatbike
-	n/a	Design	Standalone	17/10/2013	Pen/stylus made from MAGNETS. POLAR PEN - Modular Tool
-	n/a	Design	Standalone	17/10/2013	Nomad Cable - Micro USB
-	n/a	Design	Standalone	17/10/2013	SmartClaw - Personalized Golf Tee
-	n/a	Design	Standalone	17/10/2013	Hummingbird Corkscrew
-	n/a	Design	Standalone	17/10/2013	EverDock
-	n/a	Design	Standalone	17/10/2013	The SDOO Helicopter
-	n/a	Design	Standalone	18/10/2013	The Ridge Wallet 2.0
-	n/a	Design	Standalone	19/10/2013	SHAFI Smart Shower Curtain
-	n/a	Design	Standalone	19/10/2013	Wallet & Key Organizer Redefined
-	n/a	Design	Standalone	19/10/2013	Toronto TTC Token Card
-	n/a	Design	Standalone	19/10/2013	Cup Cuff: Hot Coffee Hot Hands!
-	n/a	Design	Standalone	21/10/2013	The Parachute - A Superior Multi Tool Has Landed
OEF	Ltd. Reward	Technology	Hardware	01/09/2013	Fused3D Handheld 3D Scanner
OEF	Reward	Technology	Software	01/09/2013	The 3D Scan-to-print Web App
-	n/a	Technology	Standalone	01/09/2013	2-in-1 Battery Backup + USB Wall Charger
-	n/a	Technology	Hardware	01/09/2013	Single button, capacitive touch point, with digital output
-	n/a	Technology	Standalone	02/09/2013	Home Grown Spirulina Superfood
-	n/a	Technology	Hardware	02/09/2013	TouchKeys Multi - Touch Keyboard
-	n/a	Technology	Hardware	02/09/2013	PI-C Case for Raspberry Pi R Camera
-	n/a	Technology	Hardware	02/09/2013	FluoroVu - Capturing Ultraviolet Fluorescence
OC	Public	Technology	Hardware	04/09/2013	HackRF: Open Source SDR Platform
-	n/a	Technology	Standalone	04/09/2013	Wheel Shields Longboarding Technology
OEF	Backer	Technology	Standalone	05/09/2013	Able HD: Portable HD Monitor
OC	Public	Technology	Hardware	05/09/2013	Piksi: The RTK GPS Receiver
OC	Public	Technology	Hardware	06/09/2013	MatchboxARM
OC	Public	Technology	Hardware	06/09/2013	PI Crust - Façily Connect Electronics
OEF	Public	Technology	Standalone	08/09/2013	lima: the brain of your devices
SD	Reward	Technology	Software	09/09/2013	epngasm - FOSS Animated PNG tools
-	n/a	Technology	Standalone	09/09/2013	Surf the Earth with GelfBoard
OC	Public	Technology	Hardware	10/09/2013	LEDgoes: A Modular LED Display System
-	n/a	Technology	Standalone	10/09/2013	Micro Phone Lens: Cell Phone Microscope
OEF	Ltd. Reward	Technology	Hardware	11/09/2013	PI-Pan, a Pan-Tilt for Raspberry Pi Camera
OC	Public				
IC	Ltd. Reward	Technology	Hardware	11/09/2013	Open Source Nixie Tube Shield
OC	Public				
OEF	Backer	Technology	Hardware	12/09/2013	Spiri, a programmable flying robot
SD	Ltd. Reward				
OEF	Ltd. Reward	Technology	Standalone	12/09/2013	GEEK USB Awe-sensifier for Headphones



## Participatory Mechanisms in Crowdfunding

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
OC	Public	Technology	Hardware	12/09/2013	RGB-123 Led Matrices
OEF	Ltd. Reward	Technology	Hardware	13/09/2013	Haptic: Multitouch Reinvented
IC	Ltd. Reward				
-	n/a	Technology	Software	13/09/2013	layer - Find your stuff using Bluetooth
-	n/a	Technology	Standalone	13/09/2013	Stereophone - A Multi-Scan Sound System
OEF	Ltd. Reward	Technology	Standalone	14/09/2013	IKACE Activity Monitor for Action Sports
OEF	Backer	Technology	Software	14/09/2013	Trest: a distributed secure blog platform
IC	Ltd. Reward				
OC	Public	Technology	Hardware	14/09/2013	Fixy (CMUCam5)
CDM	Backer	Technology	Standalone	14/09/2013	Sesame Ring
OC	Public	Technology	Software	15/09/2013	NoFlo Development Environment
-	n/a	Technology	Standalone	15/09/2013	US3 Drive - Waterproof Drive, Stylus, & Smartphone Stand
-	n/a	Technology	Standalone	16/09/2013	DINO PET
OEF	Ltd. Reward	Technology	Standalone	18/09/2013	LVO ONE: The Only Basketball You Need
-	n/a	Technology	Standalone	18/09/2013	Brakeboard - Brakes for Longboard Skateboards
OEF	Ltd. Reward	Technology	Hardware	19/09/2013	RFIDer - A Software Defined RFID Reader/Writer/Emulator
OEF	Ltd. Reward	Technology	Hardware	19/09/2013	SparqEE CELLv1.0: Cellular made easy
IC	Ltd. Reward				
OC	Public				
OC	Public	Technology	Hardware	20/09/2013	Red PiTaya: Open Instruments
-	n/a	Technology	Standalone	20/09/2013	Ping Wallet - The world's thinnest, smartest wallet
-	n/a	Technology	Standalone	20/09/2013	Walrus Fitness REFLECT   SMART Bike Computer
OEF	Ltd. Reward	Technology	Standalone	22/09/2013	LockedUSB Adapter
-	n/a	Technology	Standalone	22/09/2013	USB Power Adapter/Charger
-	n/a	Technology	Standalone	22/09/2013	ARC Series: The Grow Light Reinvented
-	n/a	Technology	Standalone	22/09/2013	Nine Axis Configurable Orientation Logger
OEF	Ltd. Reward	Technology	Hardware	26/09/2013	LEpruno: JavaScript for Things
OC	Public				
OC	Public	Technology	Hardware	27/09/2013	Flutter: Wireless Arduino
-	n/a	Technology	Software	27/09/2013	TalkieType
OEF	Public	Technology	Standalone	29/09/2013	The Easy Macro Smartphone Lens
CDM	Public				
-	n/a	Technology	Hardware	30/09/2013	Young Person's Guide to Arduino & Avocado Beginner Board
-	n/a	Technology	Hardware	01/10/2013	Arduino 16 Channel Digital Power Shield
-	n/a	Technology	Hardware	01/10/2013	Nixie Tube Clock Project
OEF	Public	Technology	Software	03/10/2013	Kapture: the audio-recording wristband
OEF	Ltd. Reward				
IC	Ltd. Reward				
OC	Public	Technology	Standalone	04/10/2013	ZEUS: The World's First ALL IN ONE 3D Printer / Copy Machine
-	n/a	Technology	Hardware	05/10/2013	C.S.X51 USB/MIDI Control Surface
OC	Public	Technology	Hardware	06/10/2013	Hello MIC! Arduino & mobile phone interface made easy
OC	Public	Technology	Hardware	06/10/2013	Apitronics Wireless Platform
OC	Public	Technology	Standalone	07/10/2013	The Lens Apparatus, Time Lapse Lens Motion Control
-	n/a	Technology	Standalone	07/10/2013	05-09 Mustang Shelby Tail Light Conversion Kit
OEF	Public	Technology	Standalone	08/10/2013	edgertronic - The first affordable high speed video camera
-	n/a	Technology	Standalone	08/10/2013	Interconnect Shield for Arduino

	P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
	-	n/a	Technology	Standalone	09/10/2013	Hoglin: Music Imports - Innovative Guitar Accessories
	-	n/a	Technology	Standalone	09/10/2013	LOOPHIMUS: USB MIDI Foot Controller
	-	n/a	Technology	Standalone	09/10/2013	4NDURE: Cru4Proof External Batteries for Everyday Life
OEF	Ltd. Reward		Technology	Hardware	10/10/2013	Hex: A copter that anyone can fly!
OC	Public					
OEF	Ltd. Reward		Technology	Standalone	10/10/2013	isSketchnote: from pen and paper to your iPad
SD	Reward					
OC	Public					
OEF	Ltd. Reward		Technology	Hardware	11/10/2013	Phoenix 3D Printer
-	n/a		Technology	Standalone	11/10/2013	The gMax 3D Printer - Print. Bigger.
OEF	Public		Technology	Hardware	12/10/2013	STEM System: The Best Way to Interact with Virtual Worlds
OEF	Ltd. Reward					
OC	Public					
OC	Public		Technology	Hardware	12/10/2013	An Arduino-compatible, electronic building block system
OC	Public		Technology	Software	12/10/2013	The Bike Index: Let's Stop Bike Theft, Together
OEF	Public		Technology	Standalone	13/10/2013	Precision Gyroscope
OC	Public		Technology	Hardware	14/10/2013	Smoothieboard - The future of CNC motion control
-	n/a		Technology	Standalone	15/10/2013	RIDEYE: The Black Box Camera for Your Bike
CDM	Reward		Technology	Software	16/10/2013	Nix Color Sensor
-	n/a		Technology	Standalone	16/10/2013	hasAvatar Holster
-	n/a		Technology	Standalone	18/10/2013	Haselnuts: Hasselblad Camera + iPhone DigitalBack Kit!
OC	Public		Technology	Hardware	19/10/2013	Microduino: Arduino in your pocket, small, stackable, smart
IC	Ltd. Reward		Technology	Standalone	20/10/2013	Air_Air! - Portable Air Quality Detector
OC	Public					
OEF	Ltd. Reward		Technology	Software	20/10/2013	The Peachy Printer - The First \$100 3D Printer & Scanner
OEF	Public		Technology	Standalone	20/10/2013	Langeez - Langible Lights
-	n/a		Technology	Software	22/10/2013	Brewbot: The Smart Brewing Appliance
OC	Public		Technology	Standalone	23/10/2013	7im, the true Consumer-oriented 3D printer
OEF	Ltd. Reward		Technology	Standalone	23/10/2013	Paradise Desk - Everything you've ever wanted in a desk!
-	n/a		Technology	Standalone	23/10/2013	The 3 Faces of Flowza
OEF	Public		Technology	Standalone	24/10/2013	Kirk - Electrify Every Longboard
-	n/a		Technology	Standalone	24/10/2013	FlameStower: Charge Your Gear With Fire
OEF	Ltd. Reward		Technology	Standalone	27/10/2013	Babooni: A Customizable and Comfortable Alarm
SD	Reward					
OEF	Ltd. Reward		Technology	Hardware	28/10/2013	iMotion - Haptic feedback virtual reality motion control
SD	Ltd. Reward					
OEF	Ltd. Reward		Technology	Standalone	29/10/2013	Spike : Laser accurate measurement & modeling on smartphones
SD	Ltd. Reward					
IC	Ltd. Reward					
OC	Public		Technology	Hardware	30/10/2013	7capture - Open Source 360 Product Photography
OEF	Ltd. Reward		Technology	Software	31/10/2013	WildHelp
OEF	Reward		Technology	Standalone	31/10/2013	Screwing Reinvented: The World's Best Desk Screw
IC	Ltd. Reward					
-	n/a		Technology	Hardware	31/10/2013	Want to build a satellite but don't have a NASA sized budget?
-	n/a		Technology	Software	31/10/2013	ReMarkable - An iPad app for teachers to receive/mark/grade
OEF	Backer		Technology	Standalone	01/11/2013	Rubber Band machine gun

## Participatory Mechanisms in Crowdfunding

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
-	n/a	Technology	Standalone	01/11/2013	Aero-Tray: Make the most of your mobile lifestyle
-	n/a	Technology	Standalone	01/11/2013	likker - the wrist watch that counts down your life!
-	n/a	Technology	Software	01/11/2013	Macaw: The Code Savvy Web Design Tool
SD	Reward	Technology	Software	03/11/2013	London Layout: Pocket Sized
-	n/a	Technology	Software	03/11/2013	SHADOW   Community of Dreamers
-	n/a	Technology	Hardware	03/11/2013	Sensor Film Kit - Custom Force Sensors and Switches
OEF	Public	Technology	Hardware	04/11/2013	Structure Sensor: Capture the World in 3D
OEF	Ltd. Reward				
SD	Backer				
-	n/a	Technology	Standalone	04/11/2013	FullFX Sports - Cold Therapy Wraps for Athletes
-	n/a	Technology	Standalone	04/11/2013	Okapi: The Intelligent Control System for Solar Air Heaters
OEF	Ltd. Reward	Technology	Hardware	05/11/2013	Foxonix Embedded Sound: Make Your Moos Heard
OC	Public				
-	n/a	Technology	Standalone	05/11/2013	World Lamp 32Watt LED shop light - Low Cost & Eco-friendly
-	n/a	Technology	Standalone	05/11/2013	RockStic 2 - Color Change LED Light Up Drumsticks
-	n/a	Technology	Standalone	05/11/2013	Fryette Calculator GP/DI Tube Guitar Recording Amplifier
-	n/a	Technology	Standalone	06/11/2013	Hot Mod 800 - Hot Rodded Valve Distortion Effect Pedal
OEF	Ltd. Reward	Technology	Standalone	07/11/2013	GameDino 2: this time it's personal
OC	Public				
OEF	Public	Technology	Standalone	07/11/2013	Simplify, Organize & Pay with Loop
-	n/a	Technology	Standalone	08/11/2013	Tough Jets T-15 radio controlled airplane
OEF	Public	Technology	Software	10/11/2013	ilumic: the world's smartest lights
SD	Ltd. Reward				
IC	Reward	Technology	Software	10/11/2013	Alpha Zoo mobile app - Unlock 26 alphabet-loving beasts!
OEF	Public	Technology	Standalone	10/11/2013	TrueSlide Apex: Fine Point Electric Stylus for iPad
-	n/a	Technology	Software	10/11/2013	KeyVision: Smartphone Regulator Beer Monitor
OEF	Ltd. Reward	Technology	Hardware	12/11/2013	5 Color/Material 3D Filament Printer WITH LIQUID COOLING!
-	n/a	Technology	Standalone	12/11/2013	360° panoramic photography with your pocket digital camera
-	n/a	Technology	Hardware	12/11/2013	High Speed Water Drop Photography Kit
-	n/a	Technology	Software	14/11/2013	BitLock: Turning your smart phone into your bike key
OEF	Public	Technology	Standalone	15/11/2013	Neolev - Hovering Board Toy That Actually Levitates!
OEF	Reward	Technology	Software	15/11/2013	The FORT App
IC	Ltd. Reward				
OEF	Public	Technology	Hardware	15/11/2013	casAR: the most versatile AR & VR system
SD	Ltd. Reward				
OC	Public	Technology	Standalone	15/11/2013	Triggertrap Redsnap: Modular Camera Trigger
OEF	Public	Technology	Hardware	15/11/2013	Neuroic: Home Intelligence
OEF	Ltd. Reward				
SD	Ltd. Reward				
OC	Public				
OC	Public	Technology	Hardware	15/11/2013	SwitchBlade TriCopter - Professional Grade MultiCopter
OC	Public	Technology	Hardware	15/11/2013	Programmable Capacitor
OC	Public	Technology	Hardware	15/11/2013	Fish Dish - a Raspberry Pi Add On Board
OEF	Ltd. Reward	Technology	Software	15/11/2013	Fuse: Connecting Your Car to the Rest of Your Life
SD	Ltd. Reward				
-	n/a	Technology	Software	15/11/2013	Chipolo - Bluetooth Item Finder for iPhone and Android

	P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
	IC	Ltd. Reward	Technology	Software	16/11/2013	create kick-ass mobile apps on your smartphone: adsy
	OC	Public				
	-	n/a	Technology	Software	16/11/2013	Monieur: the Artificially Intelligent Robotic Bartender
	OEF	Ltd. Reward	Technology	Hardware	18/11/2013	Oscilloscope Watch
	OC	Public	Technology	Hardware	18/11/2013	OU-80 One Up - Open Source Production Ready 3D Printer
	-	n/a	Technology	Standalone	19/11/2013	FilterWatch: Energy Efficiency by Eliminating Waste
	OEF	Ltd. Reward	Technology	Hardware	21/11/2013	Helix 3D Printer: Upgrade your business!
	OC	Public				
	OEF	Backer	Technology	Hardware	21/11/2013	StarBot Animatronic Robot Puppets
	OEF	Reward	Technology	Software	22/11/2013	GESTURES: Most Intuitive Gesture-based Camera App iPhone/iOS
	OEF	Reward	Technology	Software	24/11/2013	Japanese Friendship Garden Haiku Hunt
	OEF	Backer	Technology	Standalone	24/11/2013	Carbon Fiber PLA and More! Performance 3D Printer Filament.
	-	n/a	Technology	Standalone	24/11/2013	Omnipack: an All in one backpack
	-	n/a	Technology	Hardware	25/11/2013	VRVLT: Plug the world into your computer
	-	n/a	Technology	Standalone	27/11/2013	ALARMclock
	-	n/a	Technology	Software	27/11/2013	PrayerMate for Android
	OEF	Ltd. Reward	Technology	Hardware	28/11/2013	SODAQ: a lego-like, plug-in, rapid prototyping board
	OC	Public				
	OC	Public	Technology	Hardware	28/11/2013	Touch Board: Interactivity Everywhere
	OEF	Ltd. Reward	Technology	Software	30/11/2013	Fasetto - Sharing files instantly anywhere online or offline
	-	n/a	Technology	Hardware	30/11/2013	ServoShock Remote Servo and I/O Controller
	-	n/a	Technology	Hardware	30/11/2013	HDMIHi Affordable 9" High-Def screen for the Raspberry Pi
	OEF	Public	Games	Standalone	01/09/2013	Clashing Blades! - Two-Player, sword-fighting poker deck
	OEF	Public	Games	Standalone	01/09/2013	ArcWorld - The Fantasy Skirmish Waigame
	IC	Ltd. Reward				
	OEF	Reward	Games	Software	01/09/2013	Divergence: Online
	OEF	Public	Games	Standalone	01/09/2013	The Miserly Index: Terrible Games about Terrible Realities
	-	n/a	Games	Standalone	01/09/2013	Agents of SMERSH: Swagman's Hope
	-	n/a	Games	Standalone	01/09/2013	25 Quick & Dirty Map Tutorial's Guide Book
	-	n/a	Games	Standalone	01/09/2013	Spheres of Power: A New Pathfinder Magic System
	-	n/a	Games	Standalone	01/09/2013	CLUBE VAULT - Metal Carrying Case for Transporting Card Games
	IC	Reward	Games	Standalone	02/09/2013	Landing Mr. Right
	OEF	Public	Games	Standalone	02/09/2013	Melita Meliti Card Game
	OEF	Reward				
	IC	Reward	Games	Standalone	03/09/2013	Bocce Dice
	IC	Ltd. Reward	Games	Standalone	03/09/2013	Tessen - A quick-playing card game set in feudal Japan
	OEF	Reward	Games	Software	03/09/2013	Paranautical Activity - Old School FPS meets Roguelike
	IC	Reward				
	-	n/a	Games	Standalone	03/09/2013	Living Dungeon Tile Set PDF
	IC	Ltd. Reward	Games	Standalone	04/09/2013	Top Promoter
	OEF	Reward	Games	Software	04/09/2013	"World War II: ICG" Digital Trading Card Game
	IC	Ltd. Reward				
	IC	Ltd. Reward	Games	Software	04/09/2013	The World Of Unlimited
	-	n/a	Games	Standalone	04/09/2013	King's Forge
	IC	Ltd. Reward	Games	Standalone	05/09/2013	The Cards of Cthulhu

*Participatory Mechanisms in Crowdfunding*

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
OEF	Reward	Games	Software	05/09/2013	Ghost Song: A Journey of Hope
IC	Ltd. Reward				
OEF	Ltd. Reward	Games	Software	05/09/2013	I do Superstar
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Software	05/09/2013	d20fro: Virtual Tabletop Content
-	n/a	Games	Standalone	05/09/2013	Heet: Arctic Bounty - The exciting new expansion to Heet!
-	n/a	Games	Standalone	05/09/2013	Viri
OEF	Public	Games	Software	06/09/2013	Barter Empire: A Massive Open World RPG
IC	Ltd. Reward				
OEF	Reward	Games	Software	06/09/2013	Sword 'N' Board - Now coming to Wii U!
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	06/09/2013	Neptune
OC	Public	Games	Software	06/09/2013	FANTASY VENDOR
IC	Ltd. Reward	Games	Standalone	06/09/2013	Deck of Legends
OEF	Public	Games	Standalone	06/09/2013	Gunship: Afterburner!
IC	Ltd. Reward				
OEF	Backer	Games	Software	06/09/2013	Proton Pulse Rift
OEF	Ltd. Reward				
IC	Ltd. Reward				
OEF	Public	Games	Software	07/09/2013	Steel & Steam: Episode 1
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	07/09/2013	A War of Kings - Playing cards with a Fantasy art twist.
-	n/a	Games	Software	07/09/2013	CHADS HOUR - Website Development & Entertainment Platform
IC	Ltd. Reward	Games	Standalone	08/09/2013	Roll Call is Fun, Fast: A portable dice game for all ages.
OEF	Public	Games	Standalone	08/09/2013	Creative Gamescapes: Spaceship X
IC	Reward				
IC	Ltd. Reward	Games	Software	08/09/2013	Gridiron Thunder: Awesome Indie Football Game For OUYA
-	n/a	Games	Standalone	08/09/2013	Aces High Of Futures Past - Original Plane Miniatures
-	n/a	Games	Standalone	08/09/2013	Build It: Trains, Card Game For Gamers with Kids
-	n/a	Games	Standalone	09/09/2013	RPG Attack!
-	n/a	Games	Standalone	09/09/2013	Ready to Play Storage Solution for the game Elder Sign
OEF	Public	Games	Software	11/09/2013	StarCraft Universe
IC	Ltd. Reward				
OEF	Public	Games	Software	11/09/2013	【Project Phoenix】 Japan's indie RPG feat. AAA talent!
OEF	Ltd. Reward				
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	11/09/2013	Kitsune: of Foxes & Tools
CDM	Backer	Games	Standalone	11/09/2013	All Jokers Transformation Playing Cards
IC	Ltd. Reward	Games	Standalone	11/09/2013	EVOLUTION Bicycle® Playing Cards Deck
IC	Ltd. Reward	Games	Standalone	11/09/2013	We Didn't Playe at This Pasted-On Theme At All!
IC	Ltd. Reward	Games	Standalone	12/09/2013	Elemental Blast: The Strategic Card Game
OEF	Reward	Games	Software	12/09/2013	Footprints: A Playfull game
-	n/a	Games	Standalone	12/09/2013	Let's Kill Krampus: A Dark Comedy, Card Game RPG
-	n/a	Games	Standalone	12/09/2013	Menster Derby Beard Game
-	n/a	Games	Standalone	12/09/2013	QU-SH-UG Casting Fundraiser by Pure Evil Miniatures
-	n/a	Games	Standalone	12/09/2013	Clubbhu vs. The Vikings - The Game and the Comic

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
-	n/a	Games	Standalone	12/09/2013	The Best Damn Metal Gaming Coins Ever
OEF	Ltd. Reward	Games	Standalone	13/09/2013	DRAGONHEIM, A Classic Fantasy Roleplaying Game
IC	Ltd. Reward				
-	n/a	Games	Standalone	13/09/2013	Legends of the American Frontier by Richard Taunius
OEF	Reward	Games	Software	14/09/2013	Pro Pinball: Timeslock - The ULTRA Edition
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	15/09/2013	Tales From The Floating Vagabond, Second Edition
OEF	Public	Games	Standalone	15/09/2013	The Fastest RPG I've Ever Played - Abstract Dungeon
IC	Ltd. Reward				
-	n/a	Games	Standalone	15/09/2013	Cards with Character (Drinking Game)
OEF	Ltd. Reward	Games	Standalone	16/09/2013	Incredible Expeditions: Quest for Atlantis
IC	Ltd. Reward				
-	n/a	Games	Standalone	16/09/2013	Wrath of Kings
-	n/a	Games	Standalone	16/09/2013	The Covetous Poet's Adventure Creator and Solo GM Guidebook
OEF	Reward	Games	Software	17/09/2013	An exciting new take on the survival horror game genre!
-	n/a	Games	Standalone	17/09/2013	Codename: Oracle Card Game
OEF	Public	Games	Software	18/09/2013	CHROMANCEER Adaptive Strategy Online Trading Card Game
IC	Ltd. Reward				
OEF	Public	Games	Software	18/09/2013	Awesomenauts: Starstorm
OEF	Reward				
IC	Reward				
IC	Ltd. Reward	Games	Standalone	18/09/2013	Pulp Adventure Companion
OEF	Reward	Games	Software	18/09/2013	Instant, Mobile, Fantasy Sports
IC	Reward				
-	n/a	Games	Standalone	18/09/2013	Case for Humanity
OEF	Reward	Games	Software	19/09/2013	Stronghold2D - Mass Multiplayer 2D War Game
IC	Ltd. Reward				
OEF	Public	Games	Standalone	19/09/2013	Grim World: Gaming Supplement for Dungeon World & FATF Core
OEF	Backer				
IC	Ltd. Reward				
OEF	Backer	Games	Standalone	19/09/2013	Flip a Quest
IC	Ltd. Reward	Games	Standalone	20/09/2013	Alchemist Academy
OEF	Public	Games	Software	20/09/2013	3D Virtual Tabletop: Visually Stunning RPGs on iPad, Android
OEF	Backer				
OEF	Ltd. Reward				
IC	Ltd. Reward				
-	n/a	Games	Standalone	20/09/2013	They're Coming - A Zombie Survival Card Game
IC	Ltd. Reward	Games	Software	21/09/2013	Learn To Play Music In Minutes & KickStart Your Brain!
IC	Ltd. Reward	Games	Standalone	21/09/2013	Promised Sands for Success Core
OEF	Public	Games	Standalone	21/09/2013	Give It to the King - Redax
IC	Ltd. Reward				
OEF	Ltd. Reward	Games	Standalone	21/09/2013	Skeehole™: Where Skeeball Meets Cornhole
IC	Ltd. Reward				
-	n/a	Games	Standalone	21/09/2013	Little Fears Nightmare Edition - Blessed are the Children
OEF	Public	Games	Software	22/09/2013	E.K. Ballo the Demon Slayer Christian MMORPG
IC	Ltd. Reward	Games	Standalone	22/09/2013	Smashed Bros: The Beer Fueled Brawler

## Participatory Mechanisms in Crowdfunding

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
OEF	Ltd. Reward	Games	Software	22/09/2013	Icebound: A Visual Novel
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	22/09/2013	Out of the Blue - The Buddy Cop RPG
OEF	Public	Games	Software	22/09/2013	Tabletop Connect: 3D Virtual Tabletop for Windows and Mac
OEF	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	23/09/2013	Engineers' Collection: 4 Wagon Kits in N Gauge 1:148
IC	Ltd. Reward	Games	Standalone	23/09/2013	Conquest of Orion - A Conquer the Galaxy Card Game
OEF	Public	Games	Standalone	23/09/2013	Jadepunk: Tales from Kausao City Roleplaying Game
IC	Ltd. Reward	Games	Standalone	23/09/2013	Wrangled
IC	Ltd. Reward	Games	Software	23/09/2013	ATKMTN Presents: The Attack Pack - Two sad 2D PC Games
-	n/a	Games	Standalone	23/09/2013	Amgl! Ice Cream!
-	n/a	Games	Standalone	23/09/2013	Belle of the Ball: A Fancy Schmancy Card Game
-	n/a	Games	Software	23/09/2013	The Moaning Words - An investigation into the Cthulhu Mythos
-	n/a	Games	Software	23/09/2013	Fishy Head - The Addicting Family Friendly Game
IC	Ltd. Reward	Games	Standalone	24/09/2013	SCRIBOS: A Tabletop 3D Space Combat Role Playing Game
OEF	Reward	Games	Standalone	24/09/2013	Havok & Hijinks - Don't slay a dragon... BF one
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	24/09/2013	Robot Turtles: The Board Game for Little Programmers
OEF	Backer	Games	Standalone	25/09/2013	Raiders of R'lyeh: Horror Adventure RPG and Mythos Sandbox
IC	Ltd. Reward				
OEF	Reward	Games	Software	25/09/2013	Tetrapulse
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	25/09/2013	TERRIBLE THINGS: The Party Game Where Everyone Loses
-	n/a	Games	Standalone	25/09/2013	Septikon Uranium Wars
OEF	Reward	Games	Software	26/09/2013	Octopus City Blues
IC	Ltd. Reward				
OEF	Reward	Games	Software	26/09/2013	Crystal Arena: a MOBA like Strategy Game
CDM	Public				
IC	Ltd. Reward				
OEF	Reward	Games	Software	27/09/2013	Death Road to Canada - Permadeath Road Trip Simulator
IC	Ltd. Reward				
OEF	Backer	Games	Software	28/09/2013	Swords of I do Visual Novel Game
OEF	Reward				
IC	Ltd. Reward				
-	n/a	Games	Standalone	28/09/2013	Adventures Under the Laughing Moon - New Edition
OEF	Public	Games	Software	29/09/2013	PENGUEMIC - Word Domination
IC	Ltd. Reward				
OEF	Ltd. Reward	Games	Software	30/09/2013	Data Hacker: Corruption - A massive Dual-plot RPG
IC	Reward				
OEF	Ltd. Reward	Games	Software	30/09/2013	FitTrip: The World From Your Gym
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	30/09/2013	Smash Monster Rampage
OEF	Reward	Games	Software	30/09/2013	Hot Tin Roof: The Cat That Wore A Fedora
IC	Reward				
-	n/a	Games	Standalone	30/09/2013	RivalMe Cards + Trivia: Yanks in Exile

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
OEF	Public	Games	Software	30/09/2013	Neverending Nightmares
OEF	Reward				
CDM	Backer				
IC	Ltd. Reward				
OEF	Public	Games	Standalone	01/10/2013	"Spooks! Welcome to the Great Beyond" Tabletop RFG
OEF	Reward				
IC	Reward				
-	n/a	Games	Standalone	01/10/2013	Ad-Man! A game of advertising mascots
OEF	Public	Games	Software	02/10/2013	Mighty No. 9
OEF	Reward				
CDM	Public				
CDM	Backer				
IC	Ltd. Reward				
-	n/a	Games	Standalone	02/10/2013	Alien Uprising
OEF	Reward	Games	Software	03/10/2013	Sunless Sea
IC	Ltd. Reward				
IC	Reward	Games	Standalone	03/10/2013	Divine Instruments and Beyond for Part-Time Gods
-	n/a	Games	Standalone	03/10/2013	Wedding or Knot, 1st board game for brides & bridal showers!
-	n/a	Games	Standalone	03/10/2013	Sangoku by Mike Elliot
OEF	Reward	Games	Standalone	04/10/2013	Spell Chess - An expansion for Chess
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	04/10/2013	Bettle Merchants - Economic Board Game
IC	Ltd. Reward	Games	Standalone	04/10/2013	Second Mouse - a card game of luck and strategy
OEF	Reward	Games	Software	04/10/2013	Shantae: Half-Genie Hero
CDM	Reward				
IC	Ltd. Reward				
CDM	Backer	Games	Standalone	05/10/2013	Burning Suns
IC	Ltd. Reward				
OEF	Reward	Games	Software	05/10/2013	DCS WWII: Europe 1944
CDM	Backer				
IC	Ltd. Reward				
IC	Ltd. Reward	Games	Standalone	05/10/2013	Pirates & Dragons RPG
OEF	Reward	Games	Software	05/10/2013	Neo-Victorian Skirmish Squad
IC	Ltd. Reward				
-	n/a	Games	Standalone	05/10/2013	Tinker Deck - Steampunk Playing Cards
OEF	Public	Games	Standalone	06/10/2013	Bounce Battle
OEF	Public	Games	Standalone	06/10/2013	Lords & Ladies - a game of Legacy, Gossip and Intrigue
OEF	Reward	Games	Standalone	06/10/2013	Beyond RPG: Imagine With Us
IC	Reward				
OEF	Backer	Games	Standalone	06/10/2013	Stab City! Role Playing Game
IC	Ltd. Reward				
OEF	Reward	Games	Software	06/10/2013	Night Detective
IC	Reward				
-	n/a	Games	Standalone	06/10/2013	Diamond Cut Playing Cards Deck
-	n/a	Games	Standalone	06/10/2013	Tabletop Castles
IC	Ltd. Reward	Games	Standalone	07/10/2013	Goblins vs Zombies



## Participatory Mechanisms in Crowdfunding

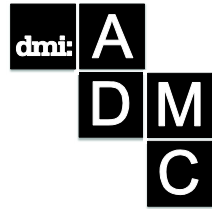
P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
OEF	Reward	Games	Software	07/10/2013	Expansion: Capital Ships/Crews in Epic Space Online
IC	Ltd. Reward				
OEF	Ltd. Reward	Games	Standalone	07/10/2013	SNAFU: A Real Time Cooperative Party Game.
IC	Reward				
OEF	Reward	Games	Software	07/10/2013	Grip of Life
IC	Reward				
-	n/a	Games	Standalone	07/10/2013	CHRIST: Build an inspiring new Art Museum.....with DCF
-	n/a	Games	Standalone	07/10/2013	The 7 Deck - A new card game platform
IC	Reward	Games	Standalone	08/10/2013	The Robotic Age RPG
-	n/a	Games	Standalone	08/10/2013	Fantasy Frontier
-	n/a	Games	Standalone	08/10/2013	Capo dei Capi
-	n/a	Games	Standalone	08/10/2013	Gettysburg: The Valley of Death Board Game
OEF	Reward	Games	Software	09/10/2013	A Gravitational Adventure - Luna's Wandering Stars
IC	Ltd. Reward				
-	n/a	Games	Standalone	09/10/2013	404: Law Not Found
IC	Ltd. Reward	Fashion	Standalone	01/09/2013	Light Knit Co-op, Our first production run.
-	n/a	Fashion	Standalone	01/09/2013	See No Evil - Zany Zombie Shirts
-	n/a	Fashion	Standalone	02/09/2013	Little Bronco Shirt
-	n/a	Fashion	Standalone	02/09/2013	HouseBROKEN Clothing's New Designs
-	n/a	Fashion	Standalone	02/09/2013	Zombie T-Shirts Return From The Dead
IC	Ltd. Reward	Fashion	Standalone	05/09/2013	Espionage Cosmetics' NAILD IT!
IC	Ltd. Reward	Fashion	Standalone	05/09/2013	Charlie Hustle: The Negro League Collection
CDM	Ltd. Reward	Fashion	Standalone	05/09/2013	Gurus Natural Rubber Sandals
OEF	Reward	Fashion	Standalone	05/09/2013	IALPA - Premium American Made Organic Tees RE-LAUNCH
OEF	Backer	Fashion	Standalone	06/09/2013	Tribesports: Revolutionizing the sportswear industry
CDM	Public				
IC	Ltd. Reward				
IC	Ltd. Reward	Fashion	Standalone	06/09/2013	Full Dice Apparel
-	n/a	Fashion	Standalone	06/09/2013	Valleau Apparel Activewear - Wear your confidence
-	n/a	Fashion	Standalone	06/09/2013	ARGOZ: Awesome Socks that Actually fit - RE-LAUNCH
IC	Ltd. Reward	Fashion	Standalone	08/09/2013	STITCHED: Limited Edition Hand Bag Collection
-	n/a	Fashion	Standalone	09/09/2013	Uplift Fall '13 Line
-	n/a	Fashion	Standalone	09/09/2013	MADE TO REBEL - Makes it to Market
-	n/a	Fashion	Standalone	09/09/2013	Chapsle Chainmail Bracelets - Final Hours!
-	n/a	Fashion	Standalone	10/09/2013	West London Boutique: Low Maintenance, High Fashion
IC	Ltd. Reward	Fashion	Standalone	11/09/2013	Ok Sock Printed Designer Socks
-	n/a	Fashion	Standalone	11/09/2013	OkeDream Ltd   Ambition & Life
-	n/a	Fashion	Standalone	12/09/2013	Help Launch Evergold Design!
-	n/a	Fashion	Standalone	12/09/2013	URBANE CAMO: Quite Possible, The Greatest T-Shirt Line Ever
-	n/a	Fashion	Standalone	13/09/2013	Hiker shodiee s-neckwarmers and balaclavas for all seasons
-	n/a	Fashion	Standalone	13/09/2013	OLIVERS: The Last Pair of Athletic Shorts You'll Ever Need
-	n/a	Fashion	Standalone	14/09/2013	Zombabiez
-	n/a	Fashion	Standalone	14/09/2013	1929Galore Jewelry Collection
CDM	Backer	Fashion	Standalone	17/09/2013	iini: vests with benefits
IC	Ltd. Reward	Fashion	Standalone	20/09/2013	BORNINFORMIA: High Quality Clothing Made in California

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
-	n/a	Fashion	Standalone	20/09/2013	Shirts Created from a Kid's Imagination
IC	Reward	Fashion	Standalone	21/09/2013	Farm Team Apparel: Minor League Duds
OEF	Ltd. Reward	Fashion	Standalone	21/09/2013	Avestomy - Ostomy Apparel with Attitude
IC	Ltd. Reward	Fashion	Standalone	21/09/2013	Great Lakes   Classic Northern Apparel   American Made
-	n/a	Fashion	Standalone	22/09/2013	Sandwich Tees II: ToastCat
CDM	Public	Fashion	Standalone	23/09/2013	Huffy Critter Scarves (of DOOM)
-	n/a	Fashion	Standalone	23/09/2013	Strapp Wallets - OMG another freakin' wallet - Stay connected
-	n/a	Fashion	Standalone	23/09/2013	A TOXIC Line of Wearable-Art Fashion
-	n/a	Fashion	Standalone	24/09/2013	Dog Breed T-Shirts
-	n/a	Fashion	Standalone	25/09/2013	[redacted] - T-shirt
-	n/a	Fashion	Standalone	26/09/2013	Fynchini jewelry exhibition, rings for every occasion
-	n/a	Fashion	Standalone	26/09/2013	"THE GREEN JEAN" 100% MADE IN THE U.S.A., ECO-FRIENDLY DENIM
-	n/a	Fashion	Standalone	26/09/2013	Spirit Designs - Enjoy water sports in style
CDM	Backer	Fashion	Standalone	27/09/2013	One for the wall, a new T-Shirt Line focusing on the Art
-	n/a	Fashion	Standalone	27/09/2013	Ellis Rugby - Pioneers Collection - English Rugger
OEF	Public	Fashion	Standalone	28/09/2013	A strapless bra engineered to stay where it belongs
-	n/a	Fashion	Standalone	29/09/2013	Recoverywhere Apparel: Taking Fashion To The Streets
-	n/a	Fashion	Standalone	29/09/2013	Denim and Spirits Fall 2013 Collection Launch
-	n/a	Fashion	Standalone	29/09/2013	LOTH Hoodies
IC	Ltd. Reward	Fashion	Standalone	30/09/2013	Category 5: Premium Boat Shoes with a Custom Touch
-	n/a	Fashion	Standalone	30/09/2013	Shelit Sports Bra & Fitness Apparel
-	n/a	Fashion	Standalone	30/09/2013	CLEVERFIT: "The Adjustable Collar Stay"
-	n/a	Fashion	Standalone	30/09/2013	We believe ideas are worth wearing
-	n/a	Fashion	Standalone	01/10/2013	Fulgive Leather: Live Passionately
-	n/a	Fashion	Standalone	02/10/2013	Halloween T-Shirt Designs
IC	Reward	Fashion	Standalone	03/10/2013	Barnaby Jones NYC - Everybody Wants a BJ
-	n/a	Fashion	Standalone	03/10/2013	Custom Painted and Studded Vests
OEF	Public	Fashion	Standalone	04/10/2013	Winter is DAMN COLD - The Beardo KFFP WARM Project
CDM	Public	Fashion	Standalone	04/10/2013	Hip - The Minimal Buss Wallet from Acire Supply Co.
-	n/a	Fashion	Standalone	04/10/2013	Simple Wallet 2.0 - The Leather Wallet Redesigned
IC	Ltd. Reward	Fashion	Standalone	06/10/2013	dawn baker: the perfect fit for 2014
-	n/a	Fashion	Standalone	06/10/2013	HIB Industrial Designs
-	n/a	Fashion	Standalone	06/10/2013	The Kubda Pilot: Cool Stuff from old stuff.
-	n/a	Fashion	Standalone	07/10/2013	Ammo Wear: Hand Crafted Bullet Casing Jewelry
-	n/a	Fashion	Standalone	08/10/2013	Alt Jewelry: Handmade, Sustainable, Pretty.
-	n/a	Fashion	Standalone	09/10/2013	100 Zombies apparel
-	n/a	Fashion	Standalone	09/10/2013	New 2014: McMacular - 1001 Pants -- Luxurious Comfort
-	n/a	Fashion	Standalone	09/10/2013	Tell a Tale 100, Illustrated Jewelry Variations
OEF	Public	Fashion	Standalone	10/10/2013	Natural Rejection
CDM	Backer	Fashion	Standalone	10/10/2013	In Search of A Sole - The Love Jules Leather Shoe Co.
-	n/a	Fashion	Standalone	10/10/2013	Sustainable Organic Wearable Sculpture w/ an Industrial Edge
-	n/a	Fashion	Standalone	10/10/2013	Sophia Lucia Rose: M@lange Collection
-	n/a	Fashion	Standalone	10/10/2013	Knot Theory: Bow Ties with Infinite Looks
IC	Ltd. Reward	Fashion	Standalone	12/10/2013	Luxury Handbags and Jewelry by Sandra Cadevid

Participatory Mechanisms in Crowdfunding

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
-	n/a	Fashion	Standalone	12/10/2013	COCABANG - fiercely feminine fashion
-	n/a	Fashion	Standalone	12/10/2013	WELKIN NYC : Children's clothing by the city, for the city
-	n/a	Fashion	Standalone	12/10/2013	Hollywon't: A brand for the Independent Creator.
-	n/a	Fashion	Standalone	13/10/2013	Yinzer Army Clothing Co. - 'Bugh Inspired Apparel & Art
IC	Ltd. Reward	Fashion	Standalone	14/10/2013	BLACKE133 Introductory Line
-	n/a	Fashion	Standalone	14/10/2013	M2057 by Maria Pinto: Urban Chic Fashion Collection
-	n/a	Fashion	Standalone	14/10/2013	My Crazy Stairs Jewelry at Hollywood Forever Cemetery
-	n/a	Fashion	Standalone	15/10/2013	Chainmail Jewellery
-	n/a	Fashion	Standalone	15/10/2013	Breaking Bad Finale Shirts & Hoodies (2 designs available)
-	n/a	Fashion	Standalone	17/10/2013	Completely Royal - Elite Belts
IC	Ltd. Reward	Fashion	Standalone	18/10/2013	Amazing Leathers: Help Launch Our Debut Collection!
-	n/a	Fashion	Standalone	18/10/2013	The Kit - Tailored Wallet: Don't settle for mass-produced
-	n/a	Fashion	Standalone	18/10/2013	Black Box Denim: Custom-Bespoke-Just-Are-some Jeans
-	n/a	Fashion	Standalone	18/10/2013	Wits + Beaux   American Made Socks and Bow Ties
-	n/a	Fashion	Standalone	19/10/2013	Seamhead...smart baseball shirts for smart baseball fans
-	n/a	Fashion	Standalone	19/10/2013	babyDFGN knitwear for babies
-	n/a	Fashion	Standalone	19/10/2013	27 Gears Fashion - Belt Buckles, Bottle Openers, & Earrings
IC	Ltd. Reward	Fashion	Standalone	20/10/2013	XOAB: Socks, done right.
-	n/a	Fashion	Standalone	20/10/2013	Eternal EH Creations handcrafted chainmaille
-	n/a	Fashion	Standalone	20/10/2013	Sartoria Marconi: Italian-made men's blazers and more
-	n/a	Fashion	Standalone	20/10/2013	Facelesskny - Dark humor for lighthearted people.
-	n/a	Fashion	Standalone	21/10/2013	Armor Class 10 - Shirts for RPG Games LEVEL 3!
OEF	Ltd. Reward	Fashion	Standalone	23/10/2013	Panda Coat
-	n/a	Fashion	Standalone	23/10/2013	ITM15 belt buckle
-	n/a	Fashion	Standalone	23/10/2013	Here, who wants a Midnight Resistance t-shirt?
-	n/a	Fashion	Standalone	25/10/2013	China Royal: Hip Hop Vibe with Luxury Aesthetics
-	n/a	Fashion	Standalone	26/10/2013	Steve Saint John Clothing, Casual Wear for Anywhere
-	n/a	Fashion	Standalone	27/10/2013	Dar Doux: A NY Based Women's RTW Clothing Label
-	n/a	Fashion	Standalone	30/10/2013	Important T-Shirt
IC	Ltd. Reward	Fashion	Standalone	31/10/2013	jegmans: Creative Tie Collection to be MADE IN THE USA!
OEF	Public	Fashion	Standalone	31/10/2013	Sock 101: Step up your sock game, at the game.
-	n/a	Fashion	Standalone	31/10/2013	Rolling Dead - Roller Derby Zombie Shirt
-	n/a	Fashion	Standalone	31/10/2013	Made in USA California Organic Cotton Shirt Project
-	n/a	Fashion	Standalone	01/11/2013	PARKE: Premium Active Denim - Engineered for Performance
-	n/a	Fashion	Standalone	01/11/2013	The Huggy Bag -- Special: Multiple \$10 Pledges Welcome!
-	n/a	Fashion	Standalone	01/11/2013	Rekhardt: Men's button downs designed to be worn unbuttoned
IC	Ltd. Reward	Fashion	Standalone	02/11/2013	Trace: Underwear for all Women
OEF	Public	Fashion	Standalone	03/11/2013	The Hoods & the Peaks by The Mute Collective
IC	Ltd. Reward				
-	n/a	Fashion	Standalone	03/11/2013	Rugged Gnome Leather Company
-	n/a	Fashion	Standalone	03/11/2013	GLOW IN THE DARK FUNKY RETRO CHRISTMAS T-SHIRTS
-	n/a	Fashion	Standalone	04/11/2013	Rep AK: Alaska Themed Clothing for Alaskans, Made in AK
-	n/a	Fashion	Standalone	06/11/2013	ConceptRicks Speckle Print Cap
-	n/a	Fashion	Standalone	07/11/2013	Stubbins Jeans - Upcycled Fashion by Daughter/Mother Team
-	n/a	Fashion	Standalone	08/11/2013	The Chemo Cozy Fleeze is Here
-	n/a	Fashion	Standalone	08/11/2013	Groupie Squirrel T-Shirts

P.M.	Exclusivity	Category	Deliverable	End Date	Project Name
-	n/a	Fashion	Standalone	09/11/2013	Oshon - The Dream of Perfect Bicycle Jeans
OEF	Public	Fashion	Standalone	10/11/2013	Theimals - Zombie Animal T-shirts
-	n/a	Fashion	Standalone	10/11/2013	The Carpenter Collection All Natural Wood Watch & Soft Strap
-	n/a	Fashion	Standalone	11/11/2013	BABY YODA T-SHIRT - (STAR WARS)
-	n/a	Fashion	Standalone	12/11/2013	Sour Milk Sea: Ray Gun Themed Silk Scarves & Pocket Squares
-	n/a	Fashion	Standalone	12/11/2013	Lion & Anvil Durable Goods
-	n/a	Fashion	Standalone	12/11/2013	A Blaquu "Made in England" collection
-	n/a	Fashion	Standalone	12/11/2013	Machine Washable Shoulder and Specialty Bags and Accessories
-	n/a	Fashion	Standalone	12/11/2013	ELEPHANT TRUNK UNDERWEAR.
-	n/a	Fashion	Standalone	13/11/2013	The LEAN™ Essentials Wallet from Raphael Quality Goods Co.
-	n/a	Fashion	Standalone	13/11/2013	LifeStyle Shirt: The More You Ngo
-	n/a	Fashion	Standalone	13/11/2013	Zombie Combat Battalion Scrolls (ZOCOM)
-	n/a	Fashion	Standalone	13/11/2013	Dress Up Your Fitness Bracelet
-	n/a	Fashion	Standalone	14/11/2013	Dyer & Jenkins: American-Made Denim & Knitwear 1/W 2013
-	n/a	Fashion	Standalone	14/11/2013	Up Shirt: The tee with the tiny environmental footprint
-	n/a	Fashion	Standalone	14/11/2013	AMPERE - Better Bra, Better lingerie experience
-	n/a	Fashion	Standalone	14/11/2013	The Sage Braid: A Global Friendship Bracelet
CDM	Public	Fashion	Standalone	16/11/2013	Art Meets Fashion   Michelle Hébert
-	n/a	Fashion	Standalone	16/11/2013	HIGH FIVE FINGERLESS COLLECTION
-	n/a	Fashion	Standalone	17/11/2013	The Perfect Hoodie by ITM
-	n/a	Fashion	Standalone	17/11/2013	Camouflage paracord products! Add-on menu included!
IC	Ltd. Reward	Fashion	Standalone	18/11/2013	STANTT: Casual Shirts That Fit Like They're Tailored For You
-	n/a	Fashion	Standalone	19/11/2013	KeyRisk™ - The World's Thinnest, Most Intelligent Key Holder
-	n/a	Fashion	Standalone	19/11/2013	Luscious, Luxurious Silk Scarves: Lorenz Hermesen Collection
-	n/a	Fashion	Standalone	20/11/2013	Atheist Baby Shoes
-	n/a	Fashion	Standalone	21/11/2013	Wandering Boho Scarves
-	n/a	Fashion	Standalone	21/11/2013	the SHOODIE by the Original Canadian Beaver Clothing Co.
-	n/a	Fashion	Standalone	21/11/2013	Pandora's Chest provides hands free living for active women
-	n/a	Fashion	Standalone	21/11/2013	Larsen & Lund: elegant, upcycled leather bags & accessories.
-	n/a	Fashion	Standalone	21/11/2013	Stylish Silhouette   Shirts
-	n/a	Fashion	Standalone	21/11/2013	Lodge Pants: Stainproof Pants for Everyday Use
-	n/a	Fashion	Standalone	22/11/2013	IK3: The Zippered Dress Shirt
-	n/a	Fashion	Standalone	22/11/2013	Watchword Apparel: Hip T-Shirts, Cool Stories.



## Business Model Innovation Through New Customer Roles. Inspirational cues and insights from a design-driven case study analysis

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*Framing business models as relational devices governing transactions with the customers and stakeholders, the current article aims to identify new rules of customer engagement and their impact on business model innovations in design-intensive industries. These industries, framed as the locus of “cultural innovation” – where the innovation soul is characterized by the proposition of new product cultural messages and meaning – sees the customer as a product “sense giver,” an interpreter of the meaning, the cultural and symbolic messages attached to the product. In this setting, new customer roles are explored through a case study analysis based on a fast-growing company operating in the furniture sector.*

*The case study analysis highlights three main customer roles that impact business models: (i) the customer as a market bridge, where the customer attracts new potential contacts and customers; (ii) the customer context as a company “show-room,” where the customer’s home setting is designed to convey the company’s product language and aesthetics; (iii) the customer as an external company design lab, where the customer host events to seek for new product scenarios.*

**Keywords:** *business model innovation, customer engagement, design-intensive industry*

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## Introduction

Business model innovation is gathering a growing attention in design and management field (Martin, 2009; Osterwalder, & Pigneur, 2010; Battistella & al. 2012).

In different industrial context the seeking for a new business model disrupted the competitive rules and the sources of value.

Cases as Hilti, Groupon, Patientlikeme, are recognized as representative of disruptive business model innovation (Markides, 2006) leveraging on a wise integration between on and off line activities and on new customer engagement roles.

A significant literature centered on business model innovation relates to web companies and e-business (Timmers, 1998). Mainly start-ups and new ventures are considered as the main players that introduced new business models and logics with the evolutionary waves of the digital economy.

On the other hand business models innovation are becoming source of value also in industries where the technology innovation and the pace of it are not relevant.

Nevertheless the scientific debate about business model innovation in design-intensive industries - as fashion, furniture, accessories, interiors, textile – where the innovation process is driven by the proposition of new product meanings and languages (Verganti, 2009) and cultural messages (Ravasi, & al. 2012) seems to be poor.

Framing business model as a 'relational device' the paper aims to identify business model innovation logics in design driven contexts where the relationship between product innovation and business model innovation seem to be relevant and fertile (Battistella & al. 2012).

To accomplish this aim, a case study based on explorative research has been conducted. The company for study was selected because it met the following three criteria: (i) had a widely acknowledged innovative business model; (ii) operates in design intensive industry where the content of innovation is based on new cultural messages and meaning conveyed by the product; (iii) generates new forms of customer relationship through new engagement roles. The article is composed of five different sections. First, a literature analysis will be presented, highlighting how the dominant studies focused on business model and business model innovation. Following the methodological part is depicted where a case study analysis research strategy is proposed. In the third section, the LAGO case study is developed, pinpointing the underpinning logics of business model innovation.

A discussion is advanced in the fourth section, where some evidence and insights based on the case study analysis support the development of a relational business model innovation approach.

In the final section, the conclusions, the main limitations of the research and new and promising research strands are proposed.

## **Theoretical background and research questions**

As can be expected by delineating the meaning of the business model in the web economy, the concepts of *flow* and *relationship* are significantly stressed. A business model represents the device by which the main flows and the company's web of relationships are designed, aiming to create benefits for the different participating actors, as providers, partners, customers (Amit, & Zott, 2001).

In their attempt to extend the business model concept by trying to go beyond the foundation originally centered in e-business, Amit and Zott (2001) define the business model as 'the content, structure, and governance of transactions designed to create value through the exploitation of business opportunities.'

Even in this case, through the term *transaction*, scholars pinpoint the relational rationale underpinning how in the business model concept the exchange and interactive dynamics prevail.

On the other hand recalling the basic business question advanced by Drucker, Magretta (2002) describes business models as

*stories that explain how enterprises work. A good business model answers Peter Drucker's age-old questions: Who is the customer? And what does the customer value? How do we make money in this business? What is the underlying economic logic that explains how we can deliver value to customers at an appropriate cost?(Magretta, 2002, p. 87)*

Here, the concept of the customer, customer value and money making are intended to be constitutive business model elements.

Other scholars have grappled with the attempt to split a business model and to identify its various components.

According to Osterwalder, Pigneur and Tucci (2005),

*a business model is a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the*

*business logic of a specific firm. Therefore we must consider which concepts and relationships allow a simplified description and representation of what value is provided to customers, how this is performed and with which financial consequences. (Osterwalder, et al., 2005, p. 5)*

In an initial proposal, these authors identify four main pillars – the product, the customer interface, the infrastructure management and the financial aspects – around which some “building blocks” are identified.

In a later release, Osterwalder and Pigneur (2010) directly proposed a “nine building blocks business canvas” (i.e., value proposition, channels, customer relationships, customer segments, revenue streams, key activities, key resources, key partnership, cost structure).

Other scholars have provided a more compact version. Specifically, business model based on six elements has been depicted where value proposition, customers, internal processes/competencies, external positioning, the economic model and personal investor factors constitute the key elements of the model (Morris, Schindehutte, & Allen, 2005).

Voelpel, Leibold and Streb (2005) mention three basic components of a BM: value proposition for customers, value network configuration to create that value, and returns ensuring the satisfaction of relevant stakeholders and, thus, the sustainability of the business model.

On the other hand, a business model concept based on four characteristic elements (customer value proposition, profit formula, key resources, and key processes) has been defined (Johnson, Christensen, & Kagermann, 2008), pointing out the interlocking logic among the different elements.

In any case, the different attempts to identify the components, the transactional and relational dimensions of the business model are depicted as fundamental. The concepts of “customer value proposition,” “customer value,” “customer segments,” “key partnership,” and “customer relationship” point out the interactive and relational dimensions of the core of the business model.

If there is a common consensus about the basic components of business model as a construct there are heterogeneous perspectives about the way to conceive and interpret the business model innovation.

A primary research strand emphasized how business model innovation is induced by or mainly related to technological innovation.



*Table 3: Literature review*

Authors	Focus on
Timmers (1998)	Product, service and information flows, business actors
Weil and Vitale (2001)	Roles and relationships among a firm's consumers, customers, allies, and suppliers
Amit and Zott (2001)	Transactions
Magretta (2002)	Customer value, economic logic, value delivery
Morris et al. (2005)	Value proposition, customer, internal processes/competencies, external positioning, economic model and personal investor factors
Osterwalder, Pigneur and Tucci (2005)	Product, customer interface, the infrastructure management and the financial aspects
Voelpel et al. (2005)	Value proposition, value network, returns
Johnson et al. (2008)	customer value proposition, profit formula, key resources, and key processes
Osterwalder and Pigneur (2010)	value proposition, channels, customer relationships, customer segments, revenue streams, key activities, key resources, key partnership, cost structure

As stated by Teece (2009), 'technological innovation often needs to be matched with business model innovation if the innovator is to capture value.'

Furthermore, new business models have been usually connected to new R&D strategies. In "Open Business Models," Chesbrough (2006) affirms:

*an open business model uses the new division of innovation labor – both in the creation of value and in the capture of a portion of that value. Open models create value by leveraging many more ideas, due to their inclusion of a variety of external concepts. Open models can also enable greater value capture, by using a key asset, resource, or position not only in the company's own business but also in other companies' businesses. (Chesbrough, 2006, pp. 2-3)*

The author, going beyond the vertical integrated company concept in which the R&D exploration and exploitation are equally run, identifies two ways to build open business models: (i) the inside-out approach, where

ideas, patents and copyrights are internally produced and then licensed to external actors that take them on the market; (ii) the outside-in approach, where companies grasp ideas and technologies from external networks turning them into products to commercialize on the marketplace (Chesbrough, 2006).

Both approaches tend to stress “openness” as a dominant way to innovate business models in a successful and profitable manner.

In contrast, Johnson et al. (2008) citing real successful cases as Hilti, Intuit, and Apple as cases propose the soul of business model innovation in ‘keeping people from getting particular jobs completed: insufficient wealth, access, skill or time.’

In a similar vein another research strand relates business model innovation to the way goods and services are purchased and accessed by the customer.

Firstly, Markides (2006), claiming for the ‘need of a better theory,’ emphasizes the difference between disruptive innovations and business model innovations, pinpointing how the latter tend to basically change competitive rules of a sector and ‘enlarge the existing economic pie,’ either by attracting new customers into the market or by encouraging existing customers to consume more. Furthermore, according to the author, ‘(...) it is important to note that business model innovators do not discover new products or services; they simply redefine what an existing product or service is and how it is provided to the customer.’

Consistent with this approach and centering on the transaction dimension, Zott and Amit (2008) also interpret business models innovation as new forms of economic exchanges. According to the authors:

*novelty-centered business models refer to new ways of conducting economic exchanges among various participants. The conceptualization and adoption of new ways of conducting transactions can be achieved, for example, by connecting previously unconnected parties, by linking transaction participants in new ways, or by designing new transaction mechanisms. (Zott, & Amit, 2008, p. 4)*

The vision that business model innovation occurs when changes are made in the way to conduct transactions, to create and deliver value and to build up new customer relationships is indeed widely accepted.

Mainly in service sectors and in the fast-paced technology industry, different business model innovations have been conceived, reconfiguring the customer's role in the production process.

The dominant innovation directions that have been pursued involve the customer's role as a collaborative producer (McKelvey, 2001; Pisano, & Verganti, 2008; Johnson, et al., 2008). The advent of a user-generated content movement, the diffusion of social media and Web 2.0 technologies, and the emergence of skilled and well-educated customers have enabled whole crowds or single users to heavily collaborate in the production processes of companies. According to this framework, the customer is a company production or co-developing partner that jointly affects the evolution, the costs and the benefits of the value system.

With Apple, iPhone users are free to conceive and hopefully sell their own apps; in the Linux operating system, people take part in writing codes and strings to optimize the functionalities and the performance of the system; with different low-cost airlines, customers are empowered to accomplish check-in activities and most of the luggage handling on their own.

The entire literature aligned to this frame is usually contextualized in the fast-paced technology industry or in service industry (Mohanbir, & al. 2005; Von Hippel, 2005; Grocott, & al. 2007; Shneiderman, 2007). Specifically this literature seems to avoid the relevant distinction between the cases where the customer plays the role of a mere product assembler – thus customizing the final offering – and the cases where the user represents an operative gear of the business model or even a provider of stimuli for business model change.

In design-intensive industries, where the competitive dynamics are driven by a continuous proposition of new product languages and meanings (Verganti, 2003; 2008; 2009), there is a wide lack of literature about the business model innovation.

In design-intensive industries, products are more or less open narratives in which customers are involved in defining the product sense and meaning (Krippendorf, 1989; Norman, 2005; Verganti, 2003; 2009; Searls, 2009). Thus the customer does not play the ordinary role of receiver but acts sometimes as 'sense giver', some others as a co-designer, till to be a full 'maker'.

Moreover the creation of product meaning seems not to be delegated to the tangible product in itself, but to the entire business model that

companies run and to the ways in which customers are engaged in it (Battistella, Biotto, & De Toni, 2012).

Notwithstanding, some questions remain open and fertile to reach a deeper understanding of how companies create business model innovation by leveraging new customer roles.

What are the customer engagement strategies to change the business model in design-driven companies? Are there specific roles that appear as proper of those design intensive contexts?

Due to a lack of previous literature, these research questions are addressed in this paper through the development of an explorative case study analysis.

## Research strategy

Literature about business model innovation is basically centered on fast-paced technology industries. Furthermore, if design-driven innovation is a concept that has widely permeated the management literature (Dumas, & Mintzberg, 1989; Verganti, 2003; 2006; 2009; Noble, & Kumar, 2010; Ravasi, & Lojacono, 2005; Ravasi, & Stigliani, 2012), there is a neglected area of research where design management studies meet business dynamics and becomes relevant to innovate the business model as a whole.

This literature scarcity led to explorative research based on a case study analysis (Eisenhardt, 1989; Yin, 1981; 1984; Mintzberg, 1979). According to the words employed by Eisenhardt (1989):

*there are times when little is known about a phenomenon, current perspectives seem inadequate because they have little empirical substantiation (...). In these situations, theory building from case study research is particularly appropriate (...). (Eisenhardt, 1989,p. 548)*

The first methodological issue faced by the research group pertained to the criteria through which to select a particular case study. A primary sample of 25 Italian furniture companies was considered. The sector choice was indicated as a representative field of design-intensive industries where companies mostly compete on the proposition of new product languages and meanings (Dell'Era, & Verganti, 2007; 2011) and on cultural innovation (Ravasi, et al., 2012).

The sample companies were identified by matching two different criteria: (i) the turnover growth rate in the previous 4 years; (ii) the introduction of novel features in business model.

The first quantitative parameter helped to select an initial ranking of ten companies. The final selection of the case to investigate was run according to an open discussion about the concept of “innovativeness of the business model.” This concept was discussed in a research group of 5 scholars of Politecnico di Milano and University of Torino (2 Assistant Professors in the Design area; 2 Associate Professors in the Innovation Management area; 1 Full Professor in the Business Innovation area).

The concept of innovativeness was split according to two main dimensions: (i) the depth of the innovation, intended to indicate how much the transactions flows and the company-customer relationship changed in business models; (ii) the breadth of the innovation, intended to indicate how many components of the business model have been affected by change with respect to the traditional sectorial trends.

The selection indicated LAGO as the most representative case of business model innovation, where both the levels of depth and breadth of innovation were agreed to by the members of the research group.

As required by theory building based on case study, a combination of multiple sources and investigation methodologies was exploited to achieve a certain robustness and extensibility of the results (Yin, 1981; Eisenhardt, 1989).

The case study analysis was conducted over a period of one year and 5 months, involving three main sources in an iterative way:

- a press analysis conducted on 26 journals and design-related magazines in the time range 2009-2013;
- five in-depth interviews, three of which were conducted with the LAGO CEO, Daniele LAGO, and two were conducted with an external consultant architect, Massimo Antinarelli;
- participation in four workshops and events organized by the Brera LAGO Apartment, located in Milan.

The press analysis supported a primary understanding of the LAGO business system. Different articles (18 of 26 articles) emphasized both directions of innovation pursued by the company: innovation in the product and in the customer relationship, product exhibition and distributive chain. A great amount of attention (15 on 26 articles) and space has been

dedicated by the press to the “LAGO Apartment network” and its novel ways of engaging customers and building new relationships.

These initial understandings derived by the press analysis supported the formulation of the main issues and questions that were explored in the subsequent interviews.

Interviews focused on the following aspects:

- driving forces that supported innovation in the business model;
- innovative concepts related to the LAGO business model;
- product design strategies and creativity management;
- logics to engage and manage relationships with customers;
- distributive policies and the LAGO Apartment network.

Following these interviews, researchers’ participation in four workshops and events organized by LAGO was encouraged to experience and grasp the atmosphere and the social interaction among the different involved actors.

Different assessments were taken, aiming to identify qualitative customer profiles, the type of events held and how customers are involved in relevant activities (workshops, events, artistic performances, etc).

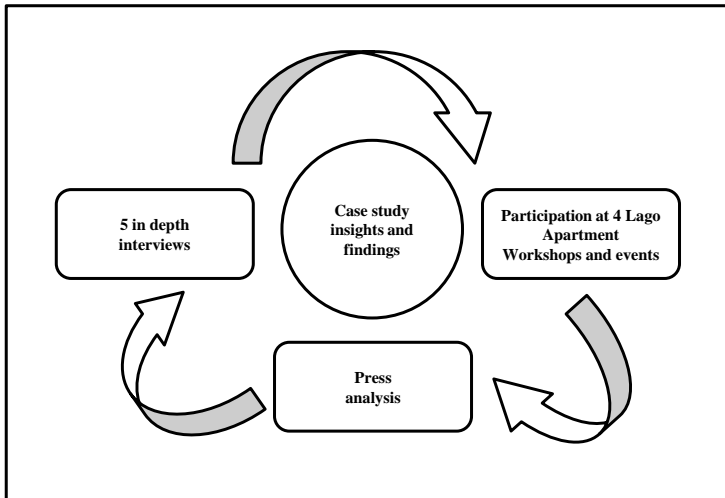


Figure 11: Iterative research process

Three data sources have been employed in an iterative way. Primarily, a first cluster of articles (15) were read to grasp an overall understanding about LAGO’s innovation and design strategy and its underpinning business model. The main concepts derived by reading the articles supported the

formulation of an open-answer questionnaire submitted to LAGO's CEO and architect consultant (2 initial interviews). The questionnaires supported the first development of theoretical constructs and some main hypothesis about the form and the logic of the business model and the company's logic of customer engagement. Following the administration of these questionnaires, the researchers' participation in three main events and workshops organized by LAGO Apartment helped to qualify a direct experience with the concepts and findings related to the tenants' and participants' experience.

A second iterative flow, mainly focused on additional articles, readings, and three more interviews, supported the refinement of the proposed concepts, and a final confirmation of findings and main concepts were derived by the last interview. In this paper, only a brief essay is presented to highlight the focal points related to LAGO's product design strategy, business model, logic, and pattern of customer engagement.

## **Case study: LAGO**

LAGO was founded at the end of the nineteenth century by Policarpo Lago, a wood craftsman who worked in aristocratic homes and Venetian churches. The generation that followed continued his tradition, but expanded their production first to bedroom furniture and later to entryway furniture. Today, LAGO is considered a fast-growing company in the Italian furniture landscape, where it grew from approximately 5 million € of turnover in the first two years of the company's redesign to 30 million € of turnover in 2010, with approximately 170 employees (of which over 25% were hired in 2008).

LAGO can be found in 400 selected shops around the world and has numerous directly managed stores in several Italian and European cities, including Rome, Milan, London, Paris and Barcelona. Lately, the company began some fertile ventures with partner leaders in different sectors to enlarge their range of products and share the pursuit of people-friendly designs, thus creating solutions that can improve the customer's quality of life.

Recently, the company has opened itself to the skills of craftspeople and designers to retrieve the importance of handwork ability, local embedded know-how, and care for detail. This was the beginning of the "LAGO Objects" collection, a set of small objects of high quality and craftsmanship.

The entire LAGO business model is based on two main pillars:

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- an innovative product design strategy, fostered by the LAGO STUDIO, the creative hub where young, external and talented designers are engaged to conceive new product propositions;
- an innovative customer engagement model, based on the creation of a diffused network of LAGO APARTMENT, where LAGO-furnished apartments of specific customers operate as showrooms and product-diffusing vehicles.

### *Managing product design at LAGO*

At LAGO, products are conceived as parts of an alphabet. Each product combined with other parts can assume a proper aesthetic language and style. The combination of the product language is delegated to the hands of the customer. Products are conceived as an open or unfinished work, a sort of open narrative that assumes sense on the basis of the successive “reader” interpretation (Eco, 1989). The products’ modularity and their openness and flexibility to be adapted to different contexts permit a full re-interpretation by the customer-reader (Figure 2).



*Figure 2: Slide carpet by LAGO*

The other feature of the design strategy consists of conceiving product systems. Going beyond the logic of the single product as protagonist in a specific context (as the typical design masterpieces designed by the internationally recognized designers), LAGO proposes products to be aggregated in a way to suggest a proper whole language, a coherent and organic mood of living and domesticity. Products are conceived as a part of systematic offering where each one relates to others in terms of color, shape, texture, and sense. LAGO offers a sort of language bundle more than independently designed products.



Practically, this means that the company considers the space as an organic system in which furniture products communicate with each other. At LAGO, design means creating small designs (products) and, at the same time, knowing how to create large designs (design systems) by looking at the home and its habitability as a whole.

The creation and the design of new product platforms and languages is partially internal and partially entrusted to an external creative hub: the LAGO Studio. LAGO Studio is the company's temporary environment in which different cultures and geographically dispersed people meet to generate new concepts and products.

In fact, LAGO organizes a yearly creative workshop, hosting young university students and designers from around the world and schools such as Saint Martin's, London Royal College of Art, Eindhoven Design Academy, and Milano Domus Academy. The main logic behind these workshops consists of engaging young and inexperienced designers to dive into LAGO's philosophy and to contribute to developing new design systems and single products.

### *Innovating Business model exploring new customer roles*

What about the customer?

Far from the "production function" highlighted in fast-paced technology industries, where the customer plays the role of a collaborative producer, at LAGO, customers are engaged according to other logics and functions.

First, the customer seems to act as a market bridge for the company. The tenants of the LAGO Apartment network form an "inner circle" aiming to access different market segments (Figure 3). Leveraging their own relationships or directly supported by LAGO in multiplying contacts and meeting opportunities, the tenants represent a contact gate where to experience a real LAGO Apartment with a proper mood, language frame, aesthetics, living space and organization.

In cases where the tenant is also an architect or a designer, the value of the relationship is even more evident. The professional tenant interested in enlarging his customer base and work opportunities can leverage being at the center of an open network that naturally attracts customers interested in design and architecture.

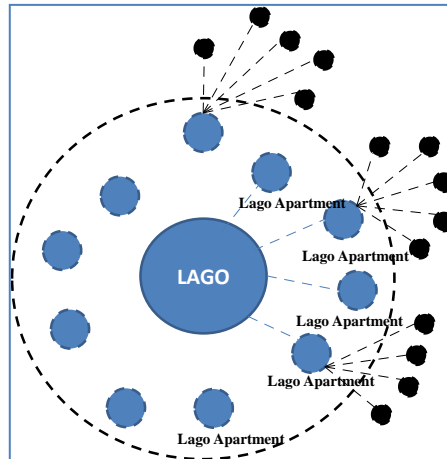


Figure 3: The LAGO Apartment network as market bridge

On a second hand the Lago Apartment constitutes a network of unconventional show-rooms, such as exhibition platforms really lived by the customers-tenants.

The fact that these apartments are real houses or offices of customers provide a more familiar atmosphere for visitors and prospects, thus decreasing the formality, the rigidity and the commercial protocols that used coupled with the typical show rooms. The informal atmosphere and the acknowledgment to be welcomed in a lived house enable more sincere and fertile relationships and the possibility to freely appreciate or not the whole aesthetics and the single items.

Thirdly, tenants can be considered as innovation promoters. As matter of fact when customers submit their project proposals to enter and take part in the LAGO Apartment network, they provide new and inspiring knowledge for innovation. They do so by proposing completely fresh product combinations and languages or by radically proposing new LAGO aesthetics and settings by reinterpreting existing product languages and meanings. LAGO Apartments, according to this role, can be depicted as extended “design laboratories” oriented towards grasping innovative signals and generating fresh insights (Dell’Era, & Verganti, 2009).

These roles directly impact the LAGO business model.

Being a market bridge, customer impacts on the market making function affecting on the company revenues. When they open their house to show their furniture to their contacts and to additional potential customers they

are creating the customer experience that is expected to affect the purchasing dynamics and thus the revenue flows.

In the same vein providing the customer houses in exhibition and show rooms affects the cost structure decreasing the exhibition and retailing costs.

Lastly the role played by customer more than feeding the actual business model provides inspirational knowledge to foster innovative products and systems.

*Table 2: The three roles played by the customer in Lago business model*

Customer as	Function	Direct impact on
Market bridge/Commercial partner	Connection with potential users	Market enlargement/New revenues
Showroom	Product placement, "living" exhibition	Reduction of communication and exhibition costs
Design innovation promoter	Exploration of new design patterns and product languages	Innovation trajectories Inspiring knowledge base

## Discussion

The presented LAGO case study evidences at least three key issues in business model innovation.

First, for long time, business models and innovation have been considered as two different aspects pertaining to the company's management. Business models as related to "value creation and capture" have been analyzed as operational devices mostly pertaining to the company operating routine. Contrarily, innovation has been framed as a changing activity oriented to move company assets, strategy and value creation means towards thriving and superior performance levels. In other words, a business model relates to *exploitation*, whereas innovation equals *exploration* (March, 1991).

This clear-cut separation seems to lose its validity. As evidenced by LAGO, the business model and innovation are intertwined concepts. LAGO innovatively created its own business model, changing the typical value drivers in the furniture industry and at the same time, its business model fosters continuous innovation because some of its constituent elements –

i.e., the LAGO apartment network – feed stimuli and insights to the company about sociocultural models and new emerging patterns in terms of product languages and meanings.

The business model in LAGO's case not only guarantees value creation and its "appropriability," but it also works as an engine aiming to update and revamp product languages and meanings.

The intertwined relationship between the business model and innovation activities proposes different questions about the *locus* and the management of R&D. At LAGO, R&D is spread out into three main moments and entities: LAGO Studio is the creative platform in which foreign and other talented designers seek for new concepts and products languages; the LAGO Apartment network feeds stimuli and insights handled and systematized to build design briefs and inspirational knowledge for LAGO Studio designers; the internal department solves technical issues and drives concepts towards the manufacturing process.

More than an open innovation pattern (Chesbrough, 2006), the LAGO business model enables a diffused R&D and design activity system in which the LAGO apartments play the role of explorative and diffused design labs, feeding cultural insights, product languages and inspirational apartment language moods.

A second finding that emerged from the case study deals with the scope and "object" of design-driven innovation. Design-driven innovation has traditionally related to the product scope (Verganti, 2003; 2009; Noble, & Kumar, 2010). Product meaning and language change has been framed by scholars as a change of some tangible product elements such as shape, material, texture, color, joining relationships, and finishing (Dell'Era, & Verganti, 2007; Person, et al. 2008; Ravasi, & Stigliani, 2012; Noble, & Kumar, 2010).

In LAGO, however, design has been applied to the entire value system and business model. Design is progressively being employed to innovate services, intangibles, applications, and interfaces (Morelli, 2002; Manzini, & Vezzoli 2003; Brown, 2008). The dematerialization of offerings is driving companies and designers to enlarge the design scope range from a product and tangible dimension to the overall value system, where business models take up a prominent role (Osterwalder, & Pigneur, 2010). This point seems to strengthen the literature strand at the intersection between design and management studies labeled "design thinking" (Brown, 2008; Dorst, 2011; Martin, 2009), where creativity and lateral thinking, with a proper mindset, knowledge and cognitive tools, foster the organizational innovation.

A third piece of evidence linked to this second point addresses the specific direction of business model innovation. LAGO introduced a novel business model in the furniture industry, reconfiguring the customer relationship system and the logic of customer engagement.

In a sector such as furniture, where fragmented and small distributive players or large low-cost malls prevail, LAGO revamps the customer relationship by introducing a familiar concept – the apartment – and provides the customer with three novel roles and functions.

These new roles and functions identify the customer as a key asset in creating the LAGO business model and in boosting and stimulating the innovation process.

Recalling some new productive roles attributed to customers in fast-paced technology industries, business model innovation through the alteration of company relational systems is becoming a critical outpost in innovation management studies and practice.

Assuming a more general perspective, business model innovation through the alteration of the company relational system can be framed according to main variables or “objects to change”: the actors and their roles.

According to this framework, business model innovation can be fostered by:

- changing the actors, when new actors (customers or stakeholders) are included in business models as providers of new assets or activities;
- changing the roles of actors, when the same or new actors are provided with novel roles in the value creation process.

The proposition of this theoretical frame tries to enlarge the perspective of business model innovation as mostly depicted in fast-paced technology industries where a robust research strand provides a dominant view in which business model innovation is mainly based on “openness” and on a collaborative production function exerted by the customer. Based on a case study methodology approach, the proposed framework aims to enlarge the range of study of business model innovations towards other industrial settings and competitive environments to deepen existing knowledge and seek new findings.

In the conclusion below, the limits of this research are highlighted and some possible new research directions are proposed.

## Conclusions

Business model innovation has undergone deep changes due to the different ways to engage R&D partners, technology providers and customers in the company value system. Innovating business models through opening them to a wider group of stakeholders has become more than a fad. Consolidated literature in the fast-paced technology industry focused on the different ways to engage external partners as co-developers or collaborative producers.

Design intensive industries, where companies compete through the creation and the diffusion of new product languages, symbolic values and cultural messages have been traditionally neglected, leaving a research gap in understanding other additional business model innovation trajectories where products are framed as “open narrations” and the customer is a “sense giver” more than user enticed by product functionalities and performance.

The analysis of LAGO as a case study notes how the customer is basically a key asset of LAGO’s business model. LAGO’s case shows how customers can assume roles different from those of co-developers or collaborative producers.

LAGO pinpoints how business model innovation can be fostered by engaging customers with new roles and logics. At LAGO, the customer acts as the company’s market bridge, forming an “inner circle” that enables the company to access different market segments. The apartment of the tenant-customer furthermore acts as an exhibition platform where events and workshops are organized to host potential customers in a sort of “living showroom.” Additionally, customers, by submitting their “apartment ideas” to the company, provide their own perspectives and aesthetics for LAGO apartments, acting as an external design lab and innovation promoters.

These highlighted customer engagement tools mainly show how other business model innovation trajectories are pursued in industries that are different from the logic pursued by the fast-paced technology industry.

The limits of the demonstrated insights and findings are related to the development of a single case study.

However, several signals by which to interpret other ways to innovate business models according to new customer engagement rules cannot be neglected.

As outlined in the LAGO study, new directions of business model innovation are even aligned with new R&D management systems. LAGO apartments become external platforms, design labs or antennas through

which part of the R&D process is managed by a community of architects, designers, and customers.

The outcome of these design labs is a sort of inspirational knowledge that feeds the LAGO Studio creative hub and internal technical offices.

Future research can deepen the knowledge surrounding new roles and functions of the customer in innovative companies' business models. A further investigation could strengthen the presented insights by exploiting a quantitative analysis on a wider case sample.

Moreover, extending the research questions and the framework of this study to other fast-paced design industries, e.g., the fashion industry, where the evolution of product language and meanings is particularly rapid, could provide additional findings about the logic of customer engagement in business model innovations.

Furthermore, the rapid emergence of fashion and the changing role of distribution within the fashion industry could provide additional rules for customer engagement and rich new insights about relationship-based business model innovations.

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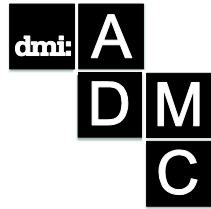
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# Specification of an Additive Manufacturing Consumer Design Toolkit for Consumer Electronics Products

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*Online toolkits, also known as product configurators, are a well established means of enabling consumer engagement in the mass customisation of products. Such toolkits typically require the consumer to select from pre-determined menus of modules in order to create products personalised to match their requirements, however in recent years a new class of toolkit, enabled by additive manufacturing, has begun to appear. Providing consumers the opportunity to change a product's appearance presents designers and brand managers with difficult decisions, yet to date little research has been conducted to understand how a brand might restrict consumer choice in order to protect its corporate design language. This paper reports on ongoing research which aims to understand the ways in which brands with mass-customisation offerings manage their identities across product portfolios, and the impact which AM might have on these management strategies. It begins by introducing the current state of AM technologies and how these are being used in MC systems. Drawing on a survey with senior design and brand managers, a specification of an AM-enabled toolkit aimed at consumer electronics products is presented, and future steps for the implementation of such a toolkit are discussed.*

**Keywords:** Additive Manufacturing; Online Toolkits; Design Language

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## Introduction

Online toolkits (von Hippel and Katz, 2002; Franke et. al; 2010), also known as product configurators (Berger and Piller, 2003; Piller, 2005), are a well established means of enabling consumer engagement in the mass customisation (MC) of products. Such toolkits typically require the consumer to select from pre-determined menus of modules in order to create products personalised to match their requirements (Pine, 1993; Tseng and Jiao, 1998). Modules may comprise physical components in a toolkit such as that offered by Dell, or properties such as colour and materials in a toolkit such as NikeiD. In this way, MC configurators are able to tailor the specification and design of products to a degree in which it is realistically probable that every configuration will be unique. In recent years however, a new class of toolkit has begun to appear; these configurators do not rely on the choice or arrangement of modules, but instead allow the precise manipulation of a product's form. This 'fine grain' control relies on two factors:

- a parametric design interface (Hermans and Stolterman, 2012) as part of the toolkit
- the use of direct digital manufacturing (DDM) technologies, in particular additive manufacturing (AM), to produce the user-customised part

Providing consumers the opportunity to change a product's appearance, as MC does, presents designers and brand managers with difficult decisions. Much MC literature has concentrated on the need to limit the solution space (Franke and Piller, 2004) and extent (Dellaert and Stremersch, 2005) of customisation for production and logistics reasons. Wide ranging evidence also suggests that consumer satisfaction is increased when the number of options is constrained (Iyengar and Lepper, 2000; Moreau et al, 2005; Dahl and Moreau, 2007; Deng and Hutchison, 2007). However to date little research has been conducted to understand how a brand might restrict consumer choice in order to protect its corporate design language. Cross et al (2009), for example, require that derivatives of a MC system should be "aesthetically pleasing", but make no mention of the resemblance of such derivatives to other products in the brand's portfolio. Yet increased consumer control over the exterior appearance of a product inevitably diminishes a brand's ability to manage product styling, both across its portfolio and over time. This difficulty is further multiplied by the use of

toolkits geared to production via AM: in their review of the literature, Fogliatto et al (2012) note that the implications of AM for MC have only recently begun to be appreciated. An understanding of the unique aspects of AM for MC, and the shift from user configuration towards genuine consumer-design which it portends, is therefore overdue.

## **Additive Manufacturing**

Additive manufacturing (AM) is defined as “the direct production of end-use component parts made using additive layer manufacturing technologies” (Hague, 2012). Gibson, Rosen and Stucker (2010; pp. 3-6) describe 8 steps within an AM process, though these can be reduced to 6 for brevity:

1. Create a three-dimensional CAD model of the part to be manufactured and save the model in STL format.
2. Transfer the STL file to the AM machine, and position and orient the part as required (this is usually done via a PC-based user interface to the machine).
3. Ensure the machine is correctly set up with regard to material supply, layer thickness, cycle time etc.
4. Build the part (generally an automated process requiring no supervision).
5. Remove the part from the machine and post process as required. Depending on the AM technology utilised, this may involve removing support structures, removing unused powder, allowing the part to cool, etc.
6. Use the part as required.

These steps reveal what Mansour and Hague (2003) describe as “by far the most important feature [of AM:] the tool-less manufacturing of parts.” Within traditional mass manufacturing technologies such as injection moulding, tooling is both complex and expensive, typically equating to 1-10x10<sup>5</sup> of the material cost of an individual part (Wang, Ruan and Zhou, 2003). The need to amortize these tooling costs inevitably leads to uniformity within a brand’s product offering, since the costs of repetition are extremely low, whereas even small design changes require significant reinvestment in tooling. Without the need for tooling, AM offers the theoretical possibility that every product sold can exhibit a unique form. The implications of such a possibility for a brand’s control of its design language form the basis of this paper.

Hopkinson and Dickens (2006) note eighteen distinct rapid manufacturing technologies, many of which have been commercialised in different ways by different manufacturers. Table 1 summarises the most commonly used processes currently implemented by MC toolkits.

Table 1. The most commonly used AM processes (Upcraft and Fletcher, 2003; Mansour and Hague, op.cit; Hopkinson and Dickens, op. cit; Z-Corp, 2005; Altair Consulting, 2012)

PROCESS NAME	MATERIALS	PART QUALITY	PROCESS DESCRIPTION
Stereolithography (SLA)	Polymer: Epoxy	Appearance: Good Strength: Good	Liquid resin material is cured by moving laser
Laser Sintering	Polymer: Nylon, Filled Nylon, Polystyrene Metal: Stainless Steel, Aluminium, Titanium	Appearance: Good, though slightly porous Strength: Very Good	Powder material is fused by moving laser
Electron Beam Melting	Metal: Titanium, Cobalt Chrome	Appearance: Good, though generally requires finishing Strength: Very Good	Powder material is fused by moving electron beam
Fused Deposition Modelling (FDM)	Polymer: Polycarbonate (PC), ABS, PC-ABS, PC-ISO, Polyetherimide (PEI)	Appearance: Poor Strength: Good	Filament material is extruded through moving heated nozzle, then welded to previously extruded material

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Multi-Jet Modelling	Polymer: Acrylic (PMMA)	Appearance: Good Strength: Good	Liquid photo-sensitive material is jet-sprayed, then cured by UV light
Perfactory Process	Polymer: Photocurable Acylate	Appearance: Very Good Strength: Poor	Liquid photopolymer is cured using DLP projector. Parts are often used as investment casting patterns for jewellery
Z-Corp Process (3DP Process)	Polymer: Composite Polymer	Appearance: Good Strength: Poor	Powder material is fused by printed liquid binder

## Product Design Language and Brand Equity

At its simplest,

*a brand is a name, term, sign, symbol, design or combination of these, which is used to identify the goods and services of one seller or group of sellers and to differentiate them from those of competitors (Kotler et al, 1996, p. 556).*

The purpose of identification is to encourage in the customer perceptions of "relevant, unique, sustainable added values which match their needs most closely," (de Chernatony, 2003: p. 9). This in turn leads to customer satisfaction and 'brand loyalty', ensuring customers return to the brand to purchase again, rather than buy a competitor's product (Kapferer, 2003: pp. 164-166). Consequently, for a large manufacturer, managing a brand or brand portfolio is a complex and multi-faceted task.

One way of measuring the success of brand management is through brand equity, a way of describing a brand's intangible assets such as "awareness, image, trust and reputation, all painstakingly built up over the years," (Kotler et al. op. cit: p.16). Initially brand equity was understood, in somewhat basic terms, as "outcomes [that] result from the marketing of a product or service because of its brand name that would not occur if the

same product or service did not have that name," (Keller, 1993). This later became recognised as just one definition of brand equity, what Wood (2000) classes brand strength, the others being brand value (the total value of a brand as a separable asset) and brand description (the associations and beliefs the consumer has about the brand).

Olins (2007: pp. 201-202) describes Peter Behrens work for AEG as the blueprint for a brand's corporate identity: products, buildings, logos, advertising and communications were all managed and required to adhere to an over-riding philosophy. By unifying elements in this way, Behrens increased AEG's recognition and reputation amongst consumers and so increased the value of its brand. As the industrial design profession matured it came to recognise ways in which a brand's image could be enhanced and maintained through the development of a "repeatable language, which can be used to generate products consistent with the brand," (McCormack and Cagan, 2003), and thus a consistent treatment of common design features across a brand's product portfolio (Karjalainen and Snelders, 2009) is now recognised as a contributing factor to brand equity. Perhaps the best known example is the Coca-Cola bottle (McCormack and Cagan, op. cit.), which has evolved over more than a century but remains recognisable when applied to both plastic and glass bottles of different sizes. In addition, Apple's filing of a lawsuit against Samsung for infringement of "trade dress" (Fried, 2011), claiming the latter's products copied the industrial design of the iPad and iPhone, is particularly relevant.

## **AM-Enabled MC Toolkits**

Piller, Salvador and Walcher (2012) describe the purpose of MC toolkits as affording consumers the opportunity to specify the "Fit, Form and Function" of a product, to more accurately meet their needs. Thus the Dell configurator mentioned above offers choices of components to customise a computer's function, whereas the NikeID configurator offers choices of shoe size (i.e. fit) and colour and material choice (form). However, whilst configuration choices may indirectly affect a product's shape (a bigger battery in a laptop might require a larger casing, for example), toolkits such as these offer the consumer no opportunity to directly interact with either the product's shape or its styling. The ability of the user to act as designer, as often claimed in MC literature (Ciccantelli and Magidson, 1993; Franke and Piller, op. cit; Randall, Terwiesch and Ulrich, 2003), is therefore a considerably limited one.



AM-enabled MC toolkits overcome some of the limitations of conventional MC systems by no longer relying on mass manufactured, multiply-reproduced modules. Instead, product enclosures produced via 3D printing can be individually styled such that not only might the component specification of a consumer's purchase be unique, its visual appearance may be also. Such an opportunity risks placing considerable burdens on the consumer however – namely how to design an attractive, functional product, and how to ensure the designed product can be manufactured. AM-enabled MC toolkits must therefore provide both design freedoms and design safeguards. This is achieved by constraining the solution space within which the user can operate (Franke and Piller, op. cit.), but with additional limitations such that the brand's design language is not compromised. Two examples of AM-enabled toolkits which work in such a way are presented below.

### *Makielab*

MakieLab is a London-based toy manufacturer, which incorporates an online customisation toolkit to allow consumers to design poseable dolls. As well as choosing clothes and hairstyles, facial features and expressions can be modified, and the doll is 3D printed in laser sintered nylon. MakieLab therefore represents a hybrid MC system, using both a modular and a parametric design approach. The hair and face section of the MakieLab configurator (Figure 1) demonstrates the ability of AM to create visually unique products. Divided into features such as eyes, nose, mouth, etc. the user controls sliders to determine the feature's shape and size. In designing the doll's nose for example, the user can control the length, width, arch and size of nostrils. These sliders offer a very 'fine grain' interaction, and the on-screen image of the doll is updated in 'real time', providing accurate feedback to the user in terms of how his/her inputs affect the doll's design.

The solution space within which the user can affect the doll's design is carefully considered. The MakieLab dolls have a recognisable aesthetic which is maintained throughout the customisation process, and which is determined by a number of factors which the consumer is unable to influence: for example the available choice of hairstyles and clothing suggests the doll represents a young 'hipster' adult, rather than a child. The proportions of the head and body are reminiscent of Japanese anime characters (some of the choices of hairstyle are described as 'Manga'), as are the over-large eyes. These features combine to create a 'collectable' product, one which appeals to those who shop in comic stores rather than

toy shops, and results in a product design language able to encompass all possible variants of the MakieLab doll.



Figure 1. The MakieLab configurator.

### *Nervous System*

Nervous System is a design studio creating jewellery and housewares, based in Somerville Massachusetts. It specialises in the use of generative design – software algorithms that create forms based on both user input and the interaction of the form with itself (Rahim, 2009). Generative design typically produces naturalistic forms, a fact reflected in names given to some Nervous System products: Algae, Ammonite, Dendrite and Xylem, for example.

The Nervous System website features three generative design configurators, the most sophisticated of these is the Cell Cycle configurator, which allows users to create jewellery items such as rings and bracelets. An on-screen model of the product can be rotated and viewed from different

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angles, and the design is automatically updated to reflect user changes. Although the products exhibit the naturalistic aesthetic described above, an underlying mathematical logic is also apparent, and this is reflected in the visual design of the configurator, which has a grid-like layout and monochrome colour palette.

Unlike the MakieLab configurator, Cell Cycle uses only additive manufacturing technologies, with users able to order products in either laser sintered nylon, or precious metals, made by the Perfactory process. The majority of interactions are via slider bars which increase or decrease a given parameter, such as number of cells or degree of twist.

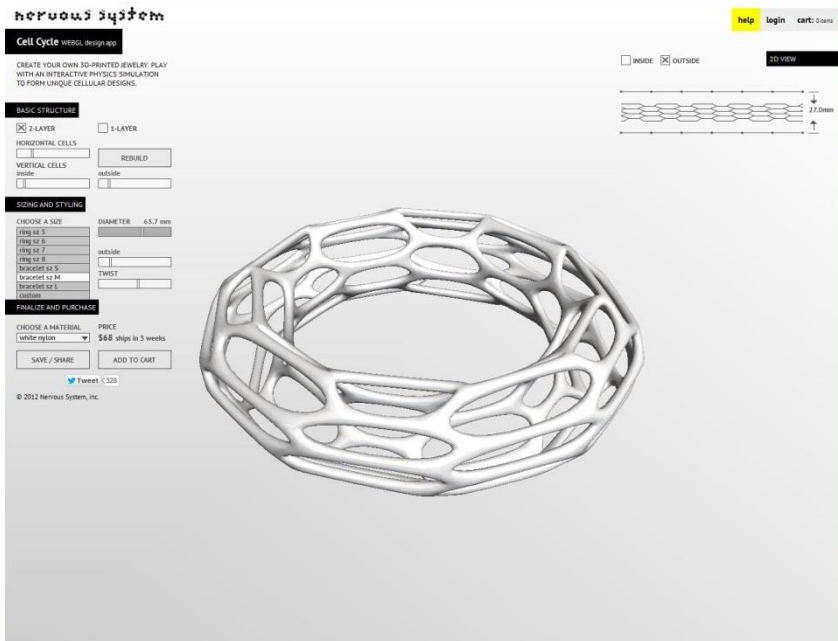


Figure 2. The Nervous System Cell Cycle configurator.

The Cell Cycle configurator again exhibits a very carefully considered solution space. Crucially, the limits set within the configurator ensure that the consumer designed product is manufacturable – for example the minimum material thickness for a piece manufactured in silver is 0.9mm; this specification automatically updates to 1.2mm if nylon is selected instead. In contrast to the the MakieLab configurator (which currently manufactures only one product), designs resulting from the Cell Cycle

system must fit within a much broader product portfolio. This is achieved largely by the nature of the configurator's generative design algorithms, which are similar to those used in other, non-customisable products. The uniqueness of such an approach means there are few findings applicable to more conventional consumer goods manufacturers. Thus, whilst MakiLab and Nervous System both indicate the potential of AM to increase the extent of customisation, they are less able to demonstrate how a brand with an established product design language might integrate AM-enabled MC products into its portfolio.

## **Product Design Language Within AM-Enabled MC Toolkits**

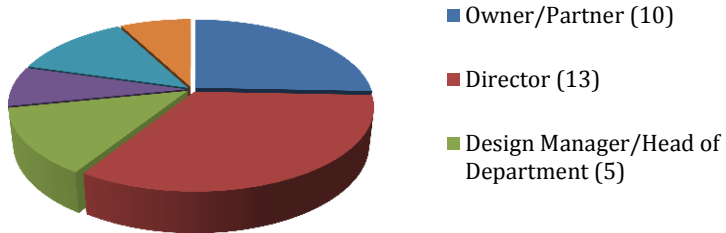
A carefully conceived and orchestrated product design language is not something a brand would wish to sacrifice were it to allow consumers to engage with the design of its products to create unique manifestations of those products (Abdallah and Chan, 2011). Such caution can be recognised in the NikeiD, configurator, where palettes of colours and materials available to the consumer for each model of shoe are deliberately limited, allowing Nike's designers to retain a degree of control over the brand's design language. A system which incorporates AM-enabled MC must similarly exercise control over the possible product forms which a consumer might wish to manufacture. However, by providing the user the opportunity to manipulate a product's shape and exterior surface definition, a new degree of complexity is introduced to the management of a brand's design language.

### *Survey Design and Participants*

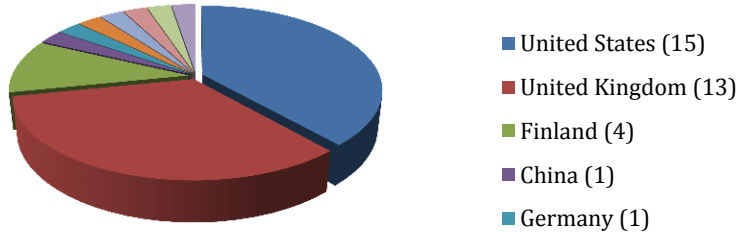
To better understand the commercial realities of brands' design languages, and how these might be protected in an AM-enabled MC toolkit, an internet-based survey was undertaken. Since a product design language is applied across a brand's portfolio and may exist (and evolve) over time, it was reasoned that survey participants should be experienced in design and/or brand management, as evidenced by the participant's job title. All respondents were therefore required to be practising at a minimum level of 'senior designer' or equivalent. Invitations were sent to 91 potential participants and 39 completed surveys (43%) were received (4 unfinished surveys were discarded from the results). Invitations were sent to personal

email addresses and contained a link to the survey web page together with a personal log-in name and password.

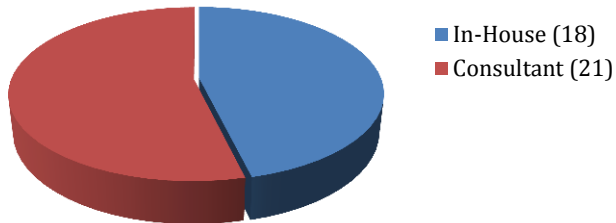
Details of respondent demographics are shown in Figures 3-5 below. It should be noted that although the country of work is shown, no assumptions should be made regarding the nationality of respondents (many are living outside their home country) or the target markets for which they are designing.



*Figure 3. Survey Respondents Job Description.*



*Figure 4. Survey Respondents Country of Work.*



*Figure 5. Survey Respondents Designer Type*

### *Sampling Bias*

Sampling bias, defined as "the difference between the expected value of the sample estimator and the true value of the characteristic which results from the sampling procedure" (Federal Committee on Statistical Methodology, 1978: p.9), occurs when a surveyed sample does not represent a random sample of the population being studied. The most obvious bias within the survey presented below comes from the geographical location of respondents: 38.5% are based in the United States and 54% in Europe. The extent to which this bias distorts the survey's findings is unclear however - it is possible to argue that Japanese, Korean and, increasingly, Chinese consumer product manufacturers (for example) operate as global brands, in which case designers working inside those corporations would record similar responses. However the authentication of such a statement is outside the scope of this research, and so the survey results should be understood as applying primarily to Western brands.

### *Survey Results*

Chen and Owen (1997) propose that a form language is comprised of six attributes: form elements, joining relationships, detail treatments, materials, colour treatments and textures. These attributes were used as the basis of questions aimed at revealing the relative importance of constituent elements of a design language. However in the survey materials and textures were treated as one element; in addition a new consideration – logos or other brand identifiers – was introduced.

With particular regard to the survey's relevance to the specification and design of a consumer design toolkit, four specific findings are noted:

- 1. A successfully implemented product design language is an important factor in a brand's image and profitability.**

More than 90% of respondents considered a coherent design language to be a critical factor in a well designed product, and more than 75% considered it to be critical to a product's commercial success. Respondents unanimously believed that a successful design language leads to differentiation from competitors and increased sales to returning customers, and a substantial majority believed it results in increased consumer awareness of the brand (98%); increased consumer loyalty (95%) and a willingness on the part of the consumer to pay more for a product (82%). One caveat should be noted however - approximately half of all respondents believed the companies they work for (either as employees or consultants) placed too little importance on developing a coherent design

language. Thus it may be argued that these organisations would be willing to sacrifice design integrity if it led to increased sales.

**2. Consumers have insights and expertise which allow them to custom design products which meet their own needs better than non-customised products, however this may be in conflict with a brand's image.**

72% of respondents believed that consumers have valuable insights into the design of current products and ways of customising or configuring them. Almost all believed that current mass customisation toolkits are useful to consumers and enhance the consumer's experience of both the product and the brand. Significant majorities of respondents believed that existing mass customisation toolkits enhance the consumer's perception of a brand (84% for the Herman Miller Sayl, 97% for NikeID). However there is much less enthusiasm for AM-enabled consumer design toolkits, with a majority (57%) believing a brand's reputation for design quality would decrease.

**3. The quality of a brand's product design language may be diluted by consumer customisation, therefore any consumer design toolkit should be constrained in its capabilities in order to be acceptable.**

A significant minority (43%) of respondents felt that allowing consumers to customise products would dilute a brand's design language. Most respondents preferred to reduce the number of options for customisation that a design toolkit offers, suggesting they would seek to retain control over a brand's design language by restricting the consumer's ability to customise a product. This is confirmed by 77% of respondents who suggested a consumer design toolkit should set boundaries of acceptable designs.

**4. In order of degree of influence, a consumer design toolkit should allow:**

- Changes to the position of logos and brand identifiers
- The use of non-standard colours, patterns and graphics
- The use of non-standard materials or material finishes
- Changes to the position of common elements
- Changes to the product silhouette
- Changes to the way in which common elements are detailed

This final finding is of particular importance for the specification of an AM-enabled MC toolkit. Figures 6 and 7 show the degree of importance placed on attributes of a brand's product design language. The necessity of incorporating a common approach to the detailing of common elements is

clearly revealed, particularly in comparison to the importance of using common forms to define product silhouettes. This is largely in accordance with previous studies (e.g. Karjalainen and Snelders, *op. cit.*). Colour and graphic treatments, and the position of logos or other brand identifiers, are revealed as the least important attributes of a brand’s design language.

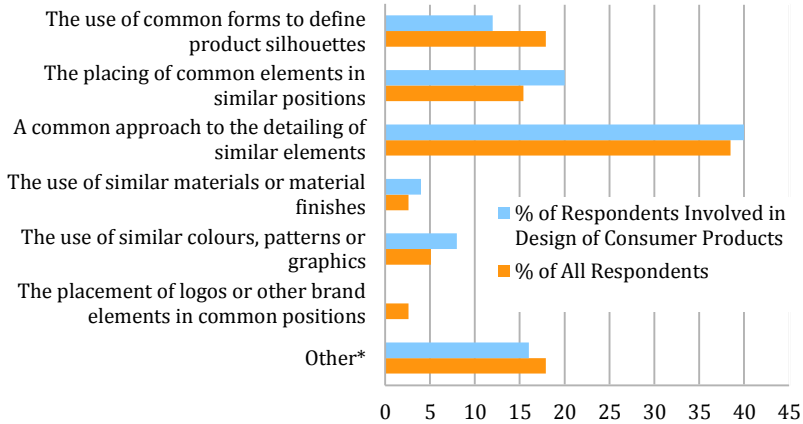
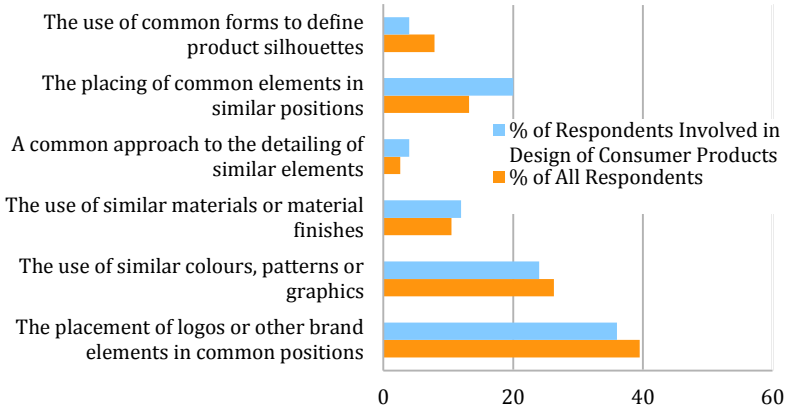


Figure 6. Survey Participants’ responses to the question: “Which of the following attributes is the most important to a successful and coherent design language?”



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*Figure 7. Survey Participants’ responses to the question: “Which of the following attributes is the least important to a successful and coherent design language?”*

*Table 2. Respondents answers to questions regarding AM-enabled consumer design*

	Strongly Agree	Agree	Disagree	Strongly Disagree
The system should allow the maximum design freedom possible	10.5%	39.5%	36.8%	13.2%
The system should set boundaries of acceptable designs	35.9%	41.0%	17.9%	5.1%
It would be possible to maintain a coherent design language	23.7%	52.6%	18.4%	5.3%
The system would be an addition to the brand's standard products	26.3%	57.9%	15.8%	0.0%

The brand's reputation for design quality would increase	2.7%	40.5%	54.1%	2.7%
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Table 2 above shows respondents' answers to a scenario in which AM-enabled toolkits allow consumers to design unique products. A 50:50 split occurs in opinions regarding whether the system should allow the maximum design freedom possible, however approximately three-quarters of respondents believed the system should set boundaries of acceptable designs. Such answers show that there is little common agreement amongst participants regarding the involvement of consumers in the design of personalised products. Participants were also divided on whether a brand's reputation for design quality would be enhanced or harmed by such a system, though a significant majority believed a coherent design language could be maintained.

## Specification of an AM-Enabled Consumer Design Toolkit for Consumer Electronics Products

As mentioned above, the ability of existing AM-enabled MC toolkits to demonstrate how a brand with an established product design language might integrate AM-enabled MC products into its portfolio is relatively poor. In addition, the complexity of product in comparison to a typical consumer electronics product is low. The following guidelines therefore represent a first attempt to formulate a specification for a toolkit suitable for the Consumer Design of consumer electronics products.

### *Framework Definition*

The framework definition (Table 3) of the toolkit refers to decisions required before the detail design could commence. A framework definition involves the specification of "the supporting structures and underlying concepts upon which every detail depends," (Goodwin, 2009: p. 377), and in a commercial context would typically involve inputs from product and brand managers as well as designers (ibid).

Table 3. Framework Definition of an AM-Enabled MC Toolkit Suitable for Consumer Electronics Products

FRAMEWORK DEFINITION FEATURE	EXPLANATION AND APPLICATION IN PROTOTYPE TOOLKIT
Design Method Type AM-enabled Constrained Consumer Design	A development of mass customisation, allowing user-modification of a product's form via a software toolkit. Constraints ensure the resultant product is safe, functional and acceptable within the brand's product design language guidelines.
Value of Customisation and Design Function and Form (Piller, Salvador and Walcher, op. cit.)	Allows users initially to choose from products whose specification targets usage scenarios (e.g. sports, business, etc.). Subsequently allows users to choose whether design decisions are made for functional or aesthetic (form) reasons.
Type of Modularity Component Sharing and Component Swapping (Ulrich and Tung, 1991)	Basic module of electronic hardware and non-visible chassis provides basis of all designs (component sharing). Consumer-designed parts fix to chassis using standard features (e.g. screw bosses) (component swapping).
Extent of Customisation (Dellaert and Stremersch, op. cit.).	Extent of specification customisation (screen size, memory, etc.) is small, as determined by hardware modularity. Extent of design customisation is unlimited within boundaries set by designer and brand. Functional detailing (wall thicknesses, draft, etc.) and cosmetic detailing (fillets, chamfers, etc.) is automated (Sinclair and Campbell, 2009).
Customisation Type Primarily Parameter-based	Needs-based systems are more complex to implement (Walcher and Piller, op. cit.); parameter-based systems are better suited to users who understand technical details (Randall, Terwiesch and Ulrich, op. cit.) Consumers choose base product by usage scenario, then define specification by technical details.

<p>Design Interaction Type Direct interaction with on-screen CAD model</p>	<p>Model shapes and surface definitions are modified directly using tools to push and pull surfaces by click-and-drag type interactions. Model shapes and surfaces are constrained within limits determined by designer and brand.</p>
<p>Manufacturing Scenario Production by manufacturer or authorised vendor</p>	<p>AM parts would be produced by manufacturer or authorised vendor (no 'at home' production). Product assembly carried out by manufacturer. Consumer assembly of changeable cosmetic parts would be possible, if intended (and designed) by brand.</p>

### *Detail Definition*

The detail definition of the toolkit (Table 4) refers to decisions governing the implementation of features with which the consumer would interact directly.

*Table 4. Detail Definition of an AM-Enabled MC Toolkit Suitable for Consumer Electronics Products*

DETAIL DEFINITION FEATURE	EXPLANATION AND APPLICATION IN PROTOTYPE TOOLKIT
<p>Platform and Installation Platform-independent, in-browser application</p>	<p>An in-browser application would require no download or installation ensuring maximum availability to users. Current web infrastructure would preclude the use of detailed, fully rendered models; this issue is anticipated to reduce in future.</p>
<p>Visualisation Products visualised with maximum realism</p>	<p>Realistic visualisation increases customer confidence in the product being customised (Walcher and Piller, op. cit.). Colours and materials are represented accurately. Model is shown in 3D perspective with ability to rotate as required.</p>

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<p>Price Continuously updated</p>	<p>Final price of product is updated continuously as changes are made (Dellaert and Stremersch, op. cit.). Default product is lowest priced such that consumer choices add cost rather than reduce it (ibid.).</p>
<p>Default Option Five basic choices, with option to browse library of previously submitted designs</p>	<p>Needs based system determines choice based on manufacturer's recommendation. Also possible to choose from a library of designs previously submitted by consumers, then use as the basis of a new design.</p>
<p>Order and Degree of Design Interaction</p>	<p>Order of interaction is suggested by the system, but not enforced. Specification of the technical details should take place first. Design phase has an implied order, according to importance of features (see page 13). However consumer can carry out tasks in any order.</p>
<p>Design Tools Direct interaction with on-screen CAD model</p>	<p>Toolkit provides consumer with the following tools: Scale: model scales as required; features such as the display window remain fixed in size and position during this operation. Shape (Silhouette): silhouette of the phone can be modified as required; as the shape is changed features such as fillets or buttons update automatically. Shape (Move Surfaces): model allows individual surfaces to be moved; connected surfaces and features update to reflect these changes. Shape (Modify Surfaces): model allows individual surfaces or connected surfaces to be modified and re-shaped. Colours, Materials and Finishes (CMF): CMF is applied at the part level. System allows designers to link the CMF of parts such that when consumer changes one</p>

	<p>part, others also update.                  Detailing: detailing of the product (however defined by the designer and brand) should be 'protected' and non-changeable by the consumer; a menu of alternative choices might be provided.                  Logo: consumer has the opportunity to upload a logo or type a message which would appear on the phone's cover.</p>
<p>Model Integrity                  Production by manufacturer or authorised vendor</p>	<p>Any consumer design resulting from the toolkit should be manufacturable by a suitable AM system.                  Integrity of any design should be guaranteed in terms of safety, functionality, consumer law, etc.                  Toolkit should prevent compromised performance, e.g. by specifying metal parts close to antenna.</p>
<p>Community</p>	<p>Toolkit provides opportunity to share and discuss designs, also to discuss the system, suggest improvements etc.</p>

## Conclusions

Currently AM-enabled toolkits have been implemented only by brands specialising in the application of these technologies; these toolkits are therefore of limited value in terms of demonstrating how AM technologies might be integrated into the portfolio of a brand which also includes more conventional offerings. This is particularly significant in light of the survey research presented in this paper, which shows that senior design professionals have reservations regarding the quality of design which might result from AM-enabled toolkits. In order to protect the brand equity which a successful design language contributes, AM-enabled toolkits must therefore take account of, and be limited by, the components identified as contributory to design languages.

The literature commonly identifies six influences over the design of the form of products, and the design languages which result when these are applied in a common way across a product portfolio. However, the degree of importance associated with each of these influences has not previously been demonstrated. This paper therefore presents valuable insights to a

brand which wishes to introduce customisation toolkits which allow the user to interact with a product's form. This in turn has led to a specification of the design tools required to enable interaction with an AM-enabled toolkit, whilst at the same time constraining the user's ability to create product forms which lie outside of a brand's design language.

Whilst this paper presents a first specification of an AM-enabled toolkit intended to safeguard a brand's design language, clearly further work is required to demonstrate its effectiveness. Preliminary instantiations in the form of wireframe prototypes would allow feedback to be gathered from both users and product designers, who would be required to submit designs which could subsequently be modified by users. This feedback would then inform the design of a chaffered prototype (Usability First, 2014) with which to demonstrate interaction methods and the types of tools needed to modify product forms as users wish.

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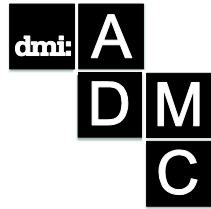
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## Business Model Adaptation to a New Digital Culture

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*New business models are emerging in the international business environment. The reasons for this include the changing of business' attitude in favour of transparency and openness, to the massive increase in the use of easier and collaborative technologies: Quirky is producing new products developed by the community and manufactured using 3D printing technology, Google gives its glasses to different developers who create their own applications based on the Google glass; meanwhile Kickstarter attracts funds through crowd sourcing, paying them back with the promise of future sales of the products they fund. Employees, investors, customers and partners do not follow a predictable rule of conduct with the organization but revolve around it using different form of collaborations related to the organization's needs.*

*Moreover the final product is customized in a reverse Pareto principle where the business does not focus only on the top selling products but sells lot of different ones. It's in this scenario that businesses like Amazon discover that their achievement is being able to respond to different customers' needs. Our work is placed in this framework in focusing on defining an emerging business model where the open collaborative way of creating, developing and manufacturing products is addressed to a large number of different market niches. Data from practice cases is used to provide support to the theoretical evidence.*

**Keywords:** *economic accessibility; economic feasibility; 3-D printing; manufacturing industry; open long tail model.*

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## Introduction

Living with global instability and uncertainty is fast becoming a way of life for organizations. While some corporations seem to respond reactively and revert back to fixed strategies, resisting change, using high control whilst basing their business on fixed and standard business models, others seem to be more open to accepting and embracing the change. These organizations are looking for the opportunities that may exist within this chaos and disorder by seeking to create business models and strategies that proactively work with the speed and scale of change. In this framework new business models are being established based on the culture of sharing new ideas, and on the ability to collect more and more collaborations in order to build the skills and resources needed to grow and develop. One example of this new category is based on internet platforms that gather, collect and sell ideas and concepts 'posted' by external designers and consumers, used crowdsourcing resources to select the right concept, build up the idea and finally raise the funds to produce it. Finally the idea takes shape through powerful software tools such as those used in the 3-D printer manufacturing process.

These new technologies accelerate innovation in the manufacturing process whilst decreasing the potential limitations of its physical constraints. This results in a more economically attractive business model. The digital manufacture allows for the production of innovative and/or customized products and to respond to the dynamics of the competitive environment. The 3D technology expands the number of products available and thanks to digital distribution is also convenient in terms of the ability to reach the consumer. This trend is in line with a new economy that is shifting away from a focus on a relatively small number of hits and moving toward a huge number of niches. The previous trend is amplified by another tendency defined as a "true economic force" (Anderson, 2013). The market movement, a term coined by Dougherty of O'Reilly Media in 2005, that identify a web generation creates physical things rather than just pixels on screens. MIT Media Lab define the maker movement as people that are treating atoms like bits using the powerful tools of the software and information industries to revolutionize the way we make tangible objects (Anderson, 2013). While the new digital tools enable product flexibility, the internet platform model gives companies the opportunity to collaborate and decrease physical constraints like shelf space and other distribution bottlenecks. The objective of this paper is to structure a series of propositions to formulate an innovative business model emerging from a

new culture and new technology trends. Three cases will be used as illuminatory examples.

## **Literature review: the two major frameworks**

In this part of the paper the authors review the most relevant and important parts of the literature on the open business model and the long tail model. From these two the open long tail model emerges.

An open system model is one in which the firm creates and captures value to take advantage of both internal and external resources. In his book "Open business model: how to thrive in the innovation landscape," Chesbrough (2006a) analyzed the characteristics that a firm should exhibit to create an open organization. According to the author in the old model of "closed organization", companies had to generate their own ideas that they would then develop, manufacture, market, distribute and service themselves. In contrast, the open organization model involves organizational characteristics that are suitable for managing creativity innovations, including the process of acquiring and integrating new ideas into the organization and marketing them. As 'valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well' (Chesbrough, 2006b), in the open organization model, firms commercialize external (as well as internal) ideas by deploying outside (as well as in-house) pathways to the market. Specifically, companies can commercialize internal (external) ideas through channels outside (inside) of their current businesses to generate value for the organization.

The vehicles for accomplishing this goal are related to the organization's ability to create connections with external actors to absorb different types of knowledge (Ahuja, 2000), improve survival rates (Baum, & Oliver, 1991), increase innovativeness (Baum, Calabrese, & Silverman, 2000; Stuart, 2000), improve performance (Hagedoorn, & Schakenraad, 1994; Shan, Walker, & Kogut, 1994) and grow faster in general (Powell, Koput, & Smith-Doerr, 1996; Stuart, 2000).

There are plenty examples of organisations structured in an open model: InnoCentive, an Eli Lilly spin-off, manages a platform where organizations can post the technical issues that need solving on a scientists' community board, will explain the unsolved problems by using the internal R&D of the pharmaceutical organizations; Fold.it, a revolutionary new computer game enabling everyone to contribute to important scientific research.

The long tail concept was created by Chris Anderson (2006) to describe a shift in the media business from selling a small number of “hit” item in large volumes toward selling a very large number of niche items each in relatively small quantities. Anderson (2006) believes three economic triggers gave rise to this phenomenon in the media industries:

- the democratization of tools of production: falling technology costs gave individuals access to tools that were prohibitively expensive just a few years ago. Million of passionate amateurs can now record music, produce short films, design simple software with professional results and create object with 3-D3-D printer technology;
- the democratization of distribution: the internet has made digital content distribution a commodity and dramatically lowered inventory, communications and transactions costs opening up new markets for niche products;
- falling search costs to connect supply with demand: the real challenge of selling niche content is finding interested potential buyers. Powerful search and recommendation engines, user ratings and communities of interest have made this much easier.

For many product categories smart technology is transforming mass markets into millions of small niche markets. Although each of these niche markets may be small when all the various niches are combined the volume of business is actually greater than the traditional mass market successes. But simply offering more variety alone won't generate greater demand. Instead, consumers need to have tools which will help them find product niches which match their tastes and interests. These tools act to simplify the finding process thanks to the filters usage . An example of an organization that uses this business model is the online video rental company Netflix or Lulu.com, a multi-sided platform- serves and connects authors and readers with long Tail of user-generated niche content.

In the following section we describe the methodology and the case studies.

## **The case studies' methodology**

Scholars have used case studies to develop theories about topics as diverse as group processes (Edmondson, Bohmer, & Pisano, 2001), internal organizations (Galunic, & Eisenhardt, 2001; Gilbert, 2005), and strategies (Mintzberg, & Waters, 1982). Building theories from case studies is a

research strategy that involves using one or more cases to create theoretical constructs, propositions and/or midrange theories from case-based, empirical evidence (Eisenhardt, 1989b). Case studies are rich, empirical descriptions of particular instances of a phenomenon that are typically based on a variety of data sources (Yin, 1994).

The literature on new forms of entrepreneurship based on creativity and design (Abecassis-Moedas, Mahmoud-Jouini, Dell’Era, Manceau, & Verganti, 2012) lays the foundation for exploratory research that builds propositions and turns them into initial statements to be used as triggers in future research. The central notion in our analysis is to use cases as the basis from which theory can be built inductively. The theory emerges by recognizing patterns of relationships in constructs and cases. The theory building process occurs via recursive cycling in the case data, emerging theory, and later extant literature (Eisenhardt, 1989a; Mintzberg, 1979; Pettigrew, 1988; Yin, 2008).

The selection of case studies was carried out in line with the criteria of extreme exemplars, as underlined by Yin (1994). We decided to select not only one case but three because while single-case studies could richly describe the existence of a phenomenon (Siggelkow, 2007), multiple-case studies would typically provide a stronger base for theory building (Yin, 1994).

As case studies can accommodate a rich variety of data sources we decided to include three semi-structured, in depth interviews with the professors of Technology Management at Stanford University, Westminster University of London and the University of Turin, to view the phenomena from different perspectives and make a more confident selection of the cases.

We ended up investigating three case studies. The first case is Quirky, a new venture firm created around the potential of 3-D printing in order to develop ideas and concepts suggested by users and designers. The second is I-Materialize, an incumbent company specialized in prototyping services that uses 3-D printing to create a digital connection platform between creative communities and users. The third is Fab-Lab, a new global network of design shops based on 3-D printing technology that works with small businesses, users and craftsmen in the production and sales of their products.

## The open long tail model in practice

In this section we will briefly describe three cases: Quirky, I-Materialize-Fablab.

Quirky is a company of consumer products that turns crowd-sourced inventions into retail products with a manufacturing process based on 3-D printing technology. Since its launch in 2009, Quirky has changed the way that product development happens.

The process, which goes from an idea to a final product, involves a plethora of different types of actors. Each week different ideas are submitted by dozens of amateurs such as kitchen workers, technology experts, jewelers, etc.; then, hundreds of online community members (or “Quirks”)- mainly made of hobby inventors, students, retirees and product-design enthusiasts -weigh in on the products and vote for their favourite submissions. The two most popular ideas are sent to an in-house team of engineers and designers to research, render and prototype. Ben Kaufman (Quirky’s founder) and his team cull the results, sort out potential patent conflicts or production problems, then make the final call on the week’s winner. At every stage--design, colours, naming, logo--the community chimes in. The best suggestions are incorporated, earning secondary “influencers” a portion of future sales revenue.

Even if a product gets community approval, it will only make it to market if enough Web surfers pre-order it to cover production costs. “This is where we find out if a good idea is a good product,” Kaufman says. “The world doesn’t need more junk.” In fact, less than a third of Quirky’s products are actually produced in the end.

Thanks to the community, Quirky collects a wide range of multi-disciplinary skills needed to turn an idea into something tangible. A background in design, electrical engineering, marketing, fund raising and access to retailers and manufacturers are all required skills that can be found inside the sourcing community in order to complete and sell a product. Thus, the community members that participate in many aspects of product creation, from design to naming and coming up with a tagline for a piece (“Protect Your Produce” is the Mercado slogan) will receive a small share of the profits.

The manufacturing process includes a small factory with 3-Dprinters, a laser cutter, milling machines, a spray-painting booth and other bits of equipment. This prototyping shop is central to Quirky’s business of turning other people’s ideas into products: Quirky’s product-development team makes a prototype. Users review this online and contribute towards its final



design, packaging and marketing, and help set a price for it. Quirky then looks for suitable manufacturers. The product is sold on the Quirky website and, if demand grows, by retail chains. Quirky also handles patents and standards approvals and gives a 30% share of the revenue from direct sales to the inventors and others who have helped.

By using its community as a strong base, Quirky can quickly establish if there is a market for a product and set the right price before committing itself to making it in bulk. Moreover, the speed with which Quirky turns designs into products (thanks to 3-D printing technology) is remarkable, “The amount of creativity that happens when you are standing next to a machine that’s making hundreds of thousands of things is much greater than when you are working 4,000 miles away,” says Mr Kaufman. “Your mind is spinning as to what else you can design for the machine to make.” Kaufman calls this process the “social product development.”

“We bring at least three brand new consumer products to market each week, by enabling a fluid conversation between a global community and Quirky’s expert product design staff”.

Our second case company, I.materialize is an online 3-D printing service which is based in Belgium and was formed in 1990 as a spin-off of Materialise, a product development company. I.materialize, is premised on the belief that people have an inherent need to express themselves, more than ever before, in this world where standardization has become the rule. its business focuses on allowing consumers the possibility to turn their ideas into reality. I.materialize provides designers and inventors with access to higher quality materials and greater choice. I.materialize gives designers the chance to demonstrate their talent and sell their products thanks to a worldwide distribution network, on the other the potential buyer can access a collection of different products that can be built on demand.

First, the user uploads a project file, then he/she selects material, size and quantity with the aid of a template. After that, a quote will appear and, upon receiving confirmation of the online payment, the product will be manufactured and delivered. It is also possible to sell the design projects and earn a percentage if the user doesn’t want to manufacture it .

A set of 3-D software is used- by the user -to create files up loadable to I-Materialize platform: Tinkercad, 3-D Tin, 123 autodesk and Google sketch up enables amateurs to design 3-D printable products without any previous expertise: the maker can just open the browser and start creating in a very intuitive way. I-Materialize supplies over 20 different 3-D printing materials:

users can sell their design, choose the fee to apply over the production price and manufacture the item in 5 to 15 business days.

Our third case example is not a single organisation, but a network of organisations. Fab labs (fabrication laboratory) are small-scale workshops offering (personal) digital fabrication facilities. Fab Labs have opened around the world from Italy to Spain, from California to Finland. A fab-lab is generally equipped with an array of flexible computer controlled tools that cover several different length scales and various materials, with the aim to make “almost anything”. This includes technology-enabled products generally perceived as limited to mass production. Each fab lab includes:

- A computer-controlled laser-cutter, for press-fit assembly of 3-D structures from 2D parts.
- A larger (4'x8') numerically-controlled milling machine, for making furniture- (and house-) sized parts.
- A signcutter, to produce printing masks, flexible circuits, and antennas.
- A precision (micron resolution) milling machine to make three-dimensional moulds and surface mount circuit boards
- Programming tools for low-cost high-speed embedded processors

Fab labs allow individuals to create smart devices for themselves. One important benefit of this network of organizations is the ability to diffuse education, business and research about a world where almost anyone can make almost anything, anywhere. Fab labs share an evolving inventory of core capabilities, people and projects that can be shared – and promoting these is an explicit part of their ethos.

The San Diego Fab Lab’s pre-college Maker Learning programs for middle and high school students are held in partnership with the University of California at San Diego. These classes are based on the ‘Maker’ philosophy that San Diego’s Fab Lab has developed in response to the need to inspire students while engaging them in learning next generation technology.

The Fab Lab curriculum includes hands-on and experience-driven activities that are standards based, as well as fun and relevant: Fab Foos is an open source Table Soccer Game, opening in Amsterdam featuring 2 web cams, an audio response, an electronic counter system and vga out. The Fab Lab House comes from the Institute of Advanced Architecture of Catalonia (IAAC) is a example of eco-living house. This Madrid-based project generates three times the energy it consumes and also houses an orchard in order to produce food. The shape of this house was dictated by its purpose: a

sustainable, self-sufficient construction whose “form follows energy”. All the characteristics of its environment were carefully studied and taken advantage of, such as the wind or the solar rays.

## **Data analysis and proposition development**

In this paper we collected qualitative information and data about the case companies’ business models from the companies’ websites, journal articles and special issues.

The companies analyzed originally offers services that are engaged all the phases of the innovative process, from the concept to the distribution where prototyping and materializing concepts are used to provide input and feedback on the quality and characteristics of products. Such organizations, by materializing objects, provide companies’ designers and R&D offices with the input and the insight that they need for the revision of engineering and conceptualization phases of their process, thus strengthening the relationship between “thought” and “practice” typical of creative processes (Shon, 1984).

3-D printing is among a spectrum of technologies being developed as a way to make easier and more cost efficient to create parts and products in a “personalized” way. The running of a 3-D printer starts from a software technique aimed at helping designers to create shapes of parts in three dimensions on computer screens and then transfer the instructions for making them to production machines. Such software is being used to make products on this basis in a range of industries from aerospace engines to jewellery. Laser scanning systems - made by companies such as the US’s Faro Technologies - can be used to measure the dimensions of items that need to be replicated or modified. Such items could be anything from products or parts made by competitors - in so-called “reverse engineering” - to parts of the human body. The information can then be converted into computer codes and sent to a production machine for turning into a solid object.

The new technology is changing many aspects of the manufacturing industry:

- The relationships between designers and production players.. The designer will have the chance to do not only the scratch but also the prototype of the product or, better, the final product as it happens in Quiky or Fablab. This change will allow the designer to acquire a part of the value chain belonging to the manufacturing organization.

- The personalization of the product as Fablab, Quirky or I materialize. A key attribute is that the technology makes it possible to produce “one-off” or highly personalised parts more easily than other manufacturing methods. This advantage will have an impact on the reduction of the relevance of inventory risk and management connected to the opportunity to print on demand the desired artifacts;
- The intrinsic characteristics of 3-D printing technology enable to produce different categories of products, in limited quantities and, above all, without a technological complementary relationship among them.

In fact in all of the cases studied, there is an extremely high heterogeneity of produced and sold categories of goods. Fashion accessories, jewels, toys, shoes, musical instruments, lamps, interior design products are indistinctively found in all product portfolios managed by 3-D printing companies. In fact, the major problems connected with this technology concern the different exploitable materials. The absence of links and technological complementary products together with the absence of large production scale and volume economies – as found in several cases – lead to a wide and diverse portfolio management. The profitability logic is founded on generating profits as well as on a number of product lines with low product volumes (Kekre, & Srinivasan, 1990; Osterwalder, & Pigneur, 2010; Amit, & Zott 2001). This characteristic founded in “long tail model” introduced the first proposition:

*1st proposition: the emerge of digital tools for design and manufacturing includes the 3 D printer the laser cutter and the 3D scanner and CAD software gives leads / is positively correlated to a diverse variety of customized and low volume products with no technological complementarities*

Based on the development of the web 2.0 technologies, the advent and the growing of a global creative class (Florida, 2003), and the evolution of a more educated and sophisticated user (Von Hippel, 2009), the crowdsourcing represents a new source to manage the innovation process leveraging on external creative sources an collaboration. As the tools of creation become digital so do the designs which are now just files that can be easily share online. Manufacturers and organizations can thereby take advantage of the web’s collaborative innovation, tapping into open source

practices and all the other social forces that have emerged on line. The old model of toiling allows space to a global movement of people working together online in a “crowd sourcing collaborative way”: crowd sourcing is used to connect labour demand and supply (cloud labour), to develop aggregate and share knowledge and information (collective knowledge), to increase audience engagement and build loyalty through online dialogue with costumers (community building) and finally to raise capital for a new projects and business by soliciting contribution from a large number of stakeholder.

Collectively a large pool of costumers will have virtually unlimited time and energy an important detail related to the long tail model where capacity need to be extended a very long way (Anderson, 2013). In fact, the increase of the human resource vote to create and make, are shifting away from a focus on a relatively small number of hit (mainstream products and markets) at the head of the demand curve and moving towards a huge number of niche in the tails (Anderson, 2006). Fablab, Quirky and I-materialize make up an example of producing different category of products as art, fashion, gadgets, games, jewelry, toys, etc... The capability of producing different products for different niches thanks to the costumers that “do the job” turned the unprofitable products and markets into profitable ones.

Platform like Quirky gathering, collecting and selling ideas and concepts that are posted by external designers and consumers.

These platforms are mainly supported by two types of makers: (i) designers who propose their own products to market them on the platform (market-oriented designers); (ii) users looking for products that are not standardized or sold in great volumes not event in an industrial scale (customization-driven users).

This new costumers have affected the world of manufacturing through (?) self-production and creating a “making culture” where users with different tools and technology (among these the 3-D printing technology) are able to build up personalised products supported by new forms of craftsmanship (Friedman, 2010; Senneth, 2009; Micelli, 2011; Yair, Tomes, & Press, 1999):

We, therefore, suggest the following second proposition:

*2° proposition: the new business model organization based on outside resources involved costumers in the R&D and prototype process as a key source of skill and competence*

Furthermore this model not only helps to increase the number of the products sold and the niches discovered but also gives boost to the collaborative behaviours between the member of the community and the organization. For example, Quirky has 8 designers on staff for a total of 40 people in the team, and hundreds of community that interact with the platform; the ideas submitted received a more than one evaluation both from the community s(?) member staff (both in Quirky, and I materialize). This collaboration involves the costumers in a new model where is not the organization that meet the needs of the costumers but is the costumer that in collaboration with the organization find the way to answer to the other costumer needs.

The essence of a business model defining a fresh way by which the enterprise delivers value to customers, entices customers to pay for value and converts those payments to profit do not seem to reflect any more the management's hypothesis. The last one could be about what customers want, how they want it, and how the enterprise can organize to best meet those needs, get paid for doing so, and make a profit but the hypothesis that come from a collaboration between makers and organization. In this collaboration the organization supports and participates to the maker process of creating developing and producing their ideas. The customer is not only involved in the creation and production but also in the profit share. These users give design advice on the product idea, the brand name, packaging and so on and will receive a percentage of the 30% profit generated by that specific product idea. Of course also the actual designer of the product will get a share of this profit once the product has made actual sales. To lower the risk, Quirky will only start to produce and sell a product in their webshop once 500 people made a pre-sale of it.

The availability of the organization tools of production (as the tool to draw and produce the object) improve the odds to produce goods and the subject who can do it reduced the time to make the product. for example, Fab-lab lends 3-D printing (and other technological devices) to those inventors who can prove their ability, or who have been educated by the Fab Lab Academy, to use these technologies properly. Quirky, I-materialize and Fablab offer digital fabrication as a service so anyone can effectively rent time on high end industrial 3D printers or computer controlling milling machines. Quirky and I materialize produce using their own 3D printer or hire them. This way to collaborate introduces the last proposition:

*3° proposition: the business value proposition is defined by costumers and reach through a platform which enabling the relationship*

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*between customers expands the potentiality and profitability of the both organization and makers.*

Inventing something new isn't enough: it has got to get to market too, ideally in economically sustainable way. This means mass production, and traditionally that's been reserved for people who either own a factory or can afford to commission the service of one. That used to involve months or years of negotiations with different country and culture. But today the word factory is increasingly accessible on the web, open to orders of any size from anyone at any scale. Thanks to the digital production and design, factories in China are flexible enough to take order online by credit card for small as well as large quantities

Finally, the acceleration in the production seems to be sustained by the e-commerce in the distribution.

## **Discussion and Conclusion**

The business model that comes out, is based on different type of users becoming designers and makers of small quantity of different product selling to few costumers thanks to digital platform as Quirky and I materialize. The underpinning process, is based on the concept that a collaborative community outside the organization can develop an idea into a product ready to be sell

The new model balance the open innovation model and the long tail model: The disintegration of the conception-conceptualization-engineering-production-sales activities chain of business processes and the breakdown of integrated value chains (Porter, 1980) gave rise to companies specialized in micro-activities.

Moreover a number of "knowledge brokers" and "bridging ties" link actors who propose new knowledge in the form of new ideas and products with actors who are able to accomplish, implement and sell these ideas and products. This business model supported by the new digital technology and in general the improvement of the technology that enables company to carry far more product items in their catalogs, (because most of the item exist solely as descriptions in an electronic databases and are digitally distributed) permits to define a long tail model too: as Anderson said (2006): "the mass of niche has always existed but the cost of reaching it falls now".

Since the first industrial revolution the power to make things at scale has belonged to those who own the means of production, which as meant big

factories, big companies and the mass-market good they were built for (Anderson, 2013). But now we can imagine an open long tail model where the web digital instruments make the diffusion of the objects of the community: the consumers finding niche products and niche products finding consumer (Anderson, 2006) and consumer create niche products for other consumers.

This could potentially change everything because will create an era of unprecedented choice for consumers and organization together that collaborate to increase their opportunities and profit (Micelli, & Rullani, 2011). All this process is creating an opportunity for an emergent business model that makes possible a bottom up transformation of the manufacturing following the democratization of its trajectory. It is still in its early days but the potential is immense because manufacturing is one of the biggest industries in the word (Anderson, 2006).

This new niche market is not replacing the market of top selling but it start to redefine the ways we design, buy and distribute product complemented the other models.

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# Reducing Uncertainty Through Disciplined Experimentation

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*New product development (NPD) is an inherently uncertain process. Such uncertainty translates into a strong risk for companies in the process of new product/services development, which typically involves substantial investments committed upfront.*

*The article presents an innovative methodology for to reduce this innovation-related risk. In particular the methodology is based on the principle of “disciplined experimentation”, a structured process to identify quickly the key vivid needs of the customers (Job To be Done), reproduce the key features of the new service/product to satisfy these needs (fast prototyping), and simulate a realistic customer journey directly with the final customers. A rigorous testing protocol and a continuous improvement process support these experimentation steps.*

*This approach allows testing the main working hypotheses, pivoting them continuously to verify the value (clients are ready to pay for the product/service a price “p” higher than the cost “c” needed to deliver the product/service), growth (how to scale up the tested hypotheses up to the entire target segment) and sustainability (how to enable the needed change in internal culture and prevent direct competitors to quickly replicate the value proposition).*

*The article presents two concrete cases of “action research”, where researchers have been directly involved within the design and delivery of the this methodology in two different industries, fast fashion and heating systems manufacturing, and the lesson learned from them.*

**Keywords:** *Innovative NPD, Disciplined Experimentation, Design of Experiments, Fast Prototyping*

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## **Introduction**

New product development (NPD) is an inherently uncertain process. Research shows that as many as 40% of new products fail to deliver anywhere near the promised objectives (Castellion & Markham, 2013).

Such uncertainty of outcome derives from many factors including the difficulties in the identification of “vivid” customer needs, to the definition of the right features and user experience of the new product or service to identifying the most suitable route to market to of course the pricing. All this in an environment where there is an increasing competitive pressure to deliver products cheaper, faster better.

To examine the issue of how to reduce the uncertainty around NPD, we first undertook a review of the existing literature in order to identify NPD best and worst practices with the intent to establish what are the circumstances under which NPD activities lead to success or failure.

## **NPD Literature**

New product development can be defined as the processes employed by a business to identify and develop new products. But which processes to employ? Which are ‘key’ processes or ‘key’ factors? Research into NPD sought to identify the processes involved in order to determine if any contributed to success; identify those factors and successful NPD should be possible by more businesses. Early work by Hustad (1977) adopted a broad perspective when defining the new product development process and included topics such as market planning, product strategy, product line extension, market forecasting, product abandonment and product liability. Other researchers were also working to refine the definitions of the NPD process into more distinct factors. Another early proponent of managed NPD processes was Morris (Morris, 1990) who had spent forty years improving project management techniques and published his Management of Projects theory in 1990. In the 1970s Robert Cooper and his colleagues started looking at the difficulties businesses were encountering in bringing new products to successful fruition (Cooper & Kleinschmidt, 1986; 1987; 1990; 1991). During this period Cooper and his colleagues developed the NewProd project, which used a stage-gate process, that is, one where the NPD process is broken down into segments and after each segment or ‘stage’ there is a hurdle or ‘gate’ that must be passed before progressing to the next stage. Cooper identified five main functions in the NPD process;

scoping, building the business case, development, testing and validating, and product launch (Cooper, 2001).

However, Loch (2000) argued that while Stage-Gate is at the core of most NPD processes, survival and growth ultimately depends on how well a company adapts to its specific environment. Davidson et al. (1999) reached a similar conclusion emphasizing the need for flexibility so that a process can be continually adjusted to an organisation's changing needs and desires. According to Fixson (2009) most definitions of NPD include stages such as product opportunity identification, market and user analysis, idea generation, concept generation, concept refinement and selection, industrial design, prototyping, testing, financial evaluation and market introduction. Cormican and O'Sullivan (2004) saw strategy and leadership, culture and climate, planning and selection, structure and performance, and communication and collaboration as key factors. Kahn et al (2012) identified seven separate factors of the NPD process; strategy (including portfolio management), process, research, project climate (including team organisation), company culture, commercialisation, metrics and performance evaluation.

Amabile (1997), Smith & Reinertsen (1998), DeCusatis (2008) analysed team characteristics and found that these factors can increase the creative ability of the team and help accelerate the NPD process.

'Fail often to succeed sooner' is reportedly one of the mottos of the successful product design firm IDEO (Kelley, 2001). Thomke (2003) noted that team integration encouraged experimentation and prototyping, which Barczak, Griffin and Kahn (2009) also found was a factor of high-performing firms suggesting this was a key factor in the NPD process.

With the rapidly changing technological advances of the past decade there is a growing interest in the role of NPD processes that were created to handle uncertainty and changing customer needs and wants; among these new methods Agile NPD is leading the way.

## **Critique of NPD Literature**

While all the NPD processes reviewed help in the quest of reducing the risk of developing a new product that will not support the firm in achieving or sustaining competitive advantage, we believe that all of them, have a number of pitfalls.

First, all the NPD processes featured in our literature require commitment and time to execute effectively; speed plays second place to

quality of execution. The earlier processes focused on the need to control the process, the people taking part and ultimately the product to ensure that the development plan was completed within budget. As these NPD processes matured some of the proponents sought to keep in pace with the changing commercial environment, while others did not.

The Management of Projects and the Critical Chain Management approaches remain static. The Stage-Gate process developed by Cooper has re-invented itself to take on board the changes of a modern, fast paced world where technology forces changes in design practices and design development. Agile Development has begun to be adopted by those outside the software development arena where it was born. The flexibility of the Agile approach allows the designers and developers to take on board the fickle demands of an ever more aware customer enabling products to better meet the customers' needs. Lean Start-up takes the involvement of the customer even further by encouraging continuous involvement from the very earliest stage of development, even conception. Lean Start-up builds on the relationship with the customer to create an environment where a product could be launched well ahead of schedule, with upgrades being made available to extend the life of the product.

Design Thinking and Design of Experiments offer a different view of the NPD process. These two approaches are useful in resolving problems using unconventional means and may offer innovative insights into the development of new products and services.

However, except for the Stage-Gate process, all the other processes assume that the right product has been selected and that the main emphasis should be on its development. Even in the case of the Stage-Gate process one of the main problems with the process has been that businesses do not know how to ensure the go/kill gates work effectively. Once the product entered the NPD process it was assumed that this was the product to develop. There appeared to be a lack in any of the processes to consider outside influences, such as, an aggressive competitor bringing in a similar product earlier. Even in those processes that encourage involvement with customers (esp. lean start up), trying out and testing the product in development, there was no suggestion that a product should be terminated. Rather the product would be adjusted to take on the comments of the potential customers.

Another pitfall of the processes reviewed was the lack of emphasis on encouraging ownership to the product being developed, as soon as the product entered the process that was it; now develop it. None of the

processes reviewed provided guidance on who should be involved in the 'NPD team', despite citing cross-functional teams as vital to success. The use of true cross functional teams can improve ownership of the product being developed but this was not raised as important. Experimentation is creeping in as a means to check the viability of a product but its use is not central to the overall NPD process and, like the involvement of customers, is generally left till late in the NPD process when there is a physical product that can be handled.

The Lean Start up and Design thinking approaches, but in particular the Lean Start up, learning from the previous approaches has introduced a set of principles that contribute to overcome some of the pitfalls. The early experimentation through the construction of Minimum Viable Products (MVP) aims at testing only one or a few variables at a time. While the introduction of the Value and Growth hypothesis, that needs to be tested progressively during the NPD process, has provided the dependent variables that can be used to validate the impact of the assumptions behind the new product. Finally the concept of Pivot has reinforced the principles that when a new product fails to test positively against the value and growth hypothesis it should be reconsidered and amended or altogether abandoned.

## Research question and methodology

We believe such principles represent a great advancement in the search for a theory of NPD, nevertheless we also believe that there are still some areas that need to be addressed. This leads to our decision of investigating the following Research Question and related Hypothesis

*"Can disciplined experimentation reduce uncertainty in NPD in a fast changing environment?"*

*With the Hypothesis that it can, if two conditions are fulfilled  
First, that the experimentation is constructed in order to validate progressively three variables, in particular*

- **Value** which involves explaining how the new product or service will create value by resolving a "vivid" need (as opposed to a latent one) producing outcomes that outweigh the effort required.
- **Growth** .the aim of this hypothesis is to validate if the new product can be scaled up beyond the first group of pioneering customers,

guaranteeing that the value created will, at least proportionally, also increase.

- **Sustainability** aims at validating two mutually reinforcing sub-hypothesis. The first relates to the ease with which competitors can replicate the new product and the second concerns how easily the organisation itself will accept the changes required to implement the new product.

Second that disciplined experimentations entails two mutually reinforcing dimensions

- The use of creative experimentation techniques leveraging innovation in technology and process in order to maximise the number of experiments, while making them as inexpensive as possible through speed of execution. the speed of them as well as to make them as inexpensive as
- Use of experimental analysis approaches, such as, Design of Experiments (DoE) that maximise the learning from each experiment performed

In order to investigate the validity of our framework the subsequent step was to identify organisations that would be willing to participate in a multi-year study. We succeeded in engaging 4 different organisations from industries as diverse as rail transportation (United Kingdom), animal health pharmaceuticals (United Kingdom), gas heating manufacturing (Italy) and fashion (Italy) with whom we have worked in the last 18 months, and for which this paper reports the preliminary findings.

## **The Progressive Hypothesis**

The success of a newly developed product, defined as its ability to contribute to the achievement or sustaining of competitive advantage of the firm, relies on a set of hypotheses which need to be validated. A hypothesis, in business as in science, is an explanation or a proposition made on the basis of limited evidence as the starting point for further investigation. Until proven true, hypotheses are just statements. The only way to prove their validity is to test them. Testing will either prove or disprove the validity of a hypothesis, but it will also provide insights about how the hypothesis could be refined or even replaced by a better one.

Just like a scientist in a laboratory, executives should first make explicit the hypotheses behind their initiatives and then validate them through



experiments. We propose, as stated before, that in the case of NPD there are three hypotheses that need to be validated progressively, starting from value, going through growth and concluding with sustainability. As you move from each hypothesis to the next, the overall level of uncertainty reduces, but it is not until the new product has provided evidence for all three hypotheses that uncertainty will be meaningfully reduced, although never eliminated.

The first hypothesis is about **Value**, which involves explaining how the new product will create value by producing outcomes that outweigh the effort involved. The typical questions that need to be addressed are:

- What kind of problem does the new product solve?
- Who are the people facing this problem? How aware are they of the problem?
- Are they prepared to pay for someone to solve it?
- Will the price they are prepared to pay for the new product be sufficient to cover the cost of its development?

The second hypothesis is about **Growth**. Here we must think through how the initiative can be scaled up beyond the first group of pioneering customers, guaranteeing that the value created will also increase sufficiently. The typical questions to be addressed are:

- Does the new product address the needs of a large enough group of people?
- Will the new product need to be changed or adapted for this enlarged group?
- How difficult and how costly would it be to scale-up to meet increased demand?
- What is needed for the new product to appeal to this larger group?
- Will the price need to be changed?
- How could we reach and engage a growing group of users? How much would this cost?
- Will the increase in users be reflected in increasing value creation i.e. will the increase in outcomes outstrip the increase of the cost of achieving such growth?

The last hypothesis is about **Sustainability** which has two mutually reinforcing facets. The first relates to the ease with which competitors can replicate the new product and the second concerns how easily the

organisation itself will accept the changes required to implement the initiative. The typical questions for the first facet are:

- How easily can the competition imitate the new product or substitute it with another product? How long would it take?
- What kinds of barriers are there which will preserve the advantage?
- Are there other barriers we could create? How much would they cost?

And for the second facet:

- How will the organisation need to change to enable the new product to be implemented?
- Will the organisation be able to cope with such changes?
- Is there something about the initiative that we can adapt in order to make it more acceptable to the people and culture of the organisation? What impact would this adaptation have in terms of value creation?

By addressing these questions the NPD executives will be able to decide whether the New Product merits being moved forward. Furthermore, this approach will help NPD executives to identify potentially serious flaws which require fixing before the initiative can be progressed

## **The Two Facets of Experimentation**

To leverage experimentation successfully, you need to be clear about which tests will be carried out, in which order, and the metrics you will use to judge the outcome and decide whether or not the hypothesis has been proven. Many experimentation tools and techniques are available and new ones can always be developed, but the most important thing is to select the ones that are the most appropriate for your particular circumstances. The fitness for purpose of any technique will depend on the time and resources you have available, but the ideal should be something which is simple, quick and inexpensive.

In an experiment about new product development, managers and engineers separate an independent variable (the “cause”) from a dependent variable (the “effect”) and then manipulate the former to observe changes in the latter. The manipulation, followed by careful observation and analysis, then gives rise to learning about relationships between cause and effect, which can be applied or tested in other settings.

Fear of failure is especially pertinent in the development of new products and services, where no idea can become a product without having been shaped, to one degree or another, through the process of experimentation. Today, a development project can require thousands of experiments, all with the same objective: to learn whether the product or service can address a new need or resolve a problem before then incorporating the information in the next round of tests so that the best results can be achieved

One of the key barriers to experimentation has always been the cost, since it has often been considered expensive in terms of the time involved and the effort expended. What has changed, particularly given new technologies available is that it is now possible to perform more experiments in an economically viable way while accelerating the drive towards a successful new product.

To overcome the cost constriction barrier managers have essentially two choices:

- change the fundamental economics of experimentation through new creative processes and new innovative technologies (the first facet)
- try to get more out of each experiment employing sophisticated statistical methods, which help to manipulate multiple variables in a single experiment while maintaining integrity in its data analysis

## **The first facet – use creative processes and new technologies to increase number of experiments**

New creative processes and new innovative technologies now enable more learning to be created more rapidly, and the outcomes can be incorporated in even more experiments at less expense. Examples can be found in:

**Customer usage simulations.** Through the building of simple mock-up user interfaces to see if a customer is interested in a particular value proposition, including the description of the product features, the price and even how the product works. This particular type of process has been made very famous by the Lean Start Up and Design thinking approaches.

**Computer modelling.** Once, the first Monte Carlo based simulation was used to build a computer generated artificial world in 1945 for the development of the hydrogen bomb, computer modelling has become an

essential part of science. However, it is only with the dramatic increase of wide spread availability of computer power at very affordable cost (i.e. first cheap powerful workstation and then cloud services) that computer modelling has become an everyday reality. Today Artificial Intelligence (AI) packages or Computer Aided Design (CAD) can substitute many of the “physical experiments” and market testing requirements of numerous products. Many organisations leveraging rich “big data” can today simulate price points and conversion rates by developing computer simulation of the likely behaviour of their customer base to a particular stimulus (i.e. new products). 3D CAD has in many instances now eliminated almost completely the need for physical prototypes.

## **The second facet – accelerate learning through experimentation**

When all relevant variables are known, formal statistical techniques and protocols allow for the most efficient design and analysis of experiments. These techniques are used widely in many fields of process and product optimisation today and can be traced to the first half of the 21<sup>st</sup> century when the statistician and geneticist Sir Ronald Fisher first applied them to agricultural and biological science, which have become the foundation of what today we call Design of Experiments (DoE)

Design of Experiments (DoE) is a statistical method of establishing which variables are important in a process and the conditions under which these variables should work to optimize that process (Ilzarbe, et al., 2008). Methods from the field of DoE have been applied to quality control problems in many engineering fields for several decades (Kuhn and Reilly, 2002) and according to Ilzarbe et al (2008) many scientists and statisticians have contributed to DoE development and to its application in different fields.

*Table 1 Thomke’s (2003) Factors that affect the learning by experimentation*

Factor	Definition
Fidelity of experiments	The degree to which a model and its testing conditions represent a final product, process, or service under actual user conditions
Cost of experiments	The total cost of designing, building, running, and analysing an experiment, including expenses for prototypes, laboratory use, etc.

Iteration time	The time from planning the experiment to when the analysed results are available and used for planning another reiteration
Capacity	The number of same fidelity experiments that can be carried out per unit of time
Strategy	The extent to which the experiments are run in parallel or series
Signal-to-noise ratio	The extent to which the variable of interest is obscured by experimental noise
Type of experiment	The degree of variable manipulation (incremental versus radical changes); no manipulation results in observation only

In general usage, DoE or experimental design is the design of any information-gathering exercises where variation is present, whether under the full control of the experimenter or not. Formal planned experimentation is often used in evaluating physical objects, chemical formulations, structures, components, and materials. Practical applications of DoE do exist, for example, the list of 131 case studies provided by Bisgaard (1992), which illustrate the application of experimental design in engineering and manufacturing.

In the design of experiments, the experimenter is often interested in the effect of some process or intervention (the "treatment") on some objects (the "experimental units"), which may be people, parts of people, groups of people, plants, animals, etc. Design of experiments is thus a discipline that has very broad application across all the natural and social sciences and engineering. ([http://en.wikipedia.org/wiki/Design\\_of\\_experiments](http://en.wikipedia.org/wiki/Design_of_experiments))

Thomke (2003) identifies seven factors (see Table 1) that affect the ability to learn through experimentation which are: fidelity, cost, iteration time, capacity, sequential and parallel strategies, signal to noise ratio and type of experiment.

## Early evidence from Field work

As part of a 3 year study we have engaged with a number of multinational organisations based in the UK and Italy with a considerable part of their business outside their domestic markets. The sectors covered are fashion both production and retailing, heating systems both electric and gas powered, animal health pharmaceutical and finally rail transportation.

As part of the engagement we are allowed to work alongside the NPD executives in their process to successfully launch new products, where by successful launch it means that they will within a reasonable amount of time

(always less than 24 months) reach volumes and revenue that are meaningful for the organisation (at least their fair share) and of course contribute to the bottom line and ultimately to sustain the competitive advantage of their respective firms.

At the time of the study we have started the activities with all the four multinationals, but of course the stages of progress are different. For this reason in this paper we will concentrate on only two cases, the one of the fashion house and the one of the electrical and gas heating system.

## **Fashion House**

The fashion house is a fully integrated textile company with over a century of history with many innovations to its name. They were the first to introduce a new type of dyeing, which allows fast, very economical production. They were the first to introduce large scale fully automated cutting plants. They were also among the first to launch successfully the business model of “fast fashion”, the one made famous by the like of ZARA, which quickly became the key driver of growth and profitability.

Unfortunately, in the last years the performance of the fast fashion division went south, many management teams were called in, but none managed to turn things around. Late in 2013 a new management team, with considerable experience in turnarounds was called in, who since then have asked the research team to collaborate alongside the management in particular the NPD team. This was because very early on it was understood that the core challenge, which would unlock the turnaround, was to return to the innovation history. The products (mostly women’s fashion) had a good enough style but they had two clear problems. First their speed to come to market was always far later than the competitors and therefore it was impossible to command prices that would guarantee profitability (“by the time the products were out it was time for the heavy discount sales”). Second many products were just not in sync with what the customer wanted, which again exacerbated the situation increasing level of stocks of unwanted products.

The management decided to completely overhaul the NPD process introducing a new system called “marketeyes”, which basically introduced the discipline of experimentation to the heart of NPD. Marketeyes is a sort of social workflow management system that allows a concept idea for a new product to go through a set of super-fast experiments, which reduce the risk that the product will not succeed in the market. These experiments range

from a simple very fast survey about the concept idea (basically a professionally designed sketch of the garment with details of the price points and the type of material) that within 2 hours is run through over 3000 shop assistants who give their view about the product (minimum threshold of response is 500), to a pre-ordering e-commerce facility that allows real customers (carefully selected among their CRM database as “predictive customers” meaning that historically for this particular type of garment, if they bought it, it has then reached success) to view the product and pre-order it if they like it, which now it has been produced in few prototypes and photographed as required for an online e-commerce site. The outcome of all the experiments are analysed through statistical techniques that provides insights about the potential success of each product and also the size of the potential success (in terms of volume and value of sales).

Marketeyes keeps track of all the experiments and provides factual evidence of what works and what does not work (and what should be changed to make it work). This speeds up the process to the point where deciding if to launch a new garment or not can be made within 7 working days. The process is not only speedy but also very selective, since many products that were thought to be potential blockbusters would be stopped and not launched or launched with a far lower range than initially thought. Marketeyes as a platform is accessible and used by most of the division of the organisation from product design to supply chain, from management control to shop assistants, which enables the fashion house to seemingly spread knowledge about new products, as well as, invite suggestions for meaningful new innovations.

The early evidence of the spring collection shows that the products launched using marketeyes performs twice as well in terms of ‘in season sell’ compared with the products launched using the traditional system.

Clearly, from the evidence provided by these early cases it seems that thanks to fast experimentation and the learning gained from the analysis of the experimental results, marketeyes provides a very efficient method to validate the value and growth hypothesis. The sustainability hypothesis is not yet fully validated since only the involvement of the people of the organisation has been validated. Competition for the time being has not been able to react, because the size of the product portfolio realised with the marketeyes is still very small.

## **Electric and Gas Heating Systems**

The company is a multinational, serving over 50 countries and with production facilities in more than half a dozen countries, specialised in the design, manufacturing, and distribution of electric and gas heating systems. It has a history of successfully developing good quality, mid-range technically sophisticated products, all in the traditional core business. This has given the company the reputation of one of the best value for money brands in the world.

The company has over the last 15 years installed a huge number (millions) of heating systems, which soon will come up for replacement (normally a heating system has a working life between 7 and 10 years) and here is the biggest challenges for the company; how to ensure the heating systems are replaced their products not those of the competition and the used spare parts for the repairing are the original. Its distribution is mostly indirect, using independent “installers and service centres” who install and maintain the relationship with the users of the systems. Unfortunately most of the independent installers and service centres are multi brands and have proven to have very little loyalty to any of the brands they sell. In other words, they will promote the one that has the best commission for them at the moment of the required replacement and/or facilitates their job for the maintenance. Furthermore, recently new technology players have entered the space from adjacent markets, companies like Nest Labs who have been recently acquired by Google, introducing devices that are covering some of the features (guaranteeing warm and cool) of traditional heating systems.

Given this context the company decided to launch a project in early 2013 offering a device that would allow remote connectivity with the heating systems, as well as, a wide array of other features, such as, automatic optimisation of temperature, safety alerts, etc. The purpose was to match the “Job to Be Done” of three different actors; the end users needing to keep their houses under control (remote control) and be diagnosed by their service centrecentres, the service centrecentres needing to optimize their business through the upfront knowledge of the interventions to be done (remote diagnosis), Company internal functions needing a “laboratory on the field” (most of the installed devices are constantly under control) and a clear view of potential substitutions and spare parts. The project was mostly driven by the R&D and engineering divisions and at one point the business case was presented to the Board asking for a multi-million investment for its deployment. The board was not very convinced about it because years before a similar project (with a similar budget) failed dramatically and



causing trouble with the distribution network. As a result the board decided to change the approach and asked the marketing team, with whom as researchers we worked alongside, to investigate how the project could be de-risked. The team proceeded as follows, first it identified the bottom-up Job to Be Done of each actor and the cost of the best alternative today applied (e.g., thermostat remotely controlled, special maintenance contracts); based on this the team produced a high quality brochure and a non-functional but graphically complete app for devices that presented the product as if it existed, and it defined the price points, built bottom-up on the Job to Be Done evaluation, all the key features and it even produced a rendered picture of how it would look. Armed with this brochure and the app, a number of installer-service centres were contacted (selected upon their openness and eagerness of being part of something innovative) and presented the project with the following line “we are here to present you a new product which will be commercialised in 3 months and because you are a valued partner, we will offer it to you in advance to pre-order”. Differently from traditional market research, they asked the service centre to sign an order, therefore not just capturing an intention to buy, but actual sales.. With much surprise, the first few sales meeting were an absolute disaster since the comments were very negative about several aspects from the price to the key features, to the design. All these feedbacks were clearly tracked and addressed to the working hypothesis to pivot. Enriched with such insights the team instead of going back to the R&D team, kept on going by just simply changing the features, price points and even the design and presenting the new version to new installers-service centres. After half a dozen of these interactions, the marketing team was able to exit most of the sales meetings with firm sizeable “pre-orders”, which demonstrated that the “new imaginary” products had potential and that people were prepared to pay. This was feedback to the board and the R&D, who at first did not like the outcome, but then eventually committed in creating a first prototype of the new device, which was much simpler and much faster to develop.

Next the team, in order to further reduce the risk of the product, decided to run the same type of experiments directly with end customers (the ones that would eventually have the device in their homes). Working with some of the installer-service centres stalls in major department stores were organised, where the product was showcased, still on paper and with a very simple video cartoon, to perspective customers. Again the installer-service centres were given the possibility of pre-ordering. Much to the surprise of the installers-service centre operators, many unexpected

comments from customers were received, which again triggered changes (done overnight). The disciplined experimentation supported also the technology development. For example, an initial the working hypothesis from the technology team was to rely only on wi-fi technology for signal transmission, considering that its high penetration in Italian households. . On the contrary the experimentation demonstrated how roughly half the people having wi-fi at home, switch it of overnight (for several reasons, ranging from energy saving to concerns related to electro-magnetic field) and would prefer to buy the GPRS version. These changes in the features, prices and presentation of the product led to very encouraging sales results.

The entire process took around 10 weeks from start to finish. It allowed, at least theoretically, avoiding an investment that would have surely proved wrong, that is the original design was not well received. Instead they now have a new product that seems to have much greater chances of succeeding. Such a process also allowed many people in the organisation and in their distribution network to realise the many biases they had about what customers want and value. Finally, it also had two strong impacts on the internal processes of the company; (i) it removed many of the barriers of fast development, forcing many of the R&D to use unconventional means (such as 3D rendering, simulated cartoons, etc.) to “prototype” and test their creations; (ii) it facilitated the development of a “Go to Market” model with a clear understanding of the supporting tools and processes needed to sale a so innovative product for the salesforce.

## **Discussion and Lesson learned**

There are three major lessons learned which are:

- Front load as many experimentations as possible at the beginning of the process. This will reduce the overall time to market as well as the overall cost of new product development
- Have the courage to abandon or put to rest a new product if the evidence from the experiments is not sufficiently strong
- There is only so much uncertainty you can remove through experiments, consider every day activities after the launch as a “natural experiment” and track the outcome as if it was an experiment

The final lesson learned is also a note of caution. Some people mistakenly think that experimentation is the same as running a pilot phase.

However, we would argue that experimentation is very different from running a pilot for the following reasons:

- Pilots are usually the prelaunch of an initiative that has already been developed, with the aim of the pilot being to prepare for full implementation. Experimentation, in contrast, is a process used to develop a new product and ensure that it meets the criteria of value, growth and sustainability.
- In a pilot, the final or advanced version of the new product is tested, albeit on a small scale. This limits its usefulness as a means of testing because if it goes wrong it is hard to say which particular aspect led to the failure. As a result, areas for improvement cannot be accurately pinpointed. Experimentation is a progressive process, which scrutinises different aspects of a new product and, therefore, is much more likely to highlight exactly what is wrong, or right, about the new product.
- Although pilots are often carried out with the intention of smoothing the process of change within the organisation, if they are presented as a *fait accompli* - a predetermined new product from the top - they may have the opposite effect. In contrast, experimentation can be done as a participative exercise, which allows staff to contribute to and understand the development of a new product, process or service. Involving staff in this way not only leads to a better developed initiative, it also means they are more likely to support its implementation

## Limitations and Further Research

The research reported in this paper has of necessity been limited to two case studies. From our experience the use of the framework suggested in this paper offers a means to improve the NPD process in terms of selecting appropriate new products that fully satisfy customer needs, speed of NPD delivery, and ultimately cost. Only through the application of the methods described can the framework be further tested, which will take time. However, the more people who apply the approach the sooner this will happen.

Applying the methods described to work in tandem with other methodological processes could offer improved performance of those methods and improve the success rate in selecting the right product for the right customer at the right time and at the right price. Experimentation

could prove a useful addition to other NPD processes, provided it is conducted correctly.

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## **Section 2d: Enterprise Eco System Design**

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# Editorial: Enterprise Eco System Design

Kaja TOOMING BUCHANAN

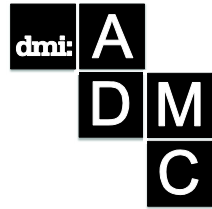
This track focuses on how design can help companies redesign their relationships with people through improved information systems. There are many ways that design can benefit management practice in order to improve customer satisfaction and create a positive user experience. It can be done through meaningful dialogue, through a design process that integrates all functional elements into the unified whole, or through a change in the customer's attitude and cultural interests.

In "Innovating Innovation: Deliver Meaningful Experiences in Ecosystems," Gardien, Deckers and Christiaansen maintain that companies need to work toward co-creation, since it is no longer possible for a company to understand all facets of the ecosystems, let alone create meaningful experiences for end-users. Therefore, the new ways of working and the development of new competences are crucial. At Philips Design, the authors believe that design thinking is a suitable methodology for facilitating the collaborative process of innovation. They created a framework called Co-Creating Innovation that includes elements such as Empower, Position, Create and Enable. As part of the paradigm shift that they believe this represents, Philips changed its focus from technological improvements toward innovation of meaning. This framework helps to create new meaningful experiences for end-users.

A different approach is taken by Hillner, De Leon and Qian Sun in "IP Management in Response to Changing Conditions." Instead of focusing on the co-creation process of companies, the authors focus on the designer/entrepreneur perception of the significance of Intellectual Property for prospects of their success. They are also aware of how the relevance of IP may change over time. The authors conclude that a better understanding of typical design business development cycles will lead to a more effective use of IP. What will be required in addition to new laws and regulations is a culture shift.

In "A Semantic Approach of Cultural Interpretation Toward Service Innovation," Yuan and Tai focus neither on large companies nor on individuals. Instead, they focus on small and medium businesses (SMB's) and the struggle of these enterprises with service innovation strategies in a

cultural context. They propose a semantic perspective of cultural and experiential modeling in order to design a semantic information system artifact that connects culture and personality to cultural interpretation and to the SMB owner's managerial behavior with regard to service innovation. According to the authors, this system can facilitate the work of designers to motivate or inspire SMB owners to develop new ways of thinking about service innovation in terms of cultural interpretations.



## Innovating Innovation – deliver meaningful experiences in ecosystems

Paul GARDIEN, Eva DECKERS\* and Geert CHRISTIAANSEN

Philips Design

*The world is growing ever more complex and is facing huge problems like aging societies, energy scarcity and increasing demand for healthcare. To meet these challenges we require new types of systemic solutions, based on a holistic, integrative and multi-dimensional approach. The good news is that the world is moving towards a knowledge economy, which is a suitable basis for developing the solutions for these challenges (Brand & Rocchi, 2011). Yet this in itself presents a new issue; we have to learn to design in a different way, creating ecosystems of interconnected products, services and solutions that can be accessed wherever and whenever users desire. These ecosystems need to offer a meaningful, relevant and coherent experience for the end-user. However, it is no longer possible for a company (or one part of it) to understand all facets of these ecosystems, let alone create meaningful experiences for end-users. In addition, it is evident that these experiences will be delivered by different players, such as businesses, governmental organizations and NGOs. No single entity has all the answers. We therefore need to work towards co-creation. At Philips Design we are in the process of changing our way of working to support this process. We believe that innovation is inherently driven by true collaboration from the onset, and that design thinking is a suitable methodology for facilitating this process. You could say we are innovating innovation, by not only focusing on new ideas, which is the focus of a lot of current innovation literature, but also by developing new ways of working as well as new competences at the same time. With this publication we aim to share the progress we have made so far, stimulate the debate on developing new ways of working and inspire third parties to join us on this journey.*

**Keywords:** *Innovating Innovation; Designing for Ecosystems; Co-creation*

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## Introduction

### *Shifting Paradigms*

Following the paradigm shift from the industrial and experience economy to the knowledge economy (Brand & Rocchi, 2011, Gardien et al. 2014), we live in a world of constant and rapid change; one in which users expect evolving, personal experiences. As a result, within companies both the propositions and the way of working are shifting from a linear to a networked structure. Instead of thinking in terms of single connected products, all the stakeholders of products and services need to start thinking in terms of ecosystems, while at the same time harnessing the skills and capabilities acquired from both the industrial and the experience economy.

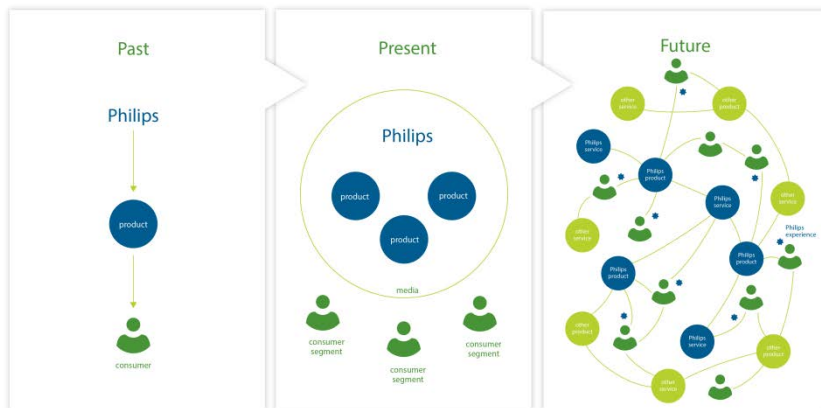


Figure 1. From industrial to knowledge paradigm, from linear to networked.

In the industrial paradigm, single products are typically delivered to a user. Value is created through efficient production and continuous (perceived) improvement. The design process is characterized by a rational, problem-solving approach, and traditional product design skills. In the experience paradigm, companies typically focus on market segmentation with tailored solutions delivering targeted experiences to customers with particular lifestyles. The design process in this paradigm is characterized by a user-centric approach and by delivering solutions as opposed to offering single products (Gardien et al. 2014).

Now society has entered the knowledge paradigm, which requires supporting people in creating and leading a life that is uniquely their own. People are looking for evolving experiences that are capable of growing and

changing with them - what in turn produces data and content that contributes to shaping their own experience. As such, companies need to shift from being the creator to becoming the enabler of experiences, providing the platform and ecosystem within which users can add their own personal touch.

### *Innovation of meaning*

As part of this paradigm shift, the Philips business focus changed recently from the importance of technological improvements toward the innovation of meaning (Gardien & Gilsing, 2013). This stems from the fact that the world is growing ever more complex and is facing huge problems such as aging societies, energy scarcity and increasing demand for healthcare. It is impossible to model these problems with any accuracy and they cannot be addressed using a reductionist approach (Zimmerman et al. 2011). Without integrative disciplines it will be impossible to adopt a holistic approach and sensibly expand knowledge and products beyond the internal environment and into people's lives (Buchanan, 1992). In innovating solutions the whole system needs to be considered with its many different aspects. What is required is a holistic, integrative and multi-dimensional approach, integrating people aspects as well as business, technology and socio-cultural developments. This poses four main challenges:

- Firstly, innovation is by definition multi-dimensional. For example, the ten types of innovation (Keeley et al. 2013) show that successful propositions innovate on multiple dimensions. As example the iPod is described by Keely, which innovates on 7 dimensions of the 10 (including, in addition to the product itself, experience, channels and business model). Seminal works such as Blue Ocean Strategy (Kim & Mauborgne, 2005) or Michael Porter's activity maps (1996) equally emphasize the multi-dimensional character of innovation. Nonetheless, all these models, in our opinion, lack any systematic connection to the societal drivers behind the change that determines whether a specific direction is sustainable. Moreover, these models fail to connect to how the innovation is expressed. Users must recognize that an innovation adds value to their lives if they are to adopt it and if the innovation is to be successful.
- Companies need platforms of innovation if their efforts are to be sustainable. A 'one product' approach lacks sufficient volume to justify the research and effort required to develop and produce it. Moreover, as for the first point, innovations need to resonate with the end-user's mindset and lifestyle. New breakthrough propositions are

built on wider social cultural changes (Holt & Cameron, 2010). We need to operate at an innovation paradigm level (both from a user and company perspective) that is applicable and valuable to a range of propositions.

- Moving towards the knowledge paradigm means a change from branded or 'staged' experiences to 'assisting in solving personal goals'. These solution approaches differ in two fundamental ways. First of all they form part of a system of different hardware, software and data elements. And secondly, ongoing engagement of the end-user with an ecosystem means that functionality, content, advice and transactions unfold only over time. The actual 'product' is more fragmented and cannot be defined in the same way as before. We therefore need to develop the skills to anticipate and design for the complexity, openness and growth of these ecosystems.
- It is no longer possible for a company (or one part of it) to understand all facets and complexity of these ecosystems, let alone create meaningful solutions or opportunities (Bhömer et al. 2012). In addition, it is evident that these experiences will be delivered by different players, such as businesses, governmental organizations and NGOs. Design as a discipline, using facilitation techniques and tools, has a key role to play in bringing these parties together. To ensure a people focused perspective in this world of ecosystems we need to articulate and develop a design perspective that looks at the 'system of innovation'. This is in addition to, for example, the business and technology perspectives where there are recognized models, like the Business Model Canvas (Osterwalder, 2010) or Porter's 5 forces (1979).

## **Towards Co-creation**

### *Design as facilitator*

In response to the challenges posed by designing for ecosystems and innovation of meaning, Philips Design has in recent years made huge changes to the way in which it works. The shift, from operating as a separate global service unit that leases out design services to each sector of the business to becoming a core function of the company, has made a huge difference (Gardien & Gilsing, 2013). The design function is now well embedded in the strategy process of Philips and collaborates strongly with group strategy, to name just one of the advantages this new approach brings.



*Figure 2. It is no longer possible for a company (or one part of it) to understand all facets and complexity of these ecosystems, let alone create meaningful solutions or opportunities; therefore we have to move towards co-creation throughout the company.*

We further operationalized the embedding of the design function by focusing on close collaboration with businesses and functions; building on the concept that innovation is inherently driven by collaboration and that design thinking (e.g. Cross et al. 1992) is a good way of facilitating this process. We embedded our designers within the Philips business groups which enabled the whole organization to make better use of the powerful perspective that design thinking brings. Next to this we are educating the whole Philips organization on design thinking - named co-create training - via the Philips University, as we will describe in the next chapter. But design thinking does not just disseminate designers' knowledge and insights throughout the company; it also means working together from the onset to ensure essential insights from all the departments and functions in Philips.

### ***New ways of working***

At Philips – like at many other companies - many products or services used to start life in research, then moved via an advanced development

department to the development and marketing groups that brought the product or service to market, effectively polishing the idea prior to launch. One of the problems with this linear approach is that everything happens sequentially. Not only is it hard to get all the disciplines involved, it is also time-consuming. To design for, and contribute to, successful ecosystems we need to be open and flexible. We can no longer follow a linear structure where we go from vision or strategy to proposition to new product development (Kyffin & Gardien, 2009).

Moreover, in addition to the time aspect the knowledge aspect is as important. It is impossible to define the whole system upfront and top-down. The aim is to reach beyond collaboration (within and outside the company) of different departments and groups, where they remain responsible for only a part of the development, and work towards true co-creation. Co-creation builds concepts from the bottom-up so that propositions are designed together from the outset (Sanders & Stappers, 2008). Adding many diverse inputs at the front-end of the process helps give a new perspective on how to design a truly holistic and integrated ecosystem. Besides, this input doesn't only originate from new products or visions; a large amount of information also flows from current (connected) products back into the ecosystem. This means that the 'concept' of the ecosystem is no longer determined solely at the front-end of the innovation process; it builds up over time.

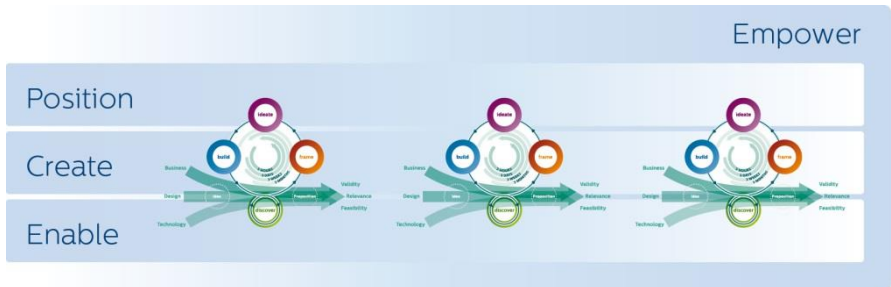
Getting to grips with this complexity means that designers have a new role to play. Rather than providing creative direction at every touch point, they will have to champion and facilitate balance and synergy between projects within the different innovation horizons, shaping and framing a story of the ecosystem that will make sense in first instance to the end users and also to the other departments in the company.

### *Co-creating innovation*

To help Philips move forward together, we created a framework called Co-Creating Innovation which is geared towards the knowledge paradigm. As mentioned above, the "concept" or "story" of the ecosystem will develop over time; this is the "position" part of the framework. As we will explain in greater detail later, the position will develop through reflection on action. For example, knowledge of current products and services, research findings and "in-market" experiments are at the base of this positioning. These activities in themselves are referred to as "create". This creation can only be carried out in an efficient way if it builds on the infrastructure of the ecosystem, for instance IT systems, hardware and software building blocks or even privacy policies.



This is called “enable”. All these 3 elements - which run simultaneously – are framed in the co-creation philosophy as elaborated upon above. Next to these three elements we set out to empower employees throughout the company to apply design thinking.



*Figure 3. The knowledge paradigm innovation framework. Position, Create and Enable run in parallel to deliver meaningful experiences in ecosystems. Empower is about spreading design thinking throughout the company.*

So we are setting out to drive change, by delivering a range of new initiatives and tools that will **empower** the company, create a **position** on ecosystems –or domains as we call them in Philips - and **enable** us all to **create** the next meaningful solutions. In this paper we will introduce the empower, enable and create elements of the framework briefly, before discussing the position element in more detail.

## **Empower**

In the introduction we elaborated on the fact that we feel, within Philips, design is too important to be left to designers alone. To spread the philosophy and knowledge on design thinking we created a co-creation training intended to empower *everyone* in our company, including those outside the design community, to deploy design thinking. The training will first teach participants about design thinking, equipping them with the tools and methods they need. The training is part of a Philips-wide initiative known as the Philips University, which encourages employees to put together courses and workshops based around their particular skill sets and interests.

The co-creation training is built on learning by addressing topics and real business challenges to solve real problems, but structured on key principles of design thinking.

## Create

The true value proposition comes only through real interaction with the end-user (e.g. Ries, 2011). So a few years ago Philips Design initiated so-called rapid co-creation projects to help accelerate the pre-seed stage of innovation (described in Fake it Make it, Crisp Magazine April 2014).

Doing fast experiments helps us to incorporate different perspectives that quickly assess the viability of ideas, and to prioritize opportunities by ensuring that the perspectives required for success have the space to evolve. By adopting this 360° view early on, concepts are developed in balance with a truly multidisciplinary perspective. Rapid co-creation brings designers, researchers, business specialists and relevant stakeholders together to focus all their insights and experience on one value area by quickly visualizing ideas and involving them all in the decision-making process. The cross-disciplinary approach also maps out what the next steps need to be.

It also means we can facilitate the early stage from innovation to market in a dynamic and hands-on way using simple tools such as sketches, models, demonstrators and videos that clearly visualize the idea, and then test it with real people. The whole team then reflects on the results of this external testing, which helps to shape the next iteration of the concept.

Rapid co-creation is primarily used to shape new products or service propositions. Currently we are working on developing a similar, co-creative approach for our strategic and visionary projects.

## Enable

These experiments and projects can be only completed efficiently if the right enablers are in place. These enablers can be very diverse, ranging from IT infrastructure, prototyping facilities, and building blocks (such as standard technologies or design templates) to privacy agreements and contracts as well as the methods and tools used in collaboration. In addition, our design locations themselves play an important role in effectively developing propositions. Experimental design labs will cater to this. For example, in our own practice we are setting up a variety of creative hubs in key office locations. These are physical meeting places dedicated to knowledge building and shared creativity, where different groups of people can come together to build and test propositions. Creative hubs support design thinking in a multidisciplinary setting. Two examples of initiatives in these creative hubs are the Digital Accelerator Lab and the ExperienceLab.

### ***Digital Accelerator Lab***

The lab is a joint initiative between our Design, Research and IT disciplines, aimed at speeding up our digital innovation and bringing digital ways of working to life. We have created teams of technology researchers, IT platform architects, software coders and designers specialized in interaction, visual and user-interface design. Using state-of-the-art equipment, they work to bring new digital innovations to the market as quickly as possible.

At the same time, we have mirrored this Europe-based lab in our research center in Bangalore, India, so the teams are able to work round the clock if necessary by passing on information at the end of the working day. For example, their recent work on data visualization has shown other areas of the business how new meaning can be found in data sets in areas such as healthcare, retail and street lighting.

### ***ExperienceLab***

Reintroduced in collaboration with Philips Research at the end of 2013, the ExperienceLab is a physical space where project teams can rapidly build and test technology and concepts with end-users in order to speed up the end-to-end innovation process. The ExperienceLab includes themed rooms that present realistic set-ups of a home, hospital and lighting concepts, each with the flexibility to be adapted to meet a project's specific requirements.

The rooms are an important tool for assessing user interactions with new technologies or design prototypes. They can be used to observe and record interactions using embedded electronics that are unobtrusively built into the surrounding environment.

An important next step is to move the interactions into "real life" with the creation of experimental design landscapes (Gent et al. 2011).

## **Position**

To be able to deliver meaningful experiences in an ecosystem, a company has to understand what drives the end-user and his/her experiences in this ecosystem. In other words, we need a clear story for innovation in which our offering is connected and which is relevant and applicable in society. We need a clear positioning on what we want to deliver and why.

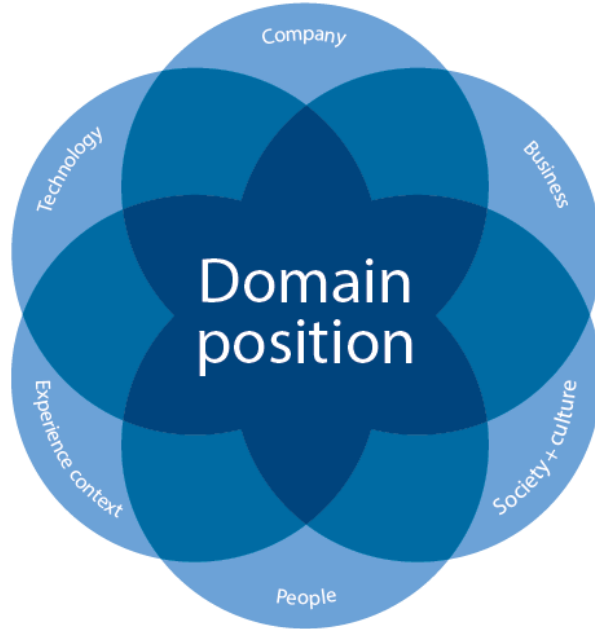
### ***Experience domains***

An experience domain is a thematic, strategic area in which design, research and business activities are organized and initiated. An experience

domain revolves around a specific user group or experience. It is a platform for collaboration, integration and building on each other's skills. Based on the thinking of the knowledge paradigm, we take a dynamic approach: experience domains are developing over time and provide directions and opportunities.

Creating the underlying knowledge that drives an experience domain is currently being developed in various projects. Developing new propositions depends on the effective collection and cross-referencing of this knowledge. Collecting and maintaining this knowledge has been difficult for a number of reasons. For example, due to the structure of businesses, it is hard to connect, design-wise, products that may target the same people but only as part of another activity or context within different business units or sales channels. Good off-the-shelf design knowledge management systems are scarce. The time required to store and code the generated knowledge effectively is often unavailable within current project structures.

Moreover, as timing is crucial, delays or temporary project stops are common. Too often, insights and knowledge from finished projects are not transferred. This problem of overview and coherence soon results in a failure to build sufficiently on each other's experiences, insights and expertise. Integration may happen on a project level, but what we want is to create a strong value network (with internal and external stakeholders) that supports us in understanding and connecting tangible and intangible facets of our business (Allee, 2000). This interconnected way of working is crucial if we are to complete the transition to a knowledge economy, let alone to move to the transformation economy (Brand & Rocchi, 2011), where trust and thus the reliability of the information is key. This interconnected way of working is equally crucial in formulating and developing a strong story for innovation, but instead of trying to 'store' all the knowledge we propose to accumulate it in the domain position.



*Figure 4. Six perspectives influence the domain position.*

### *Experience domain position*

#### **Six perspectives**

While the structure we propose works towards a *design* system for innovation, the total story, or the position of the experience domain, is made up of dialogue between activities and events different in perspectives, namely: technology, business, people, experience context, society & culture and company.

Our approach is inspired by Tom Kelly's Venn diagram on design innovation (IDEO). In this model, design innovation is at the heart of integrating technology (feasibility), business (validity) and people (desirability and usability). This model works extremely well to describe design in an organization, but in order to better link external and legacy topics, we have added three perspectives to this model as drivers for the experience domain position.

To build the position and in order to reflect upon the outcome of our activities, we needed a fourth perspective: namely, how the domain is

understood or experienced via the “experience context” in the wider socio-cultural context of its consumption (Appadurai, 2013) . The experience domain position becomes concrete in these expressions. We need to understand the cultural narrative, create an experience journey throughout the ecosystem and share this experience with our users and stakeholders. It is only at the moment the person actually interacts with the device that it becomes meaningful: meaning is in (inter)action (Overbeeke, 2007; Dourish 2004; Gibson, 1978; Verganti, 2009).

Furthermore, to put more emphasis on the disruptive character of the drivers for expression, we have added a fifth perspective: society and culture. This allows us to differentiate between personal and societal structures and developments. Since we are seeking the innovation of meaning, we can no longer focus solely on functional aspects. We must shape strategies and ideas around a preferred cultural state (Holt & Cameron, 2010). It is therefore important that we also consider the economic paradigm we are designing for, and place our work in the context of current and upcoming trends. We need to connect to what drives people, not only on a personal level but also in terms of their social and cultural environment.

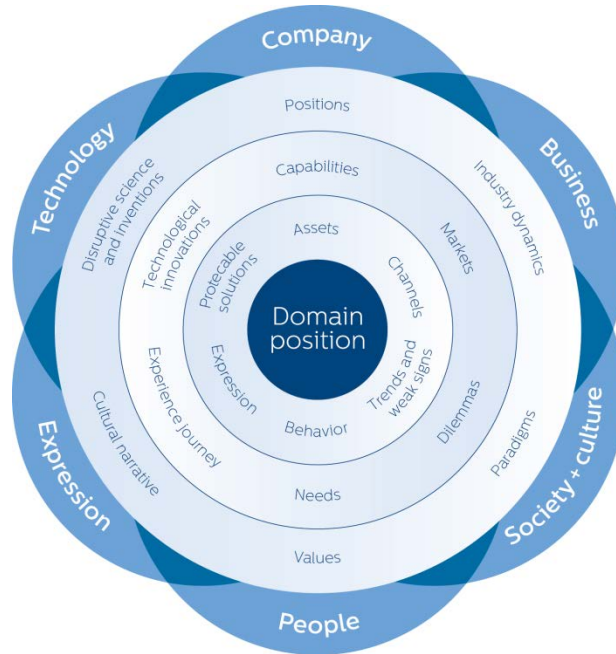
As a sixth perspective we explicitly include the company perspective. Innovation does not happen in a vacuum, but is rooted in a company’s legacy of positions, capabilities and assets. Zook and Allen explain that the strongest sources of differentiation, in a company’s strongest businesses, are like crown jewels. Most innovations, even disruptive ones, affect only one part of a business’s capabilities, assets and positions (2012).

By including a business, technology and company perspective in our story for innovation, we create a strong connection between products from different business units in Philips and thus integrate the brand identity. As explained previously, we believe it is impossible to design for our complex world without this integration. In the past we put forward design visions via the future design probes. Although we provided a very clear idea of our opinion on the preferred future (Zimmerman et al. 2011), we had no deep connection with departments in Philips to allow for emergent solutions. If we want to design for the knowledge economy, in which people and products are all connected, we have to do the same between the different departments in the company.

### **Laddering**

To define innovation at the correct level and create focus for the input from all six perspectives, we propose laddering. Laddering theory (Reynolds &

Gutman, 1988) and the related means-end theory (Gutman, 1982; Pieters et al. 1995) is very commonly used in people research activities (Parmeswaran & Raaijmakers, 2010). We also propose a laddering for the



*Figure 6. The laddering approach provides focus and helps us to understand the multidimensional character of the story for innovation by defining it at different levels.*

other six perspectives, for which this is not common practice. Laddering in people research provides insights on how people relate the attributes of a product or solution to their behavior, needs, wishes and values. We apply the same principle for the other perspectives in different ways.

Laddering all the perspectives not only gives us a better understanding of each separate perspective, it also allows us to tell a story for innovation at different levels, integrating all the perspectives. For example Verganti shows in his work on technological epiphanies how defining innovation from different perspectives at the right level leads to breakthrough thinking and implementations (Verganti, 2010). In this work, Verganti highlights how Apple, Swatch but also Philips have been successful by using technology to create products and services that people find more meaningful than current

offerings, and by integrating several perspectives in addition to the technological perspective. We use three levels: the outer circle drives change (why), the middle circle creates potential tension enabling change (what) and the inner circle describes propositions from different angles (how). If we are to work towards successful positioning of the experience domain, ensuring and demonstrating its relevance and extensibility, all these aspects, with all their perspectives at every level, must be in place.

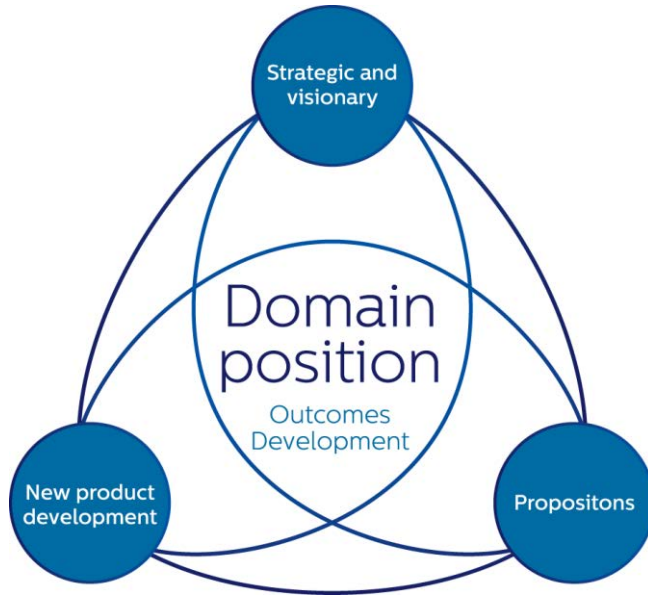
### *Experience domain structure*

#### **Balance and synergy between projects**

The experience domain is not a static, restricted area; it is open and dynamic. Not knowing where exactly you are going is inherent to the innovation process. Most true innovation starts with a vision, but the end point is not clear (Deckers et al. 2012). It takes confidence to hang out in the world of the unknown (Walters, 2013). To build this confidence and connect with the near and more distant future, the different types of projects we run are collated in the experience domains.

As described above, but also depicted in a number of influential models like Chesbrough's Open Innovation funnel (2003), innovation is often organized in a rather linear way: develop a vision (execute research), put forward propositions (advanced development) and develop new products. This linear model is no longer sufficient (Kyffin & Gardien, 2010) thanks to rapid market development and the complexity of the product-service systems. The experience domain thus needs to demonstrate balance and synergy between projects that are more strategic or visionary in nature, projects that aim to put forward realistic product and business propositions, and projects on new product developments that are on their way to market.





*Figure 7. Different types of project are connected. The projects integrate and feed back to the experience domain position.*

The structure of our experience domains is borrowed from the idea of the Reflective Transformative Design Process (Hummels & Frens, 2008, 2009). It is a bottom-up approach where all the players contribute equally and all take responsibility for the experience domain development and outcomes. Although all activities take place in the experience domain, there is no specific order. New product development may influence the strategic or visionary projects as much as the other way around. There is no linear or top-down process where decisions are made in a one-directional stream. There will preferably be a high pace of interaction between different projects, stakeholders and individual activities. Nonetheless, some projects need more independence or time than others.

### **Reflection on action**

The development and outcomes of the experience domain are reviewed through reflection on action, and exemplified by the experienceable outcomes. There is strong interplay between the experience domain position and the projects that we run. Not only should the project incorporate the overall experience domain position on a strategic level, it also needs to be

aligned at both tactical and operational level. We build towards connecting the outcomes of the experience domain in an ecosystem, offering a recognizable, reoccurring story for innovation and user experience. We therefore need to build upon each other's domain knowledge, e.g. by creating and sharing toolkits and guidelines (enablers).

Both the position and the content develop through reflection on action, taking into account all six perspectives. What are the experienceable outcomes (Experience Context)? Did we involve and affect the user, and how (People)? In which economic paradigm can we place our outcomes? What is the impact on society of our solutions (Society and Culture)? Did the businesses profit, and how (Business)? What technological advances did we integrate (Technology)? Did we integrate the company's mission and vision? (Company).

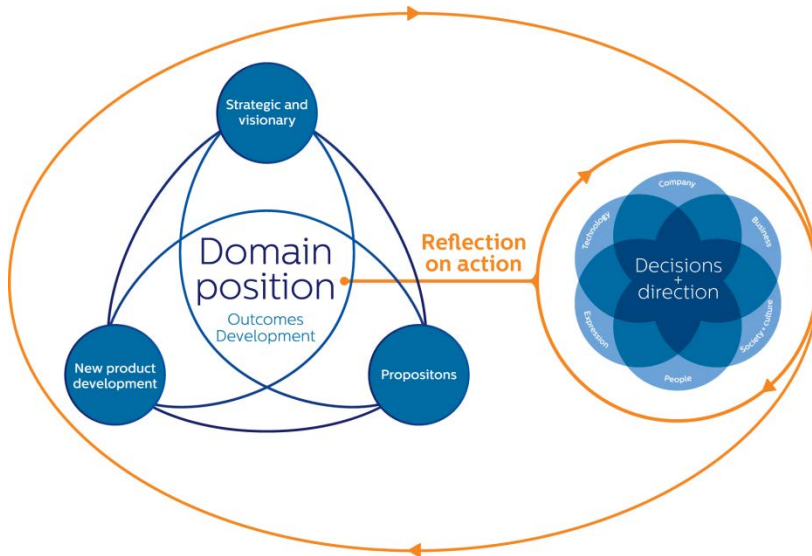


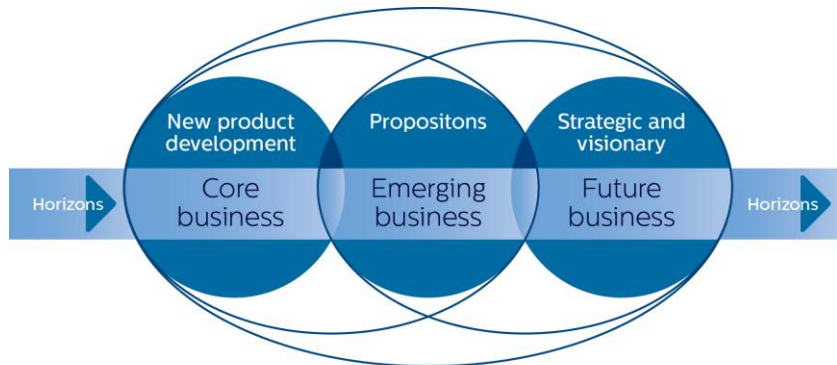
Figure 8. Reflection on action makes it possible to provide direction, make decisions and possibly redefine the experience domain position.

### Connecting existing and new meanings: MAYA

Although we organize our work in an open and flat structure, the various types of projects focus on different horizons. If we can find a balance in the different types of projects that run in the experience domain, and succeed in truly allowing the different types of projects to provide feedback to one

another, we can build a timeline in which the distant and near future are strongly connected and build on each other. We make our innovation story tangible. Not only does the story become stronger, it also helps us to take stakeholders and end-users along on our journey.

This is essential because when radical new meanings are introduced without considering existing meanings, a sociocultural gap is created (Baha et al. 2012). This results in end-users, possibly also stakeholders, failing to recognize and understand the innovation. As Raymond Loewy (1951) put it in his 'Most Advanced Yet Acceptable (MAYA)' theory: "The adult public's taste is not necessarily ready to accept the logical solutions to their requirements if the solution implies too vast a departure from what they have been conditioned into accepting as a norm". In our approach we create interplay between existing meanings and new meanings. Different types of projects that focus on different horizons contribute equally and inform each other.



### **Connecting existing and new meanings**

*Figure 9. Connecting existing and new meanings.*

As such, we bridge the sociocultural gap by establishing a balance between the introduction of new meanings and the preservation of existing meanings (Baha et al. 2012). Through our way of working, we develop a strong sense for what is most advanced, yet acceptable (Loewy, 1951). This is also the foremost reason to consider society and culture as a separate perspective, in addition to the people perspective, in our reflection on action model.

#### **Examples**

There are several examples of products where we did and did not manage to bring together all the perspectives and introduce the right innovation at the

right time. For example, when Philips launched a very early video game console in 1991, the Cd-i (Compact disc-interactive), there were too many aspects that did not fit with consumers' mindset at the time. For instance the general public did not recognize the notion of a multimedia console, and the Philips positioning: "you can do it all with CD-i" did not help in developing the understanding. Later consoles like the Sony play station clearly positioned themselves as primarily game consoles. Moreover, we failed to provide the content to support a change in mindset. For example, at the market introduction there were only a few titles available. People were unable to connect to concepts such as edutainment (educative entertainment), interactive movies or video-on-demand.

A successful example is our alliance with Douwe Egberts. The Senseo coffee machine combined new technology with a surprising but recognizable new experience. The coffee experience gained traction around the same time as Starbucks' expansion into Europe in the late nineties. People liked fast but good coffee, and the fact that you could easily just make one cup. Philips had all the channels in place for selling coffee machines. In turn, Douwe Egberts had all the channels in place to sell the complimentary coffee pads.

By positioning our work more strongly in experience domains we can actively shape and develop the story of innovation making a next step in designing for the knowledge and transformation paradigms, making sure we understand and frame all the dimensions to our innovation and bringing it to our customers in the right expression at the right time.

## Conclusion

If design is to deliver on the promises enabled by design thinking, designers need to take the next step forward. We need to redirect our creative skills away from looking at all the touch points around a proposition to developing and maintaining a position on the user experience in a domain that includes the different innovation horizons.

However, to do this effectively, not only do we need to expand our competences; we also need to adopt new ways of working that coincide with the challenges inherent in the knowledge economy. To design for connected experiences in ecosystems and domains, we at Philips Design are piloting approaches that integrate a strong position in a domain combined with rapid experimentation, built on solid enablers and embedded in a collaborative, co-creative way of working. This dynamic and iterative approach will enable us to

deliver meaningful experiences to our end-users in a rapidly changing, interconnected world.

We shared our journey because we believe that not one company, organization, NGO or government is able to deliver these experiences. This will require true co-creation, and in order to achieve this we as organizations need a shared vocabulary, methods and tools. We believe that design as a discipline, through facilitation and people focus, can take a leading role in this. With this paper we want to encourage you to join us on this journey and to create a shared understanding and attitude towards co-creation.

***Acknowledgements:*** *The contents of this paper build upon the insights of many of our Philips'colleagues. The examples, tools and approaches we discuss are the result of a communal effort. We would like to say a special thank you to everyone who is actively involved in framing our innovation program and setting up experience domains. We like to thank Caroline Hummels for her feedback and thorough editing.*

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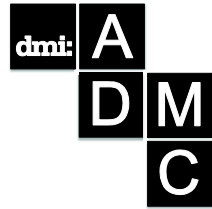
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## IP Management in Response to Changing Conditions

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*This paper, which has evolved from a series of qualitative interviews, examines a few examples of award-winning design-led start-up businesses in order to highlight the entrepreneurs' perceptions of the significance of IP for their success prospects. It will break the proprietary design business development process down into 3 stages in order to highlight how the relevance of IP may change over time. Following the discussion of possible business development strategy, the paper will clarify to what extent a registered design may help to delay costly and time-consuming patent filing. Based on the case studies, the paper will offer a small number of principles to follow when assessing the relevance of certain steps in conjunction with IP strategies. The paper provides a comparative assessment of patents and registered design rights with respect to costs, strength and litigation frequency. It discusses anticipated changes to the IP bill, and how these may affect designers in the future, before conclusions are drawn on how designer-entrepreneurs can make best use of IPR protection methods to get started.*

**Keywords:** Intellectual Property, Innovation, Start-ups, Infringement, Patents, Design Rights, Entrepreneurialism, Business Development, Exclusivity

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## Introduction

This paper examines the most significant intellectual property protection options available to lone entrepreneurs as well as small and medium Enterprises (SME). SMEs are recognised as an important source of innovation yet have limited resources and knowledge to select, secure and enforce their legal rights to their innovations. In their paper 'UK design as a global industry', The Big Innovation Centre confirms that 'The design-intensive industries [...] feature a large number of small businesses. It can often be hard for smaller businesses to use the intellectual property system effectively especially in a field like design where there are so many different ways to handle intellectual property.' (The Big Innovation Centre, 2012, p.83) This inhibits their capacity to grow and benefit from the returns on their innovation. This paper focuses predominantly on a comparison between patents and registered designs. It will conduct a cost-comparison, and evaluate effectiveness of both measures, before assessing to what extent either of the two measures can be deployed by design-led start-ups. To do so, it will discuss current changes in the patent bill, examine past and current start-ups, and sketch out the typical venture development processes.

This study relies predominantly on qualitative data collected through 17 open and semi-structured interviews. The ventures were carefully selected to produce a credible and representative range of case studies covering different kinds of inventions that are aimed at a variety of markets. The majority of questions raised within this study have evolved from these interviews, and their significance has been assessed with Grounded Theory methods. This is an inductive study, the results of which are compared to, and contextualized in findings obtained through literature reviews. The vast majority of sources do not differentiate between large corporations, small and medium enterprises (SME), and micro-scale start-ups. Levin et al admit to that when stating that 'the exclusion of those without publically traded securities undoubtedly means that small start-up ventures, important sources of innovation, were underrepresented.' (Levin et al, 1987, p. 791) This constitutes a problem, because the fact that the latter have limited access to financial resources and complementary assets such as manufacturing facilities and distribution networks sets them aside from established businesses. This study is aimed at filling the relevant knowledge gap through focusing on early-stage start-ups. Teece argues that IP can be utilized to compensate the lack of complementary assets during the early phase of a business development. But Teece discusses this matter in

conjunction with the risk of being imitated (Teece, 1986, p. 297). However, the risk of radical innovations to be imitated during the start-up phase is comparatively small, because the markets are mostly unproven, in some cases non-existent. Compared to established profitable businesses, start-ups, many of which are in the pre-trading stage, face a different set of challenges such as the search for seed funding, prototyping, route to market development etc., and they have different means of tackling these problems such as incubation schemes, peer-to-peer networking, bootstrapping and so on. This study will sketch out development models and strategies, which will provide the independent designer entrepreneur with guidance in their decision-making.

## **Changes to the IP bill**

On Monday, 27 January 2014 Sebastian Conran sent a letter to the Times asking for 'criminal provisions for deliberate unregistered design infringement, as well as registered design infringement' to be included to the IP bill, which is due to be re-issued in 2015. 16 May 2014 the bill, which, contrary to Conran's plea, does not treat unregistered design rights as criminal offenses, received Royal Assent. Copyright and trademark infringement have already been treated as criminal offence, whereas the infringement of Registered Designs, i.e. the formal protection of two-dimensional designs or surface patterns, and unregistered design rights, i.e. the right on the original design of a three-dimensional shape, has not. Neither has the infringement of patents. The proposed changes to the IP bill are set to turn the infringement of registered designs into a criminal offence. Infringement of patents and unregistered design rights will remain a subject of civil law. The difference lies in the liability, as well as the fact that a criminal offence can entail custodial sentences. This gives rise to the question whether or not registered designs are due to become more attractive means of IP protection than patents for start-ups.

Patent law is proposed to change in that a unitary patent will be introduced within Europe. The rules of this 'will be the same in every country and you will be able to challenge unitary patents and European patents in one action at the Unified Patent Court. This will be cheaper and easier than fighting your case in the courts of each country where the patent is valid.' (IPO, 2013d) A unitary patent application covering 25 EU member states is hoped to reduce translation costs from some £20,000 to £600, and save time and effort. A unified patent court in London will serve all unitary

patent infringement, and a patent opinion service provides out-of-court advice on potential infringement matters for no more than £200. The changes to design rights are no less drastic, as explained above. However, it has to be said that infringement of registered design rights are only to be treated as a criminal offence if the infringement happens intentionally, and that may be rather difficult to prove. A design rights opinions service provided by the IPO will be aimed at helping businesses to resolve design disputes without litigation. The costs involved in using this service equate to those needed for the patent opinions service.

Whilst many designers will argue that the proposed changes do not go far enough, the IPO expresses confidence that making the infringement of registered designs 'A criminal offence will help create a coherent approach to the protection of intellectual property rights in the UK. [...] As a result of this increased confidence design registration could become a more attractive proposition to creators.' (IPO, 2013c)

On-going discussions surrounding the current changes in the IP bill suggest that the registered design is about to be strengthened to a much higher degree than the patent. This may help designers develop more confidence in this mode of protection. Whether or not a registered design can ease the way into a proprietary design business development depends on numerous other factors too. However, one is inclined to think that it may, in particular if the technical details, which are aimed at a patent application, can be kept secret. Needless to say that the surrounding factors such as complementary assets, team building and funding must not be neglected. The benefit of focusing on a design registration as opposed to a patent at the outset lies in the reduced cost and time that is needed to obtain protection. So it allows the design entrepreneur to invest significantly more time and money into the development of other aspects, business relations and the innovation itself included.

## **A Comparison Between Patents and Registered Designs**

When discussing "The choice between formal and informal intellectual property" Brownyn et al. make no distinction between registered designs and patents, nor does Teece when introducing us to IPR in conjunction with appropriability regimes. It may be due to the fact that the US equivalent to the European design registration is a so-called design patent and the arguments are meant to encompass both patent variants. A more likely

reason is pointed out by Rebecca Thushnet from Georgetown University Law Center, who suggests that ‘The law’s traditional bias against, even fear of, the visual may help explain why design patents have been of less interest to many intellectual property scholars than other bodies of IP law.’ (Tushnet, 2012, p.409) To establish how much of a difference there is between utility patents and design registrations/design patents, we shall first look at the formal requirements for obtaining either.

### *Costs*

Whereas filing a patent costs several thousand pounds and takes several years to reach approval, a design registration takes a couple of weeks, months at the most, and costs only a few hundred, even if filed through Office for Harmonization in the Internal Market (OHIM) across Europe. The US equivalent of the latter, the design patent, costs more, around \$1,500 in total, and it takes longer, around 12-18 months, which is still less than the time required to obtain a utility patent. As opposed to the European design registration, the US design patent does not require any renewal applications, which somewhat justifies its higher costs. But its lifespan is limited to 14 years, which is 11 years less than that of a European design registration, and 6 years less than that of a utility patent.

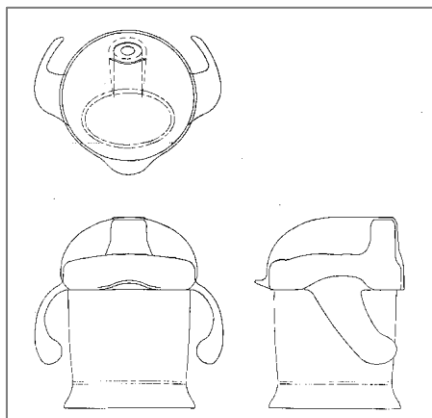
Given that processing time and costs seemed the biggest problems associated with utility patents, one might be surprised to not see a greater emphasis on design registrations / design patents in conjunction with design-led start-ups. May this have to do with the ‘bias against, even fear of, the visual’ mentioned above? Do entrepreneurs and angel investors share this fear? And, if so, where does this fear come from?

### *Statistics*

Helmets and McDonagh’s paper on ‘Patent Litigation in the UK’ establishes that only a small percentage of IP disputes at the Patents County Court (now the Intellectual Property Enterprise Court or IPEC) are patent related, only 12 out of 64 in 2007/8 (Helmets, McDonagh, 2012). Copyright issues and trademark disputes dominate here. Regrettably the paper does not distinguish between registered and unregistered design rights. But the combined number of cases of registered and unregistered design right disputes equates to the number of patent disputes with around 6 or 7 per year. This would suggest that design rights and patents are equally significant to designers.

The situation at Patents Court at the High Court (PHC) differs significantly. Helmers and McDonagh explain that the number of cases of patent disputes at PHC level is 68 in 2007/2008, which constitutes 60% of all IP disputes at this level. The cases at PHC mostly relate to patents that protect ‘pharmaceutical and chemical compounds and production processes’, whereas the cases at IPEC level tend to relate to ‘patents of lower complexity and value’, which are secured to protect inventions of ‘mechanical, discrete nature’ (Helmers, McDonagh, 2012, p.26). Most of the case studies further down would fall into the latter category. Patents litigated at IPEC level are said to be mostly less than 10 years old, which means that design-led start-up businesses are vulnerable to either being litigated, or having to initiate litigation.

### *IP Strength*



*Figure 1: 3D trademark by Haberman*

Views on the strength of design registrations and utility patents respectively vary considerably. Adam Sudcliffe, one of the designer-entrepreneurs interviewed in conjunction with this study, thinks highly of them, but suggests using them during the later stages of a venture development rather than earlier-on. Mandy Haberman, inventor of the so-called AnywayUp cup, has little faith in registered designs, so little in fact that she filed a 3D trademark for her Smiley Cup design instead of registering the design (Figure 1). Interestingly she ‘filed the Design Patent [in the US] as a strategic measure, to obtain a granted right faster than could be

achieved by our patent application'. She further explains that 'The US patenting process can take many years and it is likely that we will be launching our product there before our patent is granted.' (Haberman, 2014) Utility patents are probabilistic rights, which means they are only proven once confirmed in court. One could argue that design patents and registered designs are equally, if not more probabilistic as are utility patents. Tushnet explains that 'the ordinary observer test makes design patent infringement findings harder to review and analyze; as gestalts, they are difficult to dissect' (Tushnet, 2012, p.417). In an interview Haberman stated that she had seen a cup similar in design to her "Smiley Cup" during a trade fair, but decided not to challenge it in court because minor differences would have limited her chances to succeed (Haberman, 2014). How similar a competing design must be for it to be litigated without risk is difficult to tell. Although the design registration itself is comparatively cheap, costs add up if applied across a range of products. Sebastian Conran's 'Universal Expert' range of kitchen utensils comprises 200 objects. To secure registered design rights for 200 items, and to do so internationally would amount to a considerable sum of money.

## **The Haberman case**

The value of patents is often rated low, because early-stage design-led start-ups usually lack the funds to defend their rights in court. Patents are perceived as no more than a necessary burden to secure angel investment. Mandy Haberman is an established designer-entrepreneur, but went through the entire process of proprietary business development. Her case proves that the threat of imitation is real, and start-ups are not perfectly safe from harm.



Figure 2: Haberman Feeder



Figure 3: AnywayUp Cup Beaker



Figure 4: Bird Cup



Figure 5: Suckle Feeder

(Images: Courtesy of Haberman Products Limited)



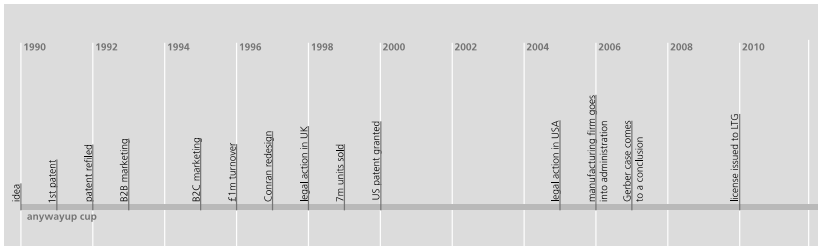


Figure 6: AnywayUp Cup timeline

Mandy Haberman has invented a number of products in the field of childcare and nutrition. But we are focusing on the early stages of an entrepreneurial design venture, and with regards to this, two of Haberman’s inventions stand out here: The Haberman Feeder and the AnywayUp cup. In 1984 Haberman patented the first product, a baby cup for children with feeding problems. Initially she filed the patent herself, but soon realised that she would better use an attorney. She refilled within a year. The development of the Haberman Feeder was funded through £20K worth of grants which Haberman had secured in the course of a 4-year period. Eventually the device was produced, marketed and distributed from home directly to hospitals and parents in need. Haberman had failed to secure a licensing or distribution agreement. Her market was too much of a niche, too small to attract the interest of large incumbents. The situation was different with her second invention, the patent for which was filed in 1992. The AnywayUp cup was the first reliable non-spill baby cup in the world, using a slit-valve to keep the liquid secure inside. Haberman presented the product to 18 incumbents under NDA, but secured no contracts. Together with a marketing team the inventor introduced the product during trade fairs in 1995 and secured almost instantly £10K worth advance orders. Using a bank loan rather than investment, Haberman started production and trade. Sales grew fast and much benefitted from a redesign by Sebastian Conran in 1997. But Haberman’s invention had already been copied by Jackel International Limited, one of the 18 companies mentioned earlier. The case was taken to High Court and led to an injunction in 1996. Subsequently various other infringements were successfully challenged in Holland. Last, but not least, Haberman had to take legal action against two companies in the USA, where her licensee refused to take action on her behalf. The results were mixed here. Haberman succeeded to take action against Playtex, who settled out of court. However, her lawsuit against

Gerber proved her patent valid but not infringed. An injunction could not be issued here. With her patent proven valid, Haberman found herself lucky in that the outcome attracted new licensing deals in the US. With a cap in legal fees at £300K due to a contingency arrangement with her lawyers, her losses were mitigated. This appears like a painful but successful journey. In an interview Haberman admits to one major mistake she has made: The AnywayUp cup was filed twice, in 1991 and in 1992. Both times an attorney had been used. Haberman decided not to proceed with her first application due to financial reasons. Between both filing dates the Richard Belanger had filed a patent application for a baby cup with a different kind of valve in the US. Both the Belanger patent and Haberman's patent from 1992 are valid. But due to the prior art created by Belanger, Haberman lost a huge amount of market share. 'It is true that I did extraordinarily well from the cup, way better than I ever dreamed. However, if I had proceeded with my earliest patent application, rather than abandoning that and refileing a year later, my patent would have been worth significantly more.' (Haberman 2014)

Haberman could rely on a bank loan to get started, something that is thought to be impossible nowadays. Her case suggests that patents are vital to the success of the independent designer entrepreneur, even if one does not need investment. The threat of being copied is real, but only once proof of market is established. Fund raising ambitions aside, IP seems of little benefit if one is not ready to enforce it in court. We can also learn from Haberman's case that the product language, i.e. the design that goes beyond the technical functionality, matters, at least in the retail sector. The Conran redesigns of the AnywayUp cup led to a significant increase in sales. After all Haberman has a name to herself, and now holds no less than 8 registered trademarks with OHIM. More recently Haberman has added to her product portfolio the Suckle Feeder, an improved baby feeding device, the Anyware range of child-safe kitchen ware, and the Glugs, a set of animal characters to be used to teach children healthy eating through story telling. Neither the Anyware range and the Glugs benefit from any kind of technological innovation, which again is an indication that design in terms of a product language matters, in particular if you can attach a brand value to it. The brand connects the product with the inventor and the firm.

The value of a brand depends on the recognition of a firm or person. The latter does not exist from the outset. Haberman's venture was not established until the late 90s. If we take the birth of Haberman's daughter Emily in 1982 as a starting point, then it took her some 13-14 years to reach a stable and sizable turnover. Her brand value grew gradually over time. To

verify means of appropriability other than brand recognition deployed during the development process, we will attempt to break the process down into 3 major development stages.

## Development Phases

In order to produce a rough framework of reference, we can segment Haberman’s business development into the fledging business (Haberman Feeder: 1984-1995), the transitional business (AnywayUp: 1995-2006), and the established business (Suckle Feeder, Anyware range, Glugs: 2006-present). To better understand the three stages, we can hypothesise on the characteristics of businesses during each period. The characteristics listed in the following are indicative, and not necessarily part and parcel of each and every single venture development.

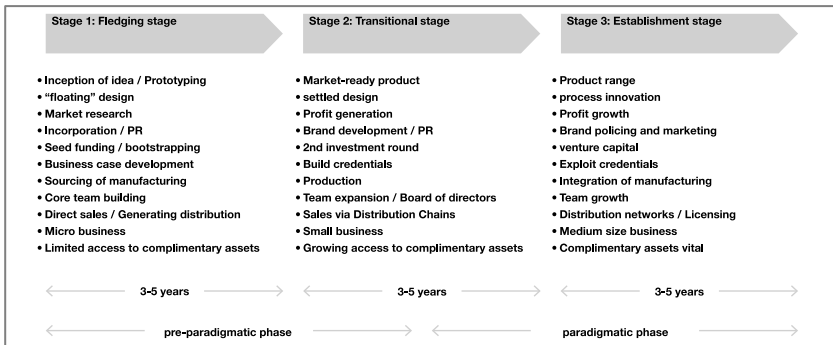


Figure 7: Business Development Stages

Murta et al. (2004) define the pre-paradigmatic phase in reference to Abernathy, Utterback, Dosi and Teece as a competitive phase during which companies rely on ‘standardized manufacturing equipment, in order to retain flexibility to adopt an alternative, should their offering fail to establish itself as the dominant design. In the paradigmatic phase of competition, companies face reduced uncertainty over product design, gravitate toward customized manufacturing equipment and compete on the basis of scale, learning, and process innovation to reduce cost.’ (Murta et al., 2004, p.8) One can argue that a start-up ceases to be a start-up as soon as it enters the paradigmatic phase. It then becomes an established business, however small it may be. One must bear in mind, however, that the customisation of

manufacturing equipment depends on the invention. Some may need a higher degree of customisation than others.

As pointed out earlier, the focus of this study is on the fledging stage of the design business development as this is commonly neglected in the literature. However, the ambition of filing for patents has long-term implications. These need to be taken into account when it comes to comparing the strengths and weaknesses of diverse IP protection methods. It also needs noting that the transition between pre-paradigmatic and paradigmatic phase is likely to be gradual, rather than sudden. It may vary from venture to venture when exactly this transition takes place. We may assume that stage 1 is predominantly pre-paradigmatic and stage 3 of a paradigmatic nature. This means that the transition is likely to take place in the course of stage 2.

Designer-entrepreneurs might trade the business towards the end of stage 2 and engage in the development of a new venture. Haberman chose to take her initiative to stage 3. It has to be acknowledged that, although she had keenly pursued the option of integrating manufacturing, she ended up outsourcing it, because some of her investors had demanded this to allow for a greater focus on sales. (Haberman, 2014)

What becomes clear in the Haberman case is that the significance of IP does not become less critical over time, its value changes. In phase one it may be a necessary burden for raising equity investment. In stage 2, when trade turns profitable and funds become gradually available to invest in lawsuits, if required. IP can be used as an effective defence mechanism to grow and sustain market share. In stage 3, IP can be connected with brand values, and be used to signal innovativeness and market control. So the relevant problems and benefits in conjunction with IP change as entrepreneurs enter the next stage. To begin with, time and money are the key concerns in relation to IPR, along with worries about the affordability of litigation. During the second phase the primary concern is market share, possible competition and imitation. In the third phase the designer entrepreneur must focus on the expansion of the IP portfolio, and on re-innovating. Adam Sudcliffe, inventor-founder of Orbel, a medical device, suggests shifting emphasis from patenting to design registrations during the second stage. These are less expensive, benefit from a faster application process, and are according to Sudcliffe easier to enforce in court. Haberman disagrees with the latter. But using registered designs in place of patents at an early stage may speed up the process of securing IP and it can save costs.

The following section introduces the case studies and highlights how the designer entrepreneurs involved handle IP.

## Summary of case studies

‘As an inventor, it is important to understand how the patent system works and to do as much as you can to protect your intellectual property before you share information.’ (Haberman, 2014b)

In preparation of this study 10 designer-entrepreneurs, who developed their business upon exit from academia, have been interviewed in relation to their invention and their views on IP. Most of the ventures are still in the fledging stage, except two, who are in stage 2. Haberman’s case differs from those of the other designer entrepreneurs, in that she did not rely on an incubator to get started, nor did she initiate her development upon exit from academia. That aside, all of the designer inventors have been dealing with comparable sets of circumstances to begin with and most of them have filed for one or several patents. The only exception with regards to patent filing is Yossarian Lives!, a digital search engine that does not qualify for patenting in Europe, and Squease, the inventors of a pressure vest designed for autistic users. Squease let their patent lapse shortly after filing because the technology was still under development.

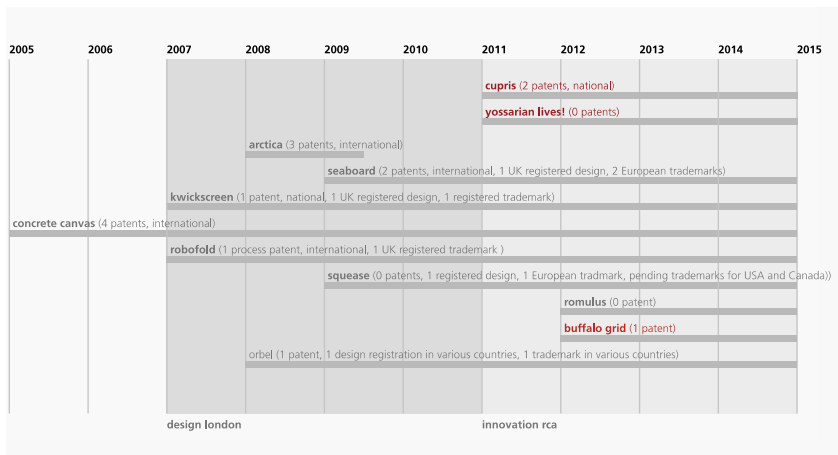


Figure 8: Incubator timeline

The team decided to build on a first-mover advantage instead. The team behind Yossarian Lives! built their IP strategy around secrecy. The majority of the remaining 8 interviewees have expressed a lack in confidence in their

patents due to the fact that their financial resources are likely to be insufficient to defend their IP in court at this stage. The main reason why they opted for patents is the fact that they assume it to be a requirement to have a patent for securing angel investment. Conversations with angel investors from the London Business Angel Network have revealed that angel investors share the interest in patents, as they see it as an indicator for innovativeness, and as a way to mitigate the risk of infringing third party IP.

## Design innovation strategies and IP

The fledging designer-entrepreneur must understand where and how to prioritise various protection methods, and how to shift emphasis over time in accordance to the business needs. To summarise the most basic mechanisms we can distinguish between formal IP (such as patents and registered designs), secrecy, and sales focus (first-mover advantage). Informal IP such as copyright and unregistered design rights are going to be neglected on this occasion because these rights are difficult and too expensive to enforce, certainly during the very early stages. NDAs and confidentiality agreements connect secrecy with formal IP. But due to the difficulty for a micro-scale start-up to enforce such rights, we subsume such arrangements in secrecy. Brand values grow only over time, and although it can be protected with IP such as trademarks, the word brand value is used as a summative term here, and it is treated as a separate asset from formal IP.

The case studies conducted to date suggest that those firms who opt for an early patent enter markets later than those who neglect the patenting option in the beginning in favour of a sales-driven strategy. Formal IP is time-consuming and costly to establish. The designer-entrepreneur needs to decide very early to what extent product developments are worth decelerating in order to pursue patents. The Haberman case has shown how costly a one-year delay in patent filing can turn out to be in the long run. Registered designs are much cheaper and faster than patents. But in the Haberman case it would not have helped to establish a barrier to entry for competitors. So the effectiveness and suitability of design registrations can be questioned. If we look at formal IP, sales orientation, secrecy, and brand value as the **four main corner stones** of a start-up's appropriability regime, then we can envisage a model that comprises a time line, based on which the deployment of these different mechanisms can be mapped out.

IP Management in a Climate of Change

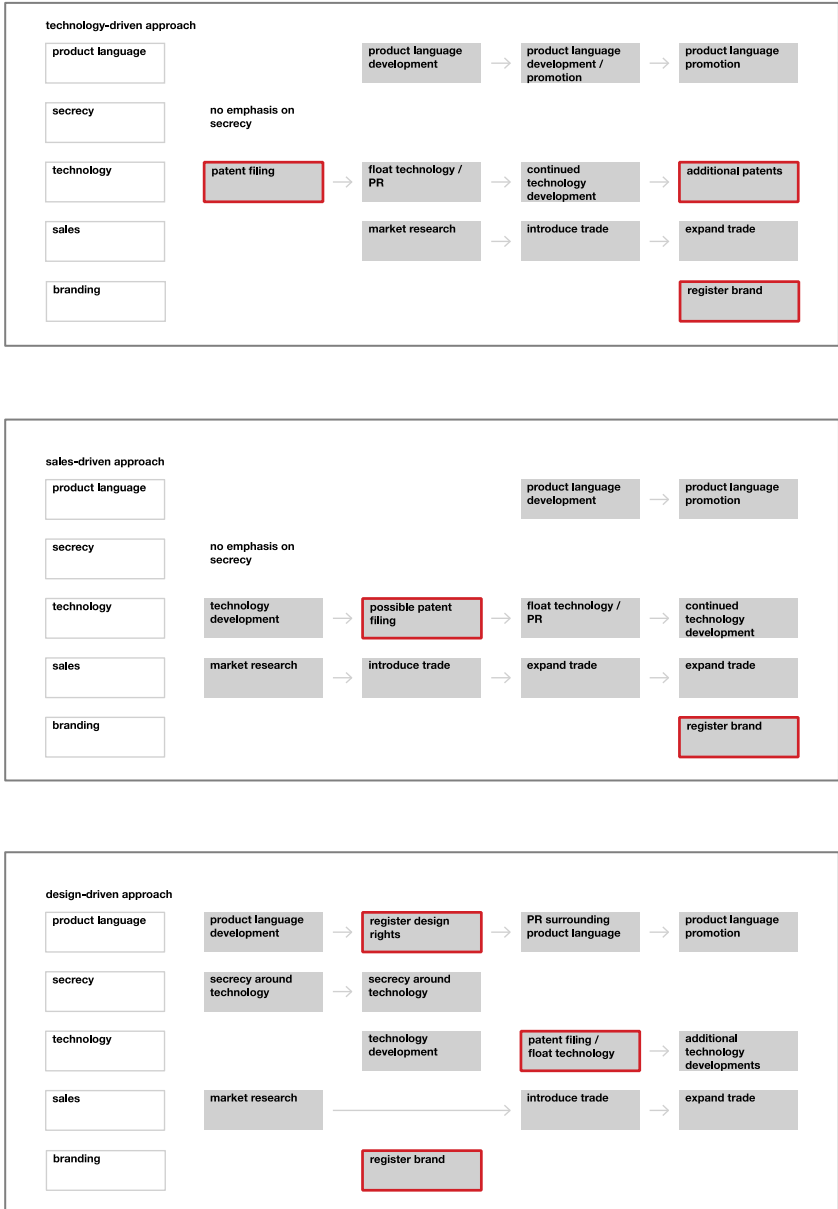


Figure 9: Possible development and protection strategies

If we separate formal IP into that which connects with the technology, namely patents, and that which relates to the visual particulars (product language), we end up with 5 appropriability aspects in total: product language, secrecy, technology IP, and sales. If we then imagine that only 2 or 3 can every be pursued at a time, how would we map out the process? If change is incremental, one may be drawn towards a sales-driven approach. If it is a radical disruptive innovation, then one of the other two options might be preferable.

The 3 schematic simplifications above illustrate how the fledging phase may roughly pan out for a start-up. The first version is the one that resembles most of the case studies. KwickScreen is closer to the second version, as is Squease. None of the ventures went through the 3<sup>rd</sup> route, which may be due to the way in which the incubatees were taught during their studies and coached during the incubation phase. The simplicity of the diagrams may reduce their credibility. However, the sales-focused approach appears to be the most straightforward. The technology-focused one may lead to a small patent portfolio, whereas a focus on product-language may lead to a coherently designed product range. It has to be highlighted that the term product-language applies not only to the items on sale, but also to the communications on the whole, including the interior design of working premises, collateral materials and media communications. Within the flow charts, the steps connected to formal IP are highlighted in red.

## Case studies revisited

Instead of discussing each of the 10 ventures mentioned above in great detail, we look at some of them as examples to discuss 3 proposed principles in relation to IP strategies:

### *Suggestion No 1: Set your priorities: design, technology, sales*

KwickScreen is a retractable divider screen aimed at use in hospitals. The company behind the novelty holds both a UK patent and a registered design, but care very little about either of the two. Their registered trademark weighs higher. After all the team focused on sales very early-on, and thus established market credentials faster than most of their peers. The company benefits from exclusive access to one particular fabric, the so-called RolaTube technology, that is vital to make their product work. They sell their expandable mobile divider screen directly to hospitals. Getting the product to work as well as building and managing their trade contacts, led this



company to success. The two founders, Michael Korn and Denis Anscorb, who are now working on the first redesign of their product, employ 5 people and the business grows by around 100% each year. The venture's sales focus has led to the development of a bespoke customer relationship management system called Romulus, which has led to an additional revenue stream because it could be licensed to some of their business contacts.



*Figure 10: KwickScreen (Image: Courtesy of Korn Wall Ltd)*

***Suggestion No 2: Adjust your IP strategy where needed.***

The team behind Squease started off with IP, but realised that their product required still a lot of development. This led to weaknesses in the patent, although having a patent pending helped to attract angel investors nonetheless. But investing time, energy and money in a weak patent was of limited benefit to the company's prospects according to Sheraz Arif, one of the company founders. The market for devices that provide autistic people with a sense of comfort and security in busy public environments was almost non-existent in the beginning. With limited competition in the field and in agreement with their investors, the team behind Squease decided to drop their patent, and to focus on developing credentials for their product through client relations, and a licensing agreement with a distributor in Australia.



Figure 11: Squease pressure vest (Image: Courtesy of Squease Ltd)

For Arctica, an environment friendly cooling system, the patent-route proved vital. The inventors and original team members, Karina Torlei, William Penfold, Daniel Becerra and Mathew Holloway, had 3 different patents to secure exclusive access to the technology, which provided an alternative to conventional air conditioning units. The start-up was confronted with the fact that the market was controlled by large incumbents who have exclusive relations with property developers. Edging their way into this tightly controlled market was impossible. The team managed to establish proof of market only through focusing on period properties, which cannot be fitted with air con in the UK due to existing regulations. Having found a way to trade their technology in a niche market, Arctica could be sold to Monodraught Limited, one of the key players in the industry.



Figure 12: Arctica cooling system (Image: Courtesy of Royal College of Art)

So here we see two opposing strategies. The focus on sales on the one hand, and the focus on patents on the other were required due to the particular nature of the relevant product and the industry it is aimed at.

*Suggestion No 3: Remain flexible. Accommodate strategy change if needed.*

Concrete Canvas is the oldest initiative here. Peter Brewin and Will Crawford invented a concrete shelter aimed at military use and at use for disaster zones. However, despite a trial with the military, the team did not manage to secure lasting relationships here. So they shifted their focus to the material, for which a separate patent had been filed in 2006, two years after the concrete shelter had been patented. All in all Concrete Canvas holds 4 patents, 40 including international filings, and trade their inventions worldwide. Their main income stream relates to the use of Concrete Canvas for lining ditches, for slope protection and for bund lining protection around petrochemical tanks. However, new areas are being discovered in collaboration with people who seek to acquire the material for untried applications. So Concrete Canvas rely on working relationships as much as on patents.



*Figure 13: Concrete Canvas applied to slope protection (Image: Courtesy of Concrete Canvas Ltd)*

Ultimately all 3 aspects, product language, technology, and sales need developing, and the designer-entrepreneur's focus of attention will at times shift from one to another. The above explanation is hoped to alert the designer-entrepreneur towards the need of establishing a focus of attention and to foster a systematic approach to navigating through these business development needs. What has been neglected is the need for the IP strategy to be aligned with the funding strategy. Whilst delaying the patent may limit the interest from investors, filing early requires funding in the first instance, and it entails other disadvantages. Rather than considering patents as a necessity from the outset, designer-entrepreneurs should be encouraged to contemplate what exactly it is that strengthens their business proposition.

## Conclusion

Despite the costs involved, many designer-entrepreneurs perceive patents as a necessity for obtaining equity funding. Given the current circumstances this does not come as a surprise. However, other means of protection often remain neglected. The way in which different forms of IP can be effectively combined and how their filing is best timed is not sufficiently understood. In particular now that we are witnessing significant changes to the UK IP bill, the relevance of registered design rights needs to be revisited. A better understanding of typical design business development cycles will lead to a more effective use of IP. To achieve this, IP in terms of patent filing must not be reduced to a tick box exercise. Instead, IP strategies must be devised in response to the predicted development route of a design-led start-up. The examinations above suggest that starting out with patents and adding trademarks and design registrations later, is currently the preferred route, as equity investment is usually required to succeed in surviving the fledging phase. This could change, provided that faith in the value of product languages grows amongst entrepreneurs and investors. What will be required in addition to new laws and regulations is a culture shift. Conran's redesign of the AnywayUp cup is only one example that evidences the degree to which attractive design propositions are valued by customers, and how this in turn benefits sales. If we can get product languages recognised as effective tools for preparing products for market, if we can establish means to defend those product languages against competitors, then we can emphasise the visual aspect of design in the early stages. This in turn will help to reduce initial costs and time spent on IP and thus speed up development processes.

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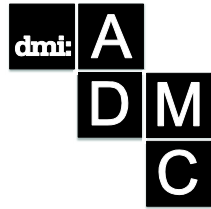
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**Interviews, conversations and ifollow-up correspondences (in chronological order)**

Interview with Paul Thomas, co-founder of Cupris (06/11/2012)  
Interview with J. Paul Neeley, co-founder of Yossarian Lives! (08/11/2012)  
Interview with Thomas Hoehn from Imperial College Business School (20/11/2012)  
Interview with Mathew Holloway, co-founder of Arctica (07/12/2012)  
Interview with Roland Lamb from Roli Labs (18/01/2013)  
Email exchange with Mathew Holloway from Arctica (15/03/2013)  
Conversation with Nick Coutts from Innovation RCA (16/05/2013)  
Conversation with Txaso Del Palacio from University College London (23/05/2013)  
Conversation with Kristien De Wolf from Imperial College Business School (24/05/2013)  
Interview with Peter Brewin, co-founder of Concrete Canvas (18/06/2013)  
Interview with Gregory Ebbs, founder of Robofold (04/07/13)  
Interview with Sheraz Arif, co-founder of Squease (04/07/13)  
Interview with Bradley Hardiman, Investment Manager at Cambridge Enterprise (28/11/13)  
Interview with Damon Millar, co-founder of Buffalo Grid (18/12/13)  
Interview with Adam Sudcliffe, founder of Orbel (18/12/13)  
Interview with Sebastian Conran, Conran Associates (21/02/14)  
Interview with Julian Wilkins, from Blue Pencil Media Limited (18/03/14)  
Interview with Mandy Haberman, inventor of the AnywayUp cup (07/05/14)  
Email exchange with Mandy Haberman, inventor of the AnywayUp cup (21/05/14)





# A Semantic Approach of Cultural Interpretation toward Service Innovation

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*Service innovation and the development of culture and creative industries have gained importance in recent years. Many studies have demonstrated the importance of culture and how it influences service business owners' decision-making and management behaviour. However, it's rare to see IT-facilitated use of cultural ingredients to design service and enable innovation. This study investigates whether cultural factors and information systems can be used to facilitate the designers to come up with service innovation strategies, especially for those small and medium businesses (SMBs) of which the owners mostly serve their customers directly. This paper proposes the notion of "cultural interpretation" in representing the emotions, values and behaviours which customers experience because of the culture. Cultural interpretation is a semantic perspective of cultural and experiential modelling. We design a semantic information system artefact that connects culture and personality to cultural interpretation and SMB owner's managerial behaviour on service innovation. This system can facilitate the designers to motivate or inspire SMB owners to develop new ways to think about service innovation, in terms of cultural interpretations. Our attempted contributions are to give sense to managerial behaviour by taking into account culture in a semantic view toward service innovation.*

**Keywords:** *service innovation, culturally sensitive design of information system artefact, SMB owner, cultural trait, personality trait*

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## **Introduction**

In recent years, there is a trend to add elements of culture to industries to help create core values for products or services. This starts from the cultural and creative industry. Many different policy regimes support and promote the development of cultural and creative industry (Cunningham, 2002). This development involves a combination of creativeness and the local culture to produce service and product innovation (Zhong et al., 2008). The other industries can also provide the energy to facilitate the inclusion of culture elements (Lin & Lin, 2009). Lin (2009) suggested the transfer of culture and creative industry to the other industries that emphasize on service innovation by including local culture, technology and aesthetics. Lin (2009) mentioned that if culture and creative industry is to be well developed, it must be facilitated and designed with creativity, in order to create a good experience for customers. Lin (2009) also pointed out that culture and technology must be used together to design original lifestyles. The facilitated inclusion of culture elements in industries for the provision of new experiences can be regarded as a way toward service innovation, because service innovation aims to offer customers sufficiently appealing new benefits (Berry et al., 2006).

Individual business managers are the key to service innovation and to whether a new service development is successful (De Jong et al., 2003), especially when local culture is utilized for service innovation. Individuals are influenced by their cultural background, which contributes to different mental programming and determines individual thinking, feelings and actions (Hofstede, 1984). Accordingly, the knowledge of the people who deliver and create the new service innovation is important. The owners of SMBs operate and dominate the firms. Their cultural background, such as their beliefs and attitudes, affect the way in which they manage and organize a business. The business managers' underlying culturally influenced beliefs and attitudes also influence changes in the business (Bhaskaran, 2006). For example, if people are raised in a collectivist culture, they are more likely to cooperate and to interact with others, and this is reflected in their work attitude (Mannix & Neale, 2005). In addition, culturally influenced beliefs and attitudes and the way they respond to service innovation are also influenced by their business skills and by the personal contact networks that SMBs develop and access (Bhaskaran, 2006). That is, both cultural and personal characteristics nurture the performance of innovative products or services (Scott & Bruce, 1994).

This study considers the people who perform the service innovation to be the owners of SMBs. Accordingly, there is a need to understand how culture influences SMBs and how culture affects SMBs in providing service innovation and developing local cultural industry. However, existing studies rarely address SMB service innovation based on culture. Consequently, this study proposes the concept of “cultural interpretation”, which refers to the interpretations of the influences of the local cultural context and the impressions that SMBs wish to convey to their customers when performing service innovation. The concept of cultural interpretation is to facilitate SMBs to identify the possible directions for service innovation based on culture.

To this end, this study develops a technological framework of semantic information system artefact (called Cultural Experiential Semantic Modeling, CESM) taking into account culture as a sense-making concept that links local culture to the SMB owner's managerial behavior on service innovation. This sense-making concept connects culture and personality to Cultural Interpretation and SMB owner's managerial behavior on service innovation. The CESM artefact can be regarded as a kind of culturally sensitive design of information systems (Kummer et al., 2012) that focus on the utilization of culture through information systems. That is, our artefact is so designed as to address cultural elements into existing business managerial behavior, focusing on changes in SMB owner's mind-sets to support possible strategic change on service innovation. This artefact can be utilized by either the designers who motivate or inspire SMB owners or directly by the SMB owners themselves.

## **Related Background**

People reside in different countries and in different period, and the ideas they encounter cannot help but reflect the effect of their environment (Hofstede, 1993). When the ideas and decision originate from the SMB owners, they decide their business managerial behavior. Different cultures also result in different types of goods/service behavior (Winsted, 1997). These goods/service behaviors can be viewed as a SMB's management or business style.

Hofstede's (1993) cultural study mentioned that culture can be described in five dimensions, which can be used to predict how a society operates, including its management. Each of these cultural dimensions has two opposing elements (Hofstede, 1994): (1) Power Distance is defined as

the inequality between people; (2) Uncertainty Avoidance is defined as the degree of tolerance for structured or unstructured situations; in societies with high power distance, inequality is accepted, but in societies with low power distance, there is relative equality between individuals; (3) Masculinity, which most values success, competition and (the opposite is femininity); (4) Individualism is defined as the degree to which people prefer to work alone or to be in a team work (i.e., collectivism versus individualism); (5) Long-Term Oriented is defined as the values that are oriented towards the future. The opposite is short-term oriented. Adler (1991) proposed the cultural and behavioral cycle theory to demonstrate how culture (values, beliefs and attitudes) influences management behavior of individuals. This can be applied to SMB owners as well. Individual decision-making is guided by different cultural rules and principles (Briley and Morris, 2000). Individual decision making rules and principles are often derived from culture and knowledge.

According to the five factor theory of personality (Costa & McCrae, 1996, 1999), cultural and personality traits are closely related. Personality traits can be influenced by culture. Culture and personality are the classical terms according to the field of psychological anthropology (Hofstede & McCrae, 2004). For instance, Hofstede (2001) detailed five cultural dimensions, emphasizing the significance of culture on business communications, and gave a definition of “culture” as the collective programming of the mind (i.e., cultural mental programming) that differentiates the members of one class of people from those of another (Hofstede, 1984). This definition focuses on a culture’s mental programming, which can be a result of a type of thinking, feeling, or action. Hofstede conceptualized culture as ‘programming of the mind’ in the sense that certain cultures create certain reactions, based on the differences between the primary values of the members of different cultures (Hofstede, 2001).

The Revised NEO Personality Inventory (Costa & McCrae, 1992) classified personality into five big sectors, called neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A) and conscientiousness (C). Each personality was defined by six specific cultural traits (Hofstede & McCrae, 2004). For example, personality openness includes the fantasy trait, aesthetics trait, feelings trait, actions trait, ideas trait and value trait; personality extraversion includes the warmth trait, gregariousness trait, assertiveness trait, activity trait, excitement seeking trait and positive emotions trait.

In sum, the literature shows that culture does affect SMB owners and that different cultures cultivate different business management styles. In order to further understand the effect of culture on SMBs management styles (i.e. decision making, service provision), this study will propose a SMB cultural model, which involves different dimensions (social and cultural embodied, religion, social relationships) within a local cultural context and Hofstede's cultural dimensions and the Revised NEO Personality Inventory (Costa & McCrae, 1992), to assess the effect of local culture on SMB's business managerial behaviour.

## **The CESM Artefact**

The main idea of the CESM artefact is to recommend for SMBs the directions in service innovation, considering socio-cultural implications. This means it requires an understanding of the socio-cultural context and behavior of the SMB that can be subsequently linked to the cultural and personality traits of SMB owners and their awareness of suitable cultural interpretations. A direction for development is then suggested, based on culture.

The socio-cultural context denotes the SMB's cultural background, which includes their local lifestyle, practices, tradition, social contacts, norms and values, ideas and cultural identity (Chiesura & De Groot, 2003). Socio-cultural behavior refers to lifestyle and may include favored behavior, habitual activities, or even implicit routines. Some behaviors are implicit, but some are explicit. Both the socio-cultural context and socio-cultural behavior contribute to cultural traits referring to the traits (attributed by the cultural) that ones have.

Given that cultural and personality traits are closely related, culture contributes to values and behavior and cultural traits signify both cultural and personality traits (Hinenoya & Gatbonton, 2000). That is, each SMB owner has its own cultural traits, because they come from different cultural contexts and have evolved different cultural behavior. A SMB owner's cultural traits shape each SMB's culture, circumstances and the cultural activities in which it participates.

The way in which cultural traits are manifested or represented, in terms of either an action or a SMB owner's self awareness, i.e., cultural interpretation awareness, which is cognitively shaped, are examined. A SMB owner's cultural traits are psychologically shaped, so the process of becoming aware is cognitive in that it involves the gathering, processing and

evaluation of information on habits or actions (Hayes & Allinson, 1998). That is, each SMB has its own traits and SMB owners realize and conceive their behavior through a cognitive process. In addition, the SMB owner's cognition can be further transformed into SMB managerial behavior. The process of cognition gathers interpretations into a mental model and then guides actions, videlicet, and applies this concept in the business field (i.e., the SMB performs service presentation).

In order to act upon the above basic ideas, Figure 1 shows the framework of the CESM artefact and identifies four main components, which include Modeling SMBs' cultural Traits (to classify and identify SMBs' cultural traits), Proposing Knowledge Based Cultural Interpretations (to recommend cultural interpretations for SMBs), Rethinking and Appraising Current Service Status Quo (to recommend SMB new service innovation directions using cultural interpretations), Evaluating and Suggesting Cultural Interpretations for Cultural Service Innovation (to evaluate and suggest the most suitable interpretations to a SMB). The details of the components are described in the following subsections.

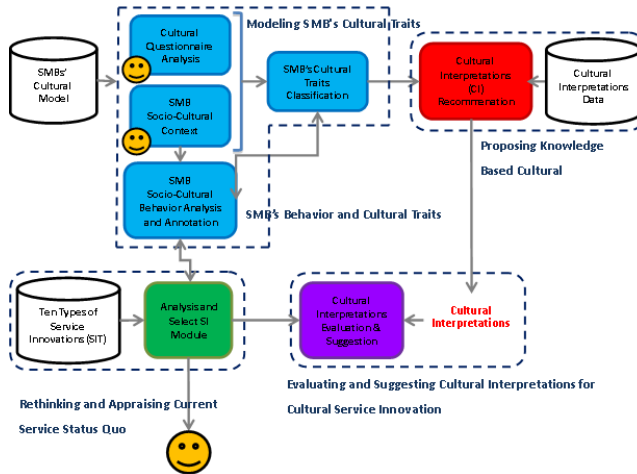


Figure 1 The CESM artefact.

### *Modeling SMB's Cultural Traits*

This component identifies the SMBs' socio-cultural background and behavior and then classifies them into cultural traits. At the beginning, a series of questions which are related to the user's cultural context are

posed. The user provides information by answering those questions. This component subsequently analyzes these statements to identify the cultural traits which characterize the user. Once these cultural traits are identified, cultural interpretation recommendations will then be made. This study is conducted in the context of Chinese culture and we use a model of three levels of analysis for the classification of cultural traits, as shown in Figure 2. This model is proposed with the following theoretical basis.

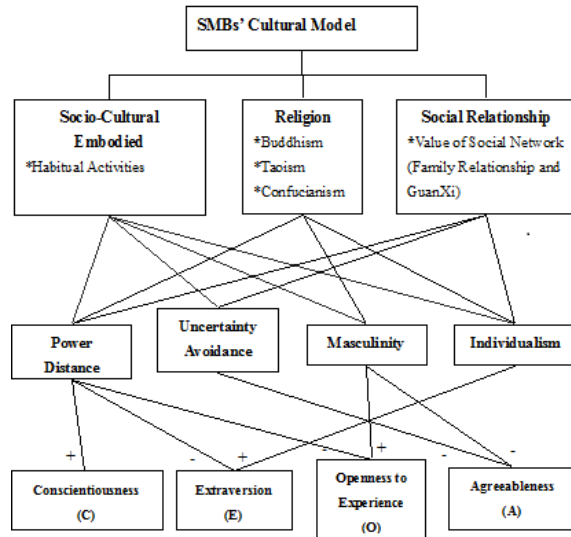


Figure 2 SMBs' cultural model.

The first level of cultural background requirement represents the socio-cultural context (religion and social relationship) and socio-cultural behavior of SMBs (socio-cultural embodied). Traditionally, a local Chinese culture is often tied up with a local religion (Yu & Miller, 2003), including Buddhism, Taoism or Confucianism (Haber & Mandelbaum, 1996). Meanwhile, the social relationship more focuses on the value of social network which includes the relationship in the family and 'GuanXi' that refers to the interconnected nature of relationships based upon reciprocation and obligation (Imrie, 2008). In addition, the socio-cultural embodied is about the living style, that is, SMBs' habitual and cultural activities that SMBs participate such as tea activities, traditional festival celebration or some special local activities.

The second level (linking to the first level) includes the four dimensions (power distance, uncertainty avoidance, masculinity, individualism) of Hofstede's cultural model, because these dimensions can reflect the fundamental dimensions of culture from the view of value systems at different levels (individual, group, organization) (Inkeles & Levinson, 1969). That is, to understand SMBs' local socio-cultural background, the knowledge of culture can give a big picture about how culture affects people's behavior. Culture is a shared experience of those people who come from the same culture context; they will teach their offspring the value systems of viewing the real world (Yu & Miller 2003). These values compose the kernel of the society and serve as the foundation of the attitude and anticipation of the members from the culture (Yu & Miller, 2003). The linkages between the first and the second layers can be attained according to previous studies. For example, the linkages to the manifestation of socio-culture embodied behavior and activities can include Hofstede's power distance dimension about how a person handles inequalities when it occurs, the uncertainty avoidance dimension about the degree of how people feel uncomfortable when the future is unknown or ambiguity, the masculinity dimension about people's self-concept about the role they view and play (e.g., more assertive role or to be more caring, nurturing role), the individualism dimension about people's view and preference (e.g., preferring a loosely knit social network or a tightly knit social network) (Hofstede, 1983), simply in terms of relating their capacities attempted.

The linkages to religion are also based on previous studies about different religions contributing to different behaviors. For example, the value of Buddhism is related to the three cultural dimensions (high power distance, femininity and collectivism). For SMB owners, their religions contribute to their business styles more or less (Yu & Miller, 2003) and the main characteristics of Chinese business/management style are under the influences of the three religions (Buddhism, Taoism, Confucianism). For the business style of Buddhism being to obey, trust and carry morals and stable mentality (Yu & Miller 2003), the characteristics of Buddhism is to behave morally good and nice. Accordingly, it is inferred that Buddhism SMB owners have the characteristics of high power distance (more willing to see a peaceful world), femininity (willing to show their caring to others), and collectivism (without strong self-centered argument and unfair feeling). Similar inferences for the other two Chinese religions are omitted in this paper.



The linkages to the value of social network involve three cultural dimensions (power distance, individualism/collectivism and uncertainty avoidance). Our main focus is the relationship and “GuanXi” between SMBs and their families. Most of Chinese people are family oriented, and have considered 'family', rather than 'individual', as the basic social unit (Hung, 2004). In addition, Hofstede and McCrae (2004) mentioned “in collectivist societies, people are integrated from birth onward into strong, cohesive in-group, often extended families (with uncles, aunts, and grandparents), protecting them in exchange for unquestioning loyalty. And a society’s power distance level is bred in its families through the extent to which its children are socialized toward obedience or toward initiative.” We also argue that family education might lead their children to be willing to take risk and adventure or just stay in a comfortable atmosphere.

The third level (linking to the second level) includes the four<sup>50</sup> of the five personality traits of the revised NEO personality inventory (NEO-PI-R) (Costa & McCrae, 1992), which include conscientiousness (C), extraversion (N), openness to experience (O) and agreeableness (A), to examine personality traits at the culture level (Hofstede & McCrae, 2004) for our purpose of finding the cultural traits of SMBs. Hofstede and McCrae (2004) provided the research results about the zero-order correlations (Table 1) between the personality factors and culture in Asia. The correlations indicate that all five personality factors are significantly associated with at least one dimension of culture and that all four cultural dimensions are related to at least one personality factor. That is, the links between the Hofstede’s cultural dimensions and the NEO-PI-R personality factors are based on the results shown in Table 1.

With the links of the NEO-PI-R personality factors, it is possible to recommend possible personality traits to SMBs and allow them to confirm their main personality traits given a personality is defined by six specific cultural traits (Hofstede & McCrae, 2004) as mentioned in Section 2. These cultural traits can subsequently form the basis of the next step in recommending cultural interpretations to SMBs. The process to identify the cultural traits is through the collection of socio-cultural embodied information and the analysis of cultural questionnaire (related to the religion and social relationship), attaining the possible main personality

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<sup>50</sup>In this study, the personality of neuroticism is excluded for consideration SMBs because we focus on the use of positive cultural traits and positive emotions to encourage SMBs to do service innovations.

factor. To confirm the correctness of the main personality, another personality questionnaire related to its six traits will be also tested.

*Table 1 Zero-Order Correlations between Mean NEO-PI-R Factors and Culture Scores (Hofstede & McCrae, 2004).*

**Zero-Order Correlations Between Mean NEO-PI-R Factors and Culture Scores Across 33 Countries**

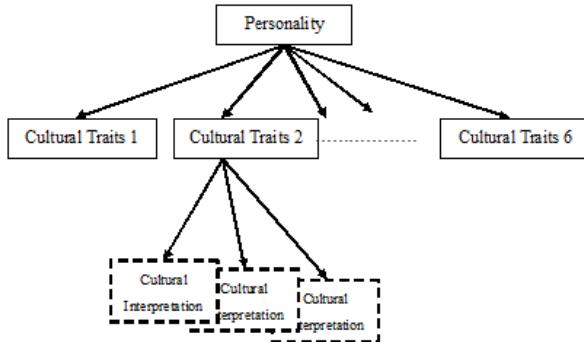
<i>IBM Culture Dimension Score</i>	<i>NEO-PI-R Factor</i>				
	<i>E</i>	<i>C</i>	<i>O</i>	<i>N</i>	<i>A</i>
Individualism	0.64***				
Power distance	-0.57**	0.52**	-0.39*		
Masculinity			0.40*	0.57**	-0.36*
Uncertainty avoidance				0.58**	-0.55**

NOTE: E = extraversion; C = conscientiousness; O = openness to experience; N = neuroticism; A = agreeableness.  
 \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

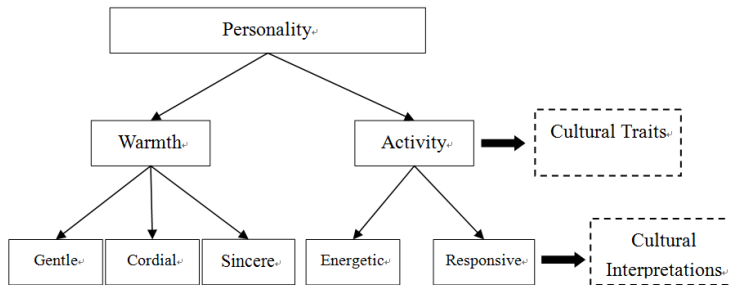
### *Proposing Knowledge Based Cultural Interpretations*

This component uses cultural traits to recommend suitable cultural interpretations to SMBs. In this study, Cultural Interpretation (CI) is defined as the styles of behavior and the rules that allow individuals to express their unique attributes and to determine the very nature of their own life experience, including cognitive, emotional and motivational behavior. It is assumed that cultural interpretations are the adjectives used to describe the behavioral styles of SMBs. These adjectives have a series of related meanings that characterize cultural traits. The CESM artefact adopts the ontology shown in Figure 4(a) specifying the relationships among personality, cultural traits and cultural interpretations, i.e., SMB’s six cultural traits and the cultural interpretations for each of the four personalities (i.e., totaling to 24 cultural traits).

For example, the personality of extraversion is defined as having the six cultural traits of warmth, gregariousness, assertiveness, activity, excitement seeking and positive emotions. For the cultural trait of “warmth”, there is a series of adjectives to describe the meaning of warmth, such as gentle, cordial, or sincere. That is, these words indicate an individual who has warmth as a cultural trait. Therefore, the cultural interpretations of gentle, cordial and sincere are classified into the cultural trait of warmth as exemplified in Figure 4(b).



(a) Ontology specifying the relationship between cultural traits and cultural interpretations.



(b) An exemplar.

Figure 4 The semantic relationship of cultural interpretations classifications.

The aforementioned semantic design allows the construction of a cultural interpretations knowledge database that can easily classify or aggregate the cultural traits information. Suitable cultural interpretations that are classified as members of the SMBs’ cultural traits can then be recommended to the SMBs. These semantic relationships between the classification of cultural interpretations and cultural traits (i.e., the classification of cultural interpretations using cultural traits) are based on the meaning of cultural interpretations and cultural traits. Semantic similarity (Resnik, 1995) is used to analyze and evaluate the similarities between the meaning and information about cultural interpretations and cultural traits. Table 2 shows an exemplar relationship between personality, cultural traits and cultural interpretations, based on their similarity. DISCO (extracting DIStributionally related words using CO-occurrences) is used, and

this is a Java class program that allows the semantic similarity between two words to be identified (Kolb, 2008, 2009). It produces a semantic similarity score. This score represents the similarity between two given words; a higher score signifies a greater semantic similarity.

*Table 2 An exemplar relationship between personality, cultural traits and cultural interpretations.*

Personality	Extraversion (E)					
	Cultural Traits	Warmth	Gregariousness	Assertiveness	Positive Emotions	Activity
Cultural Interpretations	Excitement	Friendly	Assertiveness	Practical	Action	Seek
	Kindness	Harmonious	Refresher	Definite	Growth	Dream
	Comfort	Compatible	Problem-Solving	Positive	Concentration	Trying
	Pleasure		Presentational	Specific	Stimulation	Wish
	Strength		Supervisory	Strong	Organization	Able
	Warm			Constructive	Interaction	Willing
	Touch			Interesting	Effects	
	Tenderness			Direct		
	Happiness					
	Sympathy					
	Softness					
	Affection					
	Joy					
	Charm					
Passion						

There are 24 diagrams in total representing each of the four personality factors and its six cultural traits. This component recommends six cultural interpretations to a SMB owner, based on his/her personality and cultural traits. The cultural interpretations are determined by randomizing the selection of the cultural interpretations and cultural traits in accordance with the personality traits of the SMB owner. Random choices are used to identify recommended cultural interpretations in order to ensure impartiality and diversity and prevent choosing the most similar or the least similar cultural trait, because each cultural interpretation may have a different degree of similarity to a cultural trait in each diagram.

### *Rethinking and Appraising Current Service Status Quo*

The component, Rethinking and Appraising Current Service Status Quo, allows SMBs to assess the current service status quo from a list of questions

related to the SMB's business activities and their yes/no connection to the ten types of service innovation identified by Keeley (1999), which are of four different categories (process, offering, delivery, finance) each of which can be further divided into two or three subtypes.

Going through the questions, SMBs would review their current business situation and the cultural interpretations attained from the previous components that connect the cultural interpretations with the factors considered within the ten types of service innovation. We anticipate SMBs could get some inspirations about how to utilize their cultural interpretations for the purpose of inspiring SMBs to think about the new chances of service innovation based on culture and personality elements.

### *Evaluating and Suggesting Cultural Interpretations for Cultural Service Innovation*

This component allows the SMB user to understand cultural interpretations and their use to improve the current service and business by connecting their cultural activities and their current business status quo to cultural interpretations, in order to identify possible SMB service innovation opportunities. In order to allow SMBs to implement service innovation based on cultural interpretations more clearly, the suggested advice shows descriptions of cultural interpretations-service innovation that combine cultural interpretations and the four categories of the subtypes of service innovation. That is, this component suggests possible directions of cultural interpretation based service innovation according to the SMB cultural traits, allowing the SMB to develop a holistic appreciation of their own personality results and exercise more imagination on them for their future service innovation.

In sum, the CESM artefact is used to facilitate and inspire SMBs who want to do service innovation or to impress their customers with servicescape using their socio-cultural strengths. Our implemented artefact system currently is still in its small scale form that does not involve corporate-level service oriented technology and management to enable the transition from domain-specific business views to formalized technical service view in order to facilitate the sharing or transferring as addressed in Demirkan et al. (2008), partly because the system is used by SMBs that have very limited resources and their owners mostly serve their customers directly. However, this artefact can further be integrated with a co-design tool in order to generate some groundbreaking innovation concepts.

## **Data Analysis**

Our preliminary evaluations adopt qualitative interpretation data analysis (Saldana, 2009) to evaluate our CESM artefact. This study has two assumptions: (1) Local cultural elements can be implemented and included in different domains of cultural industries toward service innovation, so regardless of the type of industry, local cultural elements would influence SMBs, because local culture is a part of the SMB's cultural context. (2) Different individuals are depicted by different cultural interpretations because of their different cultural context and personality, so cultural interpretations can represent the explicit and implicit behaviour of SMB owners (which contribute to SMBs' different degrees of service innovation and different business styles).

The evaluations of our CESM artefact are twofold. The CESM artefact begins with an analysis of a SMB's local cultural context, in order to discover the cultural interpretations which apply to the SMBs and can guide SMBs to execute service innovation. Hence, it is necessary to ensure that cultural interpretations can indeed represent a SMB's cultural context and can inspire SMBs to perform service innovation. In other words, SMBs are influenced by local cultures and then contribute to their explicit and implicit behavior. This type of explicit and implicit behavior is described using the notion of cultural interpretations proposed in this study. Accordingly, the following hypotheses are presented:

***Hypothesis 1:*** *Local culture contributes to cultural interpretations that can represent SMB owners' behavior and thinking.*

***Hypothesis 2:*** *Cultural interpretations can be a local cultural driver to guide SMB owners to perform service innovation.*

The field chosen for this study's evaluation was in the city of Yi-Lan, a typical agriculture tourism city that features a variety of SMBs with limited resources aspiring to increase innovation opportunities. The field interviews focus on an exemplar leisure farm area named "pillow mountain leisure agriculture area", which was the first leisure agriculture area in Yi-Lan, founded in 2000. It includes four villages: Zhen-Shan village, Tung-Le village, Tou-Fen village and Yong-He village. Zhen-Shan village is the major development area, with an area of seventy-eight square hectometers. Many different services are provided by the vendors in Zhen-Shan village, such as bed and breakfast, fruit picking experiences and many other different and

colourful tourist products and services that highlight the natural aspects of Zhen-Shan and support an interest in agriculture.

To examine the values of our artefact, we take four successful SMBs from the field of Zhen-Shan village and shown them our semantic information system artefact and gather data from them by interviewing these SMB owners. These interview subjects also exemplified the typical business in Zhen-Shan village and in Yi-Lan, most of which nevertheless are not considered as successful. That is, we would like to know if our system artefact can resonate with the service innovations made by these four successful SMBs in Zhen-Shan village. The data were gathered through group interviews and individual in-depth interviews. The data collected from the field interviews is used to evaluate the hypotheses that cultural background does contribute to SMBs' thinking and actions and that it can influence the way with which SMBs serve their customers toward service innovation.

In order to evaluate the hypotheses, we delimit the encoding of the interview data first. These data will be used to evaluate the hypotheses. Data encoding (Saldana, 2009) is an interpretive act in qualitative research that symbolically assigns summative, salient, or evocative attributes for a portion of data, which can be further analyzed to attain an in-depth understanding of human behaviour or decision-making and the reasons behind it. There are two coding cycles. The first cycle uses vivo coding (i.e., code mostly taken directly from the text) to identify the preliminary codes. The second cycle then classifies the themes of the preliminary codes into the final codes used to verify the hypotheses.

***Hypothesis 1: Local culture contributes to cultural interpretations that can represent SMBs owners' behaviour and thinking.***

In order to collect useful information to show that local culture can represent SMB's behaviour and thinking, the relevant interview data is used to demonstrate the findings. Knowledge of the SMB's background and the factors that influenced SMBs is vital. The raw data is classified into two different final codes: cultural context and cultural interpretation. Cultural context is local culture, which includes family relationships, education, values, environment and background. The cultural interpretation is the thinking and behaviour that is contributed by SMBs' cultural context and experience. The encodings of the interview data show the positive linkage between cultural context and SMB owners' thinking and behaviour as

indicated in Table 3. That is, cultural context would contribute to cultural interpretations implying SMBs owners' behaviour and thinking.

The data collected here are all from the in-depth interviews, because the details of each vendor are important. According to the data collected from the interview sessions, as noted in Table 3, the common backgrounds of the SMBs affects them, internally or externally. However, they use different ways to reflect and show this effect. The abduction method is used to show the findings for their cultural effects. The abduction method requires that the interview data is given as a preliminary code that would be inferred into final code. In other words, the final code represents the spirit of the interview data.

For example, the owner of Vendor D B&B, Mrs. Lee, was a child who grew up in a farming family, so the working principles of Mrs. Lee are highly influenced by her family working on farm. Mrs. Lee said, "<sup>10</sup>I was born and brought up in farming families. All I know is that we have to be diligent and to do our best at what we are doing now." Her diligence is firstly encoded as her<sup>10</sup> family education style and then her family education style is classified into a part of the cultural context. In addition, her background also contributed to her<sup>11</sup> Conservative and with low ambition personality, inferred from her description: "<sup>11</sup>I think that I am so conservative because of my family background. I do not have such ambition to achieve everything." This conservative and low ambition personality is an example of a type of thinking, represented as a cultural interpretation. That is, she prefers to observe first and then starts to ascertain whether something is worth the effort, when she encounters an innovation opportunity. In sum, it is inferred that Mrs. Lee is influenced by her cultural context, which contributes to her thinking and behavior. Through these illustrative stories shown in Table 3, it is inferred that the influence of local culture does affect SMB owners' behavior and thinking, which is represented as cultural interpretations. Their current actions reflect their own experience and cultural context.



Table 3 Interview data analysis for evaluating Hypothesis 1.

[Interview Data].	[Preliminary Codes].	[Final Code].
<p><sup>1</sup><i>“My father really worked very hard and did not care about how much money that he made, He just thought that he could not stop working and had no concept of planning.” – Vendor A - Mr. Tseng</i></p>	<p><sup>1</sup><i>Father had no concept of planning - Family Values.</i></p>	<p>✓ Cultural context.</p>
<p><sup>2</sup><i>“My parents’ generation only cared about contribution and did not ask for a return. Therefore, they grew a lot of different fruits and vegetables, but they did not try to understand which was suited to the market. <sup>3</sup>I want to do my work in a smart way; I do not want to follow the old paths. ” – Vendor A - Mr. Tseng</i></p>	<p><sup>2</sup><i>View contribution more than return - Family Values.</i>  <sup>3</sup><i>Self-awareness from the past experience</i></p>	<p>✓ Cultural context.  ✓ Cultural- Interpretation.</p>
<p><sup>4</sup><i>“The reason why I started to make Chinese refreshments is because it was hard to get one when I was young. <sup>5</sup>The situation at that time was bad, and we had to be satisfied that we had food and were not starving. For us, bread and refreshment were luxuries, so, once we got the chance, we tried to make it by ourselves.” – Vendor B - Mr. Lin</i></p>	<p><sup>4</sup><i>Lack of resources</i>  <sup>5</sup><i>Be satisfied and cherish</i></p>	<p>✓ Cultural Context  ✓ Cultural- Interpretation.</p>
<p><sup>6</sup><i>“To be honest, <u>Yi-Lan</u> is in the Taiwanese countryside and the people here seem lazy and not so ambitious in terms of their careers. However, that is because the atmosphere here is really closed and conservative, so the outside world has little influence, so <sup>7</sup>Mr. Wu felt inferior at that time.” – Vendor C - Mrs. Wu</i></p>	<p><sup>6</sup><i>Social morals are closed and conservative</i>  <sup>7</sup><i>Environment effects self-cognition feeling inferior</i></p>	<p>✓ Cultural Context  ✓ Cultural Interpretation.</p>
<p><sup>8</sup><i>“When he (Mr. Wu) finished serving in the army and went to his first job, at first, he thought that he was hard working and dedicated himself to the work. However, his supervisor did not give him any encouragement and reward, but gave it to those who graduated from university or college, so he finally found out that the importance of educational background. <sup>9</sup>This really affects him a lot; so he keeps learning and he is going to get a degree even when he is almost seventy years</i></p>	<p><sup>8</sup><i>Education background matters.</i>  <sup>9</sup><i>Preseverance with learning</i></p>	<p>✓ Cultural Context.  ✓ Cultural Interpretation.</p>

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<p>old.” – Vendor C - Mrs. Wu <sup>10</sup></p> <p><i>“<sup>10</sup>I was born and brought up in farming families. All I know is that we have to be diligent and do our best at what we are doing now.”</i> – Vendor D - Mrs. Lee <sup>11</sup></p> <p><i>“<sup>11</sup>I think that I am so conservative because of my family background, I do not have such ambition to achieve everything.”</i> – Vendor D - Mrs. Lee <sup>11</sup></p>	<p><sup>10</sup>Family education - diligent<sup>10</sup></p> <p><sup>11</sup>Conservative and with low ambition<sup>11</sup></p>	<p>✓ Cultural Context.</p> <p>✓ Cultural Interpretation<sup>11</sup></p>
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**Hypothesis 2:** *Cultural interpretations can be a local cultural driver to guide SMB owners to perform service innovation.*

In order to evaluate this hypothesis, the interviews focus on why and how SMBs design their services and whether they gain any inspiration from their own experience or cultural background. That is, we would like to know if these inspirations are either resonate with our system artefact or could be guided by our system artefact. The interview data is encoded into three main final codes. The first is the cultural context presented as local culture, which includes family relationships, education, values, environment and background. In the second, cultural interpretation represents the thinking and behaviour that is contributed from the SMB owners’ cultural context and experiences. In the third, service provision and design represent SMB owners’ business style and their services. These raw data are firstly given their preliminary codes and then categorized into proper final codes. Table 4 of interview data to evaluate Hypothesis 2, shows the raw data, followed by the preliminary codes and the third column shows the three final codes. The relationship between the interview data and the final code is then inferred. It is found that local culture drives the way with which SMBs design their service and what they hope to provide to their customers.

For example, Mrs. Lee, the owner of “Vendor D”, designed her B&B based on the way she worked on the farm, with several different but square rooms. *She said,* <sup>22</sup>*“I divided my B&B into several different square spaces and I decorated those spaces as differently themed bedrooms. <sup>23</sup>Like a vegetable farmer, we divide our land and grow different vegetables.” This shows that her behaviour was influenced by her <sup>23</sup>Family working style and <sup>22</sup>working experience, the influence of the cultural context transformed into the action. In her mind, she prefers <sup>24</sup>harmony style to competition, as shown by her interview data: <sup>24</sup>*“I do not like to compete with other B&B providers; I think that that will lower the quality of the B&B industry. I think that customers will feel what we convey to them. <sup>25</sup>I try to make visitors feel**

*comfortable and relax, so that they can enjoy the peace and beauty here.”* Therefore, she would like her B&B to be a place to <sup>25</sup>*convey peaceful atmosphere*. Her need for harmony shows her cultural interpretation and her wish to convey a peaceful atmosphere to her customers and shows her service provision and innovation.

*Table 4 Interview data analysis for evaluating Hypothesis 2.*

<b>[Interview Data]</b>	<b>[Preliminary Codes]</b>	<b>[Final Code]</b>
<p><sup>12</sup><i>I do not want to go along my parents' old path, I try to know more about my customers, to suit their needs and interests, <sup>13</sup>I am really sensitive to the trends for different fruits and I know the right time to change my key fruits.” – Vendor A- Mr. Tseng ◦</i></p>	<p><sup>12</sup><i>Suit customers' needs and interests.</i></p> <p><sup>13</sup><i>Has sensitivity for his products.</i></p>	<p>✓ Service Provision and Innovation.</p>
<p><sup>14</sup><i>When I was young, our situation was not so good. We did not have much time to study, or even to play. We had to work on the family farm so, <sup>15</sup>we learned by doing, by trial and error. Everything that I know is based on experience.” – Vendor A- Mr. Tseng.</i></p>	<p><sup>14</sup><i>Tough life ◦</i></p> <p><sup>15</sup><i>Learn by doing-experiencing ◦</i></p>	<p>✓ Cultural contex ✓ Cultural Interpretation.</p>
<p><sup>16</sup><i>I knew that most of the environments and sanitary conditions in food and beverage shops were really dirty and bad. I saw them when I was really young and really hated that atmosphere. <sup>17</sup>Therefore, at that time, I told myself that I would have my own bakery shop and that it would have to be very clean and nice.”- Vendor B - Mr. Lin ◦</i></p>	<p><sup>16</sup><i>Prefer clean rather than messy ◦</i></p> <p><sup>17</sup><i>Commitment to himself and his customer.</i></p>	<p>✓ Cultural Interpretation.</p> <p>✓ Service Provision and Innovation.</p>
<p><sup>18</sup><i>I know the importance of knowledge. I went to my graduate school when I was sixty-seven and I got a degree in architectural aesthetics. Aesthetics is my interest, actually. <sup>19</sup>After that, I used this skill to decorate my B&amp;B, to convey my sensitivity to aesthetics to my customers.” – Vendor C - Mrs. Wu ◦</i></p>	<p><sup>18</sup><i>Importance of degree-by working experience.</i></p> <p><sup>19</sup><i>Convey aesthetic feeling to customers.</i></p>	<p>✓ Cultural Interpretation.</p> <p>✓ Service Provision and Innovation.</p>
<p><sup>20</sup><i>This is the countryside, the place where I grew up, so, I want to create a country feeling for my customers.</i></p> <p><sup>21</sup><i>I want them to feel the simple, honest values and to</i></p>	<p><sup>20</sup><i>Influenced by background.</i></p> <p><sup>21</sup><i>Insist on conveying</i></p>	<p>✓ Cultural Context.</p> <p>✓ Service Provision and</p>

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forget the pressure of work and life. I will not change this key concept. I insist." – Vendor C - Mrs. Wu - c.	country style feeling to customers.	Innovation.
"22I divided my B&B into several different square spaces and I decorated those spaces as differently themed bedrooms. 23Like vegetable farmers, we divide our land and grow different vegetables." – Vendor D - Mrs. Lee .	22Behavior influenced by working experience. 23Family working style.	✓ Cultural Interpretation. ✓ Cultural Context
"24I do not like to compete with other B&B providers; I think that that will lower the quality of the B&B industry. I think customers will feel what we convey to them. 25I try to make visitors feel comfortable and relaxed, so that they can enjoy the peace and beauty here." – Vendor D - Mrs. Lee .	24Be herself, harmony. 25Convey peaceful atmosphere.	✓ Cultural Interpretation. ✓ Service Provision and Innovation.

Using the encoding process for these SMB owners' vivo data, it is possible to understand, as mentioned in Hypothesis 1, that their cultural context could have a motivating effect on their behaviour and thinking. These action and thoughts are deciding factors in how they decorate their businesses, how they convey their views and how they run their business as mentioned by Hypothesis 2. It states that cultural interpretation is a local driver that can guide SMBs to execute service innovation. The four SMB owners assert that what they present and how they act can be interpreted as their personality and their deep motivation based on cultural interpretations. This resonates with the attempted contributions of our system artefact that were highly appreciated by the four SMB owners.

## Conclusion

This study is presenting a framework of semantic information system artefact used to determine the social cultural drivers, called cultural interpretations, which can help guide SMB owners toward service innovation in combination with further enterprise design research on creating new services in line with the cultural interpretations as driven by the owners. This artefact proposes a local cultural model to describe the main local cultural contexts which influence people's acts, thinking, or service behaviour. This artefact uses cultural interpretations to motivate and guide SMB owners toward different types of service innovation. In the analysis of the interview data and inferences, it was found that some SMBs have no idea that their behaviour and their cultural background are linked in the beginning. However, during the interview sessions, it was discovered that what they described could be traced back to their cultural background

and gave clues to the link. It was also found that they can easily accept the concepts of our artefact, as long as it is presented in an easy and straight forward manner. The data from the interviews shows a positive relationship between the new service provisions and the SMB cultural characteristics. In other words, our CESM artefact is believed to be able to help guide SMBs to link their service innovation to their own cultural traits in terms of cultural interpretations. Our CESM artefact can also emerge for SMBs as an enabler bringing together cultural elements into existing business managerial behaviour, focusing on changing SMB owner's mind-sets to support possible strategic decision making on service innovation.

There are several limitations of this study. The first limitation is our local cultural model might be less robust owing to its limited coverage of cultural contexts (e.g., for example, the dimensions of religion and social relationships are two main cultural factors in the Chinese society). The second limitation is the possibly limited collection of cultural interpretations and the further consideration of the emerging cultural dynamics. Future researchers can continuously improve our local cultural model in order to cope with these limitations.

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— Chapter 3 —

**Contextualized Designing**

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## **Section 3a: Co-creating Shared Value in Service Design**

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# Editorial: Co-creating shared value with stakeholders in service design

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Service design plays an increasingly important role in provision of value in a modern economy (Mager & Sung, 2011). In addition, value co-creation is often considered as a fundamental cornerstone of service design (Schneider & Stickdorn, 2011), while co-creation is today's most accepted model for innovation (Forbes, 2011). However, value co-creation with stakeholders under the service-dominant logic can occur in different ways. Therefore, how to effectively manage value co-creation to be a sustainability strategy has become relatively crucial for different kinds of organisations, such as enterprises or non-profit organisations (NPOs).

As a result, revisiting an integrated model or framework of value co-creation with stakeholders is becoming a major challenge for user-centred service design. So far, there has been very limited research on exploring co-creating shared value with stakeholders in service design. Therefore, this session aims to offer a platform for researchers and practitioners to present the state of the art research, discuss latest developments, and envision future directions.

This session consists of eight articles. Each of them contributes important insights into the understanding of co-creating shared value with stakeholders in service design, and the findings provide an important benchmark for subsequent research on related topics. To provide readers with a quick overview of the eight collected articles, a brief summary for each of them is presented as followed.

The first article, by Anders Haug and Pia Storvang, discusses how the concept of 'consumer communities' can be integrated into store concepts based on two case studies of outdoor product stores. Furthermore, Haug and Storvang explore the four key issues and relative approaches for the related stores as a reference for future consumer community development.

The second article, by Satu Miettinen, Simon Rontti, and Jaana Jeminen, highlights that service simulations and prototypes are crucial in service

design methods since they can serve as personalized emotional samples, which reveal customers' emotional reactions and enable decision makers to go through their own experiences with an early engagement of the process. Moreover, Mittinen et al. advocate that the role of the designers should be placed in more strategic positions in the new value of co-creation system.

The third article, by Jeff Man, Yuan Lu, Aarnout Brombacher and Fangtian Ying, examine the issues of team communication and design challenges in distributed intercultural design teamwork. Through conducting design courses and related co-creation workshop, Man et al. uncover that team communication is important and requires some effective communication tools to improve intercultural design teamwork. The fourth article, by Shu-Shiuan Ho, Yi-Fang Yang, and Tung-Jung Sung, offers valuable insights into exploring the relationships between co-creation and store image consistency in creative stores. The findings of the study reveal that higher levels of store image consistency require not only tangible or intangible elements, but also the image co-creation through different types of actors. The fifth article, by Chih-Shiang Wu and Tung-Jung Sung, discusses the importance of facilitating stakeholders to co-create for customer experience management in tourism. In a service design project, Wu and Sung integrate practical insights of customer experience management and stakeholder co-creation into each stage of the service design process. The sixth article, by Busayawan Lam and Andy Dearden, aims at investigating current state of co-design knowledge of the community-based organizations. Through surveys, interviews, case studies, and a creative workshop, Lam and Dearden provide a valuable guidance for effective co-design services with the beneficiaries during the design process. The seventh article, by Pelin Gultekin-Atasoy, Hanneke Hooft van Huysduynen, Yuan Lu, Tilde Bekker, Aarnout Brombacher and Berry Eggen, develops a method that combines both insights from the user and business in a single design process for multi-stakeholder settings. After examining two cases, the study reveals that conflicts are valuable moments in multi-stakeholder discussions as to providing new insights to the participants and reducing the uncertainties in the earlier stages of innovation processes. The final article, by Erez Nusem, Cara Wrigley and Judy Matthews, presents a longitudinal action research of the effects of applying design-led innovation, which is a customer-centric method, into NPOs. Nusem et al. argues that NPOs should better understand the stakeholders with design-led innovation and redefine the value they offer to market as to driving innovation effectively and responding to the rapid changing dynamic environment.

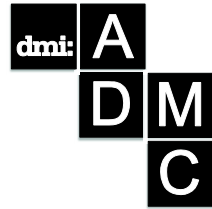
Last, these articles included will provide new prospects for exploring value co-creation with stakeholders in service design that is at its infancy. Our thanks go to the authors, the reviewers and all who were involved in preparing this session.

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## Communities as a Retail Store Concept

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*Because of increased competition, retail stores are looking for new ways to attract and retain consumers. Along this line, this paper explores how the concept of 'consumer communities' can be integrated into store concepts. This is done through two longitudinal case studies of outdoor product stores. Such stores have seldom been studied in the literature, but they may be particularly interesting in relation to consumer communities, because of the consumers' often passionate relationship to activities related to the products in focus. The two cases are investigated through interviews, store observations, network meetings and workshops. On this basis, the paper defines: 1) the community form to aim for, 2) the premises for creating communities, 3) the relevant activity types, and 4) the set of activities to be chosen.*

**Keywords:** Consumer communities; Outdoor product stores; Retail design, Service design; Concept design

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## Introduction

Increased competition implies that retail stores are constantly looking for new ways to improve their customers' experiences. As a basis, the store atmosphere and the signals the interior sends are decisive for producing the right customer experience (Van Rompay et al., 2012). Society, however, is always changing, so stores must constantly evolve to attract new customers while retaining the old ones (Babin & Attaway, 2000). This also implies that retail stores need to explore more untraditional means to achieve the desired effects. In fact, there is an increasing tendency to perceive retail stores as more than a place for purchasing goods, but also a place for socialising and leisure (Hu & Jasper, 2006; Simonsen, 2014). Along this line, this paper explores how 'consumer communities' can be integrated into retail store concepts.

Most literature on retail store design has a general perspective or focuses on one particular store type, mainly supermarkets and fashion stores. Outdoor product stores, on the other hand, are a store type that has seldom been studied, but may be particularly interesting in relation to retail store-centred consumer communities. Outdoor product stores offer products that support outdoor activities, which can be characterised by longer stays outdoors, where the experience of and attitude towards nature is significant — unlike intense sports activities, where the nature experience is pushed into the background because of the physical exertion and competitive focus (Friluftsrådet, 2013). Thus, this store category, among others, includes retailers of equipment for diving, camping, hunting, mountain climbing and scouting.

Outdoor product consumers might need more than just product information. More specifically, customers may request information about possible places where the products can be used and about others' experiences with different products in these contexts. Since it is unlikely that a sales assistant has the necessary expertise to fulfil such needs, the information must then come from other sources. Such information can come from books, brochures and contact with other organisations, but it can also come from being part of communities of consumers with similar interests. In practical terms, such communities may emerge from activities like product demonstrations, boutique cafes, lectures, activity events, special areas for product testing and the like. If a store can stimulate the creation of such communities anchored at a particular store, then this may produce significant benefits in relation to customer loyalty, customer satisfaction and understanding of customers.

Based on the discussion above, the question addressed by this paper is as follows: 'How can retail stores stimulate the creation of consumer communities anchored in the store?' The question is investigated through two longitude case studies of outdoor product stores. On this basis, this paper addresses four issues: 1) the community form to aim for, 2) the premises for creating communities, 3) the relevant types of activities and 4) the set of activities to be chosen. The findings from these two case studies are, to some degree, applicable to other store types and this is also addressed in this paper.

## **Literature review**

Literature searches in scientific journals, including the databases of ISI, EBSCO and A&HCI indexed papers, did not lead to the identification of relevant papers concerning store concepts for outdoor product stores. Searches on specific types of outdoor stores yielded little as well. Therefore, this chapter discusses the more general literature on retail store design, service design and consumer communities.

### *Retail store design*

To design retail store environments and services that produce the desired effects, an understanding of the potential consumers is a key issue. From an overall perspective, shopping can have two types of objectives: goal-oriented and recreational purposes (Joye et al., 2010). When shopping is a goal-oriented activity, the shopper feels bothered by factors such as having to wait in line, having difficulty in finding the desired products, having to pass physical obstacles, etc. Such issues result in a bad shopping experiences, which, in turn, can lead to the shopper avoiding specific shopping situations (Donovan & Rossiter, 1982). On the other hand, recreational shoppers are less adversely affected by such factors, but, in fact, prefer some stimulation during their shopping activities (Van Rompay et al., 2012).

An important aspect in store design is to understand how potential consumers perceive themselves, as shoppers usually prefer shopping environments that match their self-concept (Sirgy et al., 2000; Yim et al., 2007; Chebat et al., 2009). According to the study by Chebat et al. (2009), store loyalty can be predicted by consumers' self-congruity (match between the brand image and consumer's self-concept) — and store dimensions such as atmosphere, merchandise, price and promotions can predict this self-

congruity. Another way to understand consumers is through the concept of 'lifestyle', as used in the sociology of culture to distinguish between social groups in general patterns of values, attitudes and preferences (Ritterfeld, 2002).

Much retail store design research has focused on the design of shopping environments that stimulate consumers towards a desired behaviour. Such research has been heavily influenced by the work by Philip Kotler, who in the beginning of the 1970s was a key figure in relation to exploring the more subtle aspects of service environment design — what he termed 'atmospherics,' or "the conscious designing of space to create certain effects in buyers" (Kotler, 1973, p. 50). Since then, there have been many studies on environmental psychology and retailing that have established the importance of creating pleasant consumer experiences, conveying a desired store image and promoting specific behaviours (see, e.g., the review by Van Rompay et al., 2012).

According to Simonsen (2014), there is a tendency for more stores to sell mixed products. She mentions that a bike shop may open a café, a hairdresser may sell glasses and a hardware store may sell clothing. Furthermore, in the coming years, we may expect to see more social shopping, whereby stores become places where we listen to music, go to events and places where we meet new people (Hu & Jasper, 2006; Simonsen, 2014).

### *Service design*

The concept of 'design' has traditionally been linked to products, and, in many aspects, the insights produced in the field of product design cannot be applied to 'service design', because of the different characteristics of services, such as intangibility and perishability (Holopainen, 2010). More specifically, service systems can be defined as configurations of people, technology and other resources that interact with other service systems and help create value (Maglio et al., 2009; Patrício et al., 2011). In this context, the field of design management focuses on how particular methods and approaches of design, such as visual representations of customer journeys and creation of 'personas', may be applied in the design of services (Holopainen, 2010).

Service design processes have often been described in the form of 'water wall models' (i.e., a set of predefined steps) (Bullinger et al., 2003), but this linearity perspective has increasingly been criticised (Alam, 2002; Toivonen et al., 2007). Also, the traditional perspective on service design,

which has a focus on offering value through predefined services, has been challenged. For example, it has been argued that the design of complex service systems requires a holistic approach, i.e., a focus on both design system components, and the network of relationships that make up the service, which overall results in the full service of greater value than the sum of its parts (Norman, 2011). Another perspective is that value is created through 'co-creation', which can be done through social interaction with employees, other companies and customers (Vargo & Lusch, 2004; Toivonen et al., 2007; Roser et al., 2013). Thus, instead of delivering shrink-wrapped services, companies may offer value propositions that customers can turn into value through use (Normann & Ramírez, 1993). The resources that a company use in co-creation of value can, according to Saarijärvi et al. (2013), come through B2B, B2C, C2B and C2C value relations.

### *Consumer communities*

Because of the high costs associated with winning new customers for companies, it has become increasingly important to establish long-term relationships (Casaló et al., 2008; Morgan & Hunt, 1994; Andersen, 2005). One way of building such long-term relationships is through the establishment of consumer communities anchored in a company. The literature with a focus on consumer communities has its main focus on online (or virtual) communities, i.e., communities connected through message boards, chat rooms, and blogs. Such communities are often referred to as 'virtual communities' — a term introduced by Rheingold (1993). This paper, on the other hand, focuses mainly on communities based on real-world interactions.

An important type of a consumer community is a 'brand community', which is defined as group of individuals who voluntarily relate to each other because of their interest in some brand or product (Muniz & O'Guinn, 2001). The concept of brand communities involves the concepts of productive consumers and of value co-creation (Algesheimer et al., 2005; Schouten et al., 2007). The company benefits from brand community strategies can be significant, including higher consumer satisfaction, greater consumer loyalty, more information and an amplified word-of-mouth effect (Atkin, 2004). According to Casaló et al. (2008), a brand community is characterised by three core components. The first is termed 'consciousness of kind', and it refers to the feeling that binds every individual to the other community members and the community brand. This type of community is determined by two factors: 1) legitimisation (establishing a difference

between true and false members) and 2) opposition to other brands. The second core component is termed 'rituals and traditions', which describes the processes carried out by community members, in which the community is reproduced and community meaning is transmitted in and out of the community. The third core concept is termed 'sense of moral responsibility', which refers to the feelings that create moral commitment among the community members. There are two fundamental types of actions in relation to moral responsibility: 1) the integration and retention of members that guarantee the community's survival and 2) the support in the correct use of the brand.

In relation to consumer communities, an important distinction can be made between enduring involvement and situational involvement, where external stimuli cause situational involvement and internal factors cause enduring involvement (Houston & Rothschild, 1978). Enduring involvement requires commitment, which is a central objective for most organisations (Andreassen, 1999). Commitment can be defined as a continuing desire to maintain relationships that are considered important and valuable (Moorman et al., 1992; Morgan & Hunt, 1994). Commitment can be divided into calculative and affective commitment (Geyskens et al., 1996; Roberts, et al., 2003; Gustafsson et al., 2005). The calculative commitment refers to an individual being committed to a relationship because the value of the resources invested in the relationship would be substantially decreased if the individual ends this relationship and starts another one. This also includes situations in which there are no attractive alternatives to the established relationship. Affective commitment refers to the emotions and closeness between the parties, and this type of commitment assumes that both parties involved in a relationship will be interested in continuing it.

In relation to the focus of this paper, the concept of 'communities of practice' is also relevant. The concept was introduced by Jean Lave and Etienne Wenger (1991) to describe a group of people who share a craft or profession and are bound together by their common interest in that domain in which they share their information and experiences with each other and thereby are part of a learning process. In some cases, this describes what happens when communities are established around brands or retail stores, namely, that consumers are bound together by a common interest and through these relationships they learn from interacting with each other.

## **Research method**

To investigate consumer communities as a store concept, two case studies were carried out. The two companies were identified through a network meeting in the project 'Design to innovate' (D2i, 2014). The idea of D2i is that universities help small and medium-sized businesses (SMEs) in the southern region of Denmark to develop their businesses by using design thinking. The two cases were selected because of their focus on building communities in relation to their stores. The two selected stores were a diving store (combined with diving centre) and a camping store.

The two cases were examined through interviews, store observations, networking meetings and workshops from autumn 2012 to the summer of 2014. The interviews were carried out as semi-structured interviews with managers and were digitally recorded. In addition, information was acquired through several informal conversations with persons from the companies. The observations at the stores had the purpose of understanding communication with customers, store design and consumer behaviour. The observations were registered through notes, process maps and photos. In the case of the diving store, also role-playing activities were carried out with the purpose of understanding how customers met and interacted with company staff. The network meetings involved four to seven companies, including the two in focus, and they had the purpose of learning the companies about branding, store design, design thinking and letting the companies share experiences with business developing initiatives. The first network meeting focused on marketing and how to create customer events. The second network meeting focused on new online marketing and web challenges. The third network meeting focused on store design and company branding. The final network meeting focused on tools to use to develop interaction on different kinds of media. Finally, three workshops, customised according to specifics of the individual stores, were carried out. Two of the workshops were facilitated by either the researchers or design consultants, and one workshop was carried out as an 'idea generation camp', facilitated by a group of business students (Bager 2011; Heidemann & Nielsen, 2011). Information about the two case studies is shown in Table 1.

Table 1 Case study characteristics.

Case	Interviews	Store observations	Network meetings	Workshops
Diving Store	2	2	4	3
Camping store	1	2	4	2

## Creation of communities around retail stores

The question in focus, as mentioned in the Introduction, is divided into four issues that are addressed in the subsequent subsections:

- 1) Community form
- 2) Premises for the creation of communities
- 3) Identification of possible activities
- 4) Identification of sets of activities

### *Community forms*

To define different types of consumer community, a basic distinction is made between relationships between businesses and consumers, and relationships between consumers. This distinction produces three archetypical types of consumer communities, which are illustrated in Figure 1 and subsequently explained. In Figure 1, the 'B's' refer to 'businesses', the 'C's' to 'consumers' and the lines to relationships.

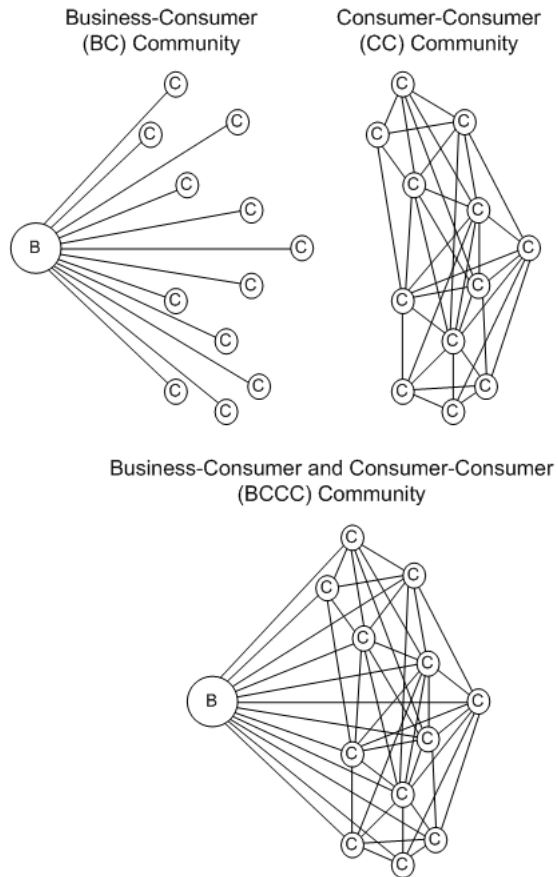
The first archetype describes communities in which the communication in the community is between the company and individual consumers. This can, for example, be in the form of a web-page where it is possible to communicate with a company but not with other consumers. The downside of this form of community is that it requires much communication to keep the community alive — and although providing consumers with this communication, they may still desire to communicate with other consumers as well.

The second archetype describes communities in which the communication is between the consumers. This can, for example, be in the form of a society of people with a common interest. From the perspective of a company, the problem of this type of community is that it is not related to the particular company, and for this reason its participants may use different companies to support their activities.

The third archetype is a community in which there is communication between the company and individual consumers, but also between individual consumers. To avoid the downsides of the previous two



community types, this kind of community, in most cases, seems to be the one to strive for. This was also the aim of the two outdoor product stores in focus.



*Figure 1 Archetypal consumer communities*

### *Premises for creating retail store communities*

Before attempting to establish a consumer community anchored in a store, the first question must be asked: Is it feasible? Based on the discussions during the interviews, network meetings and workshops, three overall aspects emerged:

- 1) Consumer motivation

- 2) Consumer availability
- 3) Consumer homogeneity

Firstly, it is obviously important that the consumers in focus have a desire to spend their spare time on activities involving a store and other consumers. This to a great extent depends on the type of products that the store offers. In other words, the products need to be related to a special interest, even passion, of the consumers. This was also the case for the diving and the camping stores.

Secondly, the consumers in focus need to be available in the sense that they are not already involved in other communities that would make it difficult to involve them. For the diving and camping stores, the community needs of a significant number of the 'motivated consumers' did not seem to be completely fulfilled by other organisations.

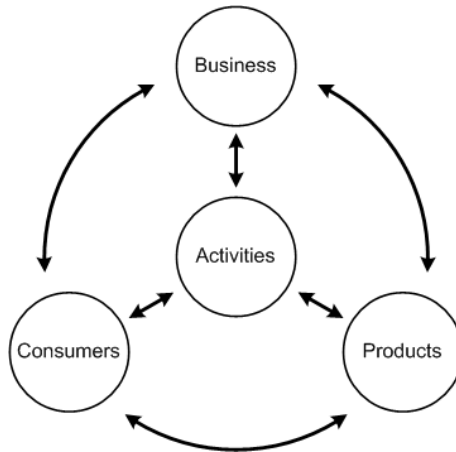
Thirdly, consumer homogeneity needs to be considered because, while a store's consumers may be motivated, available and share a common overall interest, they may not necessarily have the same exact interests. If such interests are too divergent, then this implies the need for several specific consumer communities, which could be extremely resource-demanding to support. In relation to the two cases studied, only the camping store had made an actual study of its customer types, while the diving store believed that they have acquired a good understanding of this issue through their daily experiences. However, after having participated the last workshop, the diving centre decided to produce some customer profiles to help them become better at addressing the needs of their customers. In neither of these two cases did the stores find that their customers were too inhomogeneous, which would thus prevent the formation of communities across the different customer types.

Among the companies participating the 'D2i' B2C networking, two other outdoor product stores were identified: a bike store and a scout store. Although, these seemed to have customers motivated for community participation, there were some other issues. For the bike store, on an overall basis, many of their customers were just interested in buying a bike without further activities. For the customers having cycling as a more serious hobby, most were members of cycling clubs that fulfilled their community needs. Thus, although certain activities could generate attention and attract consumers, it seemed to be difficult to establish a customer community anchored in the store. As for the scout store, Denmark has a long tradition of young people being members of scout organisations. Thus, although activities initiated by the scout store were well capable of attracting

consumers, but such activities did not seem to lead to the creation of a group of customers with special ties to the store, i.e., a community. In other words, such activities generated attention and attracted customers, but they did not create communities anchored in the store.

### *Community activity types*

Communities are established and evolve around activities. Thus, having understood which type of community a business is interested in building and having established that there are relevant consumers to build it, the next question is: Which types of activities would enable this? The discussions of activity creation in the two case studies revolved around three types of entities: the business, the consumers and the products. This is illustrated in Figure 2 and subsequently explained.



*Figure 2 Creation of community activities*

The model in Figure 2 includes six relations between its four entities. The relation between the business and the products involves that the business (store) retrieves information about products, as well as actual products, and defines demands for future products. The relationship between the business and the consumers involves that the consumers share their experiences and make demands for products and services for the business to respond to. The relationship between the consumers and the products involves that consumers acquire and use the products.

An understanding of the characteristics of the three outer entities provides a basis for defining relevant activities. Firstly, there is the business

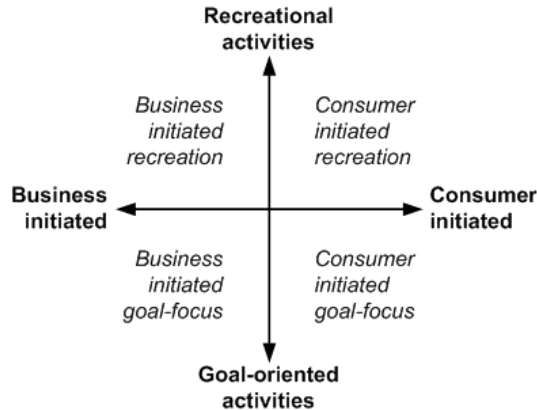
perspective, in which an activity needs to produce some benefit. This can either be a direct benefit, for example, that consumers pay for participation or buy products while participating in the activity, or it can be indirect benefits, for example, consumer loyalty or community building. From the product perspective, an activity needs to consider the products offered by the store at a minimum in the sense that the activity does not negatively impact the consumers' interest in the products. More specifically, certain activities may have the focus of strengthening the bonds between the business and its consumers, while not involving the actual products offered in the store. For example, if a bicycle store gave away cinema tickets to a cycling movie, the movie should not directly or indirectly promote bicycle products that the store does not offer, which, in the worst case, could drive the customers to competitors. Finally, in the consumers' perspective, the activity needs to be interesting so that they would want to participate.

Activities can emerge from all three of these outer entities, i.e., the business, the consumers and the products. As mentioned, a business may create an activity in order to strengthen its bonds with consumers or stimulate community creation. Activities of all three of these types were identified in the three cases. From the business perspective, the diving store, for example, arranged club nights, while the camping store arranged themed exhibitions. From the consumer perspective, diving store consumers, for example, suggested certain social events, while camping consumers socialised with each other in the store café. From the product perspective, for the diving store, certifications from external parties could be acquired through the store, and in the camping store, suppliers organised product presentations.

### *Identifying the 'right' set of activities*

Having defined possible activities and realised that realistically only a subset of potential activities can be initiated, the question is: Which combinations of activities should a business choose to initiate? As argued earlier, activities can be consumer initiated or business initiated ('business' in this context covers both store and supplier initiatives). Further, as described in the literature, consumers may have a recreational and/or a goal-oriented agenda. In the cases studied, both the recreational and the goal-oriented focus were observed in which the 'recreational' agenda refers to participation with the motive of relaxing and having a good time, while the 'goal-oriented' agenda refers to a motive of acquiring something. In the cases studied, such goals were mainly related to acquiring information, but

also including getting certain discounts, having certain experiences, being helped fixing defect products and trading used products. Obviously, many of these activities also had a strong recreational (socialising) aspect at the same time. The two distinctions give rise to defining four types of community activities, as illustrated in Figure 3.



*Figure 3 Community activity types*

When considering the cases in relation to Figure 3, ‘business-initiated recreation’ includes activities such as organising club nights (diving store) and serving hot dogs (camping store); ‘business-initiated goal focus’ includes diving education and lectures about camping; ‘consumer-initiated recreation’ includes socialising with consumers and personnel on the ‘diving ship’ and consumers socialising with each other in the camping store café; and ‘consumer-driven goal focus’ includes consumers sharing experiences about diving on the ‘diving ship’ and consumers offering to give lectures in the camping store. As mentioned earlier, many activities obviously may have both recreational and goal-oriented aspects at the same time.

Often it would be preferable to include both business-initiated and consumer-initiated activities in order to avoid that the business needs to use too many resources or that the community is not connected to the business. Furthermore, if consumers have either, or both, recreational and goal-oriented needs, there is a need to support both types in order to keep as many consumers as possible in the community. Finally, although outdoor customers may have the same general interest, they may have very diverse preferences and needs. Thus, a store must identify activities that simultaneously satisfy (almost) all customer types or target a subset of their

customers. This kind of analysis may be carried out by dividing customers, sharing relevant characteristics, into subgroups, and then map these groups to possible activities, using a rating that describes their expected interest in the activity. This illustrated in Figure 4.

	Activity 1	Activity 2	Activity 3	...	Activity n
Consumer group 1					
Consumer group 2					
Consumer group 3					
⋮					
Consumer group n					

Figure 4 Mapping consumers and activities

To produce a consumer community, the diving store acquired a ship and established a voluntary association with the purpose of creating water activities and engaging in ship traditions. According to the owner of the diving store, the purpose of the ship was “to provide a setting for sharing stories, education, information sharing, fishing, scuba diving, boat trips, events and a lot of other crazy activities”. Other initiatives of the diving store included:

- Diving club membership
- Club nights
- Dining arrangements
- Diving trips
- Fishing trips
- Lectures about diving
- Diving education/courses
- Equipment repair facilities
- Used equipment marked

The experiences of the diving store after launching these initiatives were that they, to a large extent, had enabled the creation of a community that included both the staff and consumers. The owner described the community anchored in the store as “a special kind of interest community, where there is a feeling that the employees are like one big family”. Further, the

activities around the ship and at the diving store were believed to have attracted new customers.

The camping store had observed that there was much activity on the Internet involving camping enthusiasts helping each other out and sharing information. Furthermore, the store staff had attended a design seminar and a workshop where they learned about different customer trends of campers. On this basis, they saw the potential for the creation of consumer community anchored in their store, as well as just attracting new customers through improved services. The initiatives launched, or with concrete plans of launching, included:

- Repair shop for altering and repairing caravans
- Store café (in a sparse variant, including chairs, tables, coffee/tea/water and brochures)
- Lectures in the café (done by personnel, suppliers, or expert customers)
- Lending of their meeting rooms to other companies
- Product demonstrations (by personnel or suppliers)
- Leisure events (e.g., serving hotdogs, arranging competitions, etc.)
- Product testing (areas for trying products)
- Games (floor games in the store)
- Children's areas (play areas)

The experiences of the camping store with these initiatives have so far been mixed. While activities, such as leisure events, children's area and floor games seemed to have drawn attention to the store and increased consumer satisfaction, the store café had not yet had the desired result. The café was not only intended as a self-service café, but also as a space in which the store could arrange lectures, social events and other arrangement in the evening. However, they had never quite gotten this cafe to operate as intended, since the store had difficulties in finding resources for arranging such events and because of fewer consumer-initiated events than expected.

Despite the different experiences of the two stores so far, common for both was that they saw a great potential for harvesting the benefits from the initiation of different consumer-oriented activities. On the other hand, a central issue for the stores was that they, like many other SMEs, had limited financial and time resources to invest in such activities. Further, the two cases showed it could be extremely difficult to anticipate which activities consumers would participate in. Thus, there was a need for constantly evaluating initiatives and, if necessary, new ways to activate the community.

In this sense, communities may be seen as ever-changing organisms with constantly developing needs.

As mentioned, the majority of the literature on consumer communities focuses on web-based communities. This issue was also found important by the companies in the design network, since they had all recognised an increasing necessity of using social media. On the other hand, the administration of web-based news and forums were found to be rather resource demanding, for which reason the companies in focus found it very difficult to keep up with. Further, the actual effects of web-based activities on the sales numbers can be harder to pinpoint than activities organised at the stores. Thus, in relation to community creation, the case companies had their main focus on store-related activities, while web activities were almost only in the form of one-way communication through webpages to an unknown group of recipients. In other words, such web activities had the purpose of creation attention and attracting customers, not on creating communities.

## Conclusions

This paper focused on how retail stores can stimulate consumer community creation. More specifically, the paper raised the question: 'How can retail stores stimulate the creation of consumer communities anchored in the store?' A focus was made on outdoor activity product stores, since their consumers seem to be particularly relevant because of their often passionate relationship to activities related to the products in focus. Thus, two longitudinal case studies of such companies were carried out. With a basis in the two case studies and to address the question in focus, four issues were explored: 1) the community form to aim for, 2) the premises for creating communities, 3) the relevant activity types and 4) the set of activities to be chosen.

Firstly, in relation to community forms, the paper defined three archetypes: business-consumer (BC), consumer-consumer (CC) and a combination of the two (BCCC). In the two cases studied, the latter seemed to be ideal, as the BC community type implies that the stores needed to spend too many resources on consumer interaction and unfulfilled consumer needs of talking to other consumers, while the CC community type implies a lack connection between the community and the stores, thus posing the threat of the consumers choosing competitors. However, although the BCCC community type was the ideal for the cases studied, it



may not always be so. For example, some fashion stores and supermarkets offer memberships to their consumers to create loyalty towards the store or brand in focus, but they may not have a particular interest in their consumers socialising with each other. Thus, in such cases, the BC community type seems to be most suitable. On the other hand, for companies producing a new or special type of product, the CC community may be relevant simply to increase the awareness of the product type. For example, fair trade product producers and ecology producers would have an interest in communities promoting and creating greater awareness of these types of products in general, as this is likely to be beneficial for all, or at least the majority, of such producers.

Secondly, in relation to the premises for the creation of communities, the paper defined three types: consumer motivation, consumer availability and consumer homogeneity. These were all extremely important in the two cases studied, but the question is if this would be the same in other cases? At least the first two seem to be of a general nature, as it would be hard to imagine a well-functioning community without consumer motivation or availability. This homogeneity aspect as a minimum involves that consumers have a common interest in the types of products offered. It could be assumed that, for example, communities initiated with the purpose of learning about consumers or to stimulate innovation could be effective if they included persons with very different perspectives.

Thirdly, in relation to consumer community activities, the paper argued that these could be understood as being defined by three elements: the business, the consumers, and the products. Given that the latter is defined as minimally implying that the activity does not discredit the company's products or promotes competitors' products, it seems that this perspective is adequately fundamental to also be useful in other cases.

Finally, the paper defined four overall types of community-initiated activities by distinguishing if they are consumer-initiated or business-initiated and if they have a recreational or goal-oriented purpose. For the two stores studied, it appeared that there was a need for having both business-consumer and consumer-consumer activities, as well as both recreational and goal-oriented activities. This may, however, not be the case for other companies. For example, some malls focus on attracting consumers with recreational activities, while some hi-fi forums seem to be highly focused on sharing information about products. Also, as earlier mentioned in relation to the community form discussion, both pure BC and CC communities may be relevant in some cases.

In contrast to the type of consumer communities that the literature mainly focuses on, namely, Internet-based communities, the two companies mainly focused on communities involving real-world interactions. In fact, the case studies showed that for some SMEs, the work associated with maintaining and evolving Internet-based communities can be too time consuming to employ as a community strategy. On the other hand, the two case studies showed that outdoor product stores can achieve a number of benefits by implementing 'real-world' activities that stimulate community creation. Such communities can, for example, provide an incentive to spend more time in stores and produce customer loyalty, while minimising the need for traditional market investigations. As argued, the framework may also be useful for other types of stores, and even other types companies. Thus, besides further studies of the framework in relation to outdoor stores, future research needs to study the framework's usefulness in other contexts.

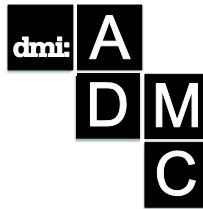
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## Co-Prototyping Emotional Value

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*Service design methods provide tools for both the analysis-based perspective to understand user motivations, emotions, the participatory development and co-design process. This research specifically focuses on audio-visual concretization with agile methods and technological tools to simulate the service journeys and solutions. This article examines the question: ‘How can profitable solutions and value be created from intangible experiences and customers’ emotion in the use of service design methods?’ The findings of this study suggest that service simulation and prototyping help in decision making of new service development. Simulations and prototypes serve as personalized emotional samples, which reveal customers’ emotional reactions and enable an early engagement of the process for decision makers through their own experiences. New systems for value co-creation place designers in more strategic positions.*

**Keywords:** *service design, emotions, co-creation, prototyping, simulation, decision-making process*

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## Introduction

The labor-intensive service sector is the largest part of the Finnish national economy, but investments in intangible capital continue to produce less profit than tangible investments (Mahmood, 2011). In developing service quality, the customer focus and meanings created during the service experience are key development elements (Rintamäki, Kuusela & Mitronen 2007). Service design methods provide tools for both the analysis-based perspective to understand user motivations and emotions and the participatory development and co-design process. This research specifically focuses on audio-visual concretization using agile methods and technological tools to simulate the service situation and solutions. This study utilizes the SINCO laboratory methodology developed at the University of Lapland (a technology-enhanced service prototyping and simulation environment) to answer the research question: ‘How can profitable solutions and value be created from intangible experiences and customers’ emotion in the use of service design methods?’



*Figure 1. SINCO laboratory is a concrete example how to do service design. SINCO consists of the environment and a set of tools for co-design and service prototyping. In SINCO technological equipment and digital material such as photos, videos, and sounds are used to create the atmosphere of actual service moments for prototyping and re-enactment. As the set-up for prototyping services, SINCO has two 117” background projection screens perpendicular to each other, to provide the background scenery and enable partial, yet immersive, spatiality. This helps to concretize different aspects of service concepts and ideas for participating users by giving them a better idea of what the service experience might contain and feel like. In SINCO, it is possible to simulate all kind of services, processes, and practices.*

This study is a part of the outcomes of a research called 'Value through Emotion' and was funded by TEKES (Finnish Fund for Technology and Innovation). This study is a case study research in which the practical development projects of five companies (KONE Oyj, Danske Bank, Norrhydro, Lapland Safaris, and Santa Park) and supporting interviews with nine other companies (GE, Intuit, IDEO, Adaptive Path, LVL Studio, Volkswagen, Whitespace, BetterDoctor, and Experientia) created a case to understand both the designer's role in value creation and the service design approach that enables this value creation. Research data were collected through thematic interviews and participatory observation and were analyzed using a theory-driven content analysis.

One important result is that the service design approach can generate appropriate solutions to support positive emotional reactions and guide positive feelings throughout the service situation (Miettinen, 2011; Miettinen & Koivisto, 2009; Miettinen & Valtonen, 2012; Stickdorn & Schneider, 2010; Tassi, 2009). The service design serves as a platform through which company values, customer needs, and motivating emotions meet. Prototyping and simulation concretize and visualize intangible service products that enable identification of customers' feelings and objectives during the service experience. Emotional aspects can be captured early in the development process through contextualized and personalized prototypes when used with appropriate fidelity. Accordingly, the identified premises to support this process in companies include an appropriate prototyping environment and embracing the new facilitator role for service designers.

Service simulation and prototyping aid in decision making and serve as personalized emotional samples that reveal customers' emotional reactions and enable decision makers' to engage in the process through their own experiences. Furthermore, simulation serves as an internal communication platform, which reveals strategic tacit knowledge. Simulation also helps the service staff train employees to handle the emotional responses of customers? This process is critical because the emotions of the service staff are present while providing service and create value through this interaction.

## **Research data and methods**

This paper is based on thematic interview and group discussion data collected from Finnish (N=5) and international companies (N=9) that have



used service design and the designing thinking process or have used designers in their service development process. The research data was collected from two research projects: 'Practices, Processes, and Products for Medicine and Healthcare' and 'Value through Emotion'. The data was collected in 2013 and 2014. The interviews with the international companies were deep thematic interviews about the role, process, and benefits of service design. The Finnish companies were involved in action research focusing on the understanding and concretizing of customers' emotional value in the service process and the benefits of service prototyping. The group discussions (N=6) and interviews (N=6) were conducted usually after the co-creation sessions were facilitated with technology-aided prototyping and simulation methods. Participatory observation was also used as a research method for this paper. The service prototyping sessions (N=10) were both documented with video, and fieldwork notes were taken. Fieldwork notes were analyzed in the same manner as the interview material. The fieldwork notes were important as the emotions (laughter, frustration, anger) that emerged in the prototyping sessions were noted carefully. Video documentation served as a visual note to confirm the outcome of the analysis.

The content analysis was conducted using two analyzing rounds in which researchers first selected key terms and phenomena that responded to the research questions and the main concepts related to the terms. The researchers read the transcript material through looking for themes related both to service designers' role as well as the emotional aspects related to service prototyping. They marked the themes and categorized them. In the second round, the findings were discussed in research meetings to understand the significance and meaning in relation with research questions. The findings were discussed in theoretical context.

## **Emotion, co-creation of value, and service prototyping are integrated in service design**

The service design process provides the platform and the tools for the stakeholders and the developers to integrate the themes of emotion in service development. This includes the customer's emotion and experience during the service experience as well as the emphatic effort to understand the customer's emotion and use this knowledge during the decision-making process when developing services. Service thinking is an on-going consideration of how collective needs are met without overstretching the

human and natural resources (Reason, Downs, & Lovlie 2009). The core of service design is to uncover these needs and emotions. This approach is used in experience design, which is an approach to creating an emotional connection with users through the careful planning of tangible and intangible service elements (Pullman & Gross, 2004). Designers can facilitate change and assist all stakeholders in understanding what the steps toward desired outcomes are. Cook, Bowen, Chase, Dasu, Steward & Tansik (2002) have discussed human issues in service design. They present *"the concept of scripting where customers interact with services according to some pre-existing paradigm, which are referred to as scripts. These can indicate where standardization is value added, and where customization of the service would be more appropriate. Conflict between the service system design, and the customer's chosen script is a major source of service failure."* Further, they discuss the customer experience and emotion from delight to rage and use scripting as means to appropriate the emotion in customer encounter situation. Service prototyping can give means to experiment different service encounter situations and analyze feelings related to these situations. This is a quick way to see if the encounter engaged users in laughter or frustration.

Sangiorgi (2012) proposes that design researchers work at two parallel levels. At one level, they introduce Design for Services methods with a focus on improving service experiences and offerings designed to meet customer needs. Second, they introduce a new way of thinking about value co-creation and innovation (Service Thinking) that could transform the way organizations perceive their role, offerings, and innovation processes. In this way, the service design approach integrates both the themes of a customer's emotion and experience in the innovation process and concretizes them for the benefit of value co-creation efforts.

Srivastava and Verma define the co-creation of value as 'a systematic and structured process based on collaboration with outsiders to generate value for the firm as well as for the customers' (2012, p.192). Consumers want to define choices in a manner that reflects their view of value, and they want to interact and transact in their preferred language and style (Srivastava & Verma, 2012, p. 192). In goods-dominant logic point of view, a company can create more value for its customers either by lowering costs or by making the product more attractive when value is assessed as value-in-exchange or value-in-product (Vargo, Maglio & Akaka, 2008, p. 148; Srivastava & Verma, 2012, p. 198). In service-dominant logic, value creation focuses on value-in-use or value-in-context. Vargo and Lusch suggest that

'there is no value until an offering is used – experience and perception are essential to value determination' (2006, p. 44). Moreover, one of the foundational premises of the S-D logic is that value is always uniquely and phenomenologically determined by the beneficiary (Vargo et al., 2008, p. 148). The definitions of value co-creation ground well the role of experiential learning and prototyping as a method in the co-creation process.

Service prototyping provides a means for concretizing the customer's emotion and experience. Service prototyping is a new area for a designer that locates him in the centre of a business development case working as a facilitator and using concretizing tools that connect the stakeholders and visualize the service offerings in the case. The short duration of a prototype cycle, from trying something out and testing it with users, is what makes the relationship between design and business successful (Moggridge, 2006). Prototypes can quickly and cost-effectively communicate a service proposition and prompt questions regarding the technical feasibility, consumer desirability, and business viability (Samalionis, 2009). Prototypes are tools for thinking (Brown, 2009). According to Coughlan et al. (2007), prototyping is a powerful means to facilitate organizational development and change.

Blomkvist (2012) proposed four distinguishing features of prototyping approaches and presented them as levels in which prototyping can be conducted: 1) artefact, 2) use, 3) context, and 4) service levels. This division of prototyping approaches is done to make the constituents of service prototyping more explicit. Representations, such as service sketches, service walkthroughs, and live service prototypes, allow service developers to approach and understand the experience of service propositions. Also, the development and low cost of audio-visual devices and mobile technology with a variety of applications enable the rapid simulation of use contexts and high-fidelity experiments with ideas early and inexpensively (Rontti, Miettinen, Kuure & Lindström, 2012). These kinds of methods also allow designers and users to enact or simulate service experiences before they have been established in an organization (Holmlid & Evenson, 2007).

## **Service designers have strategic roles in value creation**

*In the company my role is combined designer's and sociologist's role adding the self-driven researcher's role in that. I do the research work related to the projects from the human factors and design research aspects. So I haven't got traditional industrial designers' role at all.*

The designer's role has changed. Design thinking has changed the designer's work on both the operative and the strategic level. On the operative level, the design competencies and methods are applied in a wide range of things from the development of social services in the public section to the addition of service aspects in the manufacturing processes.

*First, prototypes are scenarios that are sketched by a professional visualizer who can manage them quickly. I have also produced concept videos and service concept videos in few days warning. You need to have quick storytelling skills.*

The designer's responsibilities and job descriptions have become more research-oriented. On the other hand, social and communication skills in addition to having experience with the methods and tools used in different phases of the innovation process are necessary. The designer's role and activities are increasingly international. The designer's role in the co-design and participatory design work has become more important and diversified. Design is no longer used only in the beginning of the innovation process but also as a tool to maximize the possibilities for all types of innovation during the continuous development and the quality control of service products.

The process of service design enables the concretizing and the understanding of the overview and the details. This facilitates the development work and the innovation process. Service designer appears in a role of pushing the shift from company's 'inside-out' development strategy into 'outside-in' view (Rhea, 2003, p. 146).

One aspect in shaping both the strategic and the operative role of service designers is whether or not to incorporate design as an in-house or as outsourced activity. The service design teams conducting the Finnish case projects were outsourced. According to the company executives – especially the SMEs with limited in-house resources dedicated to service development – the outsourced team provided them with 'fresh external thoughts':

*As you (service design team) are not involved in this business, it like brings very different approach in this (development). It is a good thing. (---) And you have been indeed working on these (service design*

*projects) with many different business fields so you maybe have a bit more extensive view.*

The appreciation of the external view not only concerned the development of the particular services but also the strategic transformation process from a production-oriented development strategy approach to a customer experience -based innovation approach. In large and established organizations, this may be a long process of change.

*I have been working for many years (as an in-house service designer), moving through a machine centered company, so some technology driven to a customer and end user and this (transformation) is something that we will take to many years. So that's the biggest challenge, the change of culture.*

Regardless of the size of the organization and whether the designers were in-house or externalized, the designer's role as a communicator and a facilitator of the process is evident. Knight (2012) proposed the designer's role: 'design is not just thinking or pure creativity but is also communication. A designer's role in shaping services is important not just in helping to meet a need but also in communicating what it is or what it could be in whatever way to make it understandable to others' (Knight 2012, p. 170). In our research, examples of practical communication skills were described as follows:

*First prototypes are scenarios that are sketched by professional visualizer who can manage them quickly. I have also produced concept videos, service concept videos in few days warning. You need to have quick storytelling skills.*

These kinds of comments in the interview data are submitted by engineers and managers as well as designers. The trend is that companies such as Intuit and Volkswagen are placing designers within the RDI team not isolating them in their own units anymore. A strategic level designer's role is to facilitate the transformational change in companies and governmental institutions. Service design is an outcome of this transformation process and is demonstrated in almost all of the interviews conducted during the research process. It is clear that service design and designers play a strategic role in the co-creation of value by using not only different service design methods but also a wider approach that integrates service thinking,

understanding the user relative to service rationales, and constructing service propositions. Wetter-Edman (2012) discussed the service design discourse in which the relationships between users, designers, and design objects are important; however, in service management, the underlying rationales are present. There is an increasing interest in methods and tools used for understanding users in their context and in how to transfer this understanding to successful service propositions and profit. There is a need to identify and understand the rationales as well as the relations.

## **Prototyping as an emotionally engaging co-creation platform**

Prototyping sessions serve as platforms for co-creation. Through prototyping, simulation and empathizing methods the knowledge, which is perceived as value is either triggered or supplemented by the emotional experiences of the participants who attended the co-creation sessions. Emotional value for a stakeholder is conveyed through personally experiencing the prototypes. Audio-visual simulation enables sampling both the conscious and subconscious signals affecting the experience (Shaw, 2007, p. 28-29).

In the service design cases for the Finnish companies, the process consisted of two to three workshops for each case. Prototyping and simulation served as a central platform for analysis, testing, ideation, and communication. Between the workshops, the service design teams either worked on mystery shopping and observing actual service situations or they developed concepts and prepared the next workshop at the prototyping lab. Some of the workshops were arranged at the company's site with a 'mobile' setup of the simulation devices and prototyping equipment. The prototyping methods used in the workshops included a customer journey walkthrough with audio-visual simulation, enacting, physical props, and idea mock-ups. Technological devices and applications were used in an innovative and creative way to achieve quick high-fidelity demonstrations of ideas and supplement drama and to help participants engage and empathize with various tasks, goals, and situational determinants. (Rontti et al, 2012.)

When analyzing the research data, the benefits, roles, and premises of prototyping sessions in co-creating emotional value were outlined through the place and time, facilitation, and the involvement of stakeholders.

### *Place and time for development*

According to our research data, companies see prototyping workshops as a place, time, and a 'warrant' for development and co-creation. An interesting point of reference for this finding is the Japanese concept of 'Ba,' which is a word meaning 'a shared space and time opportune for the development of knowledge in the organization' (Nonaka & Konno, 1998). Similarly, in the Japanese Lean Management Philosophy the term 'gemba' denotes the 'place of action' or 'the real place'. 'Gemba walks', in turn, refers to the action of going to see the actual process, understanding the work, asking questions and learning instead of simply forming theories (Womack, 2011). Prototyping and simulation labs dedicated to experiential and creative working - or even a corresponding space arranged temporarily with relevant equipment - are important practical premises for co-creation sessions. Smart use of configurable space can also foster creative serendipity producing unexpected innovations (Kelley 2001, p. 122-129). The agile use of technological devices and digital content enrich the possibilities to modify the space and add to the dimension of virtual reality.

Each case company was able to figure out the potential role and location for a service prototyping environment through the conducted service design cases. The three SMEs preferred the use of prototyping and the simulation environment to be an outsourced service not only due to the investment costs but also because they valued the opportunity to physically leave company and concentrate on creative thinking. In these companies with no dedicated in-house service development department, the adoption of service design thinking and the participation in the sessions was the responsibility of active entrepreneurs or a person responsible for services marketing and sales. In the two larger global companies with in-house R&D departments, at least two functions were identified for the service prototyping environment: at the headquarters for service offering development and at national branch offices for localization and service staff training.

### *Facilitation – the designer's new responsibilities*

Facilitation is a crucial activity in prototyping and in co-creation workshops. In the sessions using simulations, the facilitator's role is divided into three parts: 1) directing the participation and the script of the physical experience of the customer journey, 2) a rapid building of mock-ups 'on the fly' (both tangible and digital ones), and 3) documenting the findings and results. One good practice is to have two facilitators with designated roles. Good preparation is emphasized for the workshops using technology.

Engaging the participants and creating a relaxed and secure atmosphere are vital actions of the facilitator (Sibbet, 2005, p. 164). In addition to the facilitator’s personality and various collaborative warm-up techniques, prototyping methods and audio-visual simulation devices offer great tools for a warm-up (e.g., enacting an off-topic task in a relaxing place). An important finding in supporting the eliciting of emotional value is personalizing prototypes for the attendees (see Table 1.). The facilitator must be observant and continuously visualizing, concretizing, or co-building the participants’ ideas (Sibbet, 2005). In ensuring productive outcomes, the structure and rhythm of the workshop is important. The research on the meaning of pauses between prototyping sequences conducted by Blomkvist and Arvola (2014) shows that a walkthrough with pauses provided both more comments and more detailed feedback. Moreover, inviting the participants to summarize the workshop findings both individually and collaboratively enhances the externalization of the participants’ tacit knowledge, which has already been stimulated through prototyping.

Table 1 presents the features of prototyping and simulation that can help in understanding the emotional value in different phases of the service design process in more detail (Blomkvist, 2014; Buchenau & Suri, 2000; Kronqvist et al., 2013; Sibbet, 2005).

*Table 1. Features of prototyping and facilitation that support emotional engagement*

Activity in the service design process	Specific features in prototyping for emotional engagement	Examples of the methods
1. Gathering customer experience data	Emphatic methods, testing the service with as authentic need and goal as possible	mystery shopping, service safari, photographing customer views as a sequence of the service journey
2. Studying customer insight findings	Enacting, Analogous role play, exaggerating	Servicescape simulation (images and sounds) e.g., for a Finn team to understand a foreign travellers feeling of contrast and exoticism when coming to Lapland, the team goes through a simulation of travelling from Finland to Africa.
	Pausing for documentation	
3. Teaching /	Experiencing a service	Servicescape simulation



		<i>Co-Prototyping Emotional Value</i>
learning customer insight	journey with personal configuration	using images from the actual surroundings of the service place or otherwise similar to which the stakeholder can identify him/herself with. 'Matti recommends' rather than 'imagine your friend is recommending.' (Matti being the friends name)
	Personalized information in prototypes	
4. Generating and testing ideas	Switching roles	e.g., a ticking-timer mobile app running given to a participant in order get the 'in a hurry' feeling, virtual baby or dog with sound, simulate blindness with eye-patches, etc.
	Concretizing situational restrictions and exceptions as a personalized setting	'Quick and dirty' mock-ups and props, inserting ideas live as overlay images or sounds on simulation,
	Concretizing 'what ifs' quickly, iteratively, and often Offering a personal trial for each participant	e.g., remote paper prototyping with mobile devices
	Decreasing intervention while running	Using corresponding or analogous existing applications, combining multiple applications and devices or using them in a 'wrong' way to concretize idea functionally
5. Communicating finished concepts	Using high-fidelity emotional samples especially for ideas utilizing new technology or functional principles	Co-building potential solutions
	Involving participants with converging ideas as results	Summarizing results both individually and together
5. Communicating finished concepts	Orientation to the desired mood	Storytelling, music, video
	Involving the audience by assigning roles	Servicescape simulation
	Giving personalized tasks and goals	

### *Value through involvement*

In the case projects of the Finnish companies, a variety of selected stakeholders were present at the prototyping workshops. According to the executives, the ideal line-up of co-creation sessions would consist of the following stakeholders:

- 1) Business development manager(s) with a decision making mandate in the development case
- 2) Sales and marketing representative
- 3) Real customers (in b2b cases this may consist of a decision maker, a purchase representative, a substance specialist, and an end-user)
- 4) Service staff member(s) who daily interact with customers
- 5) Stakeholder in charge of the development of the technical system and/or internal processes for the development case
- 6) Service designer(s) as facilitator(s) of the sessions

These roles were present in some way in all of the case projects but especially in the SMEs in which a participant from a company may occupy multiple roles; however, challenges arose in having all of the stakeholders attend the sessions. In addition to this practical scheduling issue of a relatively short and effective project, this may be related to the size of the organization and its hierarchies as well as to the unestablished strategic commitment to use service design and co-creation as a tool. The case projects also show that if higher management has an understanding and commitment to service design thinking, then the practical arrangements will be arranged more easily.

Different stakeholders suggested several benefits of co-creation sessions in the interviews and group discussions. One of the more valuable benefits appeared to be the 'emotional wake-up', which occurred several times not only for managers who are possibly more distant from the everyday customer interactions but also for the service staff. Through the personal experience of their everyday surroundings through the eyes of a customer, they were able to understand what customer-centred innovation strategy means in practice. The 'wake-up' happened often despite the possible prior explicit awareness of the issues. For instance, a customer servant of a tourism company explained the effects of servicescape simulation with a detailed example:

*Road signs were askew and even though you bypass it yourself like hundred times a year, you don't notice the post like it's askew. (--)  
And if you read it on paper (refers to mystery shopping reports), you*

*still don't get it that it's askew (laughs). But when you see the image (the 1:1 photos used as simulation backgrounds), then you understand, damn it is askew!*

Chaw (2007) also suggests a similar experiential learning approach for capturing emotional insight: bringing decision makers on 'safaris' at actual service situations enables them to 'get it' – to personally feel the experience and the subsequent emotions in order to understand 'the DNA of the customer experience' (Chaw 2007, p. 139).

In large companies, prototyping sessions bridge functional silos by bringing together representatives from different departments. The internal collaboration through experiential methods enable the appearing of the personnel's tacit knowledge about both the company's internal service delivery processes and important experiences with customer interactions (Konttinen et al., 2011, p. 67-68). Prototyping and simulation serve as a rich knowledge transfer mechanism between the service design team, the company management, and the service staff. The explicit customer insight findings brought forward by the design team together with the concretizing of the issues through prototyping triggered the externalization of the participants' tacit knowledge (Konttinen et al., 2011).

Prototyping sessions also helped in making the company's internal processes transparent. Ideally, the sessions helped the development management realize what is actually happening in the company regardless of formal guidelines or service manuals. On the other hand, the participants were able to identify and suggest good practices and successes worth spreading across the entire company. This was not limited to increasing customer satisfaction but also includes potentially increasing job satisfaction and helping employees achieve personal sales goals. Prototyping sessions also serve as an internal benchmarking and platform for analyzing and developing the customer experience of different existing business sites of the company (e.g., travel destinations). Using prototyping methods was also identified as a new education tool for training service staff's actions during interactions with customers. This is important because the mood of the customer servant impacts the customer's emotional experience.

## **Assessing the value of emotional experimentation**

Prototyping and simulation provide value to businesses through the information and insight revealed and communicated to different

stakeholders. According to Hubbard (2007, p. 99) there are three reasons that information is valuable to businesses. First, it can reduce the uncertainty about decisions that have economic consequences. Second, information may affect the behaviour of stakeholders, which has economic consequences. Third, the information may have its own market value (ibid.). The breakdown of the value of information leads to the question: to what extent can emotions and feelings be considered to be reliable information? The question was also asked by one of the development managers from a large case corporation, which according to the manager, attaches great importance to academic and theoretical recommendations as development triggers and decision making arguments. According to psycho-sociologist Schwarz (2012), people refer to their feelings as a source of information, and feelings also provide information that can serve as a basis of judgment and influence how people process information. In his Feelings-as-information Theory, Schwarz (ibid) further distinguishes emotions (e.g., being angry *about* something) from moods (e.g., being *in* a bad mood), cognitive feelings (e.g., surprise or boredom), and metacognitive experiences (e.g., feeling something is easy or hard). According to him, people use feelings as a source of information until it is attributed to an incidental source when it loses its informational value. He also proposes that changes in feelings are more informative than stable emotions.(ibid)

Another conclusion that the interdisciplinary theoretical examination of the research results lead to is the connection between emotions and learning. Moon (2004, p. 53) defines emotional insight as a 'common activity that becomes evident when we acknowledge and label it as relatively distinct'. According to Moon (ibid., p. 54), emotions influence the structure of knowledge and the process of learning. Emotions may arise in the process of learning and may also facilitate or block learning. Emotional insight occurs when the emotional orientation of the person changes. Blomqvist (2014) studies service prototyping using the theoretical framework of situated cognition that also connects with learning. He identifies the reasons for using an external representation in service design as articulation, learning, communication, collaboration, and maintaining empathy (Blomqvist 2014, p. 73). As a future research topic, he also suggests studying the kinds of learning that occur during prototyping (Blomqvist, 2014, p. 81).

Prototyping and simulation methods are experiential learning and teaching tools that enable the emotional engagement of participants (Kuure & Miettinen, 2013). Physical prototypes and co-building can support stakeholders' ability for expressing personal experiences (Kronqvist et al.,

2013). Service design creates new art-based practices to express meanings. Computer-aided methods can enrich the ways in which art conveys meanings, and simulation becomes a language and a platform for communication (Kronqvist et al., 2013). Audio-visual simulation helps engage a participant's schema in service contexts and understand new ideas better through assimilating them in the existing contexts of a participant's experience (Blomkvist, 2014, p. 58). Service prototypes enable constructing both conscious and subconscious elements to be experienced.

## **Conclusion**

Value co-creation models have changed. New models place the customers' needs in the focal point of the development process. There is more pressure to engage and involve the customer in the innovation process. This places the designer in a more central and strategic position in the company. This has also changed the role of the designer and added new skills and competencies to her or his professional portfolio.

Prototyping serves as a platform for co-creation, and it helps to convey the emotional components of service value. Prototyping and simulation methods are experiential learning and teaching tools that enable the emotional engagement of participants. Prototyping can provide emotional value to businesses through the conscious and subconscious information it can reveal and communicate to different stakeholders. A dedicated place and time for prototyping, a skilled facilitator, and the active participation of stakeholders are the practical premises for co-creation sessions. Personal experimentation and collaboration is emphasized in eliciting emotional insight in co-creation. Prototyping sessions can support decision making, help in bridge functional silos in big companies, and help in using tacit knowledge as a resource in these mutual learning sessions.

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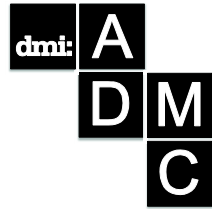
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# Impact of Team Communication on Co-design Teamwork in Distributed Intercultural Teams

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*As the development of global industry and economy, design management is making disruptive changes according to mass customization and globalization. As the tendency of disruption and innovation, design management and strategy transformed for the creation of value and meaning.*

*This paper is designed to investigate the impact of team communication in distributed intercultural design teams and explore the communication issues and design challenges for distributed intercultural design teamwork. Three different design teamwork modes are introduced to investigate the impact of team communication and improve the process and result of design teamwork.*

*This research conducts a distributed intercultural design course and related co-creation workshop with design students from China and the Netherlands as a case study, working in different design teamwork modes and interacting with different communication tools during the design teamwork.*

*In the distributed intercultural design teams, team communication is important but difficult for design teamwork, and team composition with cultural difference also has impact on distributed intercultural design teamwork. In order to improve distributed intercultural design teamwork, it is necessary for designers to be aware of cultural difference and make use of communication tools for all the design teamwork modes.*

**Keywords:** *team communication; design teamwork; distributed intercultural teams*

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## Introduction

In the recent decades, as the development of global industry and economy, design management is making disruptive changes according to mass customization and globalization, in line with the change of business model and consumer behavior. The demands from consumers and the supplies of production are increasingly global distributed, thus leading to the experience of intercultural impact on both consumers and designers. It is transformed accordingly not only the way of product and service design but also the role of designers. As the tendency of disruption and innovation, design management and strategy transformed for the creation of value and meaning. On one side, the innovation of communication technologies makes it possible for distributed intercultural product creation and development, on the other side, the effectiveness and efficiency of team communication for information has impact on distributed intercultural design teamwork.

### *Research Objective*

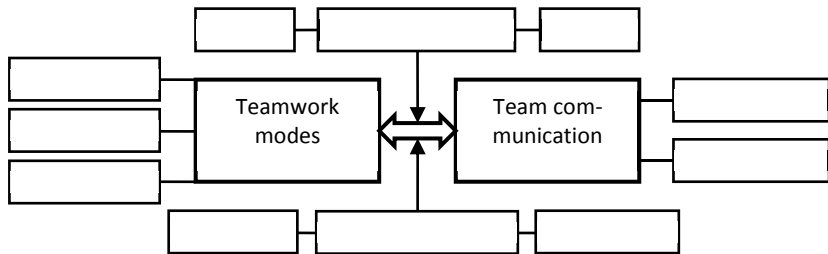
This paper is designed to investigate the impact of team communication in distributed intercultural design teams and explore the communication issues and design challenges for distributed intercultural design teamwork. Three different design teamwork modes (cooperation, collaboration, competition) are introduced to investigate the impact of team communication and improve the process and result of design teamwork. To achieve the research objective, the research questions are: how different design teamwork modes affect team communication in distributed intercultural design teams? What are communication issues and design challenges for distributed intercultural design teamwork?

### *Research Model*

In the recent trend of globalization, the business process of product development has become more complicated with diversity in many perspectives. In the context of international teamwork, team communication in distributed intercultural teams has to be taken into account to facilitate design teamwork worldwide. The paper is designed to investigate the impact of team communication over distance and cross culture in distributed intercultural teams. To achieve the research objective, the research question is how different design teamwork modes affect team communication in distributed intercultural design teams?

As the research model shown in figure 1, this research is designed to study the effect of three different design teamwork modes on team

communication and the impact of team communication on co-design teamwork, with cultural difference of Dutch and Chinese, in the context of distributed intercultural team composition, in order to find implicit factors and explicit factors of communication issues and design challenges, and their influence on design teamwork.



*Figure 1 Research model (effect of teamwork modes on team communication in distributed intercultural design teams).*

### **Team Communication**

Team communication has impact on design teamwork in distributed intercultural teams. Designers are required to share information and also communicate with each other (Kvan, 2000). Distant communication between designers supports distributed design teamwork. Communication tools facilitate designers to collaborate more conveniently and make it possible for designers to benefit from sharing information and working together (Cheng and Kvan, 2000). Considering the communication for design teamwork, the most important issue is interaction, both interaction with the communication tools and interaction between designers. In the international team, people from different countries with diverse cultural backgrounds have different meanings of the same word in communication. For example: an answer "yes" to a question can mean: I hear you, I understand you, I see your point, I agree with you.

### **Cultural Difference**

Cultural differences affect the design teamwork in international teams. It is found that cultural differences have influence on design process (Razzaghi et al., 2009). Some researchers have explored cultural differences for teamwork (Hofstede et al., 1990; Smith & Malina, 1999). Distributed design teamwork in different cultures requires an understanding of cultural context in communication. Communicating with people in different cultures also requires an understanding of the cultural context. Thus, it is important for

designers to draw attention to teamwork and understand the cultural differences, which requires designers to learn not only design skills and also intercultural communication for design teamwork. Unfortunately, cultural differences act as barrier to improve design teamwork and limited research has been found to solve design teamwork problems in the context of cultural differences. There exist problems of teamwork with people from different culture. Design teamwork has to confront the cultural differences, which hinders distributed communication (Ostwald, 1995).

### **Team Composition**

Together with cultural difference, team composition is an important and crucial factor of design teamwork. It is found that team composition is crucial to design process and teamwork (Miranda et al., 2007). The research about team composition also can be found in the field of teamwork (Cross et al., 1995). In addition, personal character is also related to team composition. To set up an appropriate design environment, design teams analyse team composition and allocation for design management (Girard and Robin, 2006). In this research, two cultural measurements were used for team composition. Value survey module was used to measure designers personal cultural character. Team role questionnaire was used to identify their suitable team position. With the two cultural measurements, very different Dutch and Chinese were teamed up over distance. As the participants of the case study, design students worked together in distributed teams, consisting of industrial design students from Eindhoven University of Technology in the Netherlands and Zhejiang University in China.

## **Methodology**

This research conducts a distributed intercultural design course and related co-creation workshop with design students from China and the Netherlands as a case study, working in different design teamwork modes and interacting with different communication tools during the design teamwork. In the case study, design teams take on the design case of design for health and make use of different ways of communication for different design teamwork modes. In the context of cultural and geographical difference, interview observation and diary reflection are used for research data collection and related analysis. This study analyzes the strength and weakness of different communication tools in distributed intercultural

design teams, so as to interpret the advantage and disadvantage of different design teamwork modes for distributed intercultural design teamwork.

### *Approach*

In this research, qualitative research methods were used to study design teamwork from various aspects. In the case study, diary reflection was used to record the team process and design result. Meanwhile, interview observation was also used to investigate design maintenance and achievement.

In this research, different communication tools are used for different teamwork modes in design teamwork. Three different design teamwork modes are used to investigate the impact of team communication and facilitate teamwork effectiveness and efficiency. For the contact in distributed intercultural design teams, video conference is used for the formal sessions, while Skype is used as the team communication media and Email is used as well for team communication.

### **Design Teamwork Modes**

In this research, three different teamwork modes are investigated, which are cooperation mode, collaboration mode and competition mode. Design teamwork modes are used to support designers to construct an understanding of design problems and potential solutions (Ostwald, 1995). According to the definition of collaborate, collaboration means work together on common tasks to solve joint problems and find solutions. As to the definition of cooperate, cooperation means work along with others on division of tasks to get mutual benefit. From the definition of compete, competition means work separately on same tasks to compare with each other (Hutter et al., 2011).

As shown in table 1 (Mattessich and Monsey, 1992), cooperation is characterized by informal relationships that exist without a commonly defined mission, structure or effort. That means cooperation requires a flexible attitude. Communication could be asynchronous and information is shared limited. Competition is characterized by more formal relationships and understanding of compatible missions. It requires project plan and division of role is considered. Communication should be synchronous and information is shared partly. Collaboration is characterized by more durable and pervasive relationship and being a full commitment to a common mission. It also requires project plan and division of work is considered. Communication should be more frequent and information is shared further.

Table 1 Comparison of teamwork modes.

Attribute	Design teamwork modes		
	cooperation	competition	collaboration
Relationship	informal	formal	durable & pervasive
Mission	without mission	compatible mission	common mission
Requirement	flexible attitude	project plan & role division	project plan & work division
Communication	asynchronous	synchronous	frequent
Information	shared limited	shared partly	shared further

### Teamwork Modes in Case Study

In the international design teams, a joint design course is taken as case study. With the cooperation design mode, one sub-team collects information from target market and another sub-team dominates the design ideation. Afterwards, the first sub-team gives feedback and suggestion to these preliminary design ideas. Finally, the second sub-team makes improvement and final decision and the first sub-team works out the prototype. With the collaboration design mode, both sub-teams collect data in a collaborative way, and then make a collaborative ideation for target market. After discussion, the design solution is improved and the final case will be chosen. With the competition design mode, both sub-teams collect data separately. Then, designers from each sub-team make an idea generation independently. Next, they present and discuss to choose the better idea or to mix them into a final design idea, and improve it together as the final solution.

## Analysis

### *Communication Tools*

Design teamwork is an important tendency for both education and industry that distant communication has been researched to support it. Many designers undertake teamwork projects in distance. The existing communication tools, such as email, telephone, short message, instant message, videoconference, whiteboards, etc., are plentiful and increasing. Considering the existing design communication methods, there are five common used communication tools, which are telephone, voicemail, short messaging service (SMS), email and instant messaging (e.g. Skype). They are

used for different purposes and circumstances in design teamwork. This study analyzes common used communication tools with different purposes and circumstances, so as to reveal the strength and weakness of them.

### **Telephone**

As a commonly used communication tool, telephone plays an important role in communication. It is most frequently used by designers, and requires less effort and time before calling. But the receiver has to answer and it may disturb him/her. It is feasible to improve the product with less intrusive calling and make the receiver more convenient to choose whether to answer or not.

### **Voicemail**

As the attachment of telephone for assistant purposes, voicemail is a good tool for asynchronous communication. That is because the other can listen to and reply the message at convenience. Sometimes the message will be lost for systematic reason. Therefore it is possible to set up a feedback system to strengthen the effectiveness and interaction after leaving a message.

### **SMS Message**

SMS message is sent at any time and at any place. It can be read and replied at the convenience of the receiver and does not disturb the receiver too much. However, the short message is used with low efficiency and time consuming, and cannot contain too much information. It will be better if it is integrated with other communicate methods for more information and interaction.

### **Email**

Email is the popular communication method online, because it can be saved and read later, not only for messages, but also for pictures and videos. Designers don't know when others read without synchronous interaction. Email has the high capability to expand function with Internet and also to combine with other physical communication terminals.

### **Instant Message**

As another popular communication tool online, instant message is a multimedia via internet, so designers feel free to talk with each other without any time pressure, but it cannot be used without Internet. It can

make a video conversation, although it requires complicate preparation before calling. Thus, it will be better if the preparation steps become simpler.

### *Contacts Classification*

After the analysis of existing design communication methods, it is found that the existing communication tools used for design teamwork have their different strength and weakness. In order to support designers to improve design teamwork in international design teams, the contacts of team communication are classified within designers according to the existing design communication tools. This study classifies the contacts into groups according to different conditions in terms of the variety of communication (see table 2).

Table 2 *Contacts classification.*

Classification	Contacts of team communication	
Purpose	functional	affective
Duration	long	short
Initiative	active	passive

### **Functional and Affective**

Based on the purpose of communication, the contacts are classified into two groups: functional and affective. Some contacts are functional for practical purpose. This type of contacts is usually with a short duration to convey the necessary information. Therefore, SMS or email is used for practical purpose instead of telephone. Male designers are shown to communicate mostly for this type, while female designers focus on communication mostly for the other type. The other contacts are affective for unpractical purpose, including social matters or emotional communication. Telephone is mostly used for this type, and often results in long time. The topic of these contacts almost contains everything, e.g. past activities/experiences, work, life, and even other people. Email is also used for this type if the other is busy or unavailable.

### **Long and Short**

According to the duration of communication, the contacts are classified into another two groups: long and short. The quantity and frequency of communication highly depend on their attitude. Some positive designers communicate very frequently and tell each other everything about anything



happened the other days. Initiative comes from both sides, and they prefer the proper communication tools for different circumstance, e.g. telephone for urgent or social matters with interaction, SMS for practical matters with less interaction, and email for busy or unavailable time. Other negative designers value their independence, so they contact to each other occasionally and only communicate for practical matters, such as convey a message. Initiative usually comes from the side that has the matter, and it takes short time for high efficiency.

### **Active and Passive**

In terms of initiative of communication, the contacts are classified into another two groups: active and passive. Most of designers are active to contact with each other. If one side is active to communicate with initiative, the other side usually waits for their calling. On the contrary, if one side is passive to contact, the other side will take the initiative, calling or sending short message to them.

## **Discussion**

### *Communication Experience Process*

Communication experience process is introduced to compare the communication tools during the different phases of communication process. The communication experience process comprises four phases: purpose, initiative, duration communication and consequence (after communication). In this case study, researchers focus on the first three phases. In the context of communication, researchers put the common communication device into communication experience process form for comparison (see table 3).

*Table 3 Comparison of common communication device.*

Device	Experience process			Benefit & Cost	
	purpose	initiative	duration	benefit	cost
SMS	functional	passive	short	low	low
Telephone	affective	active	long	high	high
Email	functional	passive	short	high	high
Skype	affective	active	long	high	high
Voicemail	functional	passive	short	low	low

From the form above, SMS, Email and voicemail are more functional in purpose, while instant message like Skype is more affective. Telephone, as

the most common communication, has both functional and affective purpose. As to the initiative, researchers divide five common communication devices into two groups: active and passive. Telephone and Skype are more active than other three communication device. People can reply immediately via telephone or Skype that means active interaction. On the other hand, telephone and Skype also have long duration, although sometime telephone can be short only for functional purpose. SMS, email and voicemail usually do not have response synchronously. As the same time, researchers also consider the benefit and cost of communication. In the context of benefit and cost of communication device, researchers find telephone, email and Skype have both high benefit and cost, while SMS and voicemail are on the opposite.

### *Communication Interaction Process*

Communication interaction process is also identified to generalize the communication process. The different phases of communication interaction process are identified, from the initial motivation to final communication. The framework of communication can generalize the interaction process to improve the communicator design for ambient assisted living. With these interactions process can also provide the support for the design process to explore the feasible solutions in the interaction context.

The general framework is based on the current communicator and consists of four interaction phases:

- (1) motivation: elicit the communication,
- (2) preparation: prepare the communication,
- (3) action: facilitate the communication,
- (4) reception: keep the communication.

In the first phase, people generate the initial motivation without actual interaction with communicator. Although there is no actual action of communication, they elicit the communication initiatively. They think about whom they intend to contact and how to contact. In the second phase, people make some preparing according to their motivation. They choose the different communication media in order to actualize the communication. The purpose in this phase should trigger the interest and makes the aware of the communication media. In the third phase, the sender facilitates the interaction with communicator. They use various function and also explore the various possibilities. The main goal of this phase is to make the communicator easy and playful to use. In the last phase, receiver gets the

communication from sender and reply to them, which is to keep the communication. This phase makes a bridge between interaction with communicator and communication in reality. After the interaction process, people get the social cohesion and meet the needs of communication in both sides. For the design of the communicator, it should focus on the first two phases to elicit people to use the communicator more convenient and accessible. That is also the purpose to meet the emotional needs for people in the modern society.

## **Results**

In order to improve intercultural design teamwork, it is necessary to be aware of cultural difference and make use of different teamwork modes. For all the design teamwork modes, it is important to use communication tools for interaction in design process. The existing communication tools can be used for different purposes and circumstances in design teamwork. However they do not take cultural difference into account and cannot manage it. Thus, the existing communication tools are not enough to support designers to improve design teamwork in international design teams, especially in the context of cultural difference. The analysis of communication process interprets the different phases in communication to support designers to improve the effectiveness and efficiency of team communication during design process.

### *Communication Design*

In the current research, the most important aspects of communication for improving the quality of life is presented, which is mainly targeted in improving the ways of providing intelligent products or services for ambient assisted living. The communicator designed for people should be easy to use and playful, which can trigger them to use. They should be not only in function, and also in emotion. Most of people are ready to accept new forms of communication. Therefore, people are willing to do what they want, if the communicator can help them to achieve their purpose. One important thing is the positive opinions about additional value of communication, which can be used in communication product development.

As to the culture in communication for people, designers have to consider the habits and customs of people. People are often afraid of changes and rarely accept structural alteration works. They are used to the

traditional communicator in their daily life. Although the current communicator cannot meet the variety of needs, people don't want to access the new communication technology positively. However, the overall willingness to use new technical devices among people is higher than often expected. On the other hand, there are still some challenges to face. Most urgent needs and wants of people often concern personal contact. The financial restrictions of people also have to be taken into account.

Ease of use and actual need of the communication are important criteria. Designers should focus on the interaction between people and communicator with good usability. To design communicator for people, designers consider the design approach for them. There are two directions: one is to redesign the current communicator to make them fit for people, another is to design the new way of communication for people. As to the users, designers should make the survey with target group to find the requirement. Designers also should to explore the current communicator to find the disadvantages and improve them to fit for people. By bringing in the user perspective, potential improvements can be pointed out. If these challenges are successfully taken, a communication solution might find broad acceptance by the target group and become a realistic alternative to the solutions available. To reach this acceptance it will be necessary to continue developing technology and accompanying service packages in close contact with the target group.

### *Communication Issues and Design Challenges*

During the team communication in international design teams, ten relevant factors are indicated to investigate their influence on design teamwork (see table 4). These factors are generated by designers in distributed intercultural teams, and they have explained the details of each aspect. The factors include interaction, interpretation, relationship, atmosphere, tools, information, language, design process, culture and distance. They are divided into two groups, implicit and explicit. Based on the discussion about team communication in the design workshop, interaction, interpretation, relationship, atmosphere, culture are considered as implicit factors, and tools, information, language, design process, distance are considered as explicit factors, among others, culture and distance are as given factors. More specifically for each factor, designers have discussed the specific aspects of each factor for the influence of team communication on design teamwork. These ten factors are not only communication issues in distributed intercultural design teams, but also design challenges for

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distributed intercultural design teamwork. With the implicit factors and explicit factors of communication issues and design challenges, designers can facilitate team communication and improve design teamwork in distributed intercultural teams.

*Table 4 Communication issues and design challenges.*

Implicit factors	
interaction	time and frequency, synchronous / asynchronous, action and reaction, proactive and reflective, offline and online, discussion and presentation
interpretation	content convey, agreement / disagreement, different meanings, explain and understand, templates
relationship	team roles, expertise and skill, strength and weakness, common grounds, introduction / profile, friendship, education and background, interest and hobby
atmosphere	context / environment, group tension, inside and outside
culture	difference and similarity, cultural context and background, culture insight, personal character
Explicit factors	
tool	social media, technology: technical equipments, written and visual, internet connection, video and audio, sound quality
information	project info, personal info, meta info, distribute and share, update, missing, back-up
language	language difference, language barrier, translation, decent English, body language
design process	process oriented, unaware of progress, different processes
distance	physical contact, distant communication, time difference, modalities and senses

## Conclusions

In the distributed intercultural design teams, team communication is important but difficulty for design teamwork, and team composition with cultural difference also has impact on distributed intercultural design teamwork. In order to improve distributed intercultural design teamwork, it is necessary for designers to be aware of cultural difference and make use of communication tools for all the design teamwork modes. As a result, different aspects of communication issues in distributed intercultural design teams are stated and discussed as design challenges for distributed

intercultural design teamwork. Based on the discussion and related results of the case study, this research shows the importance and relative difficulty of distributed team communication and intercultural teamwork, in order to help designers facilitate team communication and improve design teamwork in distributed intercultural teams.

In conclusion, this research has investigated the team communication in distributed intercultural binational teams, and made use of communication tools in different ways for distributed intercultural teamwork. In the context of international teamwork, team communication in distributed intercultural teams has to be taken into account to facilitate design teamwork worldwide. The research is designed to investigate the impact of team communication over distance and cross culture in distributed intercultural teams. Different communication tools are used to investigate the impact of team communication and facilitate teamwork effectiveness and efficiency.

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## The Image Co-creation: Store image consistency in creative stores

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*Nowadays, an increasing number of enterprises and organisations are treating value co-creation as a key source of competitive advantage. Furthermore, past studies have advocated that the store image consistency between customer perceptions and store position plays a vital role in satisfying customer preferences. Therefore, in order to enhance store image consistency, this study aims to explore the approaches and stakeholder engagement of value co-creation of creative stores. After investigating 300 customers with constructed questionnaires, doing a survey of 9 recommended creative stores' managers and 179 customers with an image interaction tool, and conducting the in-depth interviews with the 9 store managers, the findings of this study first reveal that the store image consistency is a major influence in the store's evaluation, but the highly recommended stores have different levels of store image consistency. Next, the stores build higher levels of store image consistency via not only tangible (product or servicescape) or intangible (music or customized core service) elements, but also by the image co-creation. In our case, the image co-creation approaches of recommended creative stores centralized in both of the development phase and the full launch phase of the NSDP. Especially, the more types of actors that engage in image co-creation, the higher level of store image consistency will be created.*

**Keywords:** co-creation, store image, new service development, stakeholder, creative industry.

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## **Introduction**

Hopkins & Alford (2001) stated that the importance of store image has been widely supported. The store image has a critical impact on the customers' store evaluation (Palupski & Bohmann, 1996). It also has an effect on the choice (Lewis & Hawksley, 1990), shopping intentions (Agarwal & Teas, 2001; Bell, 1999), and loyalty (Osman, 1993). Store image could be regarded as a series of brand connections in strategy, commerce, and society (Juan Beristain & Zorrilla, 2011). When the customer recognizes the same store image as expected, the customer would commend the value of service (O'Cass & Grace, 2008). Briefly, the store image mapping that the customer recognized and the store image expected can be defined as an image consistency, and it plays the key role in satisfying the customer's store preference (Kleijnen, De Ruyter, & Andreassen, 2005). Many studies (Darden & Babin, 1994; Lin, 2004; Ryu, Lee, & Kim, 2012) have conceived how to build a fine store image that is mostly generated from the products, price, service providers and environment. However, how could the store image be clearly delivered to the customer, be identified by them, and create a high level of store image consistency.

Several studies (Pralhad & Ramaswamy 2004; Ramaswamy & Gouillart, 2010) have noted that value co-creation can integrate the organisation, individual, and group, and make a solution together by creating value as well as bringing transitions among the society, culture, economic and technology. Thus, value co-creation has been recognized as one of the critical competence superiorities among companies (Cao & Zhang, 2010). It is easier to deliver value if the stakeholders engage in the value co-creation processes; if the store image is a part of value position, does the storeowner manage the value co-creation to enhance the store image consistency? In other words, compared to traditional unilateral service providing processes, if customers and stakeholders engage in value co-creation, does the provider's position easily deliver to customers? In fact, there are some challenges in practical situations; for instance, it is harder to realize the stakeholders' perspective on creativity in service network, to find a strategic scheme for uncertain requirements of stakeholders, and to overcome the fear of disclosing the stakeholders' service (Dabholkar, Bobbitt, & Lee, 2003). Hence, this study is aimed at realizing the practical condition in the stakeholders' value co-creation.

Recently, the creative industry had been gaining popularity; many creative stores with unique store images have been established. Regardless of providing a product or service, Caves (2000) claimed that the creative

stores needed to invest into many skills to create an association with originality and make it successful. Thus, creative stores often manipulate value co-creation to provide customers with a product or service. However, the creative industry had features of the high complex network interaction relationship and the non-linear development path (Caves, 2003). The frequency of image fluctuation increased, and as a result, there was also increase in the risks of the company's sustainable management. (Levickaite, 2011). Therefore, one of the purposes is to find how to co-create a fine store image. This study will use the recommended creative stores in the Taipei creative district as research cases. The main objectives of this study are 1) to compare the store image consistency between 'customer cognition' and 'provider's position', and explore the reasons; 2) to investigate the approaches and stakeholders of store image co-creation; and 3) to discover how to build a high level of store image consistency.

## Theoretical Underpinning

To realize how the creative stores' owners co-create with the stakeholders, and how to build a specialized store image, the purpose of this chapter is twofold. Firstly, this study explores the components and elements of store image. Secondly, this study investigates the possible approaches and actors of image co-creation.

### *Store Image Consistency*

Houston and Nevin (1981) defined store image as the complex consumer's perceptions of a store on different (salient) attributes. In fact, Thompson and Chen (1998) indicated that the store image represented more than just the important psychological and social value. In general, store image can be divided into two components; one is the store character (Bloemer & Ruyter, 1998) which is the image the store provides, while the other component is the image perceived by customers' viewpoint pertaining to the revenue and the attitude of the store (Keller, 1993; Thompson & Chen, 1998) is the customers' perceived image. Thus, this study will be viewed from the perspectives of 'customer cognition' and the 'provider's position', to realize if the store can provide a consistent store image. By utilizing image survey, this study can determine what the high level of store image consistency is.

### *Image Co-creation*

Today, value and value co-creation are regarded as the core of service (Vargo, Maglio, & Akaka, 2008). Binder, Brandt, and Gregory (2008) inferred that companies and organisations have placed more emphasis and attention on value co-creation. And, companies do not create value alone any more (Håkansson, & Snehota, 1989); on the contrary, they create value through multiple resources and co-create value with stakeholders (Prahalad & Ramaswamy 2004). Sander and Stappers (2008) delineated the value co-creation as a valuable activity completed by two or more stakeholders. Saarijärvi, Kannan, and Juusela (2013) highlighted three prerequisites of value co-creation: 1) what kind of value for whom (such as, the company or the customer), 2) by what kind of resources (such as, B2B, B2C, or C2B), and 3) through what kind of mechanism. This study will treat store image as one kind of value proposition and define image co-creation as value co-creation, then discuss image co-creation on actors and approaches in the following sections.

Johnson, Menor, Chase, and Roth (2000) proposed a new service development process (NSDP) which is divided into four phases: 1) the *design* phase – the company identifies the new service target' strategies and concepts, 2) the *analysis* phase – the company examines the business model, 3) the *development* phase – the company designs the new service, plans marketing strategies and tests the service, and 4) the *full launch* phase – the company implements the new service and makes adjustments to the service content. Considering strategy, design and marketing aspects, this study will adopt these four phases of the NSDP to explore the approaches to image co-creation. Based on the literature review, this study has identified 13 types of value co-creation approaches in the NSPD, as shown in Figure 1.

Firstly, at the *design* phase, there are two types of co-creation approaches: 1) co-conception of ideas: the company realizes the real needs of customers and invites the customers to co-create knowledge through approaches (Frow, Payne, & Storbacka, 2011; Medeiros & Neefham, 2008) and 2) co-meaning creation: the company obtains knowledge of the stakeholders to build new definition (Schouten & McAlexander, 1995).

Secondly, at the *analysis* phase, there are also two types of co-creation approaches: 1) co-evaluation of ideas: the company manipulates simple mechanisms to engage the stakeholders that are involved in service systems to evaluate the concept (Russo-Spena & Mele, 2012) and 2) co-outsourcing: the company shares their expertise and contracts out some activities (Spohrer & Maglio, 2008).

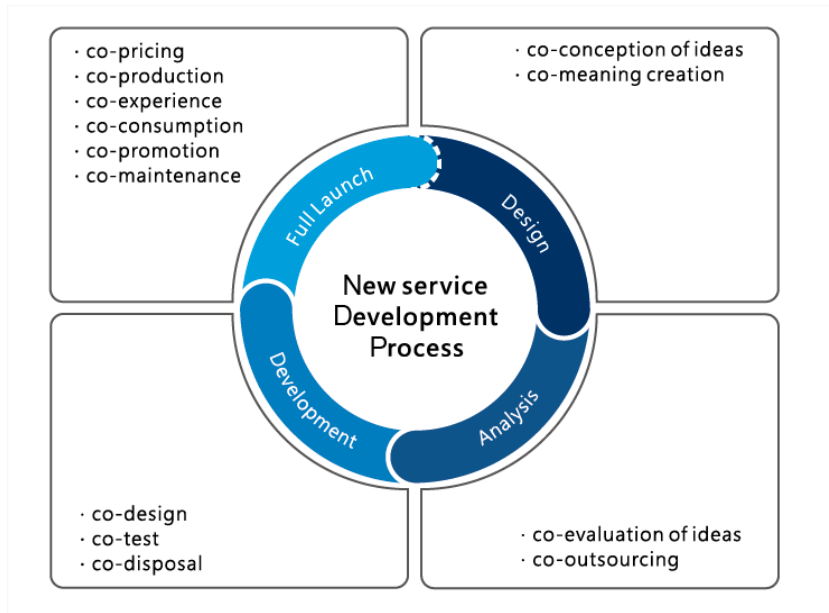


Figure 1 Co-creation approaches in the NSDP (revised from Johnson et al., 2000)

Thirdly, at the *development* phase, there are three types of co-creation approaches: 1) co-design: the company engages the stakeholders with different perspectives on how to co-design the new product or service (Blazevic & Lievens, 2008; Pini, 2009), 2) co-test: prior to market entry, the stakeholders will co-test the new product or service in order to improve the experience and sales volume (Russo-Spena & Mele, 2012) and 3) co-disposal: the stakeholders are responsible for assisting the company with waste disposal (Frow et al., 2011).

Finally, at the *full launch* phase, there are six types of co-creation approaches: 1) co-pricing: the company and stakeholders co-decide the price of the product or service (Mascarenhas, Kesavan, & Bernacchi, 2004), 2) co-production: the customers become the partners of a company, and they create service, product, and value together (Prahalad & Ramaswamy, 2004; Zeithaml, Bitner, & Gremler, 2006), 3) co-experience: the stakeholders share their resources and experiences (Prahalad & Ramaswamy, 2004), 4) co-consumption: when the stakeholders participate in certain services, different individuals will have the same experience. It is noteworthy that this service must simultaneously produce and consume (Edvardsson Enquist, &

Johnston, 2005), 5) co-promotion: the stakeholders co-promote a new service; meanwhile, customers can be regarded as the image co-creators (Frow et al., 2011; Pini, 2009), and 6) co-maintenance: the company and the stakeholders co-maintain the product or service (Frow et al., 2011). These possible roles of the stakeholders discussed above provide a feasible way to identify how the stakeholders engage in the co-creation of the store image.

### *Creative Stores*

Facing the global depression, many cities popularized the creative industry as an approach to economic recovery (Ponzini & Rossi, 2010). In East Asia, almost every government was devoted to developing creative industrial communities, like Shanghai (China), Puchon (Korea), and Taiwan (Yusuf & Nabeshima, 2005). To implement the policy of industrial aggregation, Taipei City Government developed many creative districts. By doing so, they wanted to attract more funds letting creation become an industry. In fact, the value of creative products originates from the creator and the customer based on their individual evaluation; if the creator doesn't realize the customer's need, the creator may run into a loss; meanwhile, until the customer visits and experiences the store, the customer cannot evaluate the value of the creative product (Caves, 2000). Therefore, if creative stores could integrate image co-creation with the NSDP, these new approaches might strengthen the provider's position and increase the store's valuation.

In conclusion, the creative industry is booming on a global scale, and many creative communities are located in the East Asia. The uncertainty of this industry may force store owners to manipulate the image co-creation to increase the value and enlarge the development. In addition, the store image is an essential standard of store evaluation that can be viewed from two perspectives, 'customer cognition' and 'provider's position', to realize if the store can provide a consistent store image. Furthermore, stores can manipulate co-creation to build a specific store image, while the image co-creation approach and stakeholders have yet to be studied. Thus, this study will use the recommended creative stores in Taipei creative district as research cases. As for the recommended creative stores, this study will interpret the components and elements of store image from two perspectives and explore the approaches and actors of store image co-creation later.

# Methodology

## Research Process

As stated earlier, this study has three purposes: to compare the store image consistency of ‘customer cognition’ and ‘provider’s position’, to explore the image co-creation approaches and actors in co-creation, and to discover how to build a high level of store image consistency. In doing so, a three-phase study was designed (Figure 2), that is to 1) select the recommended creative stores, 2) investigate the levels of store image consistency of these recommended creative stores, and 3) explore approaches and actors of store image co-creation.

Firstly, a purposive sampling approach was utilized. To select the recommended creative stores, our data consisted of structured questionnaires taken from 300 customers who have visited the creative districts. Secondly, this study did a survey of 9 managers of the recommended creative stores and 179 customers by using an image interaction tool. Finally, to realize the image co-creation approaches and actors in co-creation, this study further conducted in-depth interviews with the 9 store managers. The research purpose, participants, research tools, and analytical methods will be shown in the following sections.



Figure 2 Research process

### Step 1: Identify the recommended creative stores in the Taipei creative district

The first step is to identify the recommended creative stores. Considering the cultural features, industrial development, and customer volume, this study used the Taipei MRT (Mass Rapid Transit, Taipei Metro) stations at Zhongshan and Shuanglian as a research field. Both stations are

considered to be creative districts. This district is located along Zhongshan N. Rd., and the MRT Red Line lies in the centre of Taipei. Although this creative district is a mixed residential commercial area, the resident and storeowners rarely create a win-win situation in which vital functions are enhanced and business activities are prosperous. Thus, these situations attract the nearby department stores or other creative stores to gather and execute collaborative activities. First of all, this study discovered 39 creative stores in this creative district from a publication titled 'Walk to Find Taipei's Creation'. Finally, the top 9 recommended creative stores were selected via investigation with 300 customers. And the 9 store managers were willing to assist in this research. The recommended creative stores are (B), (C), (D), (E), (F), (G), (H), (I) and (J).

### *Step 2: Investigate the store image consistency level*

The second step is to investigate these creative stores' store image consistency level of 'customer cognition' and 'provider's position'. This study used a purposive sampling; the participants for this study were selected from the population of customers who just finished the consumption. This study did a survey of 20 customers per store and 179 customers with an image adjective tool (as shown in Figure 3). As for 179 customers, 67.0% were females; their ages distributed among 16-25 years old (72.1%) and 26-35 years old (17.9%); most of them were tourists (92.7%); most of them visited this district for dining (70.4%) and shopping (58.7%), and participating in art and cultural activities (35.3%). Besides, this study further interviewed one manager of each recommended creative store that is familiar with the store image and operation content.



Figure 3 An image adjective tool

These 9 managers are operators (D), store managers (B, C, E, I, & F), planning directors (H), planners (G), and public relation specialists (J).

During the in-depth interviews, this study asked customers to select the top 3 store images as the 'customer cognition', and to describe the reason for their selection. Meanwhile, the recommended creative stores' managers also selected the top 3 store images as the 'provider's position', and described how to create unique store images. To elaborate, this study adopted an image adjective tool (Yang, Wang, & Sung, 2013). This tool is comprised of 14 cards, and the image adjective is printed in both Mandarin and English on the top of each card as well as the image colour and the picture. The 14 main image adjectives are modern, elegant, romantic, dandy, chic, clear, pretty, casual, cool-casual, formal, gorgeous, classic, natural, and dynamic. Moreover, the image sub-adjective is also printed in both Mandarin and English on the back of each card. These functions can easily help the participants to select the store image.

Furthermore, this study made a statistical weight order to every single selected image adjective from the participants: the top one selected image adjective was given triple weight, the top two selected image adjectives was given double weight, and the top three selected image adjectives was given basic weight. Taking store H as an example: 12 customers selected 'natural' as the first image adjective, 5 customers selected 'natural' as the second image adjective, and 1 customer selected 'natural' as the third image adjective. That is to say, the statistical weight of 'natural' is  $12 \times 3 + 5 \times 2 + 1 \times 1 = 47$ . The data basis of customers (179) and the stores' managers (9) are distinct, so the volume showed significant differences. Finally, this study compared the top three 'store's position' images and 'customer cognition' images.

### *Step 3: Explore the approaches and actors of image co-creation*

The third step is to explore the approaches and actors of image co-creation, and this study conducted in-depth interviews with 9 recommended creative stores' managers. After typing the interview record, this study analysed the co-creation type by 13 co-creation approaches in the four phases of the NSDP (see Figure 1). Moreover, to analyse the actors (stakeholders) engaged in the co-creation approaches, this study divided the actors into several types. Actors related to the stores are: 1) storeowners, 2) employees, 3) investors, 4) business partners, 5) customers, 6) local or national governments, 7) non-governmental organisations (NGO), 8)



residents of local community, and 9) others nearby. To illustrate, employees included managers and the first-stage service providers; investors included founders or investors; and business partners included service co-providers. Local or national governments may be related to the policy of creative industry; non-governmental organisations refer to the organisation or institute with professional creative industry expertise; residents of local community, and other stores nearby have territorial relationships with the stores.

## **Findings**

### *Effecting Factors of the Store Image Consistency*

After interviewing 9 recommended creative stores' managers and 179 customers, the levels of store image consistency of 'customer cognition' and 'provider's position' is shown in Figure 4. The highest level of store image consistency is H (3/3), the second highest levels of store image consistency are E and F (2/3), the next are B, C, E, G and I (1/3), and the lowest is J (0/3). This study discovered that although store image can bring higher evaluation for the store, not all stores with high-evaluation possess high levels of store image consistency. When asked to comment on the store image in the post-study interviews, the manager of H asserted that this store sells the products made of local material, and usually plays the music that they sale to increase the store image consistency level. Moreover, the manager of H said that they often use furniture, music, and the other facilities with natural decorations such as wood, bamboo, and steel that are related to local Taiwanese elements. Furthermore, to enhance the store image, the manager of H referred that they often co-create image with stakeholders. For example, they conduct online platforms to popularize exhibitions and introduce the products. By doing so, customers could clearly perceive the atmosphere, and identify the image of the provider's position. Besides, as for stores E and F, the manager of E indicated that they play the music from radio to build the atmosphere; meanwhile, they also provide flexible service content. For example, they supply customized food and to adjust the interior space to accommodate customers with children. In addition, the manager of F referred that their interior design is coordinated with the craft style they sell, and they often hold speeches to interact with customers; more importantly, they encourage customers to touch the craft. As mentioned above, store image originates from two fields: tangible (product, price, service provider, and the services cape) and intangible (atmosphere,

psychology, and social value) (Darden & Babin, 1994; Hopkins & Alford, 2001; Lin, 2004; Ryu et al., 2012). However, this study found that a high level of store image consistency is not only originated from tangible and intangible elements, but also generates from using image co-creation to deliver the image to customers. Image co-creation is an important approach to enhance the store image consistency.

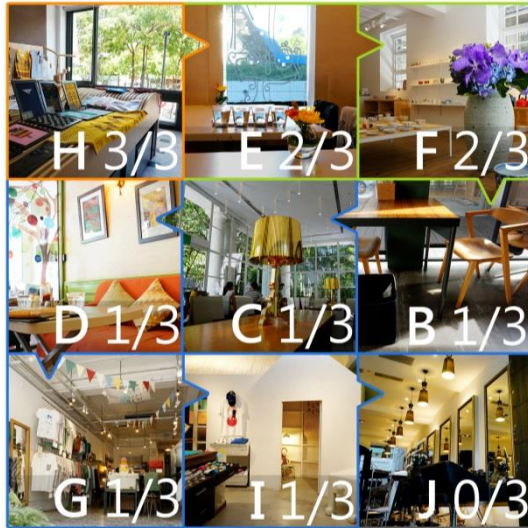


Figure 4 The store image consistency level of recommended stores

### *The Approaches of Image Co-creation*

By utilizing in-depth interviews, this study synthesized the image co-creation cases of the 9 recommended creative stores, and analysed the period of image co-creation approaches and number of actors in the four phases in the NSDP (as shown in Figure 5).

To begin with, majority of the creative stores (B, C, D, E, F, G, & H) were co-created in the phase of development and full launch. In other words, stores with high-level evaluation would co-create in the last half of the NSDP (development and full launch phase). This study estimated that image in the last half of the NSDP is more concrete and clear, and these phases are highly related to the delivery service to customers. In other words, image co-creation in these phases means that the recommended creative stores mutually build the image and delivery service with stakeholders. And it is possible to convey the consistent store image to customers. Additionally,

there are several image co-creation approaches that are also often used by the recommended creative stores, which are co-design (B, C, D, E, I, J, F, H, & G) and co-promote (B, D, E, F, H, & G). Firstly, co-design is the most frequently used approach that is manipulated by the recommended creative stores in this district, the practical examples included: 1) co-design the opening hours and service content with the residents or customers, 2) co-design the new product or service with providers, and 3) co-design the interior decoration with customers. Secondly, the practical examples of co-promotion are included: 1) co-promote new activities to customers with the creative stores nearby, 2) build an online platform for customers to make commentary, 3) hold activities with several sub-brands, 4) publish the online magazine with sub-brands or business partners. To elaborate, these stores often rely on their territorial relationships and cooperated with the creative stores nearby to hold seasonal activities and attract customers.

On the other hand, as far as stakeholders are concerned, this study found that there are multiple actors when it comes to image co-creation. In spite of the store itself, the 'residents' in community are often the co-creation actors (D, E, I, J, H, & G), even if they become the main-actor in image co-creation. This study synthesized that the possible reason for the development of community and the rights of the residents, is that they often discuss the service content with these recommended creative stores, and these stores usually adopt their comments or co-create new services.

Then, this study analysed the time period and the phases the actors engaged in (Figure 6). Compared to the other creative stores, this study found that store H with the highest level of store image consistency (3/3) co-create images in two phases (development and full launch) and more actors (store owners, employee, investors, NGO, residents, customers, and others) engage in; while stores B, C, D, I, G, E, and F with the medium levels of store image consistency (1/3 & 2/3) have medium to longer image co-creation phrase. As we known, service is a holistic experience created by multiple stakeholders. Thus, more stakeholders engage in image co-creation, it is better to deliver image and value of service to customers. For instance, store H established its own online platform and published the online magazine to communicate with customers.

First, this store not only built a well-structured dialogue and access with its customers, but also allowed the customers easily and proactively to co-promote image and leave commentary. Second, this store publishes the online magazine with sub-brands or business partners to promote the store's position and propagandize its new product, services, or activities.

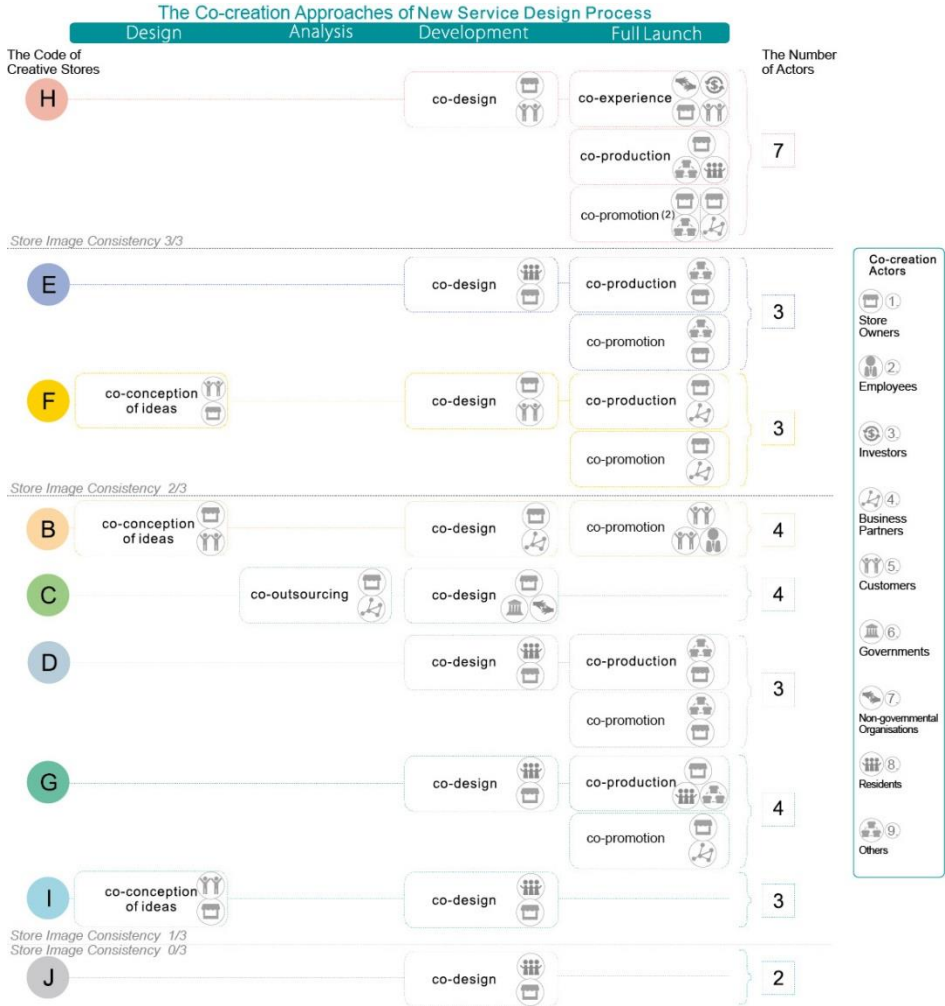


Figure 5 Co-creation approaches in four phases of NSDP by the recommended stores

However, stores with the medium level of store image consistency had no significant differences in both image co-creation and stakeholders. Stores C, D, G and E have two phases: *design* and *development*, and stores B, I, and F have three phases: *concept*, *design*, and *development*. Besides, store J (0/3) has the shortest period (only one phrase) and has the least amount of stakeholders (stores and residents in the community). In other words, it is

*The Image Co-creation: Store image consistency in creative stores*

efficient for stores to convey the store image of the provider's position by spending a longer period of time executing image co-creation in the NSDP.

To sum up, this study inferred that even though image is comprised of various elements, image co-creation maybe the possible reason for significant differences in the image consistency level. Moreover, stores with high levels of store image consistency would co-create in the later phases, such as *development* and *full launch*, of the NSDP. Last but not least, when more stakeholders engage in the image co-creation, it is easier to create a high level of store image consistency in this case.

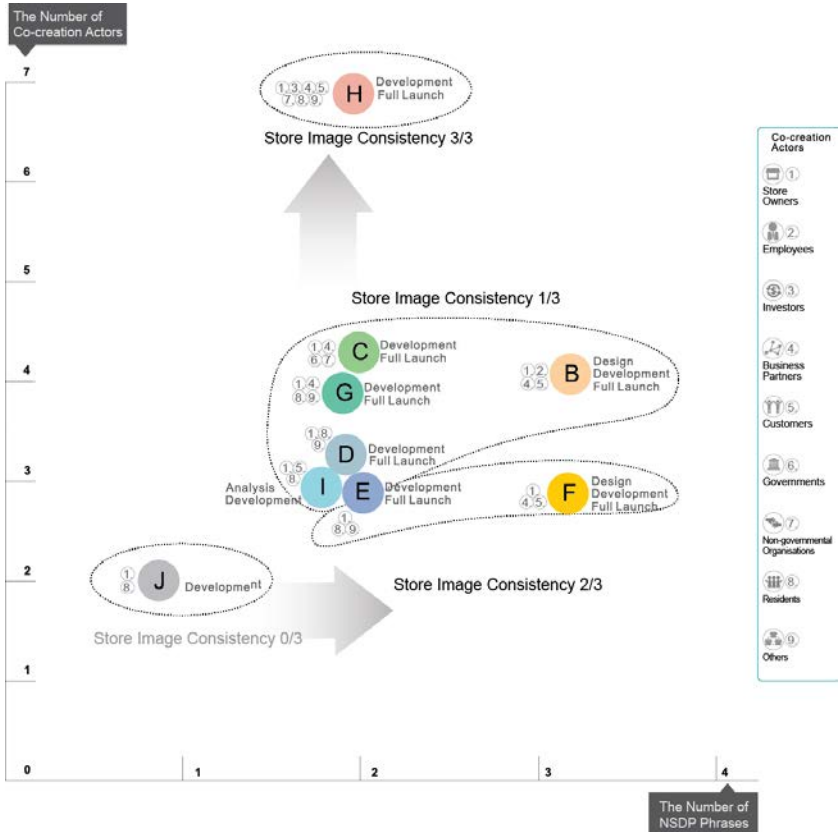


Figure 6 Comparison figure of the recommended stores' image consistency level and period of co-creation and number of co-creation actors.

## Conclusions and Suggestions

To sum up, this study found that store image consistency is a major influence in the store's evaluation, but the highly recommended stores certainly would not possess a high level of store image consistency. And, the stores build high levels of store image consistency via not only tangible (product or services cape) or intangible (music or customized core service) elements, but also by the image co-creation. In addition, the periods of image co-creation and types of actors have an influence on stores' image consistency. The image co-creation approaches of recommended creative stores with high levels of store image consistency centralized in the later phases, such as *development* and *full launch*, of the NSDP. Finally, in order to effectively deliver the store image of the provider's position, the more types of actors that engage in image co-creation, the more likely it is possible to create a high level of store image consistency.

Furthermore, based from the in-depth interviews, the store with high-level store image consistency indicated that the servicescape atmosphere is an important factor. Thus, to create a unique store image, this study suggests that the creative store should start from the service touch-points. That is to say, the storeowner can match the servicescape with the colour or the material of product and let customers have a store image evaluation before contacting with the service provider. Moreover, one essential feature of a creative industry is the creator and customers will continuously interact and they will also continuously upgrade (Lin, 2004). Image co-creation is indeed the approach to build a high level of store image consistency, especially in the last-period of the NSDP phases. The creative store should develop more kinds of activities, and let stakeholders (especially customers) co-create images from different approaches. Moreover, this study also suggests that it will be more beneficial to have more stakeholders involved in the image co-creation, e.g. cooperating with stores in the community, keeping in touch with other stores nearby, and holding activities with other stores at irregular intervals. Besides, when the store conducts the value co-creation, the friendly relations among the community should be promoted since creative stores are located in the community.

Additionally, Ramaswamy and Gouillart (2010) indicated that stakeholders should interact directly. Depending on the technological and environmental shift, more and more customers have manipulated the virtual community to have a C2C value co-creation, and observed the change of the impact on products or services, so stores can establish a platform for stakeholders to interact or share experience. However, these

platforms are not only built for interaction among customers. For example, store C's platform had an effective collaboration with similar or different kind of stores; while store B manipulated the resources from the upstream brand and integrate these resources from catering businesses and housewares. One thing for sure is, when having a dialogue or interaction, the issue should be confined to the interest of the stakeholders (stores or customers). Otherwise, the engagement should be clearly identified. If the stakeholders are lacking the same channel to interaction and transparent information, in this situation, dialogue could hardly have an impact. More importantly, dialogue, channel, and transparency can allow customers to contemplate on the evaluated risk-benefits (Pralhad & Ramaswamy, 2004). As for the sustainable development aspect, the connection among stakeholders is crucial. Future studies can be conducted on customer engagement (Brodie, Hollebeek, Jurić, & Ilić, 2011) or channels between P2P and virtual (Kohler, Fueller, Matzler, & Stieger, 2011) or business sustainable development.

However, except for the common research limit, this study had the following limitations. Firstly, this study was based on Taipei MRT stations at Zhongshan and Shuanglian. Only these two creative districts were used as the research field. Future studies should implement more locations to serve as a research field. Secondly, a majority of Taiwan's businesses belong to small and medium enterprises, so do the creative stores in this study; thus, the outcome of the study may not adapt to other kinds of industries or large enterprises. Therefore, future studies can probe into other kinds of industries or adopt research on objective estimates, and it will provide more research outcomes from multiple aspects.

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# Stakeholder Involvement and Co-Creation in Service Design: Customer experience management in tourism

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*In recent years, studies have pointed out that customer experience management (CEM) should be particularly considered in tourism service. Different from other service industries, customer travel experience is continuous and constructed by various stakeholders; therefore, it is crucial to facilitate stakeholders to co-create customer experience in the development of tourism service. Through literature review and a case study on the service design for a type of public transportation service in tourism, this study proposes some guidelines for effectively integrating customer experience management and stakeholder co-creation in each stage. Firstly, in the 'Discover' stage, a qualitative research method should be applied to explore the overall customer travel experience and the needs of stakeholders. In the 'Define' stage, organisations should focus on increasing value rather than maximizing interest, and specify concrete value propositions to attract stakeholders for the purpose of value co-creation. In the 'Develop' stage, co-creation workshops and visualization tools can be organized to facilitate communication and knowledge sharing between the stakeholders. Finally, in the 'Deliver' stage, it is important to organize a multi-discipline team and continuously monitor the progress of co-creation.*

**Keywords:** *Co-creation; stakeholder involvement; service design; customer experience management; tourism industry*

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## **Introduction**

In recent years, with the rise of the experiential economy, the customer attitude towards value has shifted from focusing on the features, price, and quality of a product to the interactive experience during the using process (Gentile, Spiller & Noci, 2007; Grönroos, 2001; Mayer & Schwager, 2007; Palmer, 2010; Pine II & Gilmore, 1998). Therefore, in order to allow organisations to provide innovative user experience to elevate customer satisfaction and loyalty, Schmitt (2003) proposed the concept of Customer Experience Management (CEM) to allow organizations to focus on the customer experience development and delivering system.

Basically, tourism is a service-intensive industry, and generally, customer attitudes towards service values frequently skew towards experiential quality (Otto & Ritchie, 1996; Zehrer, 2009). Previous studies (Carreira, Patricio, Jorge, Magee & Hommes, 2013; Stickdorn & Zehrer, 2009) have shown that travel experience is continuous and constructed by services from different stakeholders. As such, for travel service providers, how to integrate service provisions from various stakeholders and how to facilitate them to be involved in the management of customer experience are still largely unknown and unexamined (Cabiddu, Lui, & Piccoli, 2013).

Service design is a method with a holistic view that not only allows organisations to deliver valuable service to the customers, but also emphasizes the efficiency and effectiveness of the service delivery process (Mager & Sung, 2011; Moritz, 2005). Stickdorn and Schneide (2010) highlighted that to deliver service more effectively, it is important to invite stakeholders to co-create in the design process, so as to facilitate every participant to follow the service system.

However, Waligo, Clarke, and Hawkins (2013) argued that within the tourism industry, stakeholders often lack consensus due to their differences in value propositions, even resulting in unsuccessful collaborations. Therefore, organisations should apply different strategies during the stages from planning to implementation, in order to facilitate stakeholders to participate in the planning process, develop a shared vision, and achieve management possibilities. Nevertheless, in fact, with regards to customer experience management and stakeholder co-creation in tourism, there have been only a few studies providing practical suggestions of the following questions for organisations: 1) how to manage customer experience in tourism; 2) how to integrate stakeholders in tourism; and 3) how to facilitate the stakeholders to co-create in CEM in tourism.

In Taiwan, following the social emphasis on leisurely lifestyles and changing global trends, the government of Taiwan has been proactively participating in the development of the tourism industry in recent years. Starting from 2009, the government passed a NTD\$30 billion 'Top-Notch Sightseeing Attraction Pilot Campaign.' The successful implementation of the program has seen a tourist surge from 8,142,946 in 2009 to 11,052,908 in 2013 (Tourism Bureau, R.O.C., 2014). This reflects the current dynamic development situation of the Taiwan tourism industry. Similarly, Taipei, the capital of Taiwan, possesses numerous highly rated tourist attractions, with many of them topping charts in terms of visiting numbers (Tourism Bureau, R.O.C., 2014). Especially, Maokong, a place recognized as the backyard of Taipei, which not only possess convenient travel, but also has unique culture and natural scenery (Lin & Chang, 2009), as shown in the Fig. 1. In order to attract the tourists to visit Maokong thoroughly, the Taipei City government implemented the Maokong Tour Bus for internal transportation. However, it is unfortunate that the bus use rate is only 16% (Department of Transportation of Taipei City Government (hereafter referred to as DoT Taipei), 2011), and the customer experience and stakeholder collaboration needs improvement urgently (Chu, 2008).



*Figure 1 A Scenic picture of Maokong*

Therefore, this study deployed a service design project for the Maokong Tour Bus system based on the 4Ds design process (Discover, Define, Develop, Deliver) proposed by Design Council (2005), with the aim of providing practical insights to answer the questions mentioned above. As such, this study firstly reviews the literature that related to customer

experience management in tourism and stakeholder co-creation in service design. Consecutively, this study gathered insights through observations and in-depth interviews with the stakeholders at various stages during the design process. Finally, this study proposed some guidelines for effectively integrating customer experience management and stakeholder co-creation in each stage based on the findings from the case study.

## **Literature Review**

### *Customer Experience Management in Tourism Service*

As stated earlier, tourism is a service-intensive industry, where customers expect to fulfil emotional requirements through experience; therefore, organisations in tourism should focus on the quality of customer experience and the performance of service operation (Stickdorn & Zehrer, 2009; Otto & Ritchie, 1996).

Regarding the issue of customer experience innovation and management, Schmitt (2003) proposed the CEM framework in the expectation of assisting organisations in better understanding customers more directly, so as to build concrete customer relationships. The CEM framework includes five steps: 1) analysing the experiential world of the customer; 2) building the experiential platform; 3) designing the brand experience; 4) structuring the customer interface; and 5) engaging in continuous innovation. As for service operation, Vargo and Lusch (2004) stated that when designing service, organisations must respond to Service-Dominant Logic (S-D logic), a new customer relationship perspective that claim that organisations cannot create value but can only offer value propositions and then collaboratively create value with the beneficiaries. Hence, in the perspective of organisations, providing superior value is largely related to customer experience (Zehrer, 2009).

Moreover, Parasuraman, Zeithaml, and Berry (1985) developed the service gap model to help organisations to evaluate the service quality. The model includes five kinds of service gaps, which are consumer expectation – management perception gap (*GAP 1*), management perception – service quality specification gap (*GAP 2*), service quality specification – service delivery (*GAP 3*), service delivery – external communications gap (*GAP 4*), and expected service – perceived service gap (*GAP 5*).

As a result, based on the perspectives of S-D logic, this study modified the original CEM by integrating the concept of ‘providing service value

propositions' with the related steps of 'building the experiential platform' and 'designing the brand experience' in CEM. Figure 2 shows a process of CEM with S-D logic.

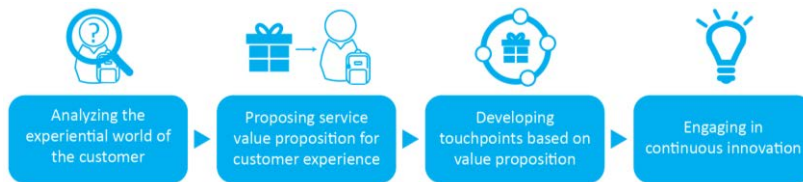


Figure 2 A process of CEM with S-D logic. (Revised from Schmitt, 2003, p. 25).

Since the customer travel experience is continuous and is comprised of the services of different stakeholders, the quality of the experience is easily influenced by the overall travel itinerary. As such, when implementing customer travel experience management, organisations should not only consider their own service, but also take a holistic view to integrate the corresponded stakeholders' service provisions into the service system (Gopalan & Narayan, 2010; Stickdorn & Zehrer, 2009).

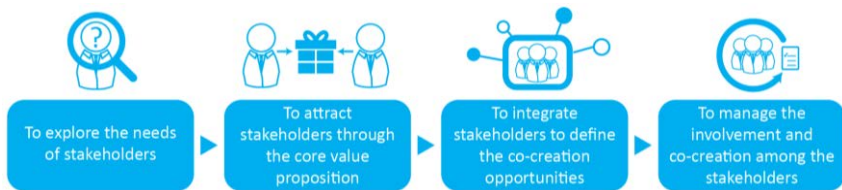
### *Stakeholder Value Co-Creation in Service Design of Tourism*

Evan and Freeman (1988) proposed the stakeholders theory, and defined stakeholders as 'groups and individuals who benefit from or are harmed by, and whose rights are violated or respected by corporate actions.' Moreover, Sautter and Leisen (1999) argued that organisational success is determined by the effectiveness of internal and external stakeholder management. In fact, in the tourism industry, services are inter-twined, and service provisions of stakeholders affect one another; therefore, the involvement of the stakeholders is one of the critical factors in the management of travel service quality (Carreira et al., 2013; Gopalan & Narayan, 2010). However, the stakeholders of tourism service are generally subjective and have difficulty reaching a consensus, causing the process of facilitating stakeholder cooperation to be difficult and complex (Waligo et al., 2013).

As such, with regards to the sustainable development of the tourism industry, Waligo et al. (2013) noted that in order to effectively facilitate the involvement of the stakeholders, organisations should apply corresponding strategies in different stages (including attraction, integration, and management), such that the stakeholders may have chances to start participating from the early planning process and build consensus; thus, the organisation can achieve the possibility of integration and management.



Moreover, from the perspective of S-D logic, in order to reduce the potential risks during stakeholder cooperation, Frow and Payne (2011) proposed the value alignment mechanism, according to which in the early stage of service development, organisations should clarify the relationships, interests, and needs of stakeholders, and define suitable value propositions in order to attract stakeholders. And, through the process of communication and knowledge sharing, the stakeholders may identify the opportunities for future collaboration and value co-creation. And, this study integrated the previous study regarding the process to facilitate stakeholders to participate in co-creation in Figure 3.



*Figure 3 A process to facilitate stakeholders to participate in co-creation*

Although the abovementioned theories support both CEM and the facilitation of stakeholder involvement in value co-creation, there are only a handful studies that actually illustrated the practical insights to facilitate stakeholders to involve in the value co-creation for CEM. Therefore, this study conducted a service design project in tourism in hopes of integrating practical insights into the 4Ds design process as a reference for the tourism industry in the future.

## **Case Study**

### *Case Study Process*

As mentioned above, based on 4Ds, this study conducted a service design project for Maokong Tour Bus as case study. Firstly, in the Discovery stage, this study adopted some methods of shadowing, observation, and the interview to uncover the service gaps of the Maokong Tour Bus and to analyse the needs of the various stakeholders. Secondly, in the Define stage, based on the findings, this study highlighted a new customer experience value proposition, and met various stakeholders individually to illustrate the needs for the co-creation of stakeholders in the future. Thirdly, inviting stakeholders, this study organized a co-creation workshop for the

communication and knowledge transfer in hopes of developing collaboration opportunities among the stakeholders in the future. Finally in the Deliver stage, through social networks and meetings, this study continued managing the collaborations and value co-creation among the stakeholders.

Meanwhile, during the 4Ds design process, through observations and interviews, this study collected stakeholders' feedback in order to extract practical insights from the Maokong Tour Bus service design project. The relationships between the interviewees and the Maokong Tour Bus are illustrated under the structure of the customer journey in Maokong as shown in figure 4.

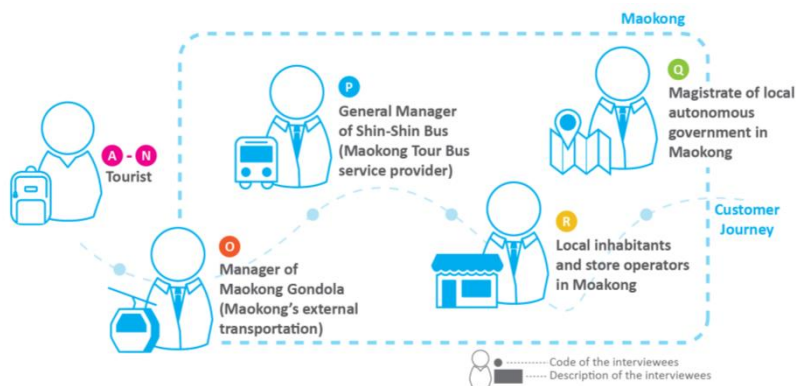


Figure 4 Background information of the interviewees

### Maokong Tour Bus

In recent years, the Taiwan government has actively promoted the tourism and hospitality industry, and the number of inbound tourists continues to rise in every year. Especially, Taipei City, the capital city of Taiwan, has the highest number of visitors in Taiwan most of the time (Tourism Bureau, R.O.C., 2014). As stated earlier, Maokong is a famous local destination, which is endowed with profound and unique cultural and natural views and resources, and recognized as the backyard of Taipei City (Lin & Chang, 2009). In 2007, Maokong Gondola was built for the purpose of external transportation linkage and for its tourism value. The introduction of the Maokong Gondola has successfully brought in a flow of new visitors for Maokong, and gradually turned Maokong into an international tourist attraction (Chu, 2007). Moreover, for the convenience of customers who

plan in-depth tours in Maokong, Taipei City Government commissioned Shin-Shin Bus to run the operation of the Maokong Tour Bus (Figure 5) for internal transportation in Maokong with its first station at the Maokong Station of the Maokong Gondola. With the 'Continual Ride Tickets', customers only need to pay NT\$ 15 to enjoy unlimited rides on the same day (DoT Taipei, 2012).



*Figure 5 Maokong Tour Bus*

However, according to the statistical report issued by DoT Taipei (2011), even though 5,000 customers per day arrived at the exit of Maokong Station through Maokong Gondola, the average number of customers who take the Maokong Tour Bus is only 150 people per day, which reveals that the usage rate is too low and causes losses for the service. With in-depth research, this study found that the service experience of Maokong Tour Bus was desperately in need of improvement. Moreover, lacking the integration of different organisations has led to poor customer travel experience in Maokong (Chu, 2007). As a result, it has affected the willingness of customers to engage in in-depth trips and consumption in Maokong, and indirectly caused a low usage rate of the Tour Bus. Therefore, starting from March 2013, we conducted a service design project and attempted to improve customer experience for the Maokong Tour Bus service.

## **Service Design of Maokong Tour Bus**

### *Discover*

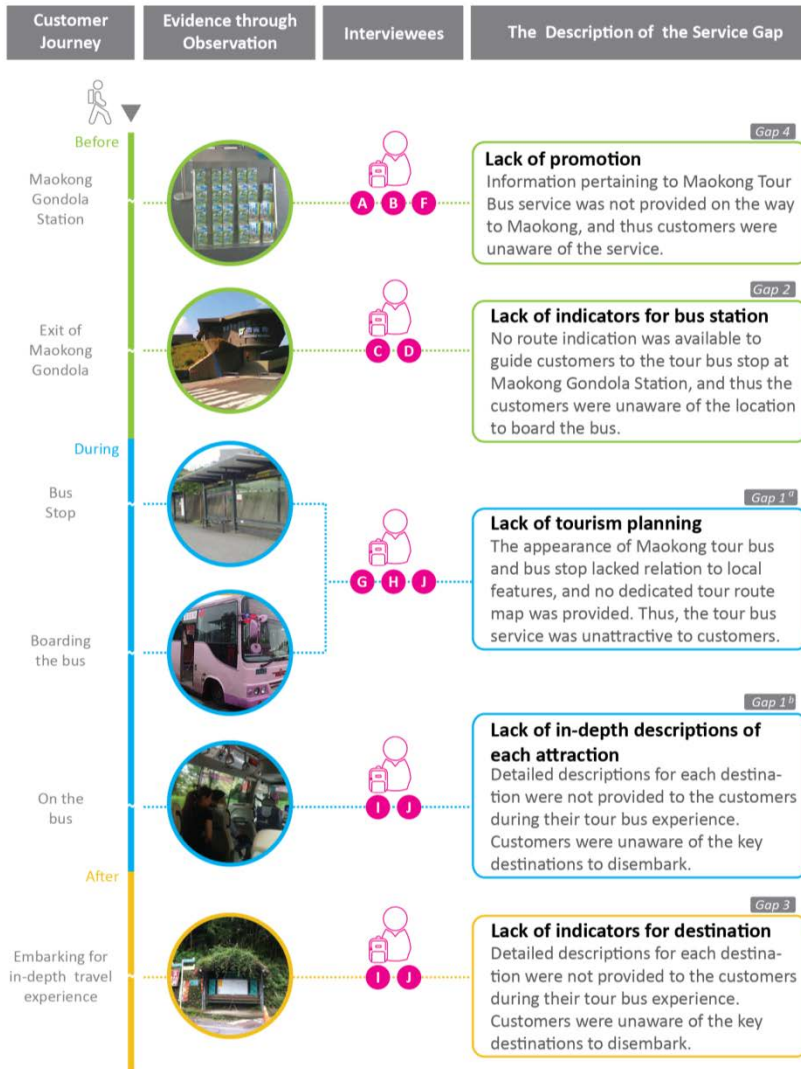
In the 'Discover' stage of Maokong Tour Bus service design project, in order to gain a holistic view of the customer experience and deep insights of

the service gaps, this study applied shadowing, observation, and interview methods in three stages during the customer journey, including 1) the 'Before' stage, in which Interviewees A to F were interviewed to share their service perceptions from taking the Maokong Gondola to walking to the tour bus stop; 2) the 'During' stage, in which Interviewees G to J were interviewed to provide their service perceptions from waiting at the tour bus stop to taking the tour bus; and 3) the 'After' stage, in which Interviewees K to N were interviewed to share their service perceptions from disembarking the tour bus to experiencing Maokong.

This study identified that some of the service quality problems that caused the low usage of the Maokong Tour Bus are not mainly from the service of Maokong Tour Bus, but the whole service system in Maokong. Therefore, in order to analyze the attribution of the problems, we categorized the major problems into four kinds of service gaps based on the service gap model. The research results of customers' Maokong Tour Bus experience are summarized in the customer experience journey map, as illustrated in Figure 6. As for Gap 1<sup>a</sup>, since the Maokong Tour Bus was not specifically designed for tourism and leisure purposes but only as transportation, the appearance of the tour bus and the bus stop lacked relation to the local feature, and no dedicated tour route map was provided for the customers, so the service was unattractive to the customers in the "during" stage. As for Gap 1<sup>b</sup>, the description of each bus stop was not dedicated for the tourism, and customers could not easily understand where to disembark for in-deep travel.

Regard to Gap 2, lacking the support from the Maokong Gondola, the indicators of Maokong Gondola to Maokong Tour Bus was absent, the customer can hardly find the bus stop of the Maokong Tour Bus in the "Before" stage. For Gap 3, due to the regulation and the habits of the resident, the quality of the surrounding environment of Maokong lacked sustainable maintenance and management. As a result, the damages to public facilities and messy public spaces undermined customer travel experience in the "after" stage. As for Gap 4, without clear information regarding the Maokong Tour Bus service during the Maokong Gondola ride and at both the entrance and exit point of Maokong Gondola Station in the 'Before' stage, customers were unaware of the Maokong Tour Bus.

*Stakeholder Involvement and Co-Creation in Service Design: Customer experience management in tourism.*



*Figure 6 The customer experience journey of Maokong Tour Bus*

Although it is crucial to apply service design and integrate the stakeholders to fill the gaps, the collaborations could not be easily achieved. This study collected the opinions and feedbacks from Interviewees O to R and discovered that the various conflicts and lack of communication

undermined the possibility of collaboration in the past (As shown in figure 7). First of all, Interviewee O stated that ‘since the resident and the local government did not carefully manage the environment in Maokong, the customer journey in Maokong was not qualified.’ Secondly, Interviewee P considered that:

*Most of the residents in Maokong only focus on their individual interests and it impede the development of the tour bus service for the customers to enhance travel experience.*

Thirdly, as for the stakeholders of local business sector, Interviewee R showed disapproval for the establishment of the Maokong Tour Bus service and the Maokong Gondola, stating that:

*The Maokong Tour Bus and Maokong Gondola service do not help promote local businesses and the customers who ride Maokong Gondola and the tour bus seldom disembark to purchase items. This further reduces revenue of our local business.*

Finally, from the viewpoint of local government, Interviewee Q considered that:

*When developing public facilities, it needs carefully consideration; otherwise, the construction may violate the environmental regulation or harm the interests or habits of the stakeholders in Maokong area.*

*As a result, in order to integrate the stakeholder for co-creation, further strategies are required (Waligo, et al, 2013).*

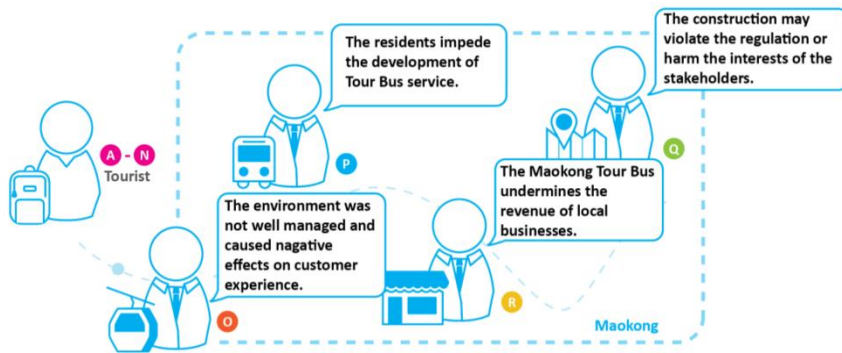


Figure 7 Conflicts among the stakeholder in Maokong

In summary, through a holistic and qualitative research, this study found that the problems, which cause the low usage of Maokong Tour Bus, are not mainly from the riding experience, but from the whole service system in Maokong. These findings correspond to the statement in Zehrer (2009) that tourism is a series of sequential service processes so that problems do not singly originate from a single service. However, without the support from other stakeholders, the service gap can hardly be filled. Thus, in the 'Discover' stage, the service design project should focus on the before, during, and after of the service, and apply the tool of customer journey map in order to fully understand customers' tourism experiences and to identify key stakeholders from a holistic perspective (Stickdorn & Zehrer, 2009; Stickdorn & Schneider, 2010). Moreover, although certain information or problems can be revealed through employing traditional quantitative analysis results (e.g. the low usage of Maokong Tour Bus or the customer satisfaction), underlying causes remain unclear and contributions to design implementation are limited (Polaine, Lovlie, and Reason, 2013; Tripp, 2013). Therefore, the service designers should alternatively apply qualitative research methods to uncover underlying problems from both customer experience perspective and stakeholders' business considerations, which can then be used as references for service experience innovation.

### *Define*

In the 'Define' stage, this study examined the findings from the 'Discover' stage through interviewing with different stakeholders in order to define appropriate value propositions of the Maokong Tour Bus service for customers and also as a strategy to attract stakeholders for collaborations as well. Based on the customer journey map, this study selected key stakeholders, and met them individually to illustrate the problems and the need for value co-creation and collaborations.

From the results of the meetings and discussions, this study found that some of the gaps (Gap 1, Gap 2, and Gap 4) could be filled through the co-creation among the stakeholders. For example, Interviewee O stated that 'the customer travel experience could be extended if the services of Maokong Gondola and Maokong Tour Bus connected.' On the other hand, Interviewee Q considered that 'if the Maokong local culture is connected to the Maokong Tour Bus, it could not only give support on the promotion of the Maokong local culture, but also to improve the travel experience for the customers.' However, it is also found that some of the gaps, which related

to the regulations or the habits (Gap 3) of the stakeholders, could hardly be solved. For example, Interviewee P mentioned that 'since the residents have established their habits over time, it is difficult to make them change immediately.' In addition, Interviewee Q stated that 'the regulations that established by the central government are designed for the protection of the environment and impartial principle, so it is hard to filled these types of gaps.'

As a result, based on the Gaps of 1, 2, and 4, this study strategically proposed the core value proposition is to connect and expand the services for the stakeholders in Maokong so as to provide a rich and comfortable travel service experience for the customers in Maokong. Firstly, this study proposed that the values of the Maokong Tour Bus service should be elevated from serving a transportation function to a travel orientated service. As a result, the characteristics of Maokong culture were integrated into the Maokong Tour Bus visual identity (Figure 8) that complies with Maokong's tourism image in this study.

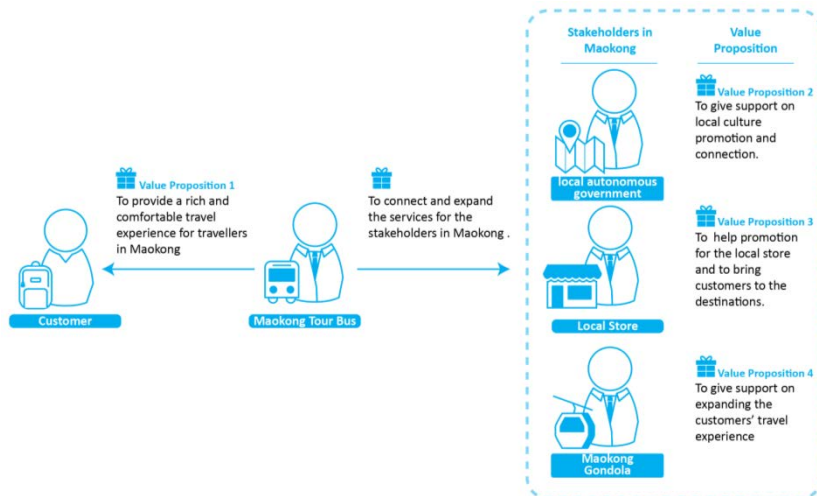


Figure 8 The new logo design for the Maokong Tour Bus

Secondly, this study illustrated the value proposition for each stakeholder (as shown in figure 9) to increase the willingness for value co-creation: 1) Customers: providing a rich and comfortable travel experience; 2) Maokong Gondola: giving support to Maokong Gondola on expanding the customer travel experience; 3) Local store: assisting promotion and bringing customers to the local store; 4) Local autonomous government: providing support for the promotion of the local culture and the connection between different areas in Maokong.



*Stakeholder Involvement and Co-Creation in Service Design: Customer experience management in tourism.*



*Figure 9 The new value propositions of Maokong Tour Bus for each stakeholder*

Thus, in the 'Define' stage, this study argued that organisations should meet key stakeholders to identify the causes of each gaps and to clarify their expectations, and propose suitable value propositions to meet their needs. Consecutively, when defining the value propositions, it is crucial to emphasize on overall value rather than maximizing profit individually as an objective to minimize conflicts and competition with other stakeholders. This method of promoting collaboration through value proposition is similar to that proposed by Frow and Payne (2011), namely, organisations should be focused on increasing value rather than maximizing profit to avoid competition and conflict, thereby successfully attracting the stakeholders to the collaboration.

### *Develop*

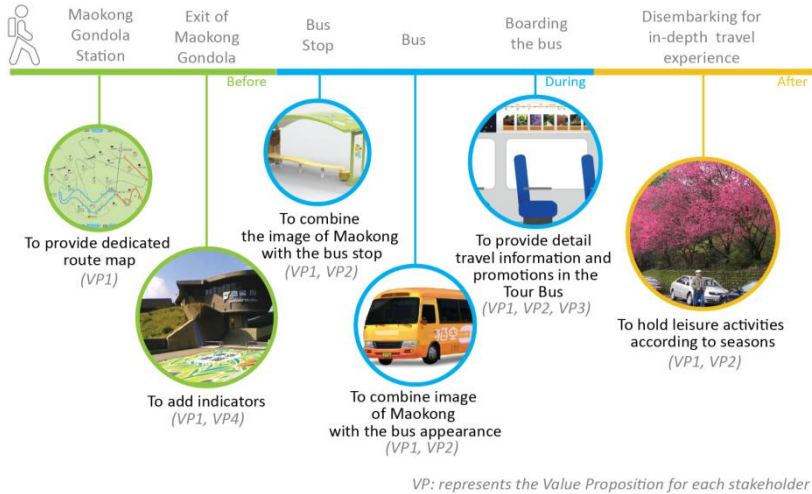
To integrate potential collaboration opportunities between stakeholders in the 'Develop' stage, this study hosted a co-creation workshop in late 2013 (Figure 10), thus providing a platform for interaction and knowledge sharing. Shin-Shin Bus Company (Interviewee O), service providers of the Maokong Gondola (Interviewee P), the local autonomous government (Interviewee Q), and external designers were invited to the workshop.



*Figure 10 The co-creation workshop in the Maokong Tour Bus service design project*

During the workshop, to familiarize the stakeholders with the purpose of collaboration, this study first demonstrated the Maokong customer experience journey by creating a servcescape 3D model and pointed out the customer experience problems caused by the lack of stakeholder cooperation. Then, this study illustrated that the purpose of this co-creation workshop was to improve the travel experience and realize the value propositions through collaboration among the stakeholders and to create mutual business models. Therefore, this study applied visualization tools and the customer experience journey map, which derived from the 'discover' stage, to facilitate the discussion and co-creation among the stakeholders. Interviewee O responded that 'the demonstration of the customer experience research helped us to put more focus on the discussion for future collaboration and to create new business opportunities.' The following is the concrete collaboration opportunities that responds to the value propositions and innovative customer experience journey map (Figure 11), which was derived from the co-creation process during the workshop. Firstly, in the 'Before' stage, in order to gain the customers awareness of the tour bus service and to extend customers experience from Maokong Gondola, Maokong Gondola would plan to install brief introduction, guiding signs, and road guidance painted on the ground for the Maokong Tour Bus service. Secondly, in the 'During' stage, it was proposed that the appearance of the bus stop and the tour bus of Maokong Tour Bus should be incorporated with local features to promote the tourism industry in Maokong. In addition, detailed information and other travel promotion in the Maokong area were provided in the Maokong Tour Bus.

Finally, in the 'After' stage, leisure activities would be added to the operation of local travelling services in Maokong such as seasonal theme events. With the help of cooperative promotions, these activities were expected to provide novel experience for customers in Maokong and to attract customers in the future.



**Figure 11** The new customer experience journey of the Maokong Tour Bus

After the workshop, all stakeholders have established their implementation plans with detailed schedule in the future. Interviewee R suggested 'The workshop opened up effective communication, which allowed us to understand each other better, and creates more opportunities for future collaboration.' As such, this study considers that in the 'Develop' stage, in order to facilitate stakeholders to build up consensus for value co-creation and future collaboration, organization should invite the key relevant stakeholders of the service and a few of irrelevant outsiders into the co-creation workshop. Stickdorn and Schneider (2010) underlined that a co-creation workshop is an open development model. With appropriate arrangements, it can facilitate stakeholders to formulate excellent ideas as a source of inspiration for core design teams to execute. Moreover, since the stakeholders will be eager to share the results, which originated from their

efforts and contributions during the co-creation process, it may increase the possibility of future collaborations.















On the other hand, the arrangement of designers to participate in co-creation is in alignment with the concept of free agent proposed by Kania and Kramer (2011) that it not only provides diverse sources of innovation, but also improves the performance of coordination and communication. In addition, to ensure effective communication between stakeholders, physical tools can be employed in the workshop (e.g., Legos, post-its, customer experience journey map). These tools were used to help in the visualization of innovative concepts proposed by the stakeholders, which created effective communication, enhanced the effectiveness of co-creation in the workshop, and elevated the quality of outcomes (Clatworthy, 2012).

### *Deliver*

In the 'Deliver' stage, together with the stakeholders, this study selected the prototypes for further implementation and evaluation, including the indicators, route map, appearance and interior of the Maokong Tour Bus, and the leisure activities. Since 2014, the aforementioned cooperative projects have been initiated, and the goals and the responsibilities for each stakeholder are illustrated in figure 12.

Moreover, in order to facilitate the process of the projects, a multi-discipline team has been established by this study that involves different stakeholders, experts, designers, and consultants. Moreover, with the assistance of social networking software (e.g., Line and Facebook) for virtual and physical meetings, this study continues to monitor the development progress of each prototype.

Sung and Wu (2011) indicated with various knowledge, multi-discipline team can propose solutions more effectively during the projects. However, in the beginning of establishing a multi-disciplinary team, it is necessary to apply virtual communication software and official or unofficial physical meetings to build up trust and consensus so as to improve collaboration maturity.

Prototype	Goal Description	Stakeholders and Responsibilities
	To establish indicators for the Tour Bus in the exit of the Maokong Gondola.	<ul style="list-style-type: none"> <li> To provide spaces for the indicators.</li> <li> To design and provide the indicators.</li> </ul>
	To design dedicated route map that introduce the Maokong Tour Bus.	<ul style="list-style-type: none"> <li> To verify the detail information shown in the map</li> <li> To design and provide the indicators.</li> </ul>
	To redesign the appearance of the Maokong Tour Bus that combines with Maokong local culture.	<ul style="list-style-type: none"> <li> To design the appearance of the Tour Bus.</li> </ul>
	To add detail information of the attractions according to the bus tour route and bus stop.	<ul style="list-style-type: none"> <li> To provide information of the attractions.</li> <li> To provide interior spaces for the information.</li> </ul>
	To launch leisure activities to promote the tourism in Maokong.	<ul style="list-style-type: none"> <li> To gather the local stores and residents to plan for the activities.</li> <li> To promote the activities through the appearance and the interior of the Tour Bus.</li> </ul>

*Figure 12 The prototypes selected for implementation in the service design project of Maokong Tour Bus*

## Conclusions and Suggestion







At the present stage, this study has successfully guided the stakeholders to participate in co-creation and CEM, based on the signature of memorandum of understanding with Shin-Shin Bus and other stakeholders. The project has started implementing the concepts during 2014–2015.

Based on the literature review and case study, this study has explored the theoretical and practical insights for the three questions proposed in the beginning of this paper and integrated into the 4Ds design process as a

reference for the future service design in tourism (Figure 13). Firstly, in order to manage customer travel experience, this study applied qualitative research methods such as shadowing and interviewing involving a holistic customer experience journey, including before, during, and after, in the 'Discover' stage. With such research methods, this study uncovered certain hidden problems (e.g. lack of promotion, lack of indicators in the Maokong area, lack of the collaboration among the stakeholders) that are not directly related to the Maokong Tour Bus riding experience, but caused the low usage rate of the Maokong Tour Bus. Meanwhile, as shown in the 'Discover' state, opinions of the stakeholders should be collected to analyse difficulties that may occur during the collaboration and value co-creation. Secondly, to integrate the stakeholders, organisations should differentiate the causes of the service gaps with stakeholders and work on the overall value and clarifying the expectations from different stakeholders to specify concrete value propositions to attract stakeholders. For example, after evaluating the causes of the service gaps and identifying the stakeholders' position and resource, this study strategically proposed the value proposition of Maokong Tour Bus that benefits both customers and stakeholders to fill the service gaps of 1, 2, and 4; as a result, it raised the possibility to align the stakeholders for collaboration.

Thirdly, by introducing designers and visualization tools that related to customer experience into the workshop, this study found that it could facilitate the open discussion and co-creation among the stakeholders and to create opportunities for future collaboration. For example, in the 'Develop' stage, this study applied some tools to illustrate the customer experience, and invited key stakeholders and external designers to join the co-creation workshop. With this workshop, the stakeholders were willing to co-create and build up connections with others. Finally, in the 'Deliver' stage, organisation should organize a multi-discipline team to implement the prototypes with corresponded stakeholders for further customer experience evaluations. Moreover, through adopting social networking software and official or unofficial meetings, organisations could facilitate the progress of the prototype implementation more effectively.

*Stakeholder Involvement and Co-Creation in Service Design: Customer experience management in tourism.*

Stage	 Discover	 Define	 Develop	 Deliver
 CEM	<p><b>To analyze the experiential world of the customer</b></p> <ul style="list-style-type: none"> <li>To apply qualitative research method to explore customers' expectations and experience.</li> <li>To take a holistic view of the customer travel experience journey.</li> <li>To analysis the problems through the service gap model.</li> </ul>	<p><b>To propose service value proposition for customer experience</b></p> <ul style="list-style-type: none"> <li>To increase the overall value rather than to maximize the individual interest.</li> </ul>	<p><b>To develop the touchpoints based on the value proposition</b></p> <ul style="list-style-type: none"> <li>To develop a visualized customer experience journey map.</li> <li>To develop a series of touchpoints to form a new customer journey.</li> </ul>	<p><b>To engage in continuous innovation</b></p> <ul style="list-style-type: none"> <li>To continuous managing customer experience and expectations as to generate innovative customer experience.</li> </ul>
 Stakeholder Co-creation	<p><b>To explore the relationship between stakeholders</b></p> <ul style="list-style-type: none"> <li>To analyse the difficulties that may occur during the collaboration and value co-creation</li> </ul>	<p><b>To attract stakeholders through the core value proposition</b></p> <ul style="list-style-type: none"> <li>To identify the key stakeholder according to the service gaps and customer experience journey</li> <li>To clarify the expectation of different stakeholders.</li> <li>To illustrate the value proposition for the purpose of value co-creation.</li> </ul>	<p><b>To integrate stakeholders and to define the co-creation opportunities</b></p> <ul style="list-style-type: none"> <li>To hold co-create workshop and introduce designers and visualization tools to facilitate the communication among the stakeholders.</li> <li>To generate consensus and collaboration opportunities among the stakeholders .</li> </ul>	<p><b>To manage the involvement and co-creation among the stakeholders</b></p> <ul style="list-style-type: none"> <li>To organize a multi-discipline team to collaborate with the corresponded stakeholders.</li> <li>To apply social networking software and official or unofficial meetings to facilitate the development of each opportunities.</li> </ul>

*Figure 13 Insights from the Maokong Tour Bus service design project*

In summary, this study found that when working on service design in the tourism industry, organisation could hardly fill all the service gaps by itself. Therefore, it is crucial to integrate the relevant stakeholders into the service systems. However, service design and stakeholders' co-creation are not panacea. If the causes of the service gaps were related to regulations or habits of the residents, it would need other resource or method to fill the gaps.

Since the case study of the service design examined by this study is still in the preliminary developmental stage, in future research, this study will further explore the improved design and customer experience. Moreover, to improve the completeness of this research, this study will continue to explore the relationships between the value propositions and the interaction of the stakeholders based on the stakeholder theory. Finally, this study expects to verify the proposed insights through various projects in the future to serve as an important reference for organisations in the tourism industry when implementing the management of customer experience.

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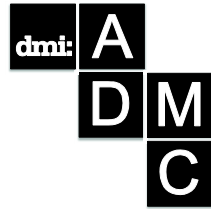
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## Co-design for Not-for-profit Organization

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*Co-design has potential to help community-based organizations deliver better services to their beneficiaries, since it encourages users to get involved in designing services that will be delivered to them. Good use of co-design could bring several benefits, e.g. ensuring that services match users' needs. However, the extent of co-design knowledge among community-based organizations is currently unknown. Hence, this study aimed at investigating their current state of co-design knowledge in order to develop guidance to help them effectively co-design services with their beneficiaries. This project employed a mix-method approach including a survey, interviews, case studies, and a creative workshop. This paper will discuss results of case studies conducted with five organizations, which involved observations and interviews with key staff and users. The results revealed that the level of understanding of co-design among community-based organizations varied greatly. While most organizations have the right mindset for adopting co-design, since they are keen to listen to users' ideas, only the minority actually involves users in designing services. The lack of awareness may be the main reason of the slow adoption of co-design. Thus, it is important to help them understand the value of co-design and how it can be used to suit their needs.*

**Keywords:** Co-design, Service Development, Community-based organizations

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## Introduction

This paper discusses the results of the research project titled “*securing the value of co-design for community-based organizations*” funded by the Arts and Humanities Research Council under the Connected Community scheme. This project is a collaboration of Brunel University, Sheffield Hallam University and the National Council for Voluntary Organisations (NCVO). In this case, community-based organizations are defined as small locally-based not-for-profit organizations providing support to disadvantage people in their areas, such as local charities and volunteering groups.

Increasingly, the UK government is keen to get charities and voluntary organizations more involved in delivering public services, e.g. community healthcare and social care, since they excel at connecting with certain hard-to-reach groups, which are often defined as people who do not engage with the community (HM Treasury, 2002). However, the study carried out by Charity Commission (2007) revealed that small charities and voluntary organizations hardly engaged in public service delivery due to several barriers that are caused by their size, such as a limited staff and resources. Apparently, there is a need to help community-based organizations that are interested in delivering public services to overcome existing barriers and deliver high-quality services to disadvantage people that they are committed to support.

Although most community-based organizations operate within poor/disadvantaged communities, they are not always organizations of the poor and disadvantaged. Leaders and members of community-based organizations recognize problems and needs in communities, but do not necessarily have first-hand experience. Hence, effective collaborations between community-based organizations and their beneficiaries could lead to better services and more effective means of delivery, e.g. reducing unnecessary costs and maximizing value. Moreover, Charity Commission (2010) suggested that small not-for-profit organizations need to make a better use of collaborations, since they heavily rely on small numbers of committed staff and/or volunteers and thus are vulnerable if they leave.

## Background Research

In this case, **co-design** was considered as a suitable approach to address key challenges that community-based organizations currently face. *Co-design*, which is short for collaborative or cooperative design, is a distinctive approach to design that promotes collective creativity of designers and

people who are not trained in design (such as frontline staff and service users) throughout the whole design process (Sanders and Stappers, 2008). Co-design reflects a shift from user-centered design (user-as-subject) to participatory design (user-as-partner), which matches the ‘*bottom-up*’ and ‘*pro-people*’ ethos of the community-based organizations.

Boyle and Harris (2009) noted that good use of the co-creation approach brings several benefits. Firstly, turning beneficiaries (service users) into taskforce could help small charities and volunteering groups overcome problems caused by the lack of staff. Secondly, collaborating with users could ensure that services match their requirements and lead to better outcomes. Thirdly, active user engagement encourages self-help and positive behavior changes, which in turn could prevent potential problems in the future. Being involved in a creative process could help people gain confidence to solve problems themselves rather than asking for help from others (Bontoft, 2006). Besides, the participatory approach could enhance stakeholder engagement, which leads to higher productivity, higher creativity, and lower costs and risks (Ramaswamy and Gouillart, 2010).

Charity Commission (2010) reported that most not-for-profit organizations are interested in collaboration for idea/information sharing, which fits well with co-design principles. It is important to stress that co-design goes beyond conventional consultations and qualitative user research. To achieve full benefits of co-creation, users must be actively involved in designing and delivering services (Buur and Larsen, 2010).

As a result, the project aimed to 1) find out values/contributions that the co-design approach could bring to the service development process in the context of community-based organizations, and 2) answer the key question: *how best should community-based organizations use co-design with their beneficiaries to design better services and more effective means of delivery?*

## **Research Methodology**

This project employed a mix-method approach which included an online survey, semi-structured interviews, case studies, and a creative workshop. This paper will discuss results of case studies conducted with five community-based organizations. The main purposes of the case studies were to develop in-depth understanding of community-based organizations’ state of knowledge of co-design and their current practices in order to understand values that co-design brought to their service development

process. These insights will help the researchers develop guidance to help community-based organizations effectively co-design with their users.

To ensure representative and balanced results, the purposive sampling strategy was employed. Two organizations (MERU and the Blackwood Foundation) were selected due to their design-led approaches. They were considered to be at the forefront in terms of co-design knowledge and design practices. The rest (DASH, Age UK Hillingdon and Destiny Support) were chosen, as they were considered to be the representatives of the majority of community-based organizations. Most community-based organizations in the UK have a very small number of full-time staff, heavily rely on volunteers to provide services and rarely work with designers. The detailed profiles of all participating organizations are shown below:

- **MERU** is a regional charity supporting people living in Southeast England (see: <http://meru.org.uk>). Its mission is to *“help disabled children and young people achieve their aspirations”* by giving advice on appropriate assistive equipment and providing a custom-made solution if the suitable device does not exist. The charity has in-house design engineers, design studios and workshops for producing prototypes and manufacturing custom-made devices.
- **The Blackwood Foundation** is a charity established in 2009 by Blackwood, an organization that specializes in providing housing and care services for people with a disability or support needs based in Scotland ([www.mbha.org.uk](http://www.mbha.org.uk)). Its mission is to promote independent living and provides support for people with a disability or support needs. The work is mainly focused on design and technology. It has only two members of staff. However, the charity has access to various experts in Blackwood, e.g. human factor specialists.
- **Disablement Association Hillingdon (DASH)** is a charity, which aims to provide *“advice, support and information that will enable disabled people to make choices about how they live their lives”* (<http://dash.org.uk>). The charity perceives itself as user-led, since many of the trustees are disabled people. It originally offers advice and information (e.g. Direct Payment) on a one-to-one basis. Recently, the services have been expanded to include many activities designed to support disabled people, e.g. art & craft.
- **Age UK Hillingdon** is a local charity, which is part of a larger not-for-profit organization, Age UK ([www.ageuk.org.uk/hillingdon](http://www.ageuk.org.uk/hillingdon)). The goal is to *“improve the quality of life and promote a positive view of all older people in the London Borough of Hillingdon.”* As a result, the

organization offers a variety of support for older people. Its services can be grouped into four categories: 1) advice, 2) social contact services, 3) homes and hospital services, and 4) voluntary services.

- **Destiny Support** is a community interest company (CIC) that promotes independent living ([www.destinysupport.org](http://www.destinysupport.org)). The organization supports people of all ages and ethnicity, especially those that are hard to reach. Destiny Support perceives itself as user-centered. It provides one-to-one support and advice for a variety of everyday needs – ranging from helping people filling in benefit forms to providing emotional support for senior citizens. It also acts as a coordinator that helps connect people with available resources and coordinate services to match their needs.

All case studies involved site visits, semi-structured interviews with senior managers and frontline staff, and observations. In some cases, interviews with users and other key stakeholders (e.g. carers) were also carried out. To ensure the consistency, the same set of questions was used for all interviews. The questions can be categorized into six groups: 1) service development process, 2) service quality, 3) associated costs, 4) user involvement in designing services, 5) designer involvement in designing services, and 6) state of knowledge of co-design and current practices.

All interviews were recorded with permission and transcribed. Results were compared and analyzed using Thematic Analysis in order to extract all key issues in a form of the main lessons learned. The rationale was that all good practices gathered through case studies can be used to form a basis of the guidance designed to help community-based organizations use co-design with their beneficiaries more effectively in order to achieve better services and more effective means of delivery. The observation notes and pictures taken during the site visits were used to support the analysis.

## **Principal Findings from Case Studies**

This section presents the main findings of five case studies conducted in the project. The outcomes were compared to identify similarities and differences in terms of current knowledge of co-design and existing service design processes, especially how much users and designers are currently involved, as well as how the involvement affecting service quality and costs.

### *Case Study 1: MERU*

**Main Focus:** This case study focused on MERU's custom-made services. The charity designs and manufactures a variety of custom-made assistive products for disabled children and young people ranging from a computer control device right through to floor exercise equipment.

**Current Understanding of Co-design:** The interviews with the CEO and three design engineers revealed that the top management and frontline staff have a good understanding of co-design and already applied its principles to co-create custom-made devices with service users and other stakeholders (e.g. parents, carers and social service officers).

**Service Design Process:** For all custom-made products, the process begins with a request from beneficiaries, such as users, parents or healthcare professionals. All requests will be thoroughly assessed by the project referral committees (including an occupational therapist, a physiotherapist, an engineer and a project administrator) to establish that there is no other suitable device available in the market.

The process consists of three stages: 1) co-creating the brief, 2) co-designing the concepts and 3) co-evaluating the outcomes. Firstly, the co-creation of the design brief will be carried out by a design engineer who is assigned as a project leader and the end user. The current design brief template is a subject of many years of refinement. Unnecessary questions have been removed and new items have been added to capture users' detailed requirements and emotional needs, e.g. aspirations. The co-creation of the design brief is crucial to the quality of the service. Unrealistic requirements must be identified and eliminated at the early stage.

During the second stage, all stakeholders are treated as co-decision makers. However, healthcare practitioners often make the final design decisions. This was because many custom-made products are considered medical devices. Thus, they are regulated by the Medicines and Healthcare Products Regulatory Agency under the Medical Device Directive.

In the last stage, a handover meeting will be held to make sure that the user is satisfied with the outcome. To ensure the quality of the outcome, the product will also be thoroughly assessed by another design engineer whether it fulfils all the requirements in the design specs.

**User Involvement:** If users do not have any severe cognitive impairments, they will be involved in all stages in the co-design process, namely defining problems, creating the brief, developing design concepts, selecting concepts, finalizing details and testing the product. Nevertheless, it was observed that some disadvantaged children and young people may lack



confidence to co-create and/or make decisions. Hence, it is important to help them express themselves and their ideas. Nonetheless, it is not practical to expect service users and other beneficiaries to be physically present at all stages of the design process, since many of them have mobility impairments. Thus, most communications are carried out via phones/emails.

**The Main Challenges:** Getting all stakeholders involved in the design process is very challenging, especially in a case where several professionals are involved and cannot agree on what is 'best' for a child. The high level of user engagement has significant impacts on the time, human resources and costs. Currently, each project takes at least two months to complete. Some requests which are considered low priority (e.g. an adapted Xbox controller) may have to wait for a few years. Due to limited staff, the charity can handle around 10 – 12 projects at one time. Although the total cost varies from one project to another, on average, each costs approximately £1,000.

**Main Lessons Learned:** By breaking down the co-design process into three key stages, MERU has achieved an effective way of working with users and ensured that all key stakeholders are involved throughout the process.



*Figure 1 from left to right – MERU's design studio and workshop facilities.*

### *Case Study 2: The Blackwood Foundation*

**Main Focus:** This case study will discuss how the foundation applied the co-design principles to develop its services. Currently, the foundation offers two main services. Firstly, it helps connect people with a disability or support needs with designers and the design process. Secondly, it helps connect people with an interest in independent living together so that they can share problems, ideas and recommendations freely.

**Current Understanding of Co-design:** The interview with the director suggested that the charity has a good understanding of co-design and

already applied its principles to develop two main services. In 2010, the foundation conducted 11 consultation and engagement workshops with approximately 100 people Scotland-wide as a means to capture what people with a disability or support needs really want. The key findings are:

- Firstly, many workshop participants have strong potential to play co-creating roles. Using Sanders and Stappers (2008) framework for classifying users based on level of expertise, passion and creativity, many participants are considered '*creators*'. They know what they want and already designed/modified products and/or built environments to suit their physical and emotional needs.
- Nevertheless, there are limited opportunities for these '*creators*' to engage in the design process. There is need to utilize their knowledge and creative skills by giving them more opportunities to co-create new designs and technologies with trained designers.
- Most people do not know about existing products/services to support their independent living. There is a need for a platform that allows people to exchange knowledge more effectively.

**Service Design Process:** The principal findings from the co-design workshops were used to inform the service development, which can be divided into two main stages. The first stage is the development of **bespoken** ([www.bespoken.me](http://www.bespoken.me)), a social media site that bring together anyone with an interest in independent living. The site offers a forum that allows people to exchange ideas, tips, problems and recommendations more effectively. It also showcases good designs so that members are aware of existing solutions in the marketplace as well as recent developments.

The second stage is connecting users with designers through a university engagement scheme. The Blackwood Foundation conducted the pilot work with School of Engineering and Design, Brunel University. The charity set a design challenge for a final-year design student by asking forum members to come up with problems and/or new design opportunities for the chosen student to work on. The idea was to encourage a trained designer to co-design a product with bespoken members. At the end of the project, a meeting was carried out with the student to discuss the overall experience and identify potential problems that should be taken into consideration before launching a larger scale of design challenge in the future.

**User Involvement:** The charity has made a good use of an online digital platform to help people with a disability and plays an active role in the co-

design process. By encouraging online collaborations, certain limitations imposed by disabilities can be overcome.

**Main Challenges:** Although an online platform has helped overcome some problems, an effective way to collaborate still needs to be established. The reflective interview conducted with the designer at the end of the pilot project revealed that the designer did not know how to utilize users' knowledge and creative capabilities effectively. The interview results show that the designer perceived the user as an adviser rather than a co-creator.

**Main Lessons Learned:** It is important to encourage trained designers to fully utilize users' insight and creative skills. Sanders and Stappers (2008) observed that, in order to successfully embrace co-design practices, one must believe that *"all people are creative."* This is not a commonly accepted belief. That is why some designers or persons in charge might find it difficult to let go of control and let users make key design decisions.



Figure 2 from left to right – Consultation and engagement workshops, and the online collaboration between a designer and bespoke members.

### *Case Study 3: Disablement Association Hillingdon (DASH)*

**Main Focus:** This case study mainly focused on the recreation services designed to support disabled people in Hillingdon.

**Current Understanding of Co-design:** The semi-structured interviews conducted with the Chief Officer and Activity Leader revealed that DASH has very limited experience with trained designers. The charity has never involved a designer in any service development project. Thus, they have never come across the term co-design. However, they found the principles of co-design well aligned with their ethos, since DASH is committed to deliver user-led services to its beneficiaries. Most service developments in the recreation area are truly user-led, since ideas are often initiated by users. In many cases, users take the ownership of the activities – see the actual quote from the Chief Officer below:

*Boccia is the newest activity, only starting a couple of weeks ago, as a result of one of service users telling us that the nearest place he can play boccia is Hemel Hempstead. Obviously, transport for disabled people is much more difficult. To travel to Hemel Hempstead just to play for a couple of hours is not very feasible. That's why we set it up for him. Now he actually runs the group himself (see Figure 3).*



Figure 3 Discussions with users and carers carried out during the Boccia session

**Service Design Process:** Although users are seen as a main source for new service ideas, there was no formal process of developing service with users. Most ideas for new services were captured through casual conversations. The organization occasionally sends out a questionnaire as a means to identify users' requirements. This kind of questionnaire is part of an on-going review to ensure that users are satisfied with the services offered. Nevertheless, there is no specific timetable for this kind of survey.

DASH sometimes uses creative techniques, e.g. brainstorming, to generate new ideas with users. Nevertheless, in most cases, they rely on close relationships, good communication skills and intuition. They have practical techniques for teasing out ideas from different groups of users. While open questions work well with people with physical disabilities, a lot of probing questions are needed for people with learning disabilities.

Currently, there is no evidence of a formal process for the new service development. Once a new service idea is picked up by a staff or a volunteer, they will share the idea with their colleagues and line managers. If the team agrees that this service idea is interesting, they will explore how to deliver it, e.g. contacting suitable funders. After the funding is secured, the team will start investigating practical aspects, such as finding suitable venues.

**User Involvement:** According to discussions with several users and carers, DASH is perceived as approachable, open-minded and responsive to users' ideas. If the service does not require a large amount of setup costs, the charity is willing to put the new idea in practice without delay. Most

users and carers felt that their opinions were listened to and valued. Thus, they are willing to share ideas, because they have seen that their suggestions have been implemented. All service users took part in the interviews, especially those with physical disabilities, are keen to be more involved in service development (e.g. leading the activity that he/she suggested). In general, the charity encourages users to lead an activity that they suggested, since it is perceived as a way to help service users develop important life skills, e.g. planning, organization and management.

**Main Challenges:** The biggest expenditure is staff. Although the charity always seeks ways to reduce costs, user satisfaction is more important than cost effectiveness. This is because the level of user satisfaction and rate of attendance are main criteria where external funders judge the service quality.

**Main Lessons Learned:** By treating user involvement as part of skill development schemes, this could get more users interested in working with charities and voluntary organizations on service developments.

#### *Case Study 4: Age UK Hillingdon*

**Main Focus:** This case study focused on social contact services provided under the 'Active Ageing Group' scheme which aims to promote active lifestyles and social interaction through numerous recreational activities, e.g. social outings and group exercises. The data was collected via a combination of an observation and semi-structured interviews with staff and volunteers, as well as service users (see Figure 4).



*Figure 4 Observation and interviews carried out at Wallis House, Ruislip, UK*

**Current Understanding of Co-design:** The charity has no experience of working with designers – not even well-established disciplines, such as

graphic design. Thus, they have never come across the term co-design. Nevertheless, the charity is interested in learning more about co-design.

**Service Design Process:** The charity currently does not have a formal process for developing a new service or improving existing ones. New ideas are often emerged from users' feedback. The organization employed both formal and informal processes to evaluate user satisfaction and identify new opportunities, e.g. questionnaire surveys. This ongoing evaluation helps ensure that the services are continually improved and evolved.

According to the interviews, service users are welcome to be involved in all stages of service developments ranging from identifying problems right through to planning service details (e.g. choosing types of exercise that they would like to do). In general, when a user suggests a new idea, the charity will try to accommodate it and test it with other users. If the new service idea receives positive feedback, it will be introduced to wider audiences. If not, the idea will be removed. Several ideas (e.g. t'ai chi and Nordic Walking) were suggested, tested and removed due to unsuccessful results.

**User Involvement:** The staff observed that when users first joined the group, they can be quite shy. However, as they become more familiar with staff and other users, they will be more 'vocal' and confident to express their thoughts and opinions. Since not all users are interested in creative activities, e.g. designing services, it is important to make the tasks relevant. Since many users have hearing impairment, the ability to frame questions in a short, sharp and simple sentence makes a significant difference.

The informal discussions with several users confirmed that users' opinions and suggestions were valued and taken seriously by the charity. Most users found staff and volunteers to be open-minded and patient. This makes them feel comfortable to give feedback and suggest new ideas.

Most users said that they are willing to spend their time planning service details with the charity, e.g. designing the itinerary of a day trip. Only a few users are interested in leading the service development project while others feel rather shy and do not wish to take the lead. They would rather give suggestions and let the staff develop the ideas further themselves.

Many users are willing to help the charity test and refine their new service ideas. Since the services are user-centered, users can choose what services they want. If they do not like the activities, they will not take part. In this way, users' attendance can also give a clear indication about the service quality. The users pointed out that, at the beginning, there were only three people attending the group activities. Now there are approximately 20 people attending. This was because the charity listened to users.

**Main Challenges:** The biggest costs of services are transport and staffing, especially services designed for wheelchair users, since the charity must have enough staff to support each user. Hence, it may not be practical to get users physically present in all service design activities due to mobility problems. Even a short distance, some users need assistance.

**Main Lessons Learned:** Some users may have relatively low confidence to begin with. It is necessary to create an environment that makes them feel comfortable and enhance their confidence so that they can openly express their concerns and creative ideas. Thus, staff's attitudes and behaviors are crucial to the success of co-creation. Besides, sensory impairments must be taken into consideration when planning creative activities for older people.

### *Destiny Support*

**Main Focus:** This case study will focus on the practical support that the organization provides for its beneficiaries. This group of services aims to enable independent living and personal development, e.g. applying for council housing and giving lessons on basic IT skills.

**Current Understanding of Co-design:** The organization has never worked with any designers – not even tradition disciplines, such as graphic design. Thus, it is not familiar with the term co-design or co-creation.

**Service Design Process:** Although Destiny Support does not have a formal process for designing a new service, they were truly user-centered – see the quote from the Head of Operations below:

*We decided that we are a supporting organization - just come through the door, tell us what you want us to support you with, even if we don't have resources or specialists in house, we will try and look for the help you need if it is out there.*

**User Involvement:** Although all service ideas were identified based on users' needs, service users are involved mainly at the front-end of the service development process. They are not involved in the planning and delivering of services. Most user engagements were carried out in an ad hoc manner (e.g. informal conversations with users), since there is no formal process – see the quote from the Head of Operations below:

*We don't choose what services we are going to deliver. We identify. When people talk to us, we listen and think: 'what can we do?' We very much react to the needs rather than set up something because we think that might be what people want. We want the problem to*

*be solved in the long term. We don't want this person to keep coming back to us or be dependent on the services. What normally happens with other organizations is that a user would resolve one issue. Like that, you have not empowered that person. The rest of the problems are still there. For us, we listen to them and list down their problems. If you identify the real problem, the rest will fall into places.*

Moreover, there is no formal process for evaluating service ideas before the launch. The current service planning mainly concentrates on identifying resources needed to deliver the service (e.g. expertise, materials, equipment), because the organization has to apply for external funding.

**Main Challenges:** The main barrier preventing the organization from increasing the level of user involvement is not staff time or money, but characteristics of service users. Most of which have many serious problems, e.g. losing their council houses or benefits, having financial difficulties and being taken to court. They are not in the right frame of mind to engage with creative activities, such as service design and development.

Interestingly, many users have become volunteers of the organization. While it would be difficult to get users involved in planning and delivering services, there is a strong possibility to engage volunteers in designing services for people who experience similar problems and challenges that they previously encountered. According to the interviewee, volunteers are perceived as another group of service users which the organization also wants to empower. The organization provides support to volunteers by giving them an opportunity to further their education. As a social enterprise, it is in a good position to help volunteers get access to free training courses.

**Main Lessons Learned:** Co-design might not suit all types of users. People in stressful situations are unlikely to be interested in co-designing services. The mundane process of applying for external funding and lengthy paperwork may be the main reasons that make a number of not-for-profit organizations decide not to involve users in service planning.

## Discussions

This section summarizes all key issues, as well as the similarities and differences in terms of current state of co-design knowledge, existing service development processes, the level of user involvement and designers' inputs.

Firstly, the practices employed by organizations that make good use of co-design (MERU and The Blackwood Foundation) are compared with those



of ‘*typical*’ community-based organizations in order to identify values contributed by the co-design approach (see Table 1). Next, the key issues emerged from the case studies are discussed.

Table 1 Summary of main differences of all case studies

	Design-led Organizations	Typical Community-based Organizations
Current State of Knowledge	Good understanding	Unfamiliar with the term, but demonstrated interest in learning more about co-design
Service Development process	Systematic approach; exploring practical and emotional needs	No formal process; focusing on planning practical aspects, e.g. finding suitable venues
Roles of Users	Users as <i>co-creators</i> – users were involved in all design activities	Users as <i>advisors</i> – users provided feedback and ideas, and tested new services
Roles of Designers	Lead the co-creation	Designers were not involved
User Satisfaction	High level of user satisfaction	High level of user satisfaction
Values Added Through Co-design	Empowered people by encouraging them to develop solutions with designers and make key decisions by themselves	Limited use of collaboration means only a few active users gained full benefits of being involved in a creative process, e.g. developing new skills

The key issues captured from the five case studies are:

- The level of understanding of co-design among community-based organizations varied greatly. While some organizations have successfully applied this approach to develop and/or improve services, others have never heard of the term co-design.
- The size of the organization and resources do not appear to impose significant barriers for adopting co-design. For example, The Blackwood Foundation, which has only two staff, showed good understanding of co-design and already made good use of it.
- While most organizations have the right mindset for adopting co-design, since they are keen to listen to users’ ideas, only the minority actually involves users in the service development processes. Most participating organizations tend to involve users in the early stages of service development only, e.g. identifying

- problems and generating ideas. Users are not involved in the later stage of service development, e.g. planning service touchpoints.
- The staff and volunteers of participating organizations have developed exceptional communication skills which allow them to build good relationships with service users and help them capture useful ideas and feedback. Several participating organizations heavily rely on personal relationships between their staff and users. This makes them vulnerable if their staff/volunteers leave.
  - It was observed that both organizations that make good use of co-design have a systematic process for developing services and access to trained designers. Having a systematic process for co-designing with users and inputs from designers allow them to explore all issues thoroughly before creating the briefs and the solutions.
  - The organizations without a systematic process or inputs from designers appeared to focus on planning practical issues only and did not demonstrate a thorough investigation upfront. Hence, emotional issues, e.g. aspirations, might not be properly addressed.
  - The slow adoption of co-design might not be because of perceived benefits and risks, since most participants considered user involvement to be beneficial and did not display serious concerns apart from resource implications. The lack of awareness may be the main reason, since most organizations rarely work with designers and, thus, have limited understanding of design contributions.
  - In some cases, beneficiaries of these organizations present serious challenges. For example, it is not practical to expect disabled children and/or elderly people to be physically present at all stages of the co-design process. Moreover, some disadvantaged people may lack confidence to co-create/make decisions. It is important to make them feel comfortable and enhance their confidence so that they can honestly express their thoughts and opinions.
  - Good use of co-design was considered valuable, as it allows community-based organizations to help disadvantage people beyond providing them with good services. Involving people in the design process could encourage them to think creatively and make decisions by themselves, as well as help them develop new skills.

The key issues extracted from the case studies suggested that there is a need to help community-based organizations understand design contributions and help them start adopting co-design and its practices.

## Conclusion

The case studies helped the researchers develop better understanding of current state of co-design knowledge of community-based organizations and their existing service development processes. The studies suggested that community-based organizations have the right mindset for adopting the co-design principles. The most important thing is to help them understand how design, especially co-design, could contribute to their organizations, their services and their beneficiaries. As a result, a series of short educational videos were created in order to help community-based organizations see how other organizations in the not-for-profit sector use co-design to help them develop better services with users (see Figure 5). These videos are the results of the co-creation between researchers and community-based organizations that took part in this study.

By getting community-based organizations to share their real-life examples of how co-design has helped them developed better services, the team can ensure that the materials are relevant to the target audiences. Moreover, academic languages (which, in many cases, are considered *off-putting*) can be avoided. Since all examples are in the not-for-profit context, it could help inspire other organizations to learn more about design and co-design. The case studies' results were later combined with those from the other primary research to form the co-design guidance for this sector.

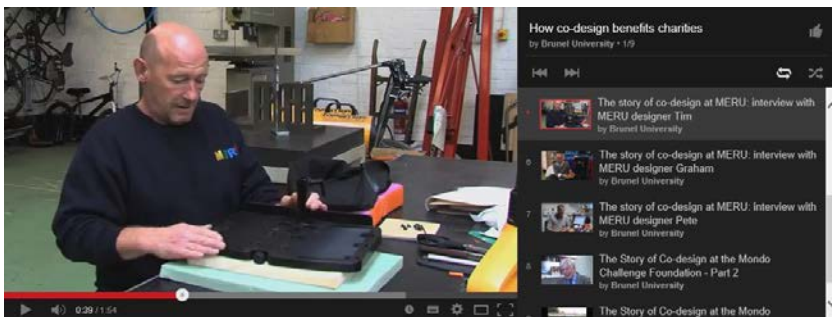
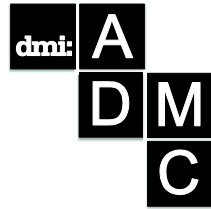


Figure 5 A series of videos sharing real-life examples of how co-design helped community based organizations developed and delivered better services with users  
(<http://www.youtube.com/watch?v=rgIBqDtOTUs&index=6&list=PL0EdKd9GP9-jq9M3CC3pMCYk5oQ6pF8aY>)

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## Conflicts as Opportunities for New Insights

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*Collaboration is increasingly valued for innovation, however setting up collaboration between different stakeholders is challenging due to the high level of uncertainties at the early stages of the innovation process. In networked innovation, the what (proposition) and the how (development process and business model) need to be designed together. Involvement of potential partners early in the design process is important to gather valuable insights to enrich the value proposition, and reduce uncertainty.*

*To support the multi-stakeholder collaboration, we are developing a method that combines user insights and business insights in a single design process for multi-stakeholder settings. In this paper, two cases are examined in which we applied our method with the purpose of defining a combined service proposition with a triple-helix innovation model by inviting core stakeholders. We observed different dynamics in the discussions during the sessions, and more specifically, in the way conflicts emerged and new insights were created. Conflicts were observed to be valuable moments in multi-stakeholder discussions; they acted as a driver for the conversations that provided new insights to the participants and reduced the uncertainties, as a consequence. Confrontation rather than suppression of conflicts is suggested to reduce uncertainties in the earlier stages of innovation processes.*

**Keywords:** *conflicts; collaborative design; participatory innovation; stakeholder involvement*

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## Introduction

Product/service design and development is an interdisciplinary activity, which requires people/organizations with different skills and knowledge to collaborate throughout the process (Ulrich & Eppinger, 2004). The intensity of the required collaboration usually increases with the level of complexity of the design problem or the designed product/service.

When we look at the contemporary practice in the design field, we can see that the design challenges are more complex than before: the focus of design shifted from designing products for users to designing future experiences of people, communities and cultures (Sanders & Stappers, 2008). We are also faced with societal challenges, like people having an inactive lifestyle, or meeting the needs of the aging population in society. In many cases, understanding the dynamics of these problems requires an inquiry from multiple perspectives and finding real solutions becomes possible with a trans-disciplinary approach (Brown, 2009), by bringing together complementary experience, skills and resources from different parties (Den Ouden & Valkenburg, 2011), which makes collaboration in product design and development even more important.

However, initiating collaboration between diverse stakeholders is challenging. In networked innovation, it is important for the collaborating parties to be able to check the feasibility and attractiveness of the solution, and the value it delivers to them (den Ouden & Valkenburg, 2011). But a number of uncertainties in the early stages of the design process makes it difficult to define the value proposition: a) many large-scale design problems such as interactive system design, product-service design or design for societal challenges, have a wicked character; the understanding of the problem evolves with the solution (Cross 2006; Dorst, 1996); b) the front end of the design and collaboration process is fuzzy, since the scope and dimensions of the problem are still vague (den Ouden & Brankaert, 2013); c) the capabilities and expectations of the different stakeholders are unknown to each stakeholder at this early stage (Atkinson, Crawford and Ward, 2006).

In multidisciplinary innovation processes, people from different disciplines, organizations and communities of practice need to collaborate. For the collaboration to be effective, shared experiences and moments of conversation are necessary (Eriksen & Vaajakallio, 2013), and also stated as valuable to achieve innovation (Buur & Larsen, 2008). It is advised that the stakeholders should be involved from the early stages to increase the added value, allow the affected parties to have a say in the proposal and enforce commitment (Abma, 2000).

One of the challenges in both traditional and more recent innovation processes is the alignment of interests of different stakeholders. Bringing an innovation to the market requires not only alignment with (future) market needs but also alignment between the understandings of all the parties involved in this process.

In traditional innovation processes, carried out within the structure of a single (often multinational) company, this alignment was often achieved through the organizational (hierarchical) structure of the company. Creating modern innovations often requires the collaboration and alignment of a much wider range of parties due to the increasingly complex structure of the required network. This will inevitably complicate the process since there is no natural guidance through the hierarchical structure of the major/dominant company involved. Although this more complicated alignment process will result in more conflicts during the initial phases of the innovation process, this is, in itself, not a bad thing.

Many authors have stated that resolving conflicts is a natural and essential part of the iterative process of innovation (Abma, 2000; Cuppen, 2012). Identifying (and resolving) these conflicts “upstream” early is considered far more efficient than “downstream” later due to the far higher flexibility in the earlier phases of the process. Since modern, networked, multi-stakeholder processes lack a central coordination mechanism it is expected that more conflicts will appear in the process. However high level of uncertainty may prevent the conflicts to surface until the later stages, and when the conflict is surfaced, intervention through the design of the process can be required for the conflicts to be constructive.

We are developing a method and a tool to support these collaborative design discussions between different stakeholders, by combining design and business insights, to create a shared understanding and reduce uncertainty in the early stages of design and collaboration. We are developing our method by a research through design process, in which we apply our method through a workshop process and a visual layout-tool, named Value Design Workshop, in multi-stakeholder sessions and reflect on the dynamics of the discussions and how those relate to our intervention.

We applied the Value Design Workshop in two cases with an aim to define the service proposals through Field Labs and the related value networks. This paper examines two cases that we conducted as a part of our research through design cycle. We will present our observations and user evaluations in these two sessions, with a focus on how conflicts took place in these two sessions and in which ways they affected the content of

discussion. We will elaborate on the effects of conflict in creating new insights in the multi-stakeholder dialogue, at different levels of uncertainties. Then we will discuss on the potential and limitations of the workshop process and tool from this perspective to support the design process in a stakeholder group.

## Available work

### *Uncertainty*

Networked innovation projects are usually complex in nature, due to the dimensions of the problem at hand and the possibility of solutions. In most cases, there is high level of uncertainty especially in the early stages of project lifecycle (Atkinson et al., 2006; den Ouden & Valkenburg, 2012). A significant amount of work is done to conceptualize uncertainty, and large amount of the available research is focused on internal uncertainty in organizations (Perminova, Gustafsson & Wikström, 2008). A commonly used definition of uncertainty is *the lack of required information to perform a task*: “The difference in the amount of information required to perform a task and the amount of information already possessed by the organization” (Galbraith 1973, cited in Harkema, 2012, p.44). A classification of uncertainty based on an overview of literature is presented by Lipshitz (1997). In this classification, the issues of uncertainty (what the decision maker is uncertain about) are *outcomes*, *situation*, and *alternatives*. These are induced by *incomplete information*, *inadequate understanding* and *undifferentiated alternatives* (Harkema, 2012). Atkinson et al. (2006) presents three key areas of uncertainty featured in networked discussions as:

- uncertainty associated with estimating: variability in relation to the performance measures like cost, duration, or quality, resulting from lack of data/inaccurate detail, bias, limited control, ignorance
- uncertainty associated with project parties: arising from uncertainty about the party’s level of performance, objectives and goals, the extent to which these objectives are aligned, reliability of the work undertaken, abilities of the party and availability of the party
- uncertainty associated with stages of the project life cycle.



They add that when the agents of the network are from different organizations, these problems can be particularly challenging, because sharing of information, responsibility and objectives can be limited.

Uncertainty may vary on the type of the project and the output. For some projects, like the ones that have a tangible outcome that can be presented with physical models and prototypes, the goals are clear and well defined and can be given from the start. On the other hand, in the projects in which the outcome is not tangible, clarity and agreement are harder to achieve, and the measures are qualitative rather than quantitative (Atkinson et al., 2006). Crawford & Pollack (2004) define dimensions of *hardness and softness* of projects that define the scope of uncertainty involved. These dimensions are *goal clarity, goal tangibility, success measures, project permeability, number of solution options, participation and practitioner role and stakeholder expectations*. The projects in which the output is not tangible and many stakeholders are involved are located towards the Soft end of the spectrum, being high in uncertainty (Atkinson et al., 2006).

Therefore, they emphasize the importance of clarifying stakeholder expectations and priorities at an early stage to avoid major difficulties in the later stages.

### *Conflicts in Multi-stakeholder Collaboration*

One characteristic component of multi-stakeholder collaboration process is conflicts. When the participants from different disciplines and stakes meet, it is more likely that different stakeholders have different or conflicting views on a shared problem or a goal (Abma, 2000). In fact, since the different viewpoints challenge each other when people from different communities (Eriksen & Vaajakallio 2013) and perspectives (Cuppen, 2012) are brought together, “consensus on all issues is rarely if possible” (Guba & Lincoln, p.41, cited in Abma 2000).

Although conflicts are normally perceived as a negative term, the value of conflicts in multi-stakeholder dialogue as an enhancer of learning (Cuppen 2012), creativity (Nemeth, Personnaz, Personnaz, & Goncalo, 2004). 2004; Buur & Larsen, 2010), empowerment, constructive dialogues and innovations (Abma, 2000) are addressed in literature. Especially in the early phases where the flexibility is high, conflicts not only may identify potential future roadblocks but also potential future opportunities. It has been argued that they can be the drivers of innovation; therefore recognizing the quality of conversations in such settings are valuable for supporting innovation and collaboration (Buur & Larsen 2010). Although

most of the participatory methods aim at consensus building (Cuppen, 20102), suppressing conflicts may move discussions into a form of formal meetings and decrease the likelihood of arriving at novel solutions in a team.

However not all types of conflicts are useful. For instance, Abma (2000) differentiates *functional conflict* from *dysfunctional conflict*. While in functional conflict, participants are “the prisoners of their own construction and unable to re-construct their position and situation” (p. 204), in functional conflict they can arrive at new meanings and solutions. Cuppen (2012) coins the term *constructive conflict* as a mechanism to enhance learning in stakeholder dialogue. Which “refers to an open exploration and evaluation of competing ideas and knowledge claims in order to achieve new ideas, insights and options for problem solving” (p. 26). Others use the terms *productive conflict* and *creative conflict* to describe the concept (Cuppen, 2012).

Conflicts are more useful in the early stages of collaboration, however they may remain hidden. Especially when the abstract concepts are to be implemented through stakeholder collaboration, consensus can be a superficial one (Abma, 2000). High level of uncertainty in the early stages may allow the conflicts to remain hidden until the later stages where concrete action is need. During the initial stages of the projects with soft characteristics where uncertainties are high, uncertainties can be inappropriately accepted due to partners feeling the need to accept the risk, in order to win the work, or because of the ignorance of the scope of uncertainty (Atkinson et al., 2006). This doesn’t mean that consensus cannot be reached, but it may be dangerous to reach it “too soon and for the wrong reasons, e.g. because of the inability to tolerate conflict” (Mitroff & Enshoff, 1979, p.10 in Cuppen, 2012). Therefore, it is particularly important to clarify stakeholder expectations and priorities at an early stage (Atkinson et al., 2006). Conflicts are the moments at which uncertainties are reduced and new balance is searched.

## Case Study setup

We organized Value Design Workshops to define the services provided by FieldLabs in two different cities, and to map out the related value networks to realize the services. A FieldLab can be described as a living-lab concept for (sports) innovation, based on Triple-helix innovation model (Etzkowit, 2003). It is “a research and development location in a real-life

setting where citizens engage in sports & play activities and where businesses can test their product prototypes” (<http://fieldlabs.eu/>). Therefore FieldLab services are composed of overlapping services provided to different customers, in this case, the local citizens, sports industry and knowledge institutes.

In both sessions we invited the core stakeholders who are the possible collaborators from the local network, or already started collaboration a short time ago. The value proposition of the FieldLabs in two cities was similar; however they are in the different stages of establishment, therefore the collaboration and involvement of partners were in different stages.

City A was in the earlier stages with partial infrastructure installed and a pilot project is being carried out at the time of the writing of this paper. During the pilot project, collaboration with the business partner has already been started a year ago; therefore the business representative was familiar with the concept. The participants from the neighbourhood activity organizers were not familiar about the service but wanted to get more information. However the services were not clarified and a FieldLab manager has not been assigned yet.

In City B the establishment of the FieldLab had already been started 4 years ago with the support of government organizations. A number of projects were carried out in collaboration with the partners from the business. A FieldLab manager has already been assigned by the municipality, however the FieldLab was being operated with the support of the NWE ProFit Project which is coming to an end in 2015, therefore the project partners were aiming to establish the business model without the project support. In both cases, the project partners from the municipality and university were looking for ways to involve the local stakeholders to organize activities and define a service structure with a business model to set-up a standalone operation.

In both sessions the same discussion process was followed, as proposed by the Value Design workshop.

## **Value Design Workshop**

Networked innovation with the involvement of different stakeholders has different dynamics than designing from single producer perspective (den Ouden & Valkenburg, 2012). It requires not only defining the solution but also defining the collaboration space with roles of different stakeholders. The need for methods and tools that support the initiation of multi-

stakeholder collaboration are stated (den Ouden & Valkenburg, 2012; Cuppen, 2012)

User Centred Design methods and tools do not necessarily address this issue, since the main focus is to create empathy with users and feed the design process with user information. Other methods from innovation studies often focus on creating new business models (Osterwalder & Pigneur, 2010; Reis, 2011) but they often assume that the solutions that connect the different stakeholders are already there and they do not necessarily develop the proposition together with the potentials of the collaborating parties. Den Ouden (2012) proposed a value model to support the value creation with multi-stakeholders. This method focuses on designing based on business insights and creating balanced value network. However, there is no direct association in her approach to connect the user insights and business insights together and make the innovation action more dedicated.

We therefore developed a method to support the initiation of multi-stakeholder innovation which allows designing the value proposition with stakeholder input. With our method we aim to integrate user insights with business insights in a single design process, to deepen the understanding on user requirements, business requirements and the collaboration structure needed for a value proposition. We propose that our method is useful in the early stage of product/service development and collaboration, when an initial proposal is defined, but still open to take shape with the contribution from stakeholders.

We designed a workshop process and a visual layout –tool, named Value Design Workshop, to apply our method and gather insights on multi-stakeholder collaboration and improve our method further (Gultekin-Atasoy, Bekker, Lu, Brombacher & Eggen, 2013).

The workshop process supports the discussion by proposing topics and keywords for the group to follow a structured discussion, enabling the participants to discuss the concept from different perspectives and position themselves in the value proposal (see Figure 1).

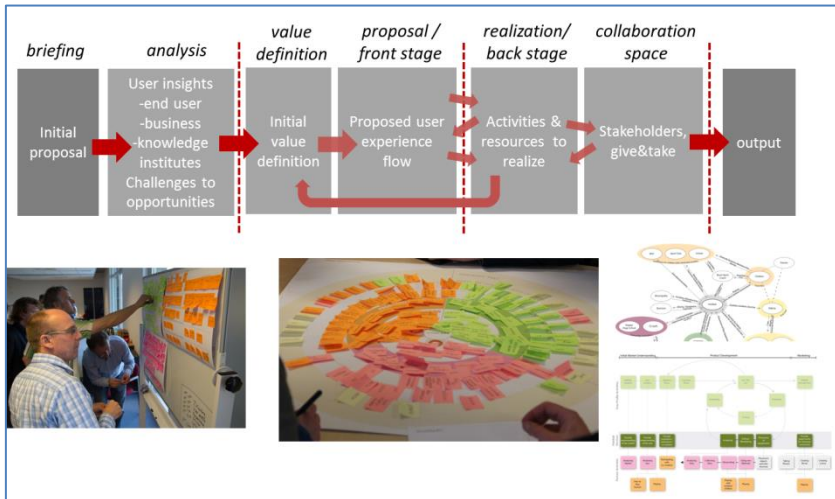


Figure 12 The Value Design Workshop Process

The process starts with an analysis of user profiles and requirements. It is followed by defining proposed experience flows with the service and then related activities and resources to support the business process. The final step includes positioning related stakeholders and their roles in the value proposition. The workshop process is supported with a paper layout which proposes topics of discussion and provides a surface that the discussion can be recorded with sticky notes. The consequent steps with the proposed layout help the participants to connect the design decisions given in the earlier stages of discussion as a means to generate new perspectives or details regarding the discussed design concept.

In the earlier stages of our research, we evaluated an earlier version of the process in terms of facilitation (Gultekin-Atasoy et al., 2013) and on how participants experienced it (Gultekin-Atasoy, Lu, Bekker, Eggen & Brombacher, 2014). In the cases presented below, we were interested in evaluating the method for the service design proposal with the involvement of key stakeholders.

## Method of analysis

The sessions were video recorded. Following the sessions interviews were held with the participants on what their expectations were, whether the session met their expectations, what they liked or did not liked about

the session and whether it provided useful insights. Following the interviews, the first and second author made a qualitative analysis of the discussions by identifying the structural categories (Popovic, 1996) in the discussion. The pattern coding (Miles & Huberman, 1994) was made in two steps: In the first step the discussion clusters were defined based on discussion subjects, and the type of statements made by each participant were identified with a summary of the statement. The following coding was used to classify the statements:

- *Argument*: Statement of reasoning regarding the concept
- *Question*: Asking a question for a better understanding/explanation
- *Explanation*: Explaining to provide better understanding
- *Idea*: Proposing a specific aspect of the design concept or solution to the problem
- *Agreement*: Confirming
- *Problem*: Mentioning a problematic condition
- *Disagreement*: Not being in agreement

Activity flows in each discussion cluster were identified to understand the main purpose of the discussion, i.e. in which way the discussion cluster helped the group to have an understanding over the discussion topic, (*clarification, ideation, problem spotting, opportunity spotting, disagreement*). The classifications were decided on by the two analysts discussing together on each cluster and try to arrive at an agreement. In some cases, the classifications made by the two analysts did not match with each other. In these cases, the analysts discussed why it was interpreted differently and whether the analysis scheme can be improved. This pattern analysis served for a deeper understanding of the content and purpose of the discussions.

In the second step of the pattern coding, discussion clusters were classified on whether the participants had an agreement, whether they had aligned their understanding of the problem/solution or whether a conflict arose, with the following categorization:

- *Clear Agreement*: Participants clearly agreeing on the presented argument
- *Alignment by defining a common ground*: Developing a shared understanding regarding the possible solution/design proposal through defining the aspects of a solution

- *Alignment by defining problem:* Developing an understanding on dimensions of the condition at hand by addressing problems
- *Clear Conflict:* Participants clearly being in disagreement regarding the presented argument

Finally, the two cases were evaluated by relating the evaluations from the analysis of interviews and discussion patterns.

## **Results**

It was observed that the discussions in the two cases have different characteristics: In City A the session went smoothly and the participants were mostly in agreement with each other. The proposed solution was evaluated and roles of the participants and the activities that can be carried out in the FieldLab were discussed. In City B, conflicts occurred in the process, which blocked the discussion many times, and terminated the proposed process. Mainly the existing problems, why these problems occurred and the possible solutions were discussed; however the service concept was not defined due to time limitations of the session. At first, the two sessions appeared to be one smoothly running session which provided general insights, and the other a session in which the proposed workshop process could not be followed and shared vision was not constructed.

However the post session interviews revealed that:

In City A: The owners of the session were satisfied with having the partners involved. However the participants mentioned that the insights they obtained were not surprising. The organizers said they benefited the session to confirm the concept with stakeholders.

In City B: The owners of the session found the session very useful for being able to discuss the problematic situations with the participants. Each participant had differing insights which they didn't have before, and this eventually affected their understanding of the situation and challenges ahead.

The discussions in City A were mainly on defining the solution by aligning the understanding on the possible solution and possible roles of the partners. In city B, participants aligned their understanding through discussions on both problem and solution, made more jumps, and had more conflicts.

The pattern flows of the two sessions show that the discussions had different characteristics as presented in Figures 2 and 3.

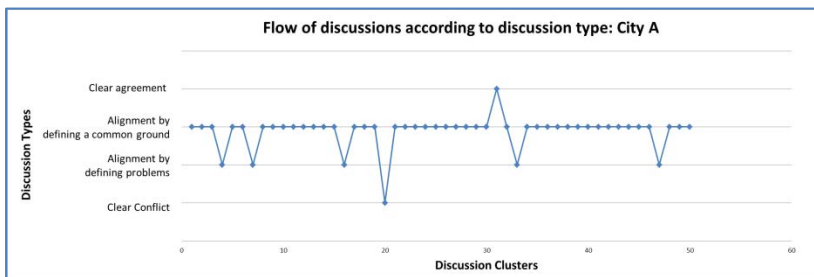


Figure 2 Pattern flow of the discussions in City A.

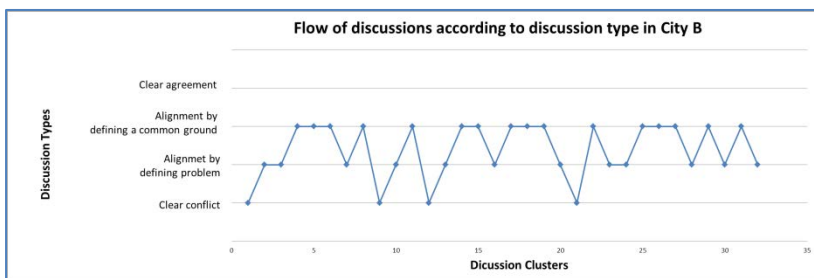


Figure 3 Pattern flow of the discussions in City B.

In the following part we present the results based on interviews and the qualitative analysis of discussions in more detail.

### City A

We observed that the discussion in the session went fairly smoothly and there has been only one conflict occurred. The group was discussing the different aspects of the concept based on the proposed topics by the tool and the process proposed by the facilitator. The participants were mainly in agreement with each other and proposing supportive arguments to strengthen the concept. Ideas to refine the existing service concept were proposed as if they were complimenting each other, and those mainly got accepted by the other group members.

### Interviews

The post-session interviews were made with the company representative, sports event organizer from the neighborhood, project member and partner from the municipality. The company representative, who was familiar with the field lab concept and the project members, mentioned that they found the session valuable to confirm the concept with



everyone and he got some insights from the session but those were not surprising. The project members were satisfied about hearing the stakeholder perspective and get them involved early in the process. They mentioned that they got insights from the participants in the sense that they had the chance to confirm the concept with their participation as well, and it was possible to detail the concept with their input. However they mentioned that those insights were not in-depth, mostly expected and it did not shifted their understanding to a totally different level.

### **Qualitative analysis**

The pattern analysis (Figure 2) show that, the participants were mainly developing a common ground in their discussions, rather than spotting out differences or possible problematic situations. The discussion clusters composed of small number of statements, which in some cases included questions to clarify the given statement. High number of discussion clusters with low number of discussion steps was observed. The group finished the session on the proposed time.

The participants hardly confronted each other's statement by rejections or counter-arguments. Conflict occurred only once; while defining the activities that will be provided to the businesses and knowledge institutes, on the subject that the product testing that can be provided by the university will not be matching the need of the businesses that utilize the FieldLab services. The university would like to use new methods, the companies who would like to test their products, therefore they would like to use proven methods that provide results in the shortest time. Although the issue surfaced while discussing the expectations and roles of the different (possible) partners, which may result in a problem in the later stages of collaboration, the issue was left undiscussed after the statements were made and the participants moved on by discussing the roles of the other partners in relation to other activities provided in the field lab.

### **City B**

The session at the City B revealed that there were obstacles for providing service in the current situation. The *Initial Value Definition* stage of the workshop led this to surface: While the participants were trying to define the "value" of the field lab for each user group, they made a definition of what FieldLab means, and what it can provide. This discussion made it visible that there were challenging conditions in the current FieldLab

operation which makes it difficult to provide and sustain certain expected activities.

One of the participants in the session was the business owner who rented the location from the municipality, which provides services to the FieldLab location visitors, makes connections with end-users and attracts them to the location. However the business has not been able to receive enough revenue as required and it was difficult for the business to sustain its presence and organize activities to attract visitors.

In the early stages of the workshop, the discussion rotated around this re-occurring topic of “how to bring the citizens to the field lab”. The participants made a re-framing of the problem from their own perspectives, and this re-framing revealed how the current operating structure of the FieldLab was and what could be the possible solutions. However, the spotted problem had not been resolved. The proposed process couldn’t have been completed due to the time limitation and the long discussion clusters that challenged the flow of the workshop.

### **Interviews**

Although the session was not finalized as expected, the participants were satisfied with the insights they got from the session. They had different insights: the session owner (FieldLab manager) was satisfied to have everyone talk to each other rather than only with the FieldLab manager, in a constructive manner. She found the session useful to have everyone comment with good examples of the service, which would make it possible to communicate on how to realize the service and the expectations from it. She mentioned that it would also be better if she had the session much earlier. For the business representative, it was a good insight to hear what sports field owner and sports sector wants, and that they have two different profiles of visitors, which opens up a lot of possibilities. For the knowledge institute, it was good to provide comments to help the field lab, and it was possible to discuss the problems the knowledge institutes had and the ways to resolve these.

On the other hand, discussing around the existing problems was mentioned as an obstacle to participate in discussion by some partners. Apparently, the position of the business owner on the location was different than the others present at the session: his business relied on the existence of the field lab, and he had already experienced some problems in the past years. For the other participants collaboration with the FieldLab was just an opportunity. Some participants arrived at the session with an expectation to

discuss about the future possibilities, but they stated that they could not feel like commenting on the vision of the FieldLabs, since the other issues were of discussion.

### **Qualitative Analysis**

In the part of the session where the values for different users were discussed, the discussion rotated around the problem of “bringing the citizens to the FieldLab”. Although the facilitator tried to bring the conversation to focus, and continue the proposed process, the issue emerged again in the consequent discussions, and opened up with the questions from the participants.

In discussion clusters, loops of problem spotting to ideation occurred, and sometimes resulted in conflicts which created a depth and dynamism in the discussion. The emergence of these conflicts terminated the planned discussion process. The facilitator tried to focus the discussion back at the topic with an intention to find a consensus. Eventually the proposed experience flows and the roles and expectations of the partners were not discussed due to the time being not enough to finalize the proposed discussed topics by the tool. The session ended by asking the participants to state their role in collaboration.

The pattern flow of discussions in City B illustrates that the participants mainly referred to existing problems and clarified the situation. The clusters of discussions took longer. The conflicts were followed by an alignment by defining problems and ended up in the alignment through defining the solution, with ideation.

## **Discussion**

We are interested in supporting multi-stakeholder collaboration by developing a method and a tool. Our approach is focused on bringing the important concept and collaboration related topics to discussion, through a collaborative design process which combines design and business insights together, and it provides a graphic layout to support this process. Therefore in this paper we are interested in the function of conflicts in enhancing the development of new insights about the dimensions of the problem/situation at hand and how conflicts can be addressed in the process and tool design.

The two cases that we examine in this paper had the same soft characteristics in terms of uncertainty, i.e., closer to the soft end of the uncertainty spectrum (Atkinson et al., 2006). However they were at

different stages of stakeholder involvement, therefore they had different levels of uncertainty. Our method was useful in these two sessions in supporting the alignment of understanding between the participants. We observed that it also helped the hidden conflicts to surface, however it did not address conflicts constructively.

In city A, there had hardly been conflict moments, since the participants were mainly looking for developing an understanding over a common ground. Although our method supported to spot a conflicting view once, it remained undiscussed. Since the collaboration has not been started yet, the participants did not mention any concrete problems. At this early stage, there were not detailed information available to the participants about the upcoming collaboration stages and challenges; uncertainty was high, which made it harder to reveal possible differences in expectations and understandings. However, the participants benefited by having a shared understanding over the concept, and having the stakeholders involved in the discussion.

In the case with the latter stage of multi-stakeholder involvement (City B), the conflicts aroused from the beginning of the joint discussion about the “value” of the proposed service combinations by the FieldLabs, and the statements were backed up with specific problems that have already been experienced by the business partner of the FiledLab for some time. In this case, the uncertainty was lower, since the problems had already been experienced in the “harsh” way. The moments of discussion were useful in providing an understanding on the problematic situation.

Although we were expecting the conflicts to emerge in the discussion, conflict was not addressed centrally in our design. We observed that our method supported the conflicts to arise by providing specific discussion points on the table from multiple perspectives. However our method was not equipped to transform the conflicts into constructive conflicts. The discussion evolved by itself within the group dynamics. Atkinson et al. (2006) point out that the projects with many uncertainties require a primary emphasis to reduce ambiguity, by having a more flexible approach in the project management which keeps the options open. In our case, when the conflicts emerged, we saw that the proposed process was not flexible enough to cover the discussion moments, which put a pressure on the timing of the session. While the conflicts led to useful insights regarding the problem and situation, those insights were not able to be transformed into solutions.

Abma (2000) mentions two ways that a conflict can be resolved: by compromise through bargaining or by an exchange of values, and by a new synthesis, indicating a new solution. He argues that the conflicts become dysfunctional not because of the lack of consensus, but the lack of other meanings, people or solutions. To manage a dysfunctional conflict, he suggests increasing variety, so that the participants see that the conflicts are constructions rather than the reality, therefore they can be open to re-construction. He proposes ways to deal with conflict, first by making the hidden conflicts visible by confrontation, and then solve it by creating other-point multiplicity, by using metaphors or dialogue and receptive listening. On the other hand, "if impasses (built up of conflicts) and conflicts are handled well – not necessarily resolved- they can be occasions for empowerment, constructive dialogues and innovations" (Lincoln in Abma, 2000, p.201).

We observed that our method mostly supports detailing a central concept rather than spotting out different directions of design. Our method can be further developed by integrating design components that the challenges and conflicts can be spotted and documented as they emerge, and alternative solutions regarding a conflict situation can be made visible as the discussions emerge. In terms of the process, more flexibility can be provided to give room for discussion.

Different stages of collaboration may require different approaches in handling conflicts. Conflicts may not get revealed in the early stages of collaboration easily due to high level of uncertainty and ambiguity. In the early stages, the effort can be placed to enable depth in discussions by addressing diversity in interpretations or expectations rather than allowing those differences remain undiscussed. In the later stages of collaboration, more conflicts can be expected due to available knowledge. High level of flexibility may be required to allow the participants to discuss on certain topics while following the steps of the process.

Lastly, stakeholder selection requires attention, since the unbalanced involvement between different participants can make it difficult to maintain a balanced in discussion.

## **Conclusion**

Conflicts arise when people from different communities are brought together and they are important and -most of the time- inevitable elements of multi-stakeholder dialogue. Although conflict has a negative connotation,

they can be seen as opportunities to reduce uncertainty and develop a shared understanding. When the conflicts are surfaced, differing expectations and understandings are disclosed and ways to resolve these are discussed, and by this way uncertainties are reduced.

High level of uncertainty in the multi-stakeholder projects may cause the potential conflicts to remain hidden until the later stages of the project lifecycle when concrete actions are necessary. However handling conflicting situations at the later stages of collaboration is harder due to diminished flexibility in the later stages. Therefore interventions to organize multi-stakeholder dialogue are required. Making conflicts manifest rather than suppress in the early stages of collaboration is healthy for the collaboration as it serves to create an in-depth understanding. While designing for multi-stakeholder communication processes, conflicts should be considered and time and moments of impasse should be taken into account.

In the two cases presented in this paper, we observed that our method is supportive in reducing uncertainty in multi-stakeholder dialogue through creating a shared understanding of the value proposal, shared analysis of the problem at hand and alignment of expectations in the early stages of multi-stakeholder collaboration. However in our design the conflicts were not addressed as central. Different levels of uncertainty may lead to emergence of conflicts, or may let them hidden. Our next steps of design will address conflict as a central issue for creating insights in a stakeholder dialogue.

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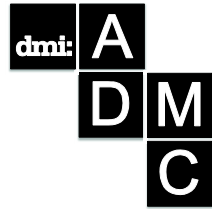
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## A Non-Profit Design-Led Innovation Journey

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*Non-profit organisations in the aged care sector are currently under pressure from more than just a sheer increase of customers. A need to respond to changing legislative requirements, increased expectations from customers and increasing likelihood of shortage in appropriate experienced staff are also contributing to instability within the sector. This paper will present a longitudinal action research study of a non-profit organisation revisiting its core purpose of providing relevant services and attempting to build a customer-centric method for addressing the current and upcoming change drivers in an Australian aged care context. The study found Design-Led Innovation to be an effective methodology for capturing deep customer insights and conceptualising new business models which address the prevalent change drivers. This paper details a design-led approach to innovation, tailored to a non-profit organisation seeking to better understand its stakeholders and redefine its value offering.*

**Keywords:** *Design in Business; Competitive Advantage; Shared Value; Aged Care*

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## Introduction

An increasingly discerning customer base, major changes to regulations and an ageing population are driving many non-profit organisations in the aged care sector to question the services they offer and the way in which they are delivered (King et al., 2012; Swan, 2010; Weerawardena & Mort, 2001). If these organisations remain complacent to these changes and simply present an existing offer to market, they are unlikely to endure through this phase of industry reforms and customer needs. With the decreasing relevancy of the current aged care offering, innovation is now beginning to be seen as a core competency of leading organisations.

This research therefore explores an Australian non-profit aged care provider's journey, and specific steps undertaken, in attempting to develop a Design-Led Innovation capability in response to these change drivers. Previously Design-Led Innovation has not been applied in a non-profit organisation with the aim of creating shared value; the practice of concurrently building competitive advantage within a business and producing social value in the economy for which it caters (Porter & Kramer, 2006, 2011). Hence, placing this research in a novel position.

In order to understand this journey the first author engaged in a longitudinal action research study revealing two major challenges faced by the organisation; an inability to define the organisation's value proposition, and a concentrated understanding of the value of design in a business context. Therefore, this research sets out to contribute a new approach for realising and leveraging opportunities for shared value creation through a Design-Led Innovation methodology, with the outcome of business model innovation.

This paper features a brief review of relevant literature, and outlines the research design and methodology, along with methods of data collection utilised in the study. An overview of the organisations journey and the specific tools and approaches explored by the organisation are presented. Findings from a thematic analysis of interviews, focus groups and a reflective journal are discussed, concluding the paper with implications for industry.

## **Literature Review**

### *The Aged Care Sector*

Three tensions in the current aged care approach suggest that the direction of the industry is unsustainable (King, 2007, pp. 202–203); (i) the ever-growing movement in consumer rights that places the needs of care recipients at the centre of care provision, (ii) the ongoing issue of recruitment and retention of care workers in an environment where demand outstrips supply, and the (iii) requirement for organisations to recognise unpaid carers as partners in the care-giving process and as people who need to be supported in their provision of care. These tensions are underscored by a heavy reliance in the industry on Federal Government funding, often resulting in a compliance-focused culture and operational approach (Weerawardena & Mort, 2001). This approach tends to distract providers from effectively addressing their social mission (King, 2007), and often translates as an inability to define whether an organisation is operating with a customer-centric or government-centric frame of mind. The inherent risk to the organisation is therein failing to understand its core customer, and compromising the organisation's social mission by attempting to respond to the needs of multiple stakeholders without truly understanding their needs.

As incremental changes and product innovation are not disruptive in nature, they will be insufficient in building a solution that responds to these challenges. To effectively drive a change of this scale business model innovation is required. In undergoing such a change an organisation's culture will significantly impact the success of the venture. Likewise, it is improbable that such an undertaking will succeed without the utilisation of an appropriate strategy to drive innovation. It is also important to consider that innovation strategy is not identical in the private (Moore, 2000), public (Albury, 2011; Borins, 2001; Moore, 2000; Mulgan & Albury, 2003), and non-profit (Huang & Yu, 2011; Moore, 2000; Weerawardena, McDonald, & Mort, 2010; Weerawardena & Mort, 2001, 2012) sectors.

Articulating the strategy of a non-profit aged care provider can be a complex matter as organisations operating in this space are required to address both an ethical orientation and a need to be financially viable (King, 2007). Given the predominance of non-profit organisations operating in the field of home and community care (King, 2007), the concept of an organisation's strategy creating superior customer value, not just superior profits (Weerawardena & Mort, 2001) is particularly relevant (King, 2007).

Especially when coupled with pressure from government on non-profit organisations to pursue competitive strategies, which can often conflict with an organisation's social mission (Weerawardena & Mort, 2001). Furthermore, such a framework could be more engaging for care workers, who are value-driven and find social contribution to be central to their performance and their identities as workers (King, 2007). Often non-profit organisations struggle to cater for the social need they seek to address due to a lack of access to significant financial resources (Tyler, 2005). As such, they do not have the luxury to facilitate the tensions created by the dichotomy between the two agendas, they must face the challenge of balancing these agendas rather than allowing one to dominate the other (King, 2007; Mumby & Putnam, 1992).

### *Innovation in Non-Profit Organisations*

Innovation is key to the ongoing success of an organisation (McDonald, 2007). Markets and environments change, organisations that do not change along with them are likely to falter and fail (McDonald, 2007). But people and institutions, for the most part, do not like change. It is painful, difficult, and uncertain (Cain & Mittman, 2002). The issue being that the act of innovation is to change. Without innovation the cost of public services rise faster than the rest of the economy. Without innovation the inevitable pressures to cut costs and drive efficiency can only be met by stretching an already strained workforce (Mulgan & Albury, 2003). To remain effective government and public services depend on successful innovation. Innovation is a means of developing better ways of meeting needs, solving problems, and using resources and technologies. Even in fields such as health care, innovation is frequently seen as a luxury or burden when it should be seen as a core activity (Cain & Mittman, 2002).

Remaining relevant in a dynamic market is difficult, to do so an organisation requires an appropriate strategy and a culture which is aligned to it. This is especially true for organisations seeking to face multiple change agendas to maintain relevancy. It is important that a strategy crafted for this purpose not only try to address the need for a competitive advantage but also address an unmet customer need, or in this scenario, an existing social issue (Porter & Kramer, 2006, 2011); as leveraging these two change drivers concurrently can provide organisations with a suitable platform for innovation.

For innovation to succeed, in any sector and by any organisation, the innovation needs to be well-formulated and designed to address a clearly

articulated problem (Mulgan & Albury, 2003). To translate innovation into fully realised competitive advantage which can be sustained in a NFP human services environment, the organisation's staff and management need to see a link between the organisation's strategy and social mission. Therefore, any attempt to redefine the organisation's value proposition or underpinning business model must be deliberately linked to its culture. However, most organisations do not consider their business model, let alone link it back to their respective cultures.

### *Design-Led Innovation*

While there is no certainty behind the success of adopting a new strategy or attempting something new and innovative, not responding to a burning platform such as the one being faced by the aged care sector can be disastrous (Carlopio, 2009). Previous research has identified that organisational cultures that engage employees in developing new ideas and strategies are better suited for implementing innovation (Chenhall, Kallunki, & Silvola, 2011; O'Cass & Sok, 2013). To sustain the changes required to develop and maintain innovation organisations require that employees understand the need to continuously improve or change product offerings, learn, and adapt to customer-focused demands (Bucolo & Matthews, 2011a; Chenhall et al., 2011). This is most effectively achieved where the underlying value structures of organisational cultures encourage innovation by way of cooperation, flexibility, and adaptation (Chenhall et al., 2011).

Often this journey begins by questioning where an organisation is, and where they are headed - having a clear vision of their reason for being, their offering, their market and their competitors – and a clear idea of what they want to become (Ward, Runcie, & Morris, 2009). Even once articulated, realigning to a collective vision is a challenge in itself, as is ensuring that all of the company's plans for growth are strategic and focused on achieving its aims (Ward et al., 2009). These, along with a change agenda that is simultaneously driven internally and externally through continuous engagement with customers and employees, are integral elements for successful innovation.

While design has been demonstrated to be a crucial strategic business resource (Dell'Era, Marchesi, & Verganti, 2010, p. 12) traditional conventional views maintain that designers are primarily concerned with the aesthetical and technical considerations of a product or service (Cox & Dayan, 2005). As with the term innovation (Baregheh, Rowley, & Sambrook, 2009; Smith, Busi, Ball, & Van Der Meer, 2008), design has continued to be

described as a wide range of activities, resulting in an array of outcomes that do not fall under a single definition (Bucolo & Matthews, 2011b). Design-Led Innovation (DLI) is a methodology that bridges these two terms and provides practitioners with a method for creating a compelling value offering for customers by radically changing a product, service, or business model's value proposition. This method of innovation, along with general design principles, has been proven to be applicable in separately creating both competitive advantage (Bucolo & Matthews, 2010; Carlopio, 2009; Holloway, 2009; Martin, 2010) and social value (Brown & Wyatt, 2010; Brown, 2008; Bucolo & Wrigley, 2011; Sklar & Madsen, 2010; UK Design Council, Danish Design Centre, Design Wales, & Aalto University, 2013).

Being 'design-led' implies utilising a set of tools and approaches which enable a business to embed design thinking in the form of a cultural transformation (Bucolo & Matthews, 2011a). From a business perspective this requires an internal vision for top line growth. For this vision to be realised it needs to be based on a base of deep customer insights and expanded through all customer and stakeholder engagements, with each outcome being mapped across all aspects of the business (Bucolo & Matthews, 2011a).

There is increasing understanding in the private sector of the enormous value this adds, even in areas not traditionally seen as the domain of design (Martin, 2010). Likewise, and for similar reasons, it is increasingly clear in the public sector that utilising design as strategy is an appropriate way to overcome common structural flaws in service provision and value offering (UK Design Council et al., 2013). DLI is a collaborative process which bypasses inefficient handovers that occur between analysis, solution and implementation. Rather than disjointedly patching together incremental solutions to problems as they arise, design looks at an entire system and redefines the problem from the ground up. It begins by understanding user needs in order to ensure that the solutions generated are appropriate to these needs, waste is avoided and end users buy into these solutions. Rather than jumping straight to expensive or risky pilots the design process tests iteratively, starting with low-cost, simple prototypes and designing out risk as prototypes become more evolved (UK Design Council et al., 2013). For these reasons, it becomes a feasible option for non-profit organisations to explore.

## **Research Design and Methodology**

While a single clear cut approach to drive all innovation does not exist, some approaches are more suitable than others in certain contexts. This paper outlines the journey of the first author, whilst working as a Design Innovation Catalyst embedded in a large non-profit aged care provider based in Australia. A catalyst's purpose is to translate and facilitate design observation, insight, meaning, and strategy into every facet of a company. This role is defined by continuously instigating, challenging and provoking innovation both internally and externally from within the company whilst maintaining a link to the strategy of the business by re-aligning and mapping these activities (Wrigley & Bucolo, 2012). In the scope of this role, the first author was tasked with (i) assisting in conceptualising, designing and implementing an innovative business model, and (ii) diffusing the design-led capability throughout the organisation as part of an action research study. This paper aims to provide an overview of the early steps of the organisations journey, focusing on the specific steps and activities undertaken in addressing the organisations mandate to design and develop a customer-centric business model.

As the methodologies and processes incorporated in action research are shown to be suitable drivers for innovation, creating change, and facilitating learning (Gustavsen, 2005; Zuber-Skerritt, 2001), action research has been selected as the primary research method. Using this method, the researcher engaged in several cycles of action research. Data collection throughout these cycles consisted of content analysis, participant observation, semi-structured interviews, field notes and reflective journal entries. As the aged care sector is in constant flux the agenda driving this research exceeds a one-time solution. The real future challenge lies in disseminating the capabilities required by an organisation to action design-led innovation in response to, or ideally in prediction of, future shifts in the market.

### *Data Collection*

Data collection methods for this paper consisted of (i) 13 semi-structured interviews with middle to high level internal staff ranging between 40 to 70 minutes, (ii) participant observation, (iii) reflective journal entries, and (iv) 11 focus groups. The purpose of these methods was to: (i) capture internal stakeholders' baseline understanding of the role of design in business, and to ascertain whether staff could articulate the value proposition of the case study; (ii)(iii) gauge any shifts in the staff's understanding of the case studies value proposition and their understanding of the role of design in business;

and (iv) identify the future direction of the organisation featured in the case study through co-design with internal and external stakeholders.

### The Journey

Internally within the participating organisation several streams of work have occurred as a response to the change drivers faced by the Australian aged care sector, this is illustrated by Fig. 1. As part of the scope of this paper the five streams deemed to have been the most influential will be discussed. These streams include competitor analysis, customer segmentation, narrative cycle, design workshops and culture transformation. Fig. 1 represents the existing relationship between these streams, the order in which they took place, how each stream informs another, and how the streams fit into the broader action research approach.

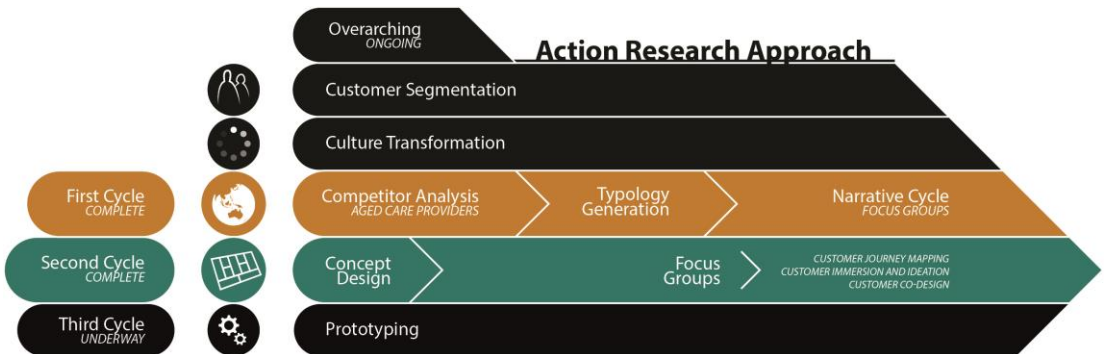


Figure 1 This figure illustrates the relations between each stream of work along with when they occurred and how they informed one another.

A set of underlying activities and objectives are grouped under each stream of work. The activities for which the first author was directly responsible or had a large contribution as part of the action research study are outlined in Fig. 2. This figure aims to depict the actions taken in each cycle of research and the outcome of each of these actions.

The first cycle of action research was structured to internally demonstrate the value of design in a business context. This cycle was about gathering a deep understanding of the organisations stakeholders, its internal and external environment, and capturing a rich base of customer



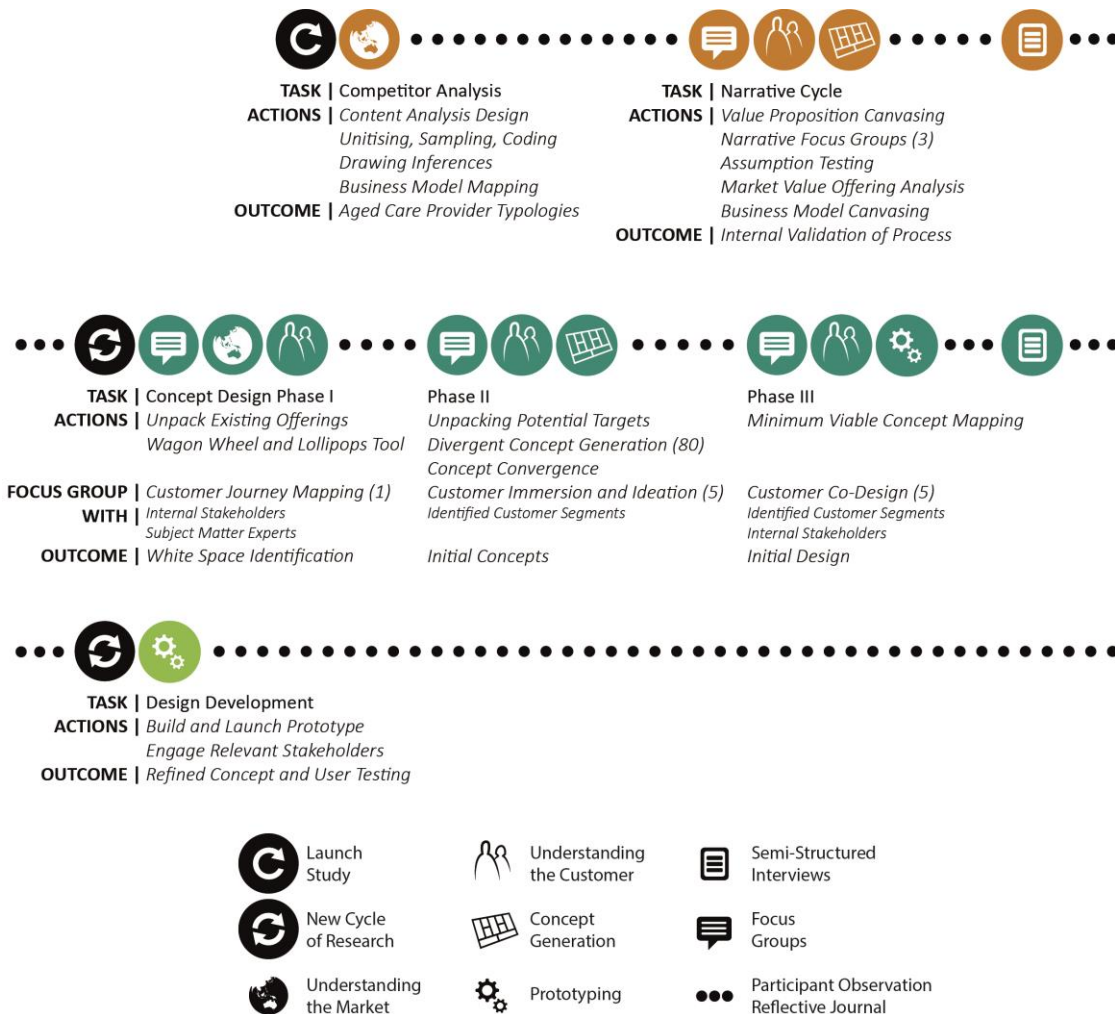


Figure 2 Action Research Cycles. This figure illustrates the specific actions in each research cycle.

insights which would act as a foundation for future innovation. Following this, the purpose of the second cycle was to build momentum. This was achieved by identifying opportunities for innovations, conceptualising what

form the innovations could take, and co-designing alternative products, services and business models to address the insights captured in the first cycle. The third cycle of action research will aim to shift from conceptualisation to implementation of the solutions developed in the second cycle.



### **Sector Analysis**

Sustaining a competitive advantage requires an organisation to constantly monitor the uncertainties that could invalidate the assumptions underpinning its strategy. The preliminary stages of this process consisted of the researchers using the business model canvas (Osterwalder & Pigneur, 2010) to analyse the business models of over thirty local and international organisations, both within and outside of the aged care industry. For organisations in the aged care industry, the canvas was utilised to understand the value proposition of each organisation, identify if they delivered on their value proposition or if it was for marketing purposes, articulate unique elements of operation, and categorise organisations with similar operating structures into typologies. The organisations analysed outside of the aged care industry were selected based on their exemplary performance. In this scenario the canvas was used to identify how these organisations were able to deliver on their value proposition and, in a hypothetical context, how they would approach the delivery of aged care if they were to enter the market.

### **Culture Transformation**

The organisation took the initiative to rebuild the values exhibited by its internal culture. This was proposed to occur over a set of three horizons where culture foundations would be established, the skills & capabilities required to live the aspired culture would be developed, and finally the culture recognised by the industry, customers and staff as a differentiator. This stream of work was structured to begin with engagement, followed by creating a future state culture, launching the vision and values of the organisation, creating regular culture checkpoints, embedding the culture internally, and Institutionalising the culture across the organisation's external sites.



### Narrative Cycle Focus Groups

The emphasis of the focus groups was on co-creating with consumers through the use of a narrative (see Figure 3 for an example board). Given that the definition of value and the process in which it's created is rapidly shifting from a product and firm-centric view to a personalised and customer-centric view, it was vital that the consumer became the locus of value creation and extraction (Osterwalder & Pigneur, 2010; Prahalad & Ramaswamy, 2004).



Figure 3 Example Narrative Board

Narratives begin by capturing the smallest of insights, glimpses of an unrelated detail that gradually grows into a more comprehensive appreciation and understanding. The deepest of these insights arise from judgemental questions that elicit personal responses (Dillon & Howe, 2003). Interacting with firms in this manner allows consumers to co-create with organisations, redefining the meaning of value and the process in which it's created (Bucolo & Matthews, 2010; Prahalad & Ramaswamy, 2004). Dialogue can then flow in both directions, from consumer to provider and from provider to consumer. A narrative not only teaches participants how to bring their lives into the narrative, but also to bring the narrative into their lives (Dillon & Howe, 2003).

The narrative cycle was utilised to unpack customer insights, and conceptualise how these insights could then be leveraged into business models through iteratively learning and questioning the underlying values of the insights. Initial stages of the process involved using the 'Value Proposition Canvas' (Osterwalder & Pigneur, 2010) to hypothesize unmet customer needs and to prototype a service around these needs. The first author constructed and tested the narrative with three focus groups, each consisting of two-three participants in the organisation's target demographic that were not currently receiving formal care services.

Following the narrative sessions, the insights were layered over the original Value Proposition Canvas to test the accuracy of the initial hypothesis. The insights were reframed, compared to the initial set, placed into a 'Business Model Canvas' (Osterwalder & Pigneur, 2010), and compared to the existing business model, in terms of financial and organisational capability to execute the model. Fig. 4 provides an overview of the narrative process.

### **Customer Segmentation**

The organisation featured in this case study recognised the need to immerse itself in its market, and to question who its true customers and competitors were. A behavioural segmentation study was carried out to collect both qualitative and quantitative data relating to the needs, preferences, attitudes, behaviours and decision-making approaches of ageing Australians and their families. Over 90 hours of customer interviews took place in metropolitan and regional Queensland, New South Wales and Victoria, including 'High Tea Triads' (focus groups, typically with 3-4 participants), paired depth interviews, and depth interviews. The synthesised qualitative output informed the design of a quantitative data

collection approach that incorporated over 1,300 surveys deployed through both telephone and online methods. This staged research approach delivered a rich bank of qualitative and quantitative insights relating to the experience of ageing, as well as a segmentation model that clearly identifies and describes five unique customer segments and four unique 'influencer' segments.

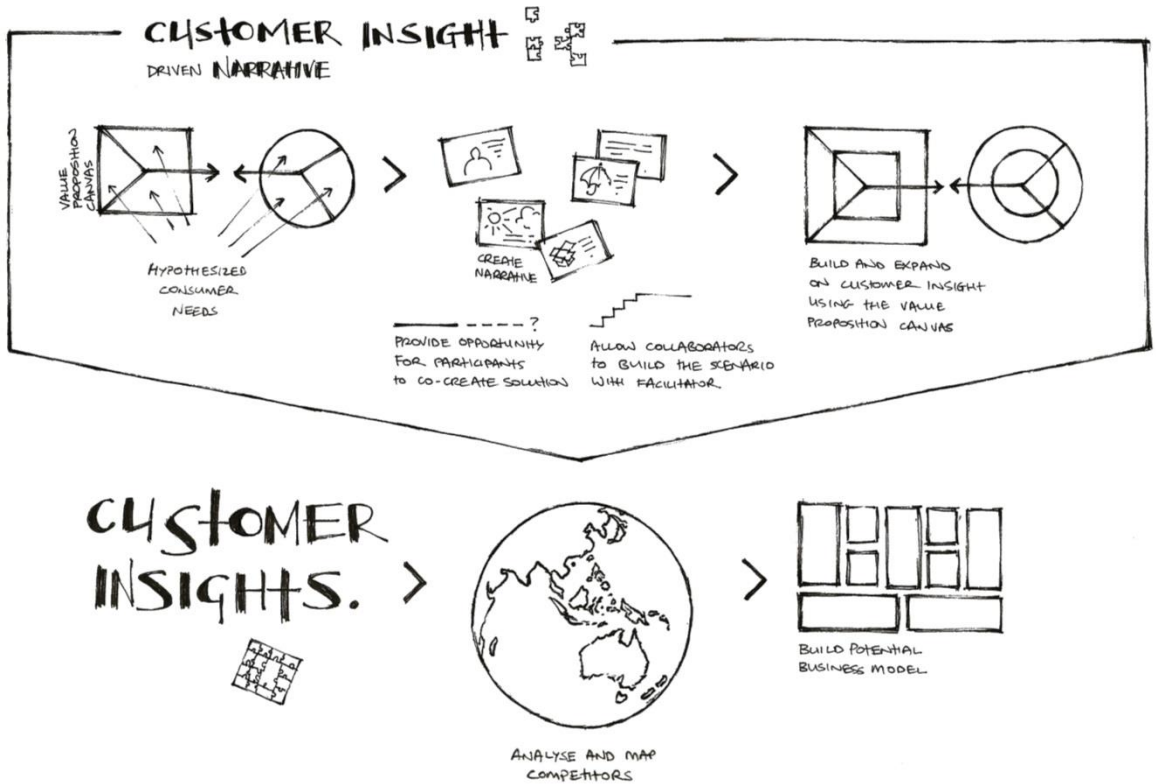


Figure 4 Narrative Process

### Design Focus Groups

The organisation also undertook customer journey mapping exercises and a series of three focus group typologies; Customer Journey Mapping

Workshop (1 session), Customer Immersion and Ideation Workshops (5 sessions) and Customer Co-Design Workshops (5 sessions).



The Customer Journey Mapping Workshop was attended by 20 internal and external stakeholders to the organisation, including staff members and subject matter experts. Through a series of activities and interactive sessions, participants created a large-scale visualisation of a person's experience of ageing, focusing on dimensions of the experience that were reported as being significant in the segmentation study findings. The goal of this workshop was to: identify the primary customer, secondary customer and relevant stakeholders; understand the needs and desires of the customer throughout each specific experience; articulate the channels in which the customer could be reached in terms of both potential interactions and platforms; unpack the experience, looking at dialogue, access, risk and transparency; identify the distinctive capabilities an organisation would require to operate in the space; and validate potential sources of revenue generation. Participants were encouraged to deconstruct and analyse the experience through the eyes of one of five identified customer segments and one of four identified 'influencer' segments. In addition to building empathy with the customer and uncovering deeper insights into the experience of ageing, the workshop was designed to identify opportunities for relieving pain points or delivering greater value; this was especially valuable in identifying white space for new business opportunities in the aged care sector.



Outputs from the Customer Journey Mapping Workshop informed the design of a series of Customer Immersion and Ideation Workshops. A proprietary segmentation algorithm and selection questionnaire was employed to recruit ten to twelve customers per workshop by segment, enabling the researchers to observe the workshop interactions on a segment-by-segment basis. Five dimensions of the ageing experience were explored (for example, 'Staying Connected'), one per workshop, through open questioning and a structured but informal conversation with and amongst participants. Two types of questions were included in the workshop facilitator guide; those that deeply explored the topic and those that opened up the ideation process by encouraging participants to consider new solutions to problems.



A period of analysis and synthesis of workshop outputs took place following the Customer Immersion and Ideation workshops and findings were incorporated into a bank of prospective solutions that would form the basis of potential new business models. A categorisation and filtering process was applied to narrow the solutions to those that most effectively responded to the customer pain points or opportunities and these solutions were explored in a series of Customer Co-Design Workshops. Participants were again recruited by segment, including customer and 'influencer' segments, and the approach to questioning was open-ended and exploratory. Large-scale visuals were used to describe the 'problem-solution' and to deconstruct and reconstruct the solution with the participants as active designers. As customers seek to further influence business, companies are no longer able to act autonomously in the design of new offerings (Prahalad & Ramaswamy, 2004). Engaging customers as active designers ensures that offerings are grounded in customer needs and allows the solutions to create mutual value for both the user and organisation.

## Findings

Once collected each mode of data was thematically analysed and coded for categorisation; segments of text were labelled in accordance to the categories they fell into, and codes were chosen to underpin the research agenda (Joffe & Yardley, 2003). Since the researcher had already formed theoretical ideas in regards to the data, it was deductively coded (Joffe & Yardley, 2003). Using theoretically derived themes allowed the researcher to replicate, extend or refute prior theories (Boyatzis, 1998). Following a thematic analysis the separate modes of data were methodologically triangulated, resulting in a set of two primary themes; value proposition for a customer-centric business model and customer focused value creation.

### *Value Proposition for a Customer-Centric Business Model*

Two sub-themes fall under this grouping. That is, the internal staff's ability to articulate the value proposition exhibited by the case study organisation, and whether they were familiar with the scope of work undertaken by the organisation in order to realign the value proposition to a customer-centric business model.

*Initial stages of research saw the first author conduct a set of interviews, mostly taking place prior to any staff exposure to the Design-Led Innovation methodology. The interviews revealed that in general, no internal consensus*

*in regards to the value proposition of the organisation existed. When asked to articulate the core value of the organisation interview participants typically displayed uncertainty in their answers, with one participant blatantly stating “I don’t think I can answer that because I haven’t been dealt in on that. I want to know what they came up with, even though my boss and good colleague thought of it”. Others who did respond to the question did so with uncertain terms. Typically, using inexplicit language such as “core value? Probably...”, and “probably not at the moment. I think coming in the core value was probably ...”.*

*However, many similarities did emerge in the themes of the responses, and as exhibited by the first quote and in the following, “somewhere in here you’ve got to understand your competitive market, where your point of difference is coming from. I’m not quite sure where in all of this that is tested”, there was an internal drive to attain or develop a better understanding of the organisation’s value proposition. This form of response didn’t convey the ignorance of participants, but rather that the organisation simply did not have a value proposition as an underlying driver for the business model at that stage.*

*Indeed, the organisation was undertaking a scope of work to identify their future customer, their needs, and a value offering that aligned to this customer. There was a clear internal understanding that the organisation needed to change, that the current methods of employing care would not result in positive organisational growth, “the question you should really ask is, do we do nothing or stick to our knitting? Do we explore the boundaries of opportunities and innovation? And I think we should be doing the latter, as, well, since there’s a real prospect”.*

*Perhaps not surprisingly, as the organisation set out to redefine and innovate its business model, staff exhibited a greater understanding of the value that the organisation wished to deliver to customers, and the image that the organisation wanted to develop and attain. In fact, the insights captured in customer segmentation as part of this scope of work proved to have significant applicability to business as usual. Other streams of work unrelated to the business model innovation were seen to constantly borrow and lean on these insights. When asked whether this work stream was valuable, one of the interview participants responded with “absolutely, if you’re talking about co-creation with customers such as the business innovation that’s just about to commence, the findings of customer segmentation present a great opportunity for creative thinking and*



*collaboration to respond with services that are better aligned with what people want”.*

### *Customer Focused Value Creation*

While there was a definite internal acknowledgment of the initiative to innovate the organisation’s business model, it was not evident, except to the individuals integral in the development, that this process was design-led. In fact, except for two outliers, interviewees strictly referred to design as the conceptualisation and development of physical or digital products and services (e.g. architectural and industrial design).

Regardless of the lack of familiarity with principles of design being utilised at a strategy level, all interview participants commented that the design-led approach to innovation resonated with the non-profit organisation, as it clearly established that the customer is the locus of value creation.

As demonstrated by the following quotes, all interview participants were not only well aware of the need for organisational change, *“the rapidly changing regulatory environment, the intent of the regulator or the government to be able to fund aged care, just the impact on GDP, it’s not going to be sustainable, so it has to change. So you’ve always got innovation ... it can either be incremental or a major step change ... if we’re not innovating then we’re out the back door, quicker than anything”*, but it was also evident that the change needed to be customer-centric, *“if you’re going to realise that you’re very existence needs to be predicated on change you need to go and talk your customer”*.

Regardless of the challenges outlined in the literature review that are associated with this sector, and as acknowledged by staff stating that *“the core business of [the case study organisation] has been dramatically constrained by a funding model that doesn’t have any variation in it”*, the overwhelming evidence demonstrated that *“it’s all about solving problems or challenging issues which your customers are facing and exceeding those expectations”*, which is central to a design-led approach to innovation.

## **Conclusions and Implications**

This research investigated potential drivers for change in a non-profit organisation that was facing multiple challenges in a fast changing dynamic environment. The design-led innovation approach to this investigation found that having an underlying social purpose was an effective means for

driving innovation. As the design-led approach to innovation was grounded in customer needs it was able to identify, articulate and communicate the need to innovate in response to the social problems occurring in the aged care sector to the broader organisation. However, to a large extent, in the traditional and conservative context of a non-profit aged care organisation, only the traditional purposes of design were seen to be valid. In line with Cox & Dayan's (2005) findings, the organisation lacked awareness surrounding the opportunities associated with the field of design.

While some of the key stakeholders within organisation were open to the potential of design in a business context, and some were in fact design champions, no real progress could be made in this avenue until the effectiveness of a design-led process was demonstrated. The narrative cycle was created for this purpose. Capturing deep customer insights demonstrated that design can unpack unexpressed customers' needs and develop clear new narratives. This design process generated a much deeper understanding and awareness within the organisation, creating more possibilities for designing appropriate solutions that address emerging customer needs.

As a non-profit aged care provider, the organisation faces the challenge of balancing the needs of its several stakeholders. The applicability of Design-Led Innovation in a non-profit aged care context has been under-researched, and it's applicability in addressing an organisation's agenda to create social value and competitive advantage simultaneously is unknown. Through the co-design workshops it was found that DLI can indeed identify and leverage opportunities for the creation of shared value. Furthermore, due to the social mission of the organisation the concept of shared value creation resonated strongly with its internal stakeholders.

The need for innovation in the public sector is, for the most part, heavily outlined in existing literature. Along with frameworks for approaching innovation, some literature exhibits case studies of organisations innovating due to similar drivers as those exhibited by the aged care sector. Most of these articles are theoretical in nature and only disclose a set of general principles and practices for practitioners to follow. No specific guide explicitly states the steps taken and methods utilised by an organisation, in and aged care context, in order to drive innovation. This paper therefore seeks to provide a detailed approach for non-profit organisations wishing to utilise design led innovation as a method for better understanding their stakeholders and redefining the value they offer to market. The next stages of the organisation's journey, which are currently underway, consist of

further development, prototyping and testing of the solutions developed through this approach. Future research should explore whether this approach to innovation is capable of sustaining momentum and moving beyond the conceptualisation of a solution to its implementation.

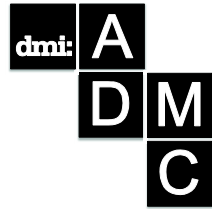
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## The Value of Design for Customers in the Service Industry: Contributions and measurements

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*In the contemporary market, quality is no longer the key differentiator for a brand. Among the marketing activities available, design is arguably acknowledged as the most distinctive method for achieving long-term brand recognition. Unlike technology, design emotionally interacts with people, and it is not easy to emulate a compelling design identity that has been effectively established. Despite its well-recognised impact, companies still hesitate to strategically employ design. The main source of the hesitation may be rooted in the ambiguity of measuring design contributions. This is particularly true in the service industry where the impact of technology development is relatively lower. This makes it a suitable industry sector for investigating environments where design has a more significant marketing role. Two major forms of research are performed within this paper: the horizontal/spectrum understanding of value, and embedding design perspectives in the service-profit chain using SERVQUAL (SERVice-QUALity) measurements. This paper proposes a model that can quantify and visualise design contributions from the customer's perspective within the service industry sector.*

**Keywords:** Design value, service design, design value typology, measurement of value

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## Introduction

Final grades are occasionally painful and frustrating to face; however, fair and effective assessments can help students to acknowledge their status and performance and then go on to improve and complete more difficult work. Likewise, the intention behind measuring business performance is to identify the current status of the business as objectively as possible. As a target of measurement, how a company can effectively design its offerings and systems is essential to surviving in a highly competitive contemporary market (Moultrie, et al., 2006). In other words, the system's design, products and services are essential for a successful business. However, despite well-recognised contributions, it is difficult to reveal the effectiveness of design. This is mostly due to the ambiguity surrounding design (Cooper and Press, 1995) and a lack of theoretical and empirical research (Moultrie et al., 2006; Moultrie and Livesey, 2010). In addition, Topalian urges researchers to cultivate 'novel means of communicating' by using language from a business perspective (Topalian, 2012, p.34). Therefore, it is necessary to investigate how design effectiveness can be comprehended and measured in a successful business.

How can design be comprehended in terms of its impacts upon the success of a business? Kaplan and Norton (1996) introduced a holistic, precise and long-term measurement tool for businesses. It has four different dimensions (i.e. financial; customer; internal business process; and learning and growth) that are referred to as the balanced scorecard. Moultrie, et al. (2006) proposed a tool for assessing design performance in SMEs (Small and Medium Enterprises). Their systemic approach to success factors, both the process and the product, enables them to identify key success factors in new product development processes and confirm design contributions.

However, unlike manufacturing industries, there are subtle differences between products and services offered by service companies. Swann (2002) argues that design influences people by using artefacts and situations that possess a high level of uncertainty. Assessing the output of design activities (e.g. auditing the system for higher productivity or profitable attention towards a new product) is arguably insufficient for comprehending critical issues within the service industry sector. It is necessary to contemplate the factors beyond outputs; in other words, how stakeholders perceive the value of having interactions in a business.



To determine the sources of design value (from a customer perspective) and the linkages between phases of their perception, this research uses the concept of value and service-profit chain. Research questions are based upon the SERVQUAL measurement tool proposed by Zeithaml, et al. (1990), who introduced five dimensions of measurable service quality (i.e. tangibles, reliability, responsiveness, assurance and empathy) from a customer perspective. The SERVQUAL measurement facilitates embedding design perceptions into service-focused questionnaires. It provides service-centric viewpoints and enables the categorisation of questions that consider gradually increasing emotional attachments. These design embedded questions are to be reviewed if the questions contain design audit elements and principles, as argued by Cooper and Press (1995). This paper describes the development of a tool that measures design value in a service company from a customers' perspective.

## **Research methodology**

### *Structure of the paper*

The measurement tool described in this paper aims to identify customers' psychological preferences. To achieve this aim, the research is divided into the following sections:

- 1) *Literature review (defining the value in this research)*. Primarily, the concept of value is critical to this research. The notion of value in customer perceptions was investigated.
- 2) *Building a conceptual framework*. Interactions within a value-creating network were identified based on how customers perceived value. Emphasising the profitability of customer retention also indicates how the conceptual framework can maintain a long-term business. In addition, there has been very little focus on determining and investigating how design influences service quality (Sangiorgi, 2009). Design for services becomes more significant since the focus of marketing and managing shifted in a human-centred direction. Thus, it is necessary to address the contributions of design beyond just its tangible aspects (Meroni and Sangiorgi, 2011).

- 3) *Creating a tool with design perspectives.* Four major dimensions of customer design value were identified and can be utilised for measuring the design value of a business. However, prior to scaling up the tool, one critical prerequisite should be confirmed—the independence of the proposed dimensions. This is important for two reasons: first, if one dimension is affected by others, it raises a major concern about tool’s practicality. The tool should suggest which dimension of design value requires focus or should be balanced to maximise invested resources from the customer’s viewpoint. The tool may fail to make these suggestions if others continuously modify the dimensions. Second, if one value dimension cannot be explained by the designated questions, it is possible that the design embedded SERVQUAL questions cannot represent each value dimension. A quantitative data collection was performed to confirm this prerequisite.
  
- 4) *Validating the tool.* Within the service industry sector, the food service industry (especially cafés) was selected as having characteristics typical of postmodern consumer behaviour and noticeable operationalisation of service aspects (for example, flexibility, artisan-focused and context-dependent nature) (Johns and Pine, 2002). Design in the service industry (starting with food service industry) is arguably worthy of investigation. This study employs a multiple regression analysis. The necessary information can be obtained through the following: Pearson correlation values, R squared values, regression coefficient values and its *p*-values. Pearson correlation and R squared values can confirm the hypothesis of the overall relationships between the proposed dimensions. Regression coefficients and its *p*-values can confirm the possibility of mathematising the relationships.
  
- 5) *Discussion, conclusion and findings.* Analysis of the quantitative data, contributions of this paper, limitations and future study directions were addressed.

### *Research survey design*

Questions about design value are based on the SERVQUAL measurements (Zeithaml, et al., 1990), but they are modified and classified according to design audit perceptions and design value dimensions. To

determine the statistical significance of utilising the proposed framework as a tool, this study performed a random survey to gather quantitative data. The survey questions were distributed online and through field surveys. However, there are two major methodological concerns in this research: overgeneralising survey responses and the relevance of customers' experience.

- 1) *Overgeneralising survey results.* To reduce the variation between companies within the service industry sector, the target was constrained to cafés. Due to its flexible and light capitalistic character, the café industry contains various aspects of post-modern consumer behaviour (Thompson and Arsel, 2004). Thus, investigating the café industry will be representative and less variable.
- 2) *Relevance of customers' experience.* An on-site field survey can minimise the distortion of experiences. This research also included an online survey to acquire a sufficient number of responses. This research attempted to reduce possible response distortions by asking for the date on which the experience occurred (5%–15/277 of samples indicated that their experience were older than 180 days).

The overall survey responses are shown below in *Table 1*.

Table 4. Summary of survey responses

	Sort	Result (Total:277)	
Nationality	Asian	146	52.7%
	European	24	8.7%
	American	107	38.6%
Gender	Female	159	57.4%
	Male	118	42.6%
Age	18 – 25	49	17.7%
	26 – 35	140	50.6%
	36 – 45	61	22.0%
	46 – 55	23	8.3%
	55 +	4	1.4%
Date of experience (within)	A week	149	53.8%
	A month	82	29.6%
	Three months	31	11.2%
	Six months	15	5.4%

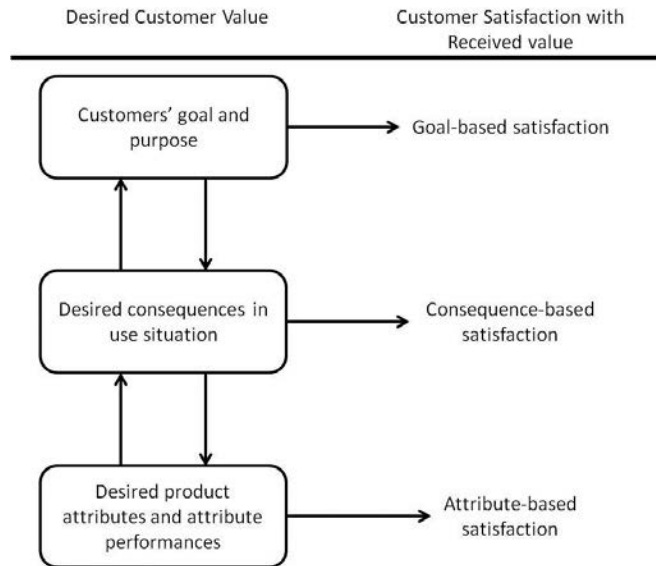
## Literature review

### *Definition of value*

A brand's value represents more than its positive financial output. From a marketing point of view, it can be a commitment to offer superior value to customers (Bruce, 2011). Pursuing and providing higher customer value in a consumer context is a key marketing activity (Holbrook, 1999). Value is an intangible element which stems from consumers' preferences about tangible aspects and pervades the overall procedure of purchasing (Wagner, 1999). Despite the ambiguity of the concept, it is proposed that a summary of customer values that encompasses contemporary issues and definitions as follows:

*Customer value is a customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations. (Woodruff, 1997, p. 142)*

This definition is inferred from what Woodruff suggested in the customer value hierarchy model in *Figure 1*. Given that this model is dynamic and embraces different levels of customer value, it explains value well and will contribute to future studies (Parasuraman, 1997). In short, customer value evolved from simple dimensions of interaction into multiple relationship behavioural factors.



*Figure 13. Customer value hierarchy model (Woodruff, 1997, p.142)*

Sánchez-Fernández and Iniesta-Bonillo (2007) classified two types of consumer value research: uni-dimensional and multi-dimensional. They argue that the former relies on customers' rational consumption behaviours and considers costs and benefits; the latter facilitates a broader analysis of value. In a sense, these dimensions may have various origins for evaluating value; it is worth investigating these dimensions to understand their relationship.

One of the pioneering pieces of research was based on the uni-dimensional approach (price-quality based) and was introduced by Monroe and Chapman (1987). They argue that perceived value can be aggregated with the acquisition value (maximum acceptable price minus actual price) and transaction value (reference price minus actual price). This view (Monroe, 1973; Dodds and Monroe, 1985) is restricted to the price-quality

view; it raises questions about the role of price in quality perception and other influencing factors relevant to the multi-dimensional approach. Zeithaml (1988) adopts Dodds and Monroe's model and modifies it to explain different levels of attributes. Given that customer perceived value consists of benefits (salient intrinsic attributes, extrinsic attributes, perceived quality and other relevant high level abstractions) and sacrifices (monetary and non-monetary prices), the customer perceived value can be defined as 'a customer's overall assessment of the utility of a product' based on the customer's perceived trade-offs (Zeithaml, 1988, p.14). The hierarchy of elements determines whether offerings fulfil customers' utilitarian product-based goals and was proposed by Zeithaml's (1988).

However, the uni-dimensional approach is often criticised due to difficulty encompassing contemporary consumer behaviour when using complex relationships (Yi and Gong, 2013) and its narrowed scope of product-only attributes (Sánchez-Fernández and Iniesta-Bonillo, 2007). In addition, understanding hierarchy and dimensions of value is crucial for encompassing variables in a model of business relationships (Ulaga and Eggert, 2005). Thus, the multi-dimensional approach was noticed for its understanding of contemporary consumer behaviour and the research stream of value, including uni-dimensional approaches as shown in *Figure 2*.

*The Value of Design for Customers in the Service Industry: Contributions and measurements*

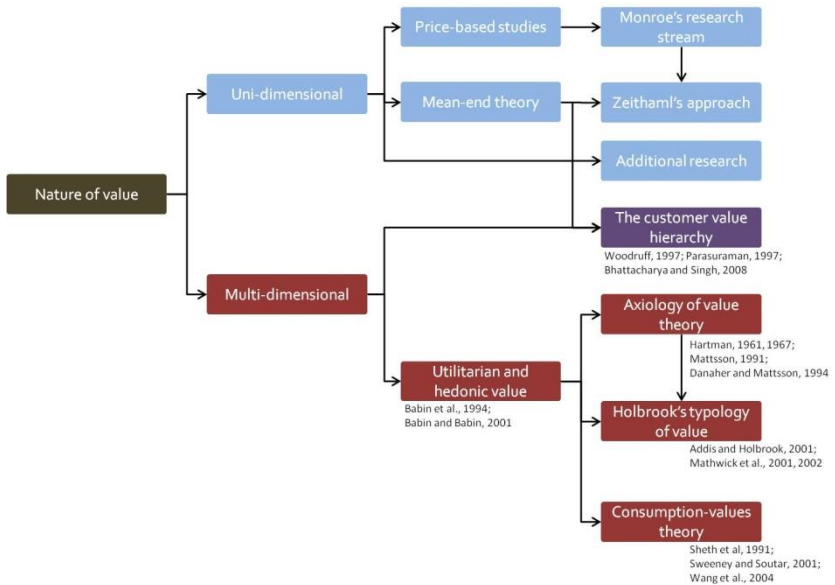


Figure 14. Research streams of perceived value (Sánchez-Fernández and Iniesta-Bonillo, 2007, p.430)

This research considers value as a complex, interrelated holistic output of what customers offer; therefore, multi-dimensional approaches (as seen in the above research stream) are reviewed. Multi-dimensional approaches posit that there are more than two factors (*dimensions*) involved in building perceived value. Within the literature (specified in Figure 2) the relationship between dimensions can be classified as hierarchic and non-hierarchic, as shown in Table 2. Due to its relevance to contemporary consumer behaviour and customer-centric viewpoint, this paper is focused on non-hierarchic relationships.

Table 5. Hierarchic and non-hierarchic relationships within multi-dimensional approaches

	Author(s)	Dimensions
Hierarchic relationships	Bhattacharya and Singh, 2008	End-state Consequence Attribute
	Hartman, 1961, 1967	Systemic Extrinsic Intrinsic (transformational)
	Mattsson, 1991; Danaher and Mattsson, 1994	Emotional Practical Logical
Non-hierarchic relationships	Woodruff, 1997; Parasuraman, 1997	Goal-based Consequence-based Attribute-based
	Babin et al., 1994; Babin and Babin, 2001	Utilitarian Hedonic
	Sheth et al., 1991	Functional Social Emotional Epistemic Conditional
	Sweeney and Soutar, 2001	Functional (Quality and Price based) Social Emotional
	Wang et al., 2004	Functional Social Emotional Perceived sacrifice
	Addis and Holbrook, 2001	Utilitarian Hedonic Balanced
	Mathwick et al., 2001, 2002	Playfulness Aesthetics Consumer Return on Investment Service excellence

Contemporary consumer behaviour changed after the era of ‘Fordism’. In Maslow’s hierarchy, the increased number of choices within a competitive market can be interpreted as being lower levels of need, which are already fulfilled basically. That makes consumers perceive the value of an offering in different ways than outlined by Maslow’s hierarchy of needs. In other words, what customers need is determined by various circumstances related to material abundance and does not concern fulfilling basic hierarchical needs. Therefore, understanding how customers value offerings in a non-hierarchic relationship can also explain contemporary consumer behaviour.

Holbrook argues the typology of consumer value using a holistic and non-hierarchic viewpoint (Holbrook, 1999). It is regarded as a sophisticated typology which explicates modern consumer behaviour (Addis and Holbrook, 2001; Sánchez-Fernández and Iniesta-Bonillo, 2007). Holbrook



describes the nature of consumer value (interactive, relativistic, preferential, and experiential; Holbrook, 1999, p.5) and the types of consumer value (extrinsic or intrinsic, self-oriented or other-oriented, and active or reactive; Holbrook, 1999, p.9). In Holbrook’s detailed explanation, extrinsic and intrinsic dimensions determine whether consumption is the ultimate goal of the customer. Self- and other-oriented values are classified based on whether consumption is for the consumer or purchased with consideration of others’ reactions in mind. If customers manipulate products or services either physically or mentally (e.g. driving a rented car is physical and solving puzzles is mental), value is situated to the active dimension. On the other hand, if customers are being manipulated by the product or services (e.g. feeling sentimental while watching a movie), value belongs to the reactive dimension. These dimensions are described below in *Table 3*.

*Table 3. A typology of consumer value (Holbrook, 1999, p.12)*

		Extrinsic	Intrinsic
Self-Oriented	Active	Efficiency (Output/Input, Convenience)	Play (Fun)
	Reactive	Excellence (Quality)	Aesthetics (Beauty)
Other-Oriented	Active	Status (Success, Impression Management)	Ethics (Justice, Virtue, Morality)
	Reactive	Esteem (Reputation, Materialism, Possessions)	Spirituality (Faith, Ecstasy, Sacredness, Magic)

This study employs Holbrook’s typology of consumer value as a key background theory for numerous reasons. First, Holbrook’s typology of value includes a holistic view of how value is perceived from offerings presented to us. Stakeholders within the value-creating network are comprised of groups of individuals who determine the value of offerings based upon their experiences within the network; it is crucial to consider the origin of perceptions through emotionally classified typologies. For example, Aspara and Tikkanen (2008, 2011) argue that positive personal association is significant for determining stock purchases—even in a highly financial-oriented relationship. Second, the aim of this study is to propose a tool that can explain how the value of a design can be measured and visualised. In order to achieve this aim, previously classified value dimensions are modified to include design in all its manifestations. By utilising Holbrook’s

typology of consumer value, the value of design can be classified in each of Holbrook's dimensions. Third, since awareness of social responsibility has increased since the era of mass production (i.e. Fordism), it is necessary to investigate the factors that determine human perceptions. In addition, solutions for socially responsible projects may be proposed through design (Cooper and Press, 1995). Thus, it may be critical to investigate how people think and the origin of their perceptions. Given that Holbrook's typology classifies psychological factors for the decision-making process of consumers, the result of assessing value through Holbrook's typology can present individual and collectively perceived value.

## Conceptual framework

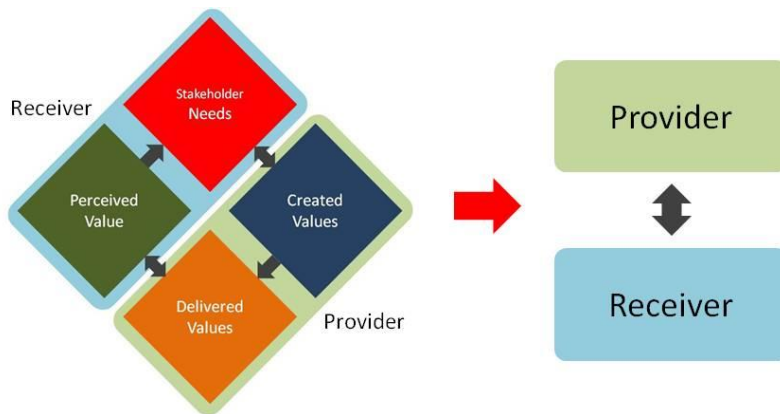
### *Co-creation of value*

If value is perceived holistically and in a non-hierarchic way, as described previously, it is worthwhile to investigate how value is created and influences stakeholders. The emergence of new cultural boundaries has been caused by greater fragmentation, pluralism and older, weakened collective solidarities in contemporary markets; these have triggered change in consumer behaviour (Amin, 1994). Developments in modern technology have encouraged involvement by creating value from stakeholders who were formerly passive buyers or observers. The value of a brand (shop) no longer exists for one specific stakeholder but for every stakeholder who directly or indirectly influences it.

Since maintaining a business involves more complex relationships between stakeholders, some may argue that it can be impossible to satisfy every stakeholder within the network. Instead, they insist that focusing one stakeholder's value can maximise the overall efficiency of the resources used. However, in the contemporary market, it may be argued that the most significant stakeholder in maintaining business is not a single group or a single stakeholder. The central stakeholder, in terms of measuring any given value, can change as each value is measured and evaluated. For example, businesses that participate in Fairtrade® or "ethically sourced" content for their food products include logos on their packaging that is designed to increase awareness of responsible consumption. In the past, the value of everyday food stemmed from providing high quality food at low prices (consumer-centric value). Today, the value of everyday food in the contemporary market has the added dimension of social responsibility, which includes suppliers and local communities (multiple stakeholder value).

From a long-term perspective, considering multiple stakeholders within a network will provide agility in a business model and therefore allow the business to survive.

In addition, it is also important to consider multiple groups of customers within the value-creating network. Borja de Mozota argues that managers in process-oriented companies are being challenged to develop a solution that is applicable to multiple users (Borja de Mozota, 2011). Not only the providers of value, but also the receivers of value may be comprised of more than one group within a business network.



*Figure 15. The conceptual framework of sustaining a business*

*Figure 3* illustrates the conceptual framework of sustaining a business and how to determine this relationship. To maintain a profitable business, the series of activities expressed in the diagram (emergence of needs, created value, delivered value and perceived value) must keep circulating. Exceeded positive value enriches the business environment of a society and stimulates expectations for another transaction (Holbrook, 1999). Within these activities, Nam and Carnie (2014) argue that there are mutual relationships between stakeholders' needs and created values; delivered values; and perceived values. The development of information technology and the increase of social responsibility enable mutual relationships between those phases. Activities within the sustainable business may be classified as being a provider or receiver. Thus, the mutual relationship and the co-creation of value enhance the overall value of a network.

### *Conceptual framework for the service industry*

The aforementioned framework is relevant to the service industry for two reasons: it promotes mutual relationships between stakeholders, and it provides a continuous loop of value-related activities. First, the mutual relationships between stakeholders are particularly emphasised because of what service companies offer when an interaction takes place. For example, if customers are fully satisfied with employees' services, customers may show their trust and appreciation. Employees may also feel respected and well appreciated. This relationship can help to increase value of the network for both parties. Since design can intervene in the service experience of stakeholders (Meroni and Sangiorgi, 2011), the interactions of building service experiences also need to be addressed by investigating mutual relationships within the network. Second, the continuous loop of activities can be interpreted as retaining stakeholders. Retaining stakeholders, (customers in this research) is crucial to running a service-centric business because customers become more profitable as they remain in the business (Reichheld and Sasser, 1990; Aaker, 1996; East et al., 2013). Therefore, the conceptual framework in *Figure 3* is relevant to the service industry.

In addition to the relevance of the conceptual framework, the service industry is notable from the customer's perspective. Every industry should consider the service aspects of their businesses and understand that quality service is essential for maintaining a business (Daniels, 2012). Daniels also argues that the continuous growth of the service industry is highly dependent on efficient and systemic management. Due to relatively rapid changes in the service industry, companies are being forced to adapt to the contemporary market situation (Sheu et al., 2003). In addition, in the service industry, leverage based on design is increasingly significant due to the ubiquity of services provided. Cooper and Press (1995) also exemplified the importance of design in the service industry. They provided an example of the financial industry by identifying, from a customer's perspective, indistinguishable services between companies. Studies by Best (2006) in the service sector illustrate customers' potential ongoing difficulties in distinguishing the impact of design in a variety of service sectors.

The paradigm shift also encourages the creation of an appropriate methodological tool for understanding service design (Meroni and Sangiorgi, 2011). Putting design(er) at the core of creating solutions to customers, Manzini and Vezzoli (2003) describes characteristics of services as value adding product life cycle, offering final result and enabling platform. Adding value by service elements can be viable through customised solutions,

information & communication technology and specialised services (Meroni, 2008). According to Meroni and Sangiorgi (2011), design has changed definitions of value creation in terms of a service's interactive perspectives. These observations demonstrate changes in perceiving design for services. They urge the development of theoretical and empirical frameworks that can encompass the contemporary requirements of service design.

### *Contribution of design and its measurement*

In this post-Fordism era, consumer choice is significant and arguably increases the influence of design (Cooper and Press, 1995). As influence increases, the impacts and contributions of design (as a company's strategic tool) also become notable. Cooper and Press (1995) have classified the contributions of design as a strategic goal into three elements: securing a distinctive niche, surviving in a mature industry and competing globally. This can be achieved by various activities from stakeholders within the value-creating network.

Having established these activities, it is necessary to develop a suitably effective measurement tool. How can these activities' effectiveness be measured? It remains a challenge to assess the impact and contribution of design through a quantified method (Hands, 2011). In addition, when it comes to acknowledging design contributions, designers are still highly depended upon peer review or numeric business figures, such as sales increases, market share and reputation (Borja de Mozota, 2011). However, it can arguably be difficult to obtain measurement objectivity through peer reviews. Since numeric business figures are the outcome of company-wide activities, the contribution of design becomes blurred, and it becomes challenging to distinguish it from the company's overall outcome. Therefore, it is worth seeking the contribution of design in direct ways.

This paper aims to determine a framework of value(s) that are affected by design. The contribution of business activities, including design, drives the competitive advantage of a business/nation. Likewise, a business/nation requires a competitive advantage for their survival in this highly globalised and competitive marketplace. A value-creating network is arguably required to obtain such a competitive advantage for any given business/nation. This competitive advantage is derived from the activities of stakeholders within the value chain (Porter, 1990) in the sense that the perception of stakeholders towards the network is not circumscribed by financial benefits. Activities' contributions need to be interpreted holistically through the

concept of value. Given that design activities (whether they are micro- or macro-scale) aim to create value (Borja de Mozota, 2011), it is essential to understand the contribution of design through value.

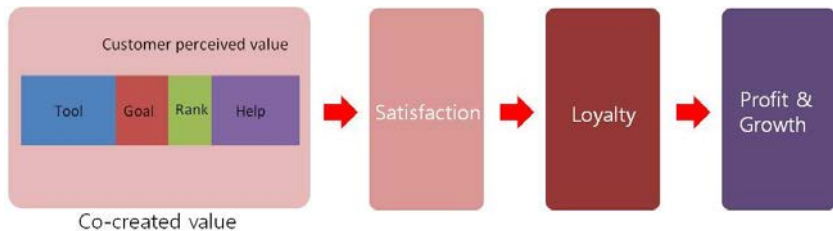
When assessing whether investments in design are effective, Borja de Mozota explains three advantages of utilising the balanced scorecard: it provides a dynamic and long-term perspective; it is applicable to any design project or decision; and it broadens the design outcome of financial perspectives (Borja de Mozota, 2011). Given that the balanced scorecard includes the financial benefits of design, the objectivity of design investment (both financial and non-financial) can be realised. Moreover, the four perspectives (financial, customer, internal, and learning and growth) in the balanced scorecard represent the holistic view of a business's performance. However, there are some limitations when employing the balanced scorecard for investigating the value of the previously mentioned network (*figure 3*).

Since the balanced scorecard is a 'results-based' view of company-based activities it is difficult to include the causes behind each stakeholder's decision to remain within the network. In this paper, the key issue of assessing quantified results will be applied within the service-profit chain. Thus, relationships among co-created value, satisfaction and loyalty can be investigated. Furthermore, due to the dynamic character of the contemporary business situation, it is crucial to be agile in order to transform the strategic weight of stakeholders. For example, when there was no cognition of the corporate social responsibility, putting an 'ethically-sourced' sign or Unicef logo may not be as effective as it is today. It can be interpreted as the emergence of another significant stakeholder within the network, suppliers and local communities. In other words, even if the assessed value of a brand or a business is superior to its competitors, if it is mistakenly focused on stakeholder's superior value, the brand/business may not be able to offer superior value to stakeholders. It is essential to balance the relationships between stakeholders and the relative weight of their value perceptions.

## **Design embedded existing theories**

When design and other business concepts (e.g. organisation, reputation or strategy) are combined (Borja de Mozota, 2011) more efficient design contributions can be achieved. Thus, if design perspectives can be successfully embedded within aforementioned business concepts, it can

facilitate a distinct evaluation of a design's contribution. *Figure 4* summarises the output of this section: the overall layout is based upon the service-profit chain. How customers view the design value of the network has four dimensions (i.e. design as tool, goal, rank and help) and is determined by design embedded SERVQUAL questions. The SERVQUAL questions were modified to reflect design perceptions by selectively choosing design audit elements and principles (Cooper and Press, 1995). The present paper will investigate whether the design embedded questions can successfully quantify and visualise created value for customers. This section demonstrates how customers' co-created design value can be quantified and visualised.



*Figure 16. Summary of design embedded service-profit chain*

### *Design Value typology*

Although Holbrook's typology of customer value includes various aspects of value, some researchers argue that ambiguity exists between active and reactive values in Holbrook's typology (Leclerc and Schmitt, 1999; Solomon, 1999; and Richins, 1999). To dissipate the ambiguity between active and reactive value concepts, they can be combined as one dimension and named as shown below in *Figure 5*.

		Extrinsic	Intrinsic
Self-Oriented	Active	<b>Efficiency</b> <i>Tool</i> (Output/input, Convenience)	<b>Play (Fun)</b> <i>Goal</i>
	Reactive	<b>Excellence</b> (Quality)	<b>Aesthetics</b> (Beauty)
Other-Oriented	Active	<b>Status</b> <i>Rank</i> (Success, Impression management)	<b>Ethics</b> <i>Help</i> (Justice, Virtue, Morality)
	Reactive	<b>Esteem</b> (Reputation, Materialism, Possessions)	<b>Spirituality</b> (Faith, Ecstasy, Sacredness, Magic)

Figure 17. Holbrook’s typology of consumer value (clustered by four dimensions)

To reflect design perspectives, the four dimensions of value are interpreted as follows: design value as a tool, design value as a goal, design value as a rank, and design value as help. These dimensions can be quantified and visualised as shown in Figure 6. Its measurement may be calculated by determining the area of the blue, red and green diamonds on the figure below using the design value equation (see Figure 7). The diamond area can be used to investigate phases within the service-profit chain. If the diamond area can represent the co-created design value of customers, then the relationship between the diamond area and the next phase in the service-profit chain (satisfaction) may be examined by a single regression analysis. In doing so, one can investigate whether the co-created design value positively influences design satisfaction.

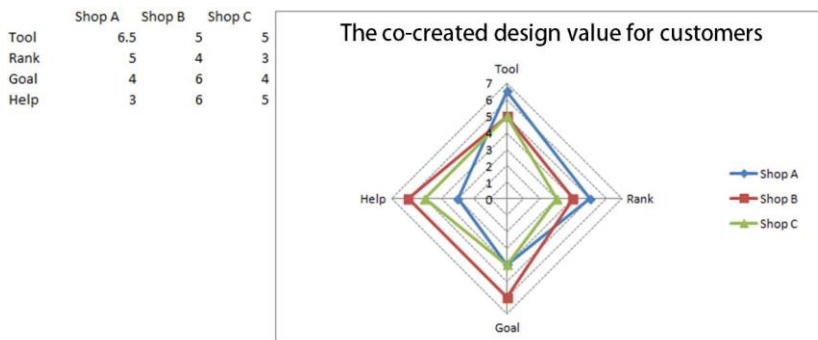


Figure 18. Example of measured co-created design value for customers



$$\text{Sum of total customer design value} = \frac{(\text{Tool} + \text{Goal}) \times (\text{Rank} + \text{Help})}{2}$$

Figure 19. The design value equation

### *The service-profit chain*

From a long-term perspective, network stakeholders should continuously be involved in activities that create value. Loyalty is essential for encouraging stakeholder retention. Although loyalty is driven by satisfaction, as shown in *Figure 8* (Heskett, et al., 1994), some may argue that satisfaction can directly impact the profit and growth of the network. Therefore, it is necessary to examine relationships between the phases in the service-profit chain.



Figure 20. The service-profit chain (Heskett, et al., 1994)

Customer satisfaction is one of the most significant indicators of customers' return business (Dube, et al., 1994). Spiteri and Dion (2004) identified the two types of satisfaction: transactional and overall satisfaction. To assess the long-term relationship, they suggest measuring the overall satisfaction derived from total experience because it is more relevant. In addition, Kumar, et al. (2011) insist that operation performance as perceived by customers need to be construed as a whole system approach, not as individual elements. Thus, customer satisfaction is defined as an overall assessment of future behavioural intentions; it considers what customers receive based on what a company provides (McDougall and Levesque, 2000).

As shown in the aforementioned service-profit chain, researchers also insist that loyalty is derived from satisfaction. It has been empirically proven that end-user loyalty, which could lead to customer repurchases, is more significantly derived from overall satisfaction than customer value (Spiteri and Dion, 2004). Although their practical research area is limited to the pharmaceutical industry in business-to-business situations, the results clearly indicate that overall satisfaction drives customer loyalty and overall satisfaction is driven by customer value created by the company. This result

supports the idea that co-created value does not directly affect stakeholders' loyalty. Instead, it is necessary to have a mediating phase for the design satisfaction of stakeholders. Likewise, other phases can be adapted to design perspectives, such as design loyalty and co-created design value.

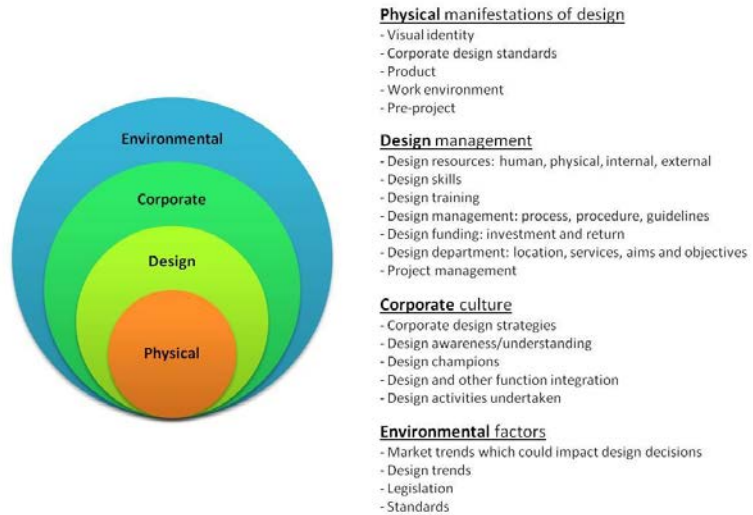
### *Design audit and SERVQUAL*

Cooper and Press (1995) argue that there are three levels to consider when a design is audited: the corporate philosophy and strategy; how the company operates; and how design function communicates. Later in their research, Cooper and Press extend this broad view to explain the four hierarchies of design audit (1995, p.214).

- I. Physical manifestations of design*
- II. Design management*
- III. Corporate culture*
- IV. Environmental factors*

By employing this view, design activities within a corporation can be clearly classified; thus, the design audit for functions within the company can be addressed. However, since the co-created value introduced in this paper consists of stakeholders who are involved in the value-creating network, it is necessary to investigate beyond corporate viewpoints to encompass the values of other relevant stakeholders.

Despite its business-centric restrictions, Cooper and Press's arguments can be understood as key factors of composing the value of employees and other stakeholders. Leadership, competencies, management and people are positively related to the loyalty of employees, which may stem from greater employee value and satisfaction in their work (Martensen and Grønholdt, 2001). These principles are already embedded in the hierarchy of design audit as shown in *Figure 9*. The SERVQUAL questions were selectively reviewed using the audit elements and principles to reflect customer perceptions. The modified questionnaire includes sections of satisfaction and loyalty for utilising the service-profit chain (please refer to the appendix).



*Figure 21. The levels that organisational design audits might address (Cooper and Press, 1995, p.214)*

Although co-created value stems from all stakeholders within the network, this study investigates customer perception to confirm independence as a prerequisite to the dimension of value. The questionnaire was designed to reflect four dimensions (i.e. design as tool, design as goal, design as rank and design as help) followed by the service-profit chain phases. By utilising the questionnaire, one can investigate how customers' value offerings, satisfaction and loyalty can be based upon these four dimensions. Given the aim of this paper, the focus is on whether the above framework is relevant to further studies investigating the holistic view of co-created design value across all stakeholders. Since customers are regarded as the major stakeholder within a value-creating network, this study researches customer perception to test this proposed framework.

### **Independence of value dimensions**

Each of the four dimensions in *Figure 5* is a discrete category and is individually affected by stakeholders. When a business requires strategic decisions to improve its performance, focusing on weak points within the value diamond model's blurred dimensions can further confuse strategic focus. To utilise the visual method shown in *Figure 6*, each dimension should

not be correlated. Thus, multiple regression analyses were performed to investigate any potential relationships between dimensions.

This study performs quantitative data analysis to confirm the independence of each dimension. Questions are designed in the seven-point Likert scale as the SERVQUAL measurement. By examining survey responses with the multiple regression analysis, one can calculate the relationship between one dimension and the other three dimensions and their impacts upon each other. This study employs the alpha level as 0.05, a seven-point Likert scale, and 0.03 as an acceptable margin of error.

## Discussion

Table 4 indicates moderate (correlation value; 0.3–0.5) and strong (correlation value; 0.5–1.0) relationships between the four dimensions. The following is the null hypothesis ( $H_0$ ) of the multiple regression analysis, using the assumption of a linear relationship between each of the dimensions:

*H<sub>0</sub>: One design value dimension is influenced by the other three dimensions.*

While R squared and adjusted R squared values can be disputed by having *F*-values with a significantly low *p*-value, the  $H_0$  of the multiple regression analysis *can be accepted* (see Table 5 for details).

Table 4. Pearson correlation value

		Tool	Goal	Rank	Help
Pearson Correlation	Tool	1.000	.512	.615	.507
	Goal	.512	1.000	.526	.310
	Rank	.615	.526	1.000	.385
	Help	.507	.310	.385	1.000

Table 5. Multiple regression analyses results

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	Set input y as Tool	Set input y as Goal	Set input y as Rank	Set input y as Help
R <sup>2</sup>	0.498	0.335	0.443	0.267
Adjusted R <sup>2</sup>	0.492	0.328	0.437	0.259
F-value	90.104*	45.808*	72.341*	33.140*
Std. error of the estimate	0.681	1.177	0.878	0.969

\*p-value < 0.001

However, to accept the hypothesis and formulate a relationship between dimensions, regression coefficients' values need to be reviewed. *Table 6* below demonstrates the regression coefficients values.

*Table 6. Regression coefficients of design value dimensions*

Dependent variable	Model	Un-standardised Coefficients		Standardised Coefficients	t	Sig. (p-value)	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
Tool	(Constant)	1.770	0.209		8.489	.000	1.360	2.181
	Goal	0.145	0.034	0.218	4.285	.000	0.079	0.212
	Rank	0.317	0.043	0.388	7.400	.000	0.233	0.401
	Help	0.246	0.040	0.290	6.180	.000	0.168	0.325
Goal	(Constant)	0.849	0.402		2.111	.036	0.057	1.640
	Tool	0.434	0.101	0.289	4.285	.000	0.235	0.633
	Rank	0.411	0.077	0.335	5.322	.000	0.259	0.563
	Help	0.044	0.073	0.035	0.600	.549	-0.101	0.189
Rank	(Constant)	0.452	0.301		1.502	.134	-0.140	1.045
	Tool	0.527	0.071	0.430	7.400	.000	0.387	0.667
	Goal	0.229	0.043	0.281	5.322	.000	0.144	0.313
	Help	0.083	0.055	0.080	1.521	.130	-0.024	0.191
Help	(Constant)	1.259	0.325		3.878	.000	0.620	1.899
	Tool	0.498	0.081	0.423	6.180	.000	0.340	0.657
	Goal	0.030	0.050	0.038	0.600	.549	-0.068	0.128
	Rank	0.101	0.066	0.105	1.521	.130	-0.030	0.232

If one dimension can be explained by the other three dimensions, all coefficients are necessarily statistically significant. Some p-values (help dimension in the dependent variable: goal, 0.549; help dimension in the dependent variable: rank, 0.130; goal and rank dimensions in the dependent variable: help, 0.549 and 0.130) reject the H<sub>0</sub> of the regression coefficients below.

*H<sub>0</sub>: All dimensions are correlated and can be described by regression coefficients.*

Despite some positive relationships between dimensions, it is very difficult to describe the relationships between the dimensions. Due to the dispute of R squared, adjusted R squared values and the rejection of  $H_0$  of the regression coefficients, each design value dimension cannot be explained in terms of their relationships. Thus, each dimension is independent and should be measured separately.

## Conclusions and findings

This paper examined how stakeholders perceive value from the network that they are involved in and how those perceptions can be quantified and visualised. By first obtaining customer perceptions, it can be argued that customers determine the value of offerings through four measurable and independent dimensions (design as tool, design as goal, design as rank and design as help). The proposed model can be practically used to enhance global strategies in international business. For example, it is important to understand local culture in global business (Robertson, 1995). If survey results are grouped by cultural boundaries, marketing activities focusing on a specific dimension can be determined by identifying relatively important values for customers.

Given that the four dimensions are derived from psychological factors, these dimensions are arguably applicable to other stakeholders. Before performing any qualitative or quantitative research, it is necessary to review questions for other stakeholders to reflect the design audit elements and principles from Cooper and Press (1995).

However, the survey target is very limited when generalising and applying the proposed frameworks as a tool. Investigating other businesses within the food and beverage service section and selecting for various cultural backgrounds among customers can strengthen the reliability of the proposed tool. Furthermore, since the perceived service quality is determined by a wider social and organisational context (Meroni and Sangiorgi, 2011), other critical stakeholders will require clarification.

In future research, it is worth investigating the main stakeholders of the service industry and their interactions as they co-create value in the network. Also, it is necessary to follow-up on how the next steps within the service-profit chain (satisfaction and loyalty) can be influenced by the dimension of design value. For example, if the design value can be quantified (as shown in this paper), can the design value positively impact the next step (satisfaction)? Likewise can the created value phase in the

service-profit chain, modified to co-created design value, satisfaction and loyalty, be adapted for design perceptions (design satisfaction and design loyalty)?

Other stakeholder groups are as significant as the researched customer group for building co-created design value in the network. It is necessary to modify the questions to investigate other stakeholders' perceptions within the proposed framework. As a result, the co-created design value can be attributed to various stakeholders' perceptions. By doing so, design contributions in the service industry can be holistically recognised in a quantitative and visual way.

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## Appendix (Survey question)

### Design as Tool

1. Products and Services from the (        ) Café are good value for money.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
2. The (        ) Café is located in a favourable place and I like the atmosphere of the surrounding area.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
3. The (        ) Café company has modern-looking equipment						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
4. The physical facilities at the (        ) Café company are visually appealing						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

5. Materials associated with the service (such as tables, sofa, and tableware) are visually appealing.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
6. Materials associated with the service (such as tables, sofa, and tableware) match well with the overall atmosphere of the café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
7. I feel comfortable to staying / hanging around at the café using the tables, chairs, sofas, tableware etc....						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
8. I like the way the (            ) Café decorates the service materials (such as tables, sofa, and tableware)						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
9. I like the logo (or signs) of the (            ) Café						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
10. I like the interior of the (            ) Café						
Strongly Disagree						Strongly Agree

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1	2	3	4	5	6	7
11. I like the location of the (            ) Café, because it fits in well with the surroundings						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
12. I am willing to introduce the (            ) Café to friends, because they will also like the physical design of the (            ) Café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
13. I am willing to visit the (            ) Café again to enjoy the mood of the (            ) Café offerings						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
14. I will keep using the products and services from the (            ) Café, even if the price is increased. Because I like the design of the (            ) Café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

**Design as Goal**

1. Your main purpose of visiting the (            ) Café is,	
1	to buy products (foods and drinks) – take-away
2	to buy and enjoy products and services with friends or family
3	a business purpose (meeting with customers)

4	to spend time alone (reading books/magazines, studying, enjoying atmosphere)					
2. Considering your purpose in question 1, the design of the (        ) Café helps you achieve this purpose.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
3. I feel comfortable and fulfilled, considering my purpose in question 1 by using the products and services from the (        ) Café.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
4. I am willing to introduce the (        ) Café to friends who have the same purpose of visiting.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
5. I will visit the (        ) Café again, because I trust that the (        ) Café will provide similar or better products and services than competitors.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

**Design as Rank**

1. The (        ) Café is a trendy place with the most recent design consideration.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
2. Other customers in the (        ) Café are similar to me.						

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Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	
3. I feel a sense of belonging in the ( ) Café.							
Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	
4. The ( ) Café's atmosphere reflects my characteristic							
Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	
5. I think other visitors also like the design of the ( ) Café.							
Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	
6. I am willing to introduce the ( ) Café to friends who are similar to me							
Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	
7. I will visit the ( ) Café again, because I trust that the ( ) Café will provide similar or greater products and services							
Strongly Disagree							Strongly Agree
1	2	3	4	5	6	7	

**Design as Help**

1. I can find design considerations for people with physical difficulties in the ( ) Café. (e.g. access ramp, ergonomic design)
---------------------------------------------------------------------------------------------------------------------------------

Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
2. I know that the ( ) Café uses ethically sourced ingredients and products, because of their display or logos in sign. (e.g. Fairtrade®)						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
3. I believe that cafés should operate in a manner that includes a diversity / range of customers and use ethically sourced ingredients and products.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
4. I can recognise from the design of the ( ) Café that my consumption at the ( ) Café supports others mentioned in questions 1 and 2.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
5. I think others also recognise the design of the café (design for those who have physical difficulties and using ethically sourced ingredients) at the ( ) Café easily.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7
6. I trust the ( ) Café will continue to keep improving or maintaining current design considerations						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7



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7. I prefer to consume products and services like the ( ) Café, rather than other shops which have no considerations to their suppliers or consumers.						
Strongly Disagree						Strongly Agree
1	2	3	4	5	6	7

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**Section 3b: Design in the Creative and  
Culture Industries**

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# Editorial: Design in the Creative and Cultural Industries in an Era of Disruption

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The creative and cultural industries (CCIs) include experiential services such as the performing arts as well as products that require exceptional levels of creativity in their development processes: examples are recorded music, fashion, books, art exhibitions and digital media. Many of these sectors have been disrupted by the development of digital technologies and the Internet. Yet there is comparatively little writing on the management of design in the CCIs. In these sectors design is not simply a means of communication or the way to create objects and spaces, but rather is a vital process in the generation of meaning and identity.

This track contains an interestingly eclectic mix of papers that examine the use of design in the cultural and creative sectors. Two papers focus on various aspects of design in the fashion industry, others examine the design of music production, the digital entertainment sector, and design as an aid to the creation of cultural products using museum residencies as the mechanism. Others focus on the creative process itself in, for example, creating identity or in managing the risk inherent in creative production.

In “Powers of design: a heuristic inquiry into the Victoria and Albert Museum’s Residency Programme”, Saskia Coulson and Louise Valentine suggest that there has been a considerable increase in the level of investment and engagement offered by British museums to the creative industries, evinced by a proliferation in the provision of residencies. Residencies offer the time and resources to innovate in practice, and can result in objects, events or services which benefit the host organization and participating individuals. Their paper reviews British residency programs to identify the main practical and strategic value offered by residencies and undertakes an in-depth heuristic analysis of the Victoria and Albert Museum’s Residency Programme, with emphasis given to the development and management of the service and its situation within the Museum’s wider organizational framework. This study contributes to a growing debate that

design can be employed as a way of thinking about the development of cultural products and services, and fosters a discussion on the agency of design within a cultural organization.

In “Studio design and the management of creative production”, Jonathan Gander and Alison Rieple discuss the design of recording studios and how this affects the management of relations within popular music recording projects. The creation of a pop song is a complex endeavor, requiring a large number of decisions involving highly subjective and contestable judgments. Organized in a flat structure and without established lines of authority this temporary assembly of people are faced with the challenge of making a product characterized by uncertainty over how to make it and what it will sound like once it is completed. Their paper is based on observation of the practices, and relationships operating in a recording studio, supplemented by interviews with the participants. Using a socio-material approach, the spatial organization and use of technological objects are included to produce a contextual analysis of how actions are organized and decisions taken. What emerges is an understanding of how the designed arrangement of the participants and the application of sound production and editing technology are used to manage the development of the song and confer decision-making authority upon the music producer. When the spatial organization of the participants is altered by the introduction of new technology and new spaces, the decision-making power of the producer is challenged and artist power is increased.

Jonatan Jelen and Mark Leal in “Omnipresent Access: User Perceptions in New Media Ecosystems” suggest that new technology has mostly altered the world in a pragmatic way – transportation and mobility, energy generation and distribution, transformation of natural resources into consumable products all changed human behaviors. Yet, information-centric technologies also alters the character of humans and consequently the ways in which they relate to systems, experiences, objects, and to each other. The authors argue that social media-related developments such as omnipresent access to streaming video services the past decade has been particularly disruptive, and may have altered consumers’ perception of entertainment altogether. Extending the existing framework of human-computer interaction with the novel human-centered research approach phenomenography, the authors undertook an exploratory grounded theory study with 8 participants to define constructs that capture the experience of consuming streaming video. This yielded five categories that could be used to conceptualize hardware and software development for future mobile

technologies, and also lead to the design and development of fundamentally different business models, digital experiences, and ecologies of coproduction.

The paper by Irini Pitsaki, Alison Rieple and Natalie Nixon “Design and identity formation in cultural organisations’ strategic performance” examines design as a contributor to the formation of identity, both within an organisation and externally among its clients. These concepts are strongly linked and constitute an element of strategic performance. They suggest that in the cultural industries, a clear and consistent corporate identity must be shared internally between the group of employees and externally; ideally, a cultural organisation, because of its non-profit, educational, ethical, etc. status, should see its identity perfectly matched with that of its audience. Organisational brand identity signals what the corporation is and does, which helps to build loyalty and attachment to the company. This is a deeply selective and interpretive process and one that plays a major role in strategy. In this paper, the authors critically review key texts on identity formation in relation to design and brand strategy; and use a case study of museums and galleries to arrive at a set of conclusions about the role of design in the articulation of a clear and distinctive identity for both cultural corporations and individuals interested in cultural products.

In “Three Methods that Creative Talents Could Learn from Designers: Empathic Observation, Group Brainstorming, and Rapid Prototyping” Jaewoo Joo and Soren Ingomar Petersen discuss how creative talents face a high risk of failure but have limited knowledge of how to manage it. Their research has identified that failure risk is successfully managed using three methods; identifying more accurate needs by empathic observation, generating more solutions by group brainstorming, and selecting qualified solutions by rapid prototyping. The authors suggest that creative talents should apply designers’ risk management methods to their creative tasks. “Designing Organisations in the CCI” written by Johan Kolsteeg and Frido Smulders, discusses how cuts in government budgets are forcing cultural organizations to reconsider their position by and decide how to avert the risk of these cuts. They are likely to search for new organizational constellations with new business models. Converting the cultural organization into a hybrid organization combining cultural as well as business values, is one of the options and a major challenge when preserving the cultural values that belong to the artistic core remission priorities. This paper investigates the application of the IDER-model, that combines design thinking and design related implementation theories that

take the potential conflicting value systems into account as well as a focus on the subsequent realization of associated organizational changes. The model explicated in the paper relates to the fundamental choices underlying the adaptation to external changes through hybridization. Based on this theoretical discussion the paper proposes an agenda for future research.

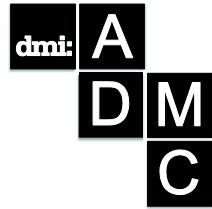
Finally, two papers focus on the fashion design industry. In “Co-creation and the Democratization of Fashion: investigating the case of UK based fashion design company Own Label”, Thorsten Roser, Robert DeFillippi and Julia Goga-Cooke, discuss how the fashion industry has always taken inspiration from the crowd. However, the fashion industry remains reminiscent of an oligarchy led by a small elite of high fashion designers dictating new trends and design from the top of the market. Only a small group of new up and coming fashion designers end up in one of the established fashion houses. Furthermore, in today’s economy and marketplace few consumers can afford high-end fashion attire. During the past decade co-creation has become an established new business practice to enable better front-end ideation, stakeholder advocacy and user customization. In this paper the authors focus on co-creation and the democratization of fashion based on a case study of Own Label. They conclude that such firms are likely to use hybrid models of co-creation to strategically position themselves in a highly competitive market. Further, co-creation enables a new market place for millennial fashion designers and millennial buyers thereby holding the potential to disrupt the market and lead to greater democratization of the fashion industry.

The final paper in this track also focuses on some of the difficulties to be found on the fringe of the fashion industry field. In “The Role of Networks in Fashion Designing: The Disconnect between Designers and Manufacturers in London”, Galina Gornostaeva, Alison Rieple and David Barnes have undertaken an empirical study of the role of networks in fashion designing in London. There is evidence that the relationship between new, small, fashion design firms and apparel manufacturing is one of the weakest points in the fashion production chain. Analysis based on interview data as well as a critical review of the relevant literature, suggest that these problems have two main causes: a) designers are locked-in to the retail-led, London-based networks, which are dominated by strong links with the design colleges and industry-related institutions; b) as a consequence of this, their relationships with manufacturers lack trust, reciprocity and knowledge exchange for the successful prototyping and scaling up of production to be achieved. Negotiation of constraints and specificities of designs are made more



difficult because of personal, cultural, linguistic, physical and organizational differences between the two fields, which create cognitive distance and incompatibility between the fields of fashion design and apparel manufacturing.

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# Three Risk Management Methods That Creative Talents Could Learn From Designers: Empathic observation, group brainstorming, and rapid prototyping

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*Our interview of ten creative talents revealed that they face high risk of failure but have limited knowledge of how to manage it. We review how designers' manage New Product Development (NPD) and find that they successfully manage failure risk using three methods; they identify more accurate needs by empathic observation, generate more solutions by group brainstorming, and select qualified solutions by rapid prototyping. We suggest that creative talents should apply designers' risk management methods to their creative tasks.*

**Keywords:** *Creative talent, risk management, design, New Product Development, empathic observation, group brainstorming, rapid prototyping*

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## Introduction

Art can be considered “Goal Directed Play” with the intent of “Making Objects Special” as to support ceremonies (Dissanayake 1998). According to studies of artists, deep human and philosophical issues inspire art, and the process of creating an artwork is a process of tinkering. Artists are inspired by other artists and their surrounding culture, and contemplate deep issues before and while producing their art pieces. Successful artists are trendsetters. They characterize and name problems, while designers solve them (Petersen 2011).

For most of European history, art and design have been considered the same thing, a craft. Until the renaissance (14th to 16th century), crafts were used to validate and promote religious institutions and rulers, fashioning architecture, furniture, weapons, clothing, utensils, jewellery, sculptures, and paintings. Wealthy patrons supported craftsmen and crafts were manufactured on commission. As art was separated from craft and the cost of art materials declined, artists produced pieces for the upper class and for themselves including self-portraits, still lives of objects, flowers, and food items, as well as landscapes. Abstract paintings did not appear until the beginning of the 20th century and most art became a commodity as the cost of reproduction fell. Art and craft, since their separation, have inspired each other, and since the industrial revolution, mass-produced goods have inspired industrial design. Today, art can be produced by anyone and anyone can label and sell what they produce as their own art (Crowdsourcing findings confirm this: [http://www.huffingtonpost.com/soren-petersen/what-is-art\\_b\\_1938274.html](http://www.huffingtonpost.com/soren-petersen/what-is-art_b_1938274.html)).

As arts become democratized, many creative individuals and their entrepreneurial ventures are characterized by enormous profit potential as well as huge market and execution risk. If they get the unique ingredients right, they can replicate the commercial success of Picasso, Madonna, Spielberg, and Jobs. Otherwise, an average American artist makes less than \$23,000 a year (U.S. Census Bureau 2008). Indeed, creative individuals’ revenue curve is best described by a power curve; a few earn substantial revenue, most earn nothing at all. Entrepreneurial ventures in the creative economy depend on a limited number of breakthrough ideas derived from a few individuals, as opposed to raw materials or properties. Private investment is virtually unattainable for these ventures due to a lack of tangible assets, effective and efficient processes, reliable metrics, and risk

assessment methods, making it impossible to construct a viable business case.

Different from creative talents, designers have developed their own methods to manage risk. According to Perks, Cooper, and Jones (2005), designers have changed their roles dramatically in recent decades. Relegated to being primarily stylists in the fifties, they are now contributing at a strategic level, responsible for the visual perception of corporations, user experience, and leading the design process in the twenty-first century. According to Von Stamm (2003), harsh competition has led to an increased emphasis on innovation as a crucial dimension of business strategy. In response, designers are undertaking a leadership role in innovation. They carry out a broad array of tasks, beyond those demanded from specific design activities. Scholars suggest that their responsibilities should expand to roles that support the entire New Product Development (NPD) effort. Such roles include interpreter, coordinator, and facilitator (Turner 2003). In addition, an increased understanding of customers' needs is becoming a prerequisite for successful innovation. The lack of useful market and customer information is driving designers to generate their own quick and dirty research. Therefore, it is argued that designers should not only embrace the traditional marketing tasks such as marketing research and marketing communication (Von Stamm 2003) but also directly interface with the marketplace to effectively understand and communicate with customers (Leonard-Barton and Rayport 1997).

In the present work, we aim to provide insights into how creative talents manage their risks. In order to achieve this goal, first, we reported on our interviews with 10 creative talents; secondly, we reviewed the contemporary effort that designers have made to reduce their risk in new product development; and finally, we conclude what creative talents could learn from designers.

## **Study about creative talents**

In order to understand what artists do, we conducted two studies, crowdsourcing and interview. First, we conducted a crowdsourcing challenge on the professional social network (LinkedIn) between August and September 2012. We applied the Six Step Co-creation Cycle method to the four groups (Creative Designers and Writers, Design Education, Design Research and Design Management Institute) and provided an open-ended question (Petersen 2013);

What characterizes good Art? Art can be considered “Goal Directed Play” with the intent of “Making Objects Special,” supporting ceremonies (Dissanayake, 2002). What do you think separate good art from bad art?

We collected in total 39 comments. Their comments reveal that not few creative talents mentioned the link between art and design. Here are a few specimen comments of the artists:

“The expression of the thoughts of the artist is successful when it engages both the maker and the viewer and creates dialogs of wonder. It is subjective and stimulating and seeks to enlighten and entertain”

“Art adapts to and reflects the values of the time, by speaking the language of the patron and by adjusting to the consensus of the most successful styles of the period, which, at the moment, happens to be design”

“Art and design are inextricably linked”

Second, we conducted interviews with 10 individuals who are presently working in five different creative industries. They consist of a music stylist, musician, movie producer, cameraman, painter, graphic designer, font designer, museum curator, healthcare designer and ceramic designer. We performed our interviews between September 2011 and February 2012, using a semi-structured open-ended interview instrument. The instrument contained the questions addressed in the application form for the Industrial Design Excellence Award (IDEA) from the Industrial Design Society of America (IDSA). Interviews, with durations between 45 minutes and two hours, were conducted in person, on Skype, or over the phone.

We typed and coded interviewees’ comments using the Concept Aspect Profile (CAP) (Petersen 2005). This profile consists of thirteen aspects of a concept or an idea including individual user in social context, user identity, user needs, user behavior, user activities, interface with offering, offering’s function, offering’s features, architecture, technology, planning, philosophy, provider entity. We tallied the total number of information segments for each aspect in order to compare creative talents and designers.

We identified the gap between art and design by comparing art concepts and industrial design concepts; industrial designers pay more attention to success indicators such as users' identity, needs, and behavior, while artists pay more attention to themselves and members of their own profession. This suggests that artists have opportunities to further excel by understanding their buyers more deeply. We believe that they can easily improve their market position by leveraging the methods developed in the

consumer product industry, beginning with the following three approaches: (1) positioning artwork, (2) managing risks, and (3) integrating art and business.

In addition, according to the interviewed artists, one has to be able to understand and share the vocabulary in order to appreciate an art piece. Thoughts and ideas are worthless unless shared—without impact, they have no relevance. Perhaps some of the more well-designed and innovative products of today are, in reality, a type of substitute art because, although functional, they may still be perceived as art.

## **Literature review about designers**

As designers' roles have changed from aesthetic specialists to the leaders of new product development, their efforts to improve the chance of succeeding in their projects are attracting much attention among researchers. In particular, researchers shed light on their efforts to improve the quality of the three tasks in the design process. These tasks include (1) identifying needs, (2) generating solutions, and (3) selecting solutions.

### *(1) Identifying needs by empathic observation*

Users or consumers are generally considered the experts on their own needs. However, they are sometimes unable or unwilling to explain their needs. They tend to either emphasize short-term problems by sacrificing long-term needs, or ignore their potential needs regarding radically new products because their insights into new products tend to be bounded by their own experience of currently available products. As Hamel and Prahalad (1994) argue, consumers generally lack foresight and, thus, being merely customer-led is dangerous. This implies that, when developing discontinuous (breakthrough) new products, traditional methods are insufficient to identify needs. As a result, it can be difficult for marketing to provide input and direction before a general product application has been established (Veryzer 1998). Further, questions remain concerning the role of customer input and market research in discontinuous (breakthrough) new product development (Wind and Mahajan 1997) as well as the relationships between market researchers and other key disciplines (e.g., Industrial Design, R&D) involved in the development of these types of products (Veryzer 2005).

To identify needs that consumers want fulfilled, designers invest tremendous effort. In particular, they attempt to understand users—not

indirectly through marketing research, but directly. For example, Matthing, Sanden, and Edvardsson (2004) said, "the consumers' service ideas are found to be more innovative, in terms of originality and user value, than those of professional service developers" (p. 479).

Recently, designers focus on ethnographic observation to identify consumer needs. One is. This method enables them to empathize with how users think and feel. For instance, Hamel and Prahalad (1994) and Leonard and Rayport (1997) claim that either obvious or unobtrusive observation methods lead to collecting and analyzing quality data (needs). Similarly, Kelley (2001) argues in his seminal book, *The Art of Innovation*, that observation is the first step in collecting data. More recently, business magazines have paid closer attention to the pronouncement made by ethnographers that such observation "provides a richer understanding of consumers than traditional research methods. Closely observing people where they live and work allows companies to zero in on customers' unarticulated desires (Ante and Edwards 2006).

## *(2) Generating solutions by group brainstorming*

After identifying user needs, designers often generate solutions through so-called group brainstorming. Although this method is widely used in practice, psychologists are reluctant to appreciate its value. According to Diehl and Stroebe (1987, 1991), for example, several studies have consistently shown that nominal brainstorming or the aggregated work of individuals working simultaneously but without contact with each other outperforms group brainstorming. Prior work has suggested three reasons that group brainstorming is ineffective (Shepherd et al. 1995).

The first reason is evaluation apprehension. Group members are reluctant to express their unpopular or politically incorrect suggestions or poorly developed ideas for fear of being judged or evaluated by others—group members or externals (i.e., managers). The productivity of the group declines when members start to worry about how others will respond to their ideas. The second reason is social loafing or free riding. Group members intentionally limit their contributions and rely on other group members to do the job. This often happens when the responsibilities are unclear or when individuals do not feel accountable for producing. A large body of research has found that when individuals believe that their contribution cannot be identified and appreciated, they invest less effort into the task. The last reason is production blocking, which occurs when group members have to wait for others to finish before they offer their own



ideas. While waiting, ideas may become obsolete or forgotten, or, in order not to forget, people concentrate on and rehearse their own ideas instead of participating and generating more and new ideas.

Sutton and Hargadon (1996) criticized the findings obtained from prior research by arguing that the studies use a single effectiveness (or efficiency) measure and fail to consider the context in which group brainstorming is used and to examine how and why designers use it. They performed ethnographic fieldwork with IDEO employees and demonstrated that group brainstorming serves many objectives rather than simply increasing the quantity of ideas. Similarly, Leonard and Sensiper (1998) argue that knowledge held in people's bodies and heads and their unarticulated knowledge is the basis of creativity and is not easily captured or codified. The process of innovation is both an exploration and a synthesis.

### *(3) Selecting solutions by rapid prototyping*

After generating multiple solutions, designers often use prototyping to narrow down the alternatives (Schrage 2000). A prototype is known to serve various roles. First, it clarifies the generated solution and facilitates communication among designers. Physical prototypes help elucidate the new product concept for the development team and others in the organization (Leonard and Rayport 1997). Alternatively, visual prototypes made by designers facilitate the evaluation of the proposed design. "The renderings and models produced through their efforts (with the help of other professionals such as clay modelers) are invaluable in assessing the desirability of proposed designs and their market viability" (Veryzer 2005, p. 25). Secondly, it becomes a source of feedback from users and designers. It helps in gaining reactions from potential users and, sometimes, is used to supplement traditional marketing research methods (Leonard and Rayport 1997). Physical activities involved with rapid prototyping help designers to better understand their own solutions as well. In fact, some design challenges can only be resolved and evaluated in the prototype stage, such as subtle detailing like chamfers, radii, textures, and materials. Prototypes also make the concept more memorable and, thus, real. As Nussbaum (2005) said "seeing ideas in working, tangible form is a far more powerful mode of explanation than simply reading about them off a page."

## Conclusion about creative talents and designers

In sum, designers have developed and revised their own unique methods such as empathic observation, group brainstorming, and rapid prototyping to enhance their performance in the three specific design tasks: identifying needs, generating solutions, and selecting a solution. Their unique methods have been developed and widely utilized in firms such as IDEO and P&G as well as documented and carefully examined in schools. As a result, designers successfully manage their risk and get involved in product development projects early.

While designers have made tremendous effort to manage risk (e.g., devise, test, and revise various methods in different stages of NPD), artists have changed themselves very little, appearing to be reluctant to adapt to changes in an art world and become more aware of business risks. Our interviews with 10 artists in various creative industries suggest that the concept discourse of creative talents differs significantly from that of designers. For example, we asked both creative talents and designers to explain their focus on various concept aspects while developing art/design concepts and compared what they emphasized. We found that industrial designers paid attention to users whereas artists paid attention to themselves. This suggests that creative talents can improve their commercial performance by shifting their foci from themselves to users or buyers.

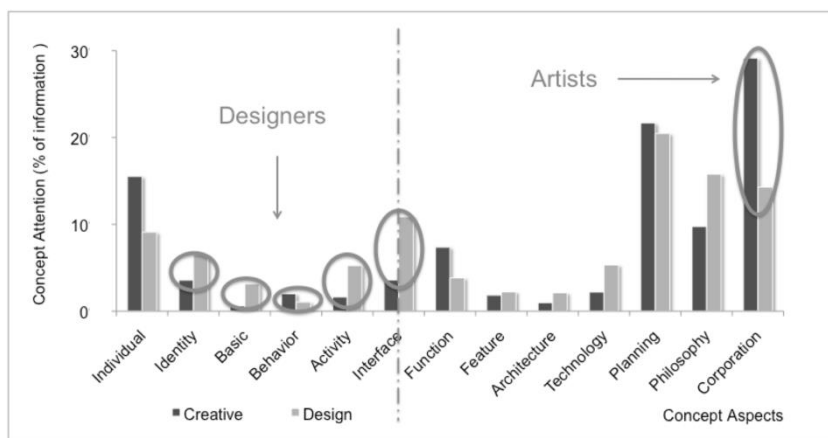


Figure 1 Concept Attention Profile between creative concepts (art) and design concepts (industrial design)

We found from our literature review of designers that creative talents could further excel in their performance by considering their users. They could do so by leveraging three methods often used in the consumer product industries: (1) positioning on a market risk-execution risk matrix, (2) managing risks, and (3) integrating management with art.

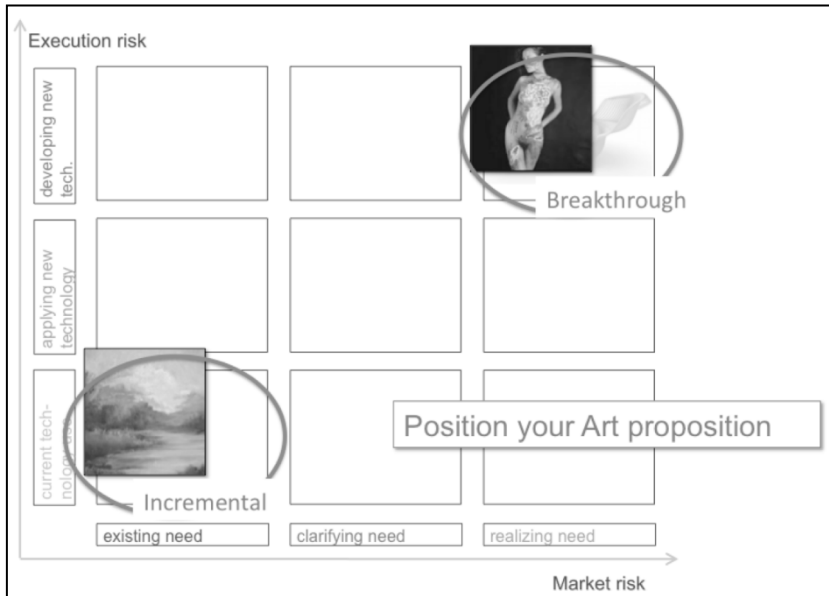


Figure 2 Matrix of market risk and execution risk

First, creative talents could position their artworks on the matrix of market risk and execution risk. Doing so enables them to understand what to pursue. For example, when they position their artwork at low market risk and low execution risk, their artwork will become commoditized, so-called, "me-too" products. However, when positioning their artwork at high market risk and high execution risk, they explore hidden user needs using radically new methods, suggesting that they pursue breakthrough innovations. Which strategy is better depends on contest, such as the artist's risk profile and the competition. According to a study of Mexican ceramics artists, low-end producers experiment more since they have nothing to lose. Artists in the middle range have something to lose and, thus, they are cautious and

refrain from experimentation. Artists in the top-end experiment the most, to remain on the cutting-edge. In general, top performing artists pursue innovative concepts with high market risk (e.g., non-established/little recognized topics) and high execution risk (e.g., unfamiliar topics, materials, and processes) (Dissanayake, 2002). One example is extreme body art: an artist surgically inserted an extra ear under the skin of his arm.

Second, creative talents should manage risks to stay relevant and competitive. Note that venture capitalists carefully select start-ups but they have to endure a waiting period of three to five years before a carefully selected investment provides a worthwhile return on their investment, because only one out of twenty ventures excel. Risk management of artwork involves diverse risks from loss or damage to commercial risk. For paintings, for example, commercial risk decreases while a painting’s value increases as the painting proceeds to the first sale, followed by sales from galleries and on to when critics and museums finally show interest. This suggests that painters need to pace cash flow to finance the entire process.

Finally, creative talents should integrate management with art creation. In the past, design has been shown to create the greatest value for organizations when it is integrated with management. For entrepreneurial ventures in the creative economy, creative professionals are one- man businesses.

*Table 1 Evolution of the role of designers in New Product Development (excerpted from Perks, Cooper and Jones 2005, p. 112)*

Period	Role of design in New Product Development
1800s	Business-oriented
1920s to 1950s	Specialist (e.g., durable goods)
1960s to 1970s	Professional (after WW2)
1980s	Brand dominated (e.g., Gucci, Ralph Lauren)
1990s	Sub-process of NPD (recession)
Early 2000	NPD process leader (supporting the whole NPD)

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## Co-creation and the Democratization of Fashion

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*The fashion industry has always taken inspiration from the crowd (Nixon & Blakley, 2012). However, the fashion industry remains reminiscent of an oligarchy led by a small elite of high fashion designers dictating new trends and design from the top of the market. Only a small group of new up and coming fashion designers end up in one of the established fashion houses. Furthermore, in today's economy and marketplace many fashion savvy consumers cannot afford high-end fashion designer attire. During the past decade co-creation has become an established new business practice to enable better front-end ideation, stakeholder advocacy and user customization (Ramaswamy & Ozcan, 2013). Our paper researches co-creation and the democratization of fashion based on the case study of Own Label. Building on the co-creation framework of Pater (2009) we conclude that in practice such firms are likely to use hybrid models of co-creation to strategically position themselves in a highly competitive market. Further, co-creation enables a new market place for millennial fashion designers and millennial buyers thereby holding the potential to disrupt the market and lead to greater democratization of the fashion industry.*

**Keywords:** Case study, co-creation, democratization, fashion and design

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## Introduction

The UK has become a seedbed for nurturing talent and fostering growth in the Creative and Cultural Industries (CCIs). In a highly transient economy companies are looking for new sources of innovation and growth, whilst seeking to offer new experiences and ways of engagement with customers. During the last decade co-creation has become an established new business practice, as well as a marketing and innovation management tool.

Digitization and co-creation allow firms to expand into new markets and to generate value beyond their initial core markets by directly involving co-creators across the value chain. The co-creation of design has been investigated and applied in many business contexts. In the creative and design intensive industries we can find examples of companies utilizing co-creation from inventive design of gadgets and household goods ([www.quirky.com](http://www.quirky.com); Piller, Ihl, & Vossen, 2011) to more complex products such as motor cars and other vehicles ([www.localmotors.com](http://www.localmotors.com); Ramaswamy & Ozcan, 2013). The past few years have also seen an increase in co-creation models in the fashion industry. For example, the co-creation of athletic shoes ([www.nike.com](http://www.nike.com)), t-shirts ([www.threadless.com](http://www.threadless.com)), men's shirts ([www.blanklabel.com](http://www.blanklabel.com)) and jewellery ([www.gemvara.com](http://www.gemvara.com)).

In this paper we explore co-creation in fashion design by investigating the co-creation practices of an innovative UK based fashion design company: Own Label ([www.own-label.com](http://www.own-label.com)). Own label organises regular open design competitions via an online platform and engages a diverse community of fashion co-creators. By studying the co-creation practices of Own Label we explore if such co-creation practices hold the potential to disrupt the market and lead to greater democratization of the fashion industry.

### *Aims*

Our aim is to contribute to previous co-creation research (Piller et al., 2011; Prahalad & Ramaswamy, 2004) by investigating co-creation in the context of the fashion industry and looking at the processes of creation and commercialization of designer fashion. We do this by looking into the approach of a company committed to enabling greater democratisation in the fashion industry in order to support up-and-coming design talent and to make designer clothing more affordable for fashion consumers.

Our particular interest is to look at how co-creation democratizes the fashion industry. We look at critical stages of the value chain across the fashion creation process to understand how different types of co-creators



are involved in the making of fashion. Ultimately, we explore the creation of value in the fashion industry and how co-creation influences this process.

Finally, we explore the tension in choosing either an elitist approach to fashion design that engages an elitist and closed club of experts in fashion creation versus engaging larger and more inclusive crowds, coalitions and communities into the fashion creation process.

## **Theoretical strands**

### *Democratization of Design Innovation*

*When I say that innovation is being democratized, I mean that users of products and services—both firms and individual consumers—are increasingly able to innovate for themselves. (von Hippel, 2005, p. 1)*

Von Hippel's (ibid. 2005) notion of democratization focuses on users as opposed to manufacturers of products or services. Our discussion extends this concept of democratization to include the participation of a wider variety of stakeholders in the design process. Our notion of democratization is more aligned with Chesbrough's (2003) view of open innovation, which reasons that in a world of widely distributed knowledge, companies cannot afford to rely entirely on their own in house expertise, but should instead engage with external sources of innovation. We similarly argue that democratization of design innovation benefits design firms by expanding the range and quality of design ideas from an expanded variety and number of participants in the design process. Because of advances in digital technology, it becomes easier for a wider array of people to participate in the design process, whether through submitting their own design ideas, evaluating the design concepts of others and making suggestions for their improvement.

Von Hippel (2005) observes the impact of digital technology on expanding the opportunities for participation in design.

*When the cost of high-quality resources for design and prototyping becomes very low - which is the trend we have described - these resources can be diffused widely, and the allocation problem then diminishes in significance. The net result is and will be to democratize the opportunity to create (ibid., 2005,p. 123).*

A further benefit of these democratizing digital tools is described by von Hippel is thusly:

*Democratization of the opportunity to create is important beyond giving more users the ability to make exactly right products for themselves. As we saw in a previous chapter, the joy and the learning associated with creativity and membership in creative communities are also important, and these experiences too are made more widely available as innovation is democratized. (ibid., 2005, p. 123)*

So the tools of democratization (low cost digital tools for design creation, dissemination and editing) are in fact making possible the creation of design communities composed of an array of stakeholders whose individual participants might not otherwise be able to co create fashion design. These digital tools and their facilitation of design communities (and crowds) provide the necessary technological and social resources for Own Label to enact its democratic model of fashion co creation.

*Democratization of fashion is often attributed to fast fashion, live broadcasts of catwalk shows, video streaming, twitter and photo sharing platforms, which indeed bring fashion closer to wider audiences rather than the lucky few. What we mean by democratization of fashion is the public being not just the audience but the judge as well...[...]...it is the vote of the public that decides what gets manufactured at Own Label. (Interview - Co-founding Director)*

### *What is co-creation?*

Co-creation is an active, creative and social collaboration process in which co-creators become active participants in the innovation process of a firm and thus in the development of new products or services (Piller et al., 2011). In the management and innovation literature co-creation has been associated with different meanings ranging from innovation with customers to mass customisation, co-production and emotional engagement (Roser, Samson, Humphreys & Cruz-Valdivieso, 2009). Indeed, co-creation can involve a broad range of stakeholders (Roser, DeFillippi & Samson, 2013). Co-creation goes beyond traditional market research, marketing and R&D approaches for soliciting user feedback. Co-creation engages customers and other stakeholders to participate in the value creation process and this opens up the boundaries of the organization to accommodate the needs and preferences of these customers and other stakeholders (DeFillippi & Roser, 2014). As such, co-creation holds the potential to enable firm growth

through innovation and business transformation and to foster industry disruption (Christensen, 2003).

Hence, in this study we focus on co-creation as a process nurturing creativity and the expansion of a company's innovation capabilities. More specifically, we define co-creation as an interactive, creative and social process that is initiated by the firm at different stages of the product development process (Roser et al., 2009). Co-creation may involve employees, partners, customers, crowds, fans, as well as other co-creators. Firms may utilize technology and Internet communities to enable the strategically orchestrated interaction between their co-creators across discrete activities of the firm's value chain.

### *Types of Co-creation*

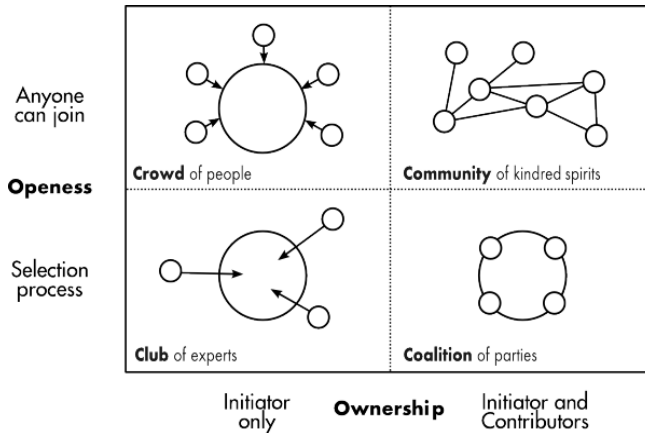
Design industry scholars have noted the increasing democratization of the design process as the availability of collaborative technologies and related practices (e.g. crowd-sourcing, co-creation) enable customers and other stakeholders to participate in designing goods and services (Hofitzer, 2009). Co-creation can be conceptualized in terms of a range of practices that democratize how people and organizations engage with each other in one or more value creating processes. In co-creation both the project initiator and outside parties participate and engage in the specific value creating process with reciprocal influence of each party on the resulting activity. Different forms of co-creation imply different forms of democratizing these value creation processes.

Pater (2009) suggests that different forms of co-creation (and by implication democratization) can be characterized in terms of two distinct choices by co-creation project initiators: *Openness* and *Ownership*.

Openness refers to how external parties are chosen to participate in a given co-creation process. Some co-creation practices select participants based on particular criteria for qualifications and competency and only those parties are invited to participate. On the other hand, other co-creation practices use Open Calls where anyone can participate or respond to the typically Internet broadcasted call for co-creators.

Ownership refers to whether the outcomes (e.g. intellectual property) and challenges of designing and executing projects are owned by just the co-creation project initiator or by the contributors as well. Ownership choices have a major influence on the governance or management of the co-creation project. Further, Pater (2009) identifies four types of co-creation that reflect these combinations of choices as depicted in Figure 1.

**Figure 1: Four types of co-creation**



Source: Pater (2009)

1. **Club of Experts** co-creation creates value by selecting contributors who meet certain specific participation criteria such as technical expertise, or certification as a qualified vendor or expert source.
2. **Crowd of People** co-creation (crowd-sourcing) attempts to create value by drawing upon the Wisdom of Crowds philosophy that if you ask enough people and organizations for advice the more likely you will receive the best available solutions for your value creation challenges.
3. **Coalition of Parties** co-creation involves a selective group of independent organizations teaming up to share ideas, pool risks and investments. Each party brings specific assets or skills to the Coalition.
4. **Community of Kindred Spirits** co-creation typically consist of self-selected groups of people who have shared interests and volunteer to work on some common project.

In practice, co-creation is likely to be a hybrid combination of these more distinct forms of co-creation within diverse Business-to-Business (B2B) and Business to Consumer (B2C) contexts (Roser et al., 2013). Indeed co-creation may often involve a portfolio of these co-creation practices utilized according to the business strategy employed (DeFillippi & Roser, 2014).

### ***Co-Creation in Fashion***

Traditionally, an elite of influential designers, brand development agencies and fashion houses has governed the fashion industry. Digitalization has enabled ways of marketing and user involvement around fashion products including lead user marketing, fashion bloggers, Facebook fan pages, Pinterest and the like. Fashion design, however, is still governed by a relatively small elite. This ‘oligarchy’ creates design by innovating from the top of the market.

According to a 2014 European Union commissioned study, co-creation is ‘a revolutionary design approach where a multitude of stakeholders are actively involved in the design process. It goes beyond partnering with other companies, assembling multidisciplinary teams, or conventional user-designer relationships that might for instance apply to architects and their clients.’ (Dervojeda et al., 2014, p. 3). Co-creation is a crucial design trend, because it can change companies’ relationships with their customers dramatically. A customer not only buys products, but also meaningfully participates in the process by which those products are designed.

Potts, et al. (2008) describe fashion as a pure social network market, in which the choices of individuals are determined by the choices of others. Fashion choices are at one and the same time acts of copying and of very personal expression. Fashion allows individuals to create meanings and values – and status differentials in personal standing – by appropriating for their own purposes the image created by designers and labels. As a result of this social network market, co creation offers a technology-enabled method for aggregating the choices of prospective fashion buyers into a two way dialog with fashion designers and manufacturers, as illustrated by our forthcoming review of case studies of fashion co-creation (see below).

With ever shorter production cycles and global competition for brand recognition, however, fashion houses continuously look for new inspiration, new ways of organizing and innovation to gain competitive advantage. The past few years have seen an increase in co-creation models in the fashion industry. Most co-creation models in the fashion industry are enabled by a combination of technology with co-creation tools of competition, customization and collaboration, which have made it possible to co-create with one individual user, with a group of experts and with the crowd. Table 1 below outlines typical approaches to co-creation in the fashion industry.

#### **Table 1: Typical co-creation approaches in the fashion industry**

Co-creation with      Made-to-order has always been a fashion paradox. In the

the end user	developed countries it is still a signature of exclusivity and status. In less developed countries, where labour is cheap, it often is the default mode. Technology and online applications are enabling both small and big fashion houses to offer different degrees of customization, at different price points. A typical example is Indochino ( <a href="http://www.indochino.com">www.indochino.com</a> ), where the client gets the suit made to his measurements. Measures are taken either by a travelling tailor or the client who is provided with instructions and uploading them online.
Co-creation with the experts	Fashion collaborations are amassing rapidly among different arrays of experts. Frequently observed approaches include collaboration between large high street retailers and established high-end luxury fashion designers. For example, collaborations between H&M and Karl Lagerfeld, Alexander Wang and many others (see <a href="http://www.hm.com">www.hm.com</a> ). Other examples include co-creation between fashion and film, fashion and contemporary arts, fashion and technology, fashion and Nobel laureates, fashion and celebrities.
Co-creation with the crowd	This is an emerging model for fashion. It combines technology, voting competitions and fashion loving crowds who are looking for fresh and non-conformist mass culture. Competitions are not a new tool in searching for talent. Technology, however, makes it possible to engage co-creators as designers, decision makers, promoters and buyers across the value creation and design process. A common example of such co-creation are the designs produced by T-shirt company Threadless ( <a href="http://www.threadless.com">www.threadless.com</a> )

The key benefits of such co-creation for fashion companies include:

- Early trend-spotting and improved sensing capability
- Increased speed to market
- Lower risk of market failure
- Nurturing of loyal customer community
- High buzz rates and advocacy
- Sticky brands on a low budget
- Fast adaptation of production cycles
- More authentic and better customer experience and journey
- Cheaper high quality product for design oriented customer
- Low volume production at manageable cost
- Lower risk of overproduction and less waste

What is significant about co-creation in design intensive industries is the democratization of the process by which design choices are made. Traditionally, these choices have been dictated by the expertise (or aesthetic license, depending upon one's perspective) of a small elite of designers whose reputation enables them to set the standard for their industry. This elite designer driven perspective has been celebrated recently by scholars studying Italian industrial design, whose architect led and designer driven processes make little or no use of so called customer engagement to determine their design choices (Verganti, 2013). Verganti (2013) argues that only by relying upon the aesthetic genius of world-class designers can radical innovations arise in industrial design. The present study contrasts this elite designer driven perspective with a co-creation perspective that democratizes the processes of fashion design and selection.

The next section of our paper investigates how fashion company Own Label is making use of co-creation principles to generate business benefits and enable greater democratization of fashion creation.

## **Case study analysis**

This section outlines our methodology and analysis procedure. For better contextual clarity we will, however, provide a brief case description to give a flavour for the material our analysis is based on.

### *Case description*

Own Label is an online fashion co-creation company. The business was initially set up following a project-based collaboration between students from the University of the Arts and London Business School. The founders of the company were motivated by their belief that, consumers should determine what looks stylish and that the Internet provides the ideal platform to showcase the talents of rising designers. The company runs online fashion competitions encouraging co-creators to 'Join the new fashion democracy!' (Own Label website).

Own Label describes itself as 'a new channel for emerging fashion designers and creative talent' (ibid.). Fashion students and new designers submit their designs to the Own Label website in line with a specific fashion brief. A large community of affluent lead users and potential fashion customers vote for their favourite fashion designs. Those designs, which

attract the highest number of votes are manufactured in a limited number and sold online via Own Label's online store, as well as pop-up store events.

The mission of Own Label is 'to harness the creative talents of upcoming designers and provide them with a channel through which their designs can be seen by fashion conscious consumers' (ibid.). Further, Own Label's mission is to democratize fashion and give consumers input into which garments get made and to give fashion forward shoppers the opportunity 'to be the first to get their hands on the next big name designer of tomorrow' (ibid.).

*We aim to continuously improve our business model. Our online platform initially targeted students and design colleges, which builds sustainability at the micro level....[...]...the next stage will be to target applications from a broader audience such as young design entrepreneurs who may want to test the commercial viability of their designs...and young independent brick-and-mortar fashion retailers who may be looking to establish an online presence without the expense of developing a retail website. (Interview - Co-founding Director)*

On the one hand, Own Label aims to be a new channel for emerging fashion designers. On the other hand, they want to offer high quality designs (at competitively lower prices) to the 'fashion conscious consumer' for established brand names (Own Label website).

*Our idea is simple...fashion students and new designers submit their designs to Own Label in line with a specific brief...The Own Label community votes for their favourite designs. The designs, which attract the highest number of votes are manufactured in a limited number and sold online. (Interview - Co-founding Director)*

From a commercial perspective, Own Label is aiming to innovate a new market by creating a new channel for emerging fashion designers. Own Label differentiates itself by fusing concepts of exclusivity and co-creation in a professional format and by offering a range of designs, not just those which fit with a particular high street chain. The company's vision is that Own Label is where 'fast fashion meets couture or personal tailoring' (Own Label website). It's originality derives from the more democratic process employed in involving different kinds of co-creators into the value chain from the creation of designs to manufacture to commercialization.



### *Research aim and research interests*

Our key research aim is to examine Own Labels co-creation model in more detail. The following research interests guide our study:

- Learn what co-creation approaches are emerging in the fashion industry
- Study if there is a difference between theoretical and practical models of co-creation
- Draw implications on what co-creation means for the fashion industry participants
- Reflect on co-creation as a means to foster the democratization of value creation
- Reflect on co-creation as a strategic tool to enable organizational innovation and growth and its potential to bring about industry disruption

### *Research question*

How are the four conceptual types of co-creation outlined by Pater (2009) utilized in the fashion co-creation process employed by Own Label?

### *Hypothesis/Expectation*

In theory we can outline distinct modes of co-creation. In practice co-creation is likely to be a hybrid model consisting of a portfolio of different co-creation practices.

## **Methodological approach**

Our methodological approach is a qualitative case study with the active engagement of a founding member of the company to help us validate our findings (Denzin & Lincoln, 2005). Our iterative analysis focuses on the specific co-creation practices, as well as design co-creation process employed by Own Label. We examine the relationships and engagement process involved in Own Label's co-creation approach. We investigate what co-creators are involved and during what stages of the co-creation and fashion design process by focusing on critical transition points. We utilize the conceptual framework developed by Pater (2009) to analyse the data in hand. Our sources of data include both data stemming from a 1-2-1 interview, as well as studying the Own Label Website and community.

### *Data creation*

In April 2014 we conducted one 1-2-1 in-depth interview with the co-founder and acting director of Own Label. The interview process lasted 94 minutes and was facilitated by the lead author of this paper who is a highly experienced qualitative researcher. As topic guide for our interview we used a set of six previously validated questions relating to any firm's strategic co-creation choices (see Roser et al. 2009; Roser et al. 2013; DeFillippi & Roser, 2014). These questions help the researcher to explore (1) who is involved, (2) for what purpose, (3) where in the value creation/fashion design process, as well as (4) how frequent and (5) intimate the involvement of these co-creators is in the fashion design process is. Finally, we ask (6) what incentives are used to reward co-creators for their involvement in Own Label's fashion design process. In addition to this interview, we also utilise the information available via Own Label's website as contextual data to provide a more detailed description of the business case at hand.

### *Analysis procedure*

Whilst our topic guide questions resulted in very rich raw data, our particular interest here is to generate a focused and in-depth conversation with the interviewee focused on organizational practices and ways of organizing. Hence in a second step we then analyse the interview raw data by way of content analysis in order to identify and analyse the four types of co-creation outlined by Pater (2009). The aim of our analysis is to discover what co-creation types are involved in the process implemented by Own Label.

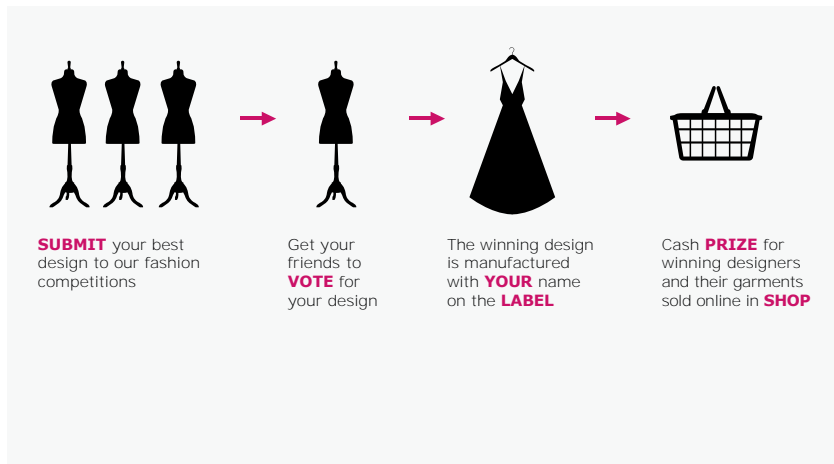
Based on these two steps in our analysis we create a value chain model reflecting the types of co-creation employed by own label across the fashion design process. In a third step we present the findings of our analysis to the interviewee in a 'reflect back' meeting. The purpose of this third step is to validate our view of Own Labels co-creation choices. The fourth and final step of our procedure is to interpret the findings of our analysis by relating them back to the conceptual model developed by Pater (*ibid.*, 2009; see figure 1).

Following our analysis procedure, we identify the most important sequential stages of Own Label's value creation. Building on the four types of co-creation by Pater (2009) we identify, which forms of co-creation are in play for each particular stage. Ultimately, this allows us to study Own Label's co-creation approach in relation to the democratization of fashion building on two core aspects of any co-creation process: *openness* and *ownership*.

## Analysis Findings

At first glance Own Label's fashion co-creation activities seem to follow a simple crowd-sourcing approach (see figure 2 below). The company posts fashion competitions in a specific section of their website. Fashion students and new designers submit their ideas in line with these briefs for the chance to win a cash prize. The top designs are displayed in the 'vote' section of the website to be voted for by the public. The most popular designs are then manufactured and sold online via their online store with the designers name on the label. As such, the company acts as an intermediary between fashion designers and fashion consumers offering a marketplace for exchange and engagement for both of them.

**Figure 2: Own Label user involvement approach**



Source: Own Label website ([www.own-label.com](http://www.own-label.com))

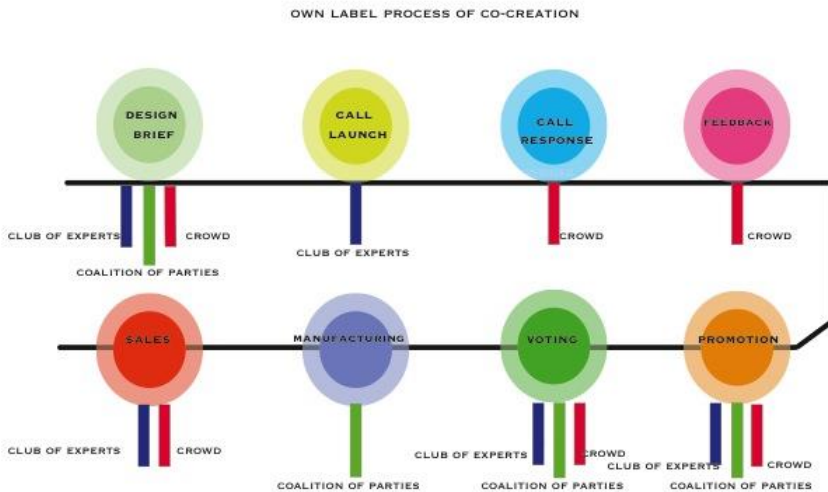
However, the company's business model also engages these communities in a broader co-creation process that goes beyond the mere *submit-vote-win-manufacture-reward-buy co-creation process*. Further, they maintain critical relationships with other stakeholders, such as retailers. For example, the company needs to ensure that the high standards expected by design fashion buyers are maintained. As such, the company sources from UK based manufacturers that also deliver to other high-fashion companies.

To implement their business model, Own Label has made a number of strategic co-creation design choices that involve both B2B and B2C relationships across a number of critical stages. The company utilizes a portfolio of different co-creation choices to enable the co-creation of fashion design. Whilst some co-creation activities are dyadic and face-to-face interactions others involve groups of people or crowds online.

### Openness

Own Label’s co-creation approach is a hybrid model that utilizes more than one type of co-creation across their fashion design process (see figure 1). According to the co-creation model put forward by Pater Strategy (2009) Own Label’s fashion co-creation process involves different types of co-creation across a number of transitions (figure 3 below).

**Figure 3: Own Label’s process of co-creation**



1. **Design Brief:** Own Label uses various practices to decide on the thematic focus of the brief:
  - a. Own Label team of experts decides the brief design based on forecasting trends and analysis (club of experts)

- b. Own Label collaborates with partner(s) on a particular brief. The partner can be another fashion organisation, like All Walks of Life ([www.allwalks.org](http://www.allwalks.org)) for the brief on Diversity, or a company from different industries, e.g. technology, print etc. (coalition of parties)
  - c. Own Label asks the community what suggestions they have on next brief (the crowd)
2. **Call Launch:** Own Label staff (club of experts) filters ideas for the design brief to select the most promising ideas. They issue the open call for submissions based on the design brief, with a deadline for submission response.
3. **Call Response:** Anybody (the crowd) can reply to the call and submit a design that corresponds to the brief, by uploading three pictures and completing a designer personal profile.
4. **Feedback:** As soon as the designs go online, the community (the crowd) starts commenting and giving feedback on style, fabric, colours, size. While these comments do not lead to an iteration of the design, they are valuable suggestions for the manufacturing phase.
5. **Promotion:** All parties involved take part in promoting the designs to their fans, friends and friends of friends. Own Label staff works with designers (club of experts) to generate content which feeds into the community blog, Facebook page, Twitter and Pinterest. The crowd is encouraged to spread the word via social media. If a coalition of partners is involved in the brief, they also take part in promoting the designs.
6. **Voting:** Voting period is announced by Own Label staff and lasts 4 weeks. The crowd votes to decide the top three winners. Own Label specialist team (club of experts) decides on the commercial viability of the designs, and the quality of the pattern to make the final decision. Own Label also chooses a 'wild card'.

7. **Manufacturing:** Own Label team is in charge of implementation. The collaboration in this phase is a coalition of parties, between Own Label, the winning designer and the tailors.
  
8. **Sales:** Own label team (club of experts) manages the sale and shipping of garments to end-users. The crowd generate marketing buzz via social media.

### *Ownership*

The intellectual property ownership rights stay with company as 'the project initiator'. Own Label is given exclusive licensing rights to use the winning designs during the production run and online sales via their website for up to one year. Any legal value creation and implementation responsibilities also rest with Own Label.

Designers are rewarded with exposure and feedback from the community. The winning designers receive a fixed cash prize of £200 pound sterling. In addition to prize money winners also get their fashion design work and designer profile featured on the Own Label website. Ultimately, being involved in such public fashion competitions is an 'apprenticeship experience' for the participants where they can practice and learn how to apply their own skills in a commercial environment and take design ideas to market. During the competition process, Own Label guides the participating designers in how to harness social media to promote their designs and reach their potential clients. At the end of the competition, Own Label also organises a crash course for the finalists on 'How to start your own label' (see Own Label website).

### *Democratization of Own Label's fashion design process*

In the view of the company's director Own Label provides a commercial platform for emerging designers to join an otherwise difficult-to-enter industry and marketplace. By the same token the company wants to make designer fashion more accessible to consumers.

*New designers or graduating design students face a limited number of options if they wish to pursue their dreams...[...]...The lucky few get taken on by the major high street chains, but for many who wish to build on their creative talent rather than be restricted by a corporate career it is extremely difficult to build a reputation...[...]...At the same time we live in an age where consumers are no longer loyal to a particular brand. Consumers are more inclined to mix expensive*

*branded designs with classic or vintage items. They throw together a variety of items in order to create a style, which is uniquely personal. Popular culture enjoys being part of the process by which creative talent rises out from the masses...[...]...Own Label hopes to play a part in the discovery of great new designers. (Interview – Co-founding Director)*

## **Discussion and outlook**

In this paper we explore democratization at the intersection of art and commerce. This may seem paradoxical. Yet, both socio-cultural and economic aspects of organizing can contribute to value creation in different ways.

There are many contrasting visions and experiences of what democracy means. Democracy is a continuum of possibilities rather than a specific state of social organizing. At one end of the spectrum, we may find a social movement where actors are fighting for freedom. At the other end, we may see calls for more open participation and involvement to enable greater opportunity for new talent. Democracy is an ideological idea, a state of mind, as well as cultural and social representation. As such, it is not a static term fixed by a true value, but a concept that co-evolves within an ever-changing society. The Internet and social media are further changing what democracy means and how it manifests itself in practice today. As such, we have to be open to variant and more fluid definitions of democracy and its multiple cultural manifestations in society and business. Specifically, one must consider the institutionalization of democracy in a commercial context where actors co-create new services and goods for new and emerging markets to serve their own communities.

From what we have seen, Own Label is not a grassroots uprising against fashion capitalism, rather it is a platform for new talent that may or may not contribute to an erosion of the established fashion elite in the future. Similar to many other young, up-and-coming fashion designers and community members, the company is itself a start-up venture. The company aims to support greater freedom and participation in the fashion design creation process by extending it to a wider audience of participants. This extension of the value chain is a strategic move by the owners of the business in order to create a new marketplace and commercial channels outside the traditional and established pathways to value. As with any democratic movement this can be a risky process.

The company seeks to utilize co-creation as a means to enable an opportunity space for both millennial fashion designers and fashion buyers. The firm aims to profit from providing and managing a creative and commercial space enabled by its technical platform and facilitated user interactions. Creating this space and technical platform requires time and resources, as well as the ability to manage commercial risks in order to exploit commercial opportunities. Whilst their commercial model is new, interesting and different, it may also need considerable refinement to make the company a dominant commercial player in a saturated fashion marketplace governed by price wars and brand competition.

Our case study has illustrated the complexity and diversity of co-creation processes and co-creation partners engaged during the various phases of the fashion design process at One Label. This complexity stands in contrast to the more simplistic conceptual models of co-creation employed to characterize a firm's co-creation practice. Our findings largely confirm our expectation that co-creation can be more usefully understood as a hybrid model in which a firm employs a portfolio of co-creation practices in relation to diverse co-creators within distinct phases of the firm's value creation and product development processes.

At a more macro level, our case study illustrates how a new generation of fashion design firms are disrupting the fashion industry by challenging the orthodoxies of the established fashion design houses. Presently, new entrant design firms such as Own Label are disrupting from below in that their initial market appeal is to an emerging segment of fashion buyers - most likely younger millennial generation buyers with distinctive sensibilities for engagement in their purchase decisions. These buyers are typically underserved by traditional fashion design houses due to their high priced luxury fashion offerings that provide neither the customization nor cost savings that appeal to millennial buyer sensibilities. It is such underserved customers that are the typical targets of disruptive innovation (Christensen, 2003).

Similarly, Own Label is drawing upon the design capabilities of an emerging generation of fashion designers (also millennials), who are accustomed to submitting their fashion design proposals (briefs) online in design competitions and are utilizing these design competitions to develop their own professional reputations and attract buyers to their designs. The fashion industry poses daunting employment challenges to young designers, who may not find it easy to acquire permanent positions in established design houses dominated by more experienced fashion designers and labels.



Design co-creation offers new avenues for young designers to participate in their industry and to acquire needed experience and recognition. Fashion design companies such as Own Label are utilizing their hybrid models of co-creation to strategically position themselves in niche markets, adapt faster to trends, as well as to shape new lifestyles. They keep users engaged to compete in a highly competitive market, to lower their design and innovation cost and to increase velocity of the design process itself. Digital technology, cost pressures and competing for brand equity in an increasingly transient and fast paced industry may further enable and foster design co-creation and strategic user involvement in fashion and design.

Taken together, democratization of fashion design is indeed a disruptive force in the industry and is impacting a new generation of designers, design firms and their buyers. It is far too early to forecast whether these co-creation focused fashion design houses will ultimately displace more established fashion design houses and the oligopolistic domination of fashion by the elite fashion designers. However, there is already evidence that new entrant fashion design firms such as Own Label are establishing new positions in the industry that can attract millennial designers and millennial buyers.

From studying Own Label and other co-creation examples we conclude that co-creation holds the potential to change value creation and by implication to disrupt the current market position of powerful fashion design houses. In a world where individuality and user-centred design and personalization are becoming increasingly popular, disruptive impacts may include the creation of new markets outside of existing hierarchies and power networks. The examples in this paper already illustrate disruption in the lower end of the fashion market (e.g. fashion company Threadless).

As we have seen there is no one size-fits-all approach to co-creation in fashion. Own Label's approach is primarily an example of co-creation in ideation, i.e. at the front-end of the innovation and value creation process. It is a question of when technology will also enable more co-creation across other parts of the value chain. Indeed, co-creation in the production process of fashion could become a particularly disruptive force for fashion companies. The recent developments in related design industries such as 3D printing technology provide a vivid example of rapid business transformation and the democratization of manufacturing in other markets.

In fashion creation the integration of augmented reality tools e.g. to take precise body measurements- has already become possible. From a strategic perspective the fashion industry should therefore encourage and adopt such

co-creation practices in order to stay abreast with innovation and new technologies. On the one hand, production cycles of fashion are getting increasingly shorter. On the other hand, diversity is increasingly needed and Own Label's approach has also shown good potential in eliminating waste and stock as a more sustainable way of using resources and producing fashion. Further, co-creation can create a platform for nurturing new talent enabling market entry for designers that will appeal to underserved markets with peripheral customers.

In summary, our case study explores the intersection between elitist fashion design creation and a more open and collective process. We study democracy as enacted in a space of tension between creative opportunity and challenge. As such, our work contributes to a broader understanding of democratization through co-creation in action.

In conclusion, for the future oriented fashion company co-creation is a way to experiment, test and develop new markets, brands and designs. Ultimately, the co-creation of fashion leads to a shift in requirements and fosters new business models. Looking into the future of an increasingly diverse and dynamic fashion economy, the democratization of couture and personalized on-demand fashion might just be a mouse-click away. In the words of fiction novelist William Gibson: The future is already here - it is just not evenly distributed (cited in *The Economist*, 2006).

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# Powers of Design: A heuristic inquiry into the Victoria and Albert Museum's residency programme

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*There has been a well-documented increase in the level of investment and engagement offered by British museums to the creative industries, as evidenced by the proliferation in the provision of residencies in recent years. Residencies offer the time and resources to innovate in practice, and can result in objects, events or services which benefit the host organization and participating individuals. This paper will briefly review British examples of contemporary residency programs, identifying the overlapping and disparate characteristics of residencies, and provide an overview of various real-world practices to determine the main practical and strategic value offered by residencies to project stakeholders. Furthermore, this paper will offer an in-depth heuristic perspective of the Victoria and Albert Museum's Residency Programme, with emphasis given to the development and management of the service and its situation within the Museum's wider organizational framework. This study contributes to a growing debate that design can be employed as a way of thinking about the development of cultural products and services, and uses the concept of residency as a lens through which the traditional and emerging frameworks of design can be viewed and can foster a discussion on the agency of design within a cultural organization.*

**Keywords:** Residency, Museum, Design Management, Heuristic Research

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## Introduction

From 2005 to 2010, there was a noted 40% rise in the number of freelance designers in the UK, with the total reaching over 65,000 (Design Council, 2010). This figure contributes to the 8.4% of the population recorded to be working in the creative industries in 2010 (Bakhshi, Freeman & Higgs, 2013). The Department for Business, Innovation and Skills and the Department for Culture, Media and Sport have advocated that the creative industries, totalling 5.6% of the UK GDP, are a critical area of growth in these current times of austerity (Kendall, 2011). Part of the increased investment arising from this position of strength can be observed in the way British museums work more strategically with the creative industries. Together, they create new partnerships to investigate the benefits arising from interdisciplinary exchange of resources and audience (Kendall, 2011), and construct 'hubs' for the advancement of professional creativity (Bishop, 2004). In turn, this has expanded the role of the museum from one of showcase to that of the patron and client (Pavitt, 2009).

These factors disrupt the foundations that influence organizational behavior, and have contributed to an increased interest into the nature of residencies for creative practitioners. The term *residency* can be found in a diverse range of disciplines, and within each of these areas, the definition of this term varies. For the purposes of this research, the term 'residency' is considered in the context of the cultural (specifically, museums and galleries) and the creative industries. In this context we propose that residency denotes a *provision of time and resources to innovate in practice, subsequently resulting in objects, events or services that the resident, participating individual and host organization benefit from.*

In a recent international survey conducted by the International Federation of Arts Councils and Cultural Agencies, 89% of the eighteen Arts Councils and Ministries of Culture from all continents reported that they provided support for residencies. It was also noted that less than half (38%) of the respondent organizations had recently conducted an evaluation of these residency programmes (Gardner, 2013). This reveals a tension between the intent and delivery of residency programs. Furthermore, the current discussion in industry journals criticizes programs for their lack of consideration in the preparation and provision of residencies (Gray, 2009). It is argued, therefore, that despite progress being made in terms of provision, there remains limited research conducted on the design and effectiveness of this service.

It has been noted that design thinking is key factor for a successful business (Martin, 2009), and there has been a marked proliferation of the use of design thinking in a wide range of contexts beyond what is considered the traditional field of design (Kimbell, 2011). This has filtered through to the cultural industries, which have seen a number of researchers exploring the use of design in the creation and development of products and services (Mitroff Silvers, Hamley, Trihn, Lytle-Painter, Ludden & Lee, 2014; Mitroff Silvers, Rogers & Wilson, 2013; Pitsaki, 2010, 2007; Pitsaki & Rieple, 2011; Rieple & Pitsaki, 2011). This paper contributes to this growing debate using the concept of residency as a lens through which the traditional and emerging frameworks of design can be viewed. We contend that Victoria and Albert Museum Residency Programme can foster a discussion on the agency of design with emphasis placed on the value design brings to the organization through a discussion on the four powers of design (Borja de Mozota, 2003, 2006). We close by indicating the impact of this research on a future design museum's strategy for engagement and participation.

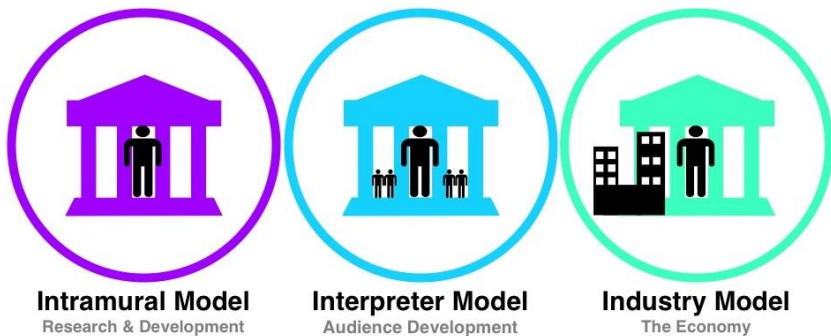
## **A Panorama of Residency Provision**

The term 'residency' implies an idea of an individual rooted in a physical location or community, whereby the organization providing the residency supplies the resources to the individual in residence to create new work or resolve an existing problem in their practice. Currently, there is no one model in use, and the various frameworks employed in practice - which are shaped by the different missions of the organizations housing the programmes - lead to great variances in expectations and requirements. The landscape of residency provision is diverse: centers provide 'space away from their usual environment' and 'time of reflection, research, presentation and/or production', and can include individuals or collectives from the full spectrum of the creative industries, including designers, artists, writers, curators and academics (Res Artis, 2014). Residency programs can also be at the core of an organization, or be provided as part of a wider program.

There exist only a limited number of studies on the provision of residencies: these have primarily been conducted on a national level, and are aimed at gauging the importance of state-wide residency campaigns (EKOS, 2009; Hutton & Fenn, 2002; Stephens, 2001). These mainly quantitative research documents often report on the number of activities

provided and participants included, and tend to focus on the economic or social benefits offered by residencies to communities or geographic areas. In addition, there are several reports on residency case studies, and these have often been undertaken as part of a larger initiative of delivering similarly structured residencies to several organizations (Hercombe, 1986; Museummaker, 2011). These provide insights from the organization about the residencies, as well as their beneficial value to employees or visitors. Finally, there are also a handful of internal evaluation reports, often commissioned by the organization providing the program and only made available to those working in the institution. This means that what does exist contributes to an incomplete and insufficient critical debate on the subject.

To overcome the lack of academic discussion on the subject, and to understand the role of residency within the current practice of cultural institutions, we conducted a rigorous contextual review of existing design and craft residency practices in Britain. This contextual review of residency provision introduced the idea the residency practices can be categorized into three conceptual models: these models represent a scale of engagement between agency, individual, audience and industry, and have been titled the *Intramural Model*, the *Interpreter Model* and the *Industry Model*. These are illustrated in Figure 1 and summarized below.



*Figure 1 'Visual representation of the existing frameworks of residency provision'.*

The *Intramural Model* is formed on the basis that the resident is given time and resources away from social and economic distractions to develop new creative outputs or an exhibition. Examples of this model include Cove Park, a residency hothouse in the secluded area of Argyle and Bute in Scotland; *Maker-in-Residence* at the Barony Centre in East Kilbride (the self-

proclaimed 'Craft Town of Scotland'); or *Architecture in the Forest*, which provided a platform for sixteen makers to create an exhibition inspired by the Kielder Forest in Northumbria. This model of residency provision focuses on the notion that innovation is stimulated through the process of the creative practitioner working in seclusion, relatively free from any external influences which could impede the creative process. These characteristics are fundamental to any residency, and could be considered to be at the core of subsequent models.

In the *Interpreter Model*, the resident is viewed as the intermediary through whom the audience interprets creativity. This model is founded on the assumption that the resident can foster innovative audience engagement approaches within museums and galleries (Gray, 2009; Kendall, 2011; Morris, 2005) by reinvigorating the collection and adding a critical dimension to works or curatorial methods (Morris, 2005). The *Museummaker* project of 2011/12, for example, brought craft makers into museums around England in order to 'unlock the creative potential of museum collections' and to provide a contemporary perspective to the display of objects (Museummaker, 2011, p.3). This use of the residency as a catalyst for audience engagement has been developed in response to the shifts in focus in museums and galleries, since interest in these organizations has forced a change from the traditional static environment to open, participatory and accessible process-driven displays (Morris, 2005).

The *Industry Model* views the designer from a business-focused perspective. Within the field, these programmes expound the notion of a residency as a catalyst for innovation and enterprise within the designer's practice, as well as in the practice of the organization. It has been noted that those working in the creative industries are part of what is considered the *super-creative core* within the *creative class*, a social division which develops the economy through the advancement of ideas, technology and the production of creative innovation (Florida, 2002). However, actors in the creative class find their practice defined by the opposing rationales of economically-driven decisions versus creative aspirations, and it is accepted that an individual working as a creative professional must find a compromise between the two (Eikhof & Haunschild, 2007). Residency programs such as Cultural Enterprise Office's *Fashion Foundry*, the *Incubator* scheme at Cockpit Arts, and *Hothouse* provided by the Crafts Council, have noted this tension and devised programs which directly support new businesses in design and craft. There are also new models of residency provision emerging, as companies bring designers in-house for a specific purpose,



with the agreed trade-off that the residency will improve the designer's practice. This model can be explored in *Research Designer in Residence* program at the EMERGE recycling centre (in which the resident examines new forms of reusing materials); and the *Geeks in Residence* program facilitated by Sync (which pairs a designer with a suitable organization in order to facilitate knowledge exchange and skills development).

However, these models, which are arguably limited by the aim of the host organizations, cannot be applied to future museum practices. As the creative and cultural industries face increasingly complex challenges this must be reflected in the ways in which museums engage with all of their stakeholders. This has already been noted in the research aimed at audience development in museums and galleries. It is further evidenced by the change in museums, which no longer represent the ivory towers of sacred objects broadcasting information to visitors they once did, but have become sites for progressive methods of participatory audience engagement (Anderson, 2004; Hooper-Greenhill, 2011). Audiences have formed a critical voice which scrutinizes museums (Anderson, 2004), and in response, museums have had to give ground not only to maintain the financial support they receive but also to establish their role in the new society (Waltl, 2006). This paradigm shift has disrupted the cultural industries and necessitated a process of rethinking about 'the museum' as a concept, questioning the values and assumptions of museum professionals and those who engage with museums (Anderson, 2004). As expectations of service quality are generally rising, it is recognized that since what a museum provides is an experience, it can therefore also be included within the service industries, and as a result, it must work in partnership with stakeholders to achieve user satisfaction (Waltl, 2006). However, being audience-centred requires a complete understanding of the values and expectations of museum stakeholders, and research is critical in making informed decisions on programs which evolve with the ever-shifting dynamics of society (Waltl, 2006).

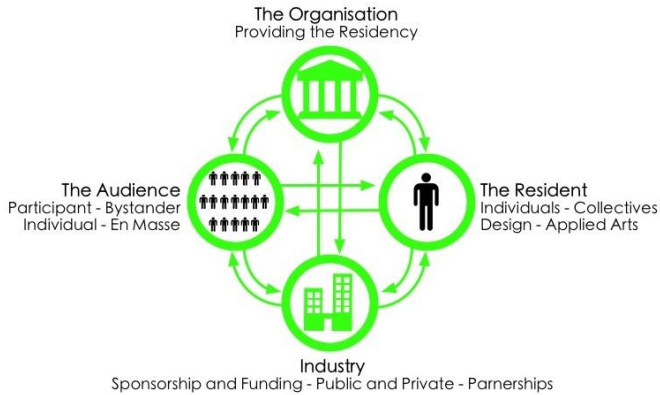


Figure 2 'A New Model for Residency Provision'.

As a response to this disruptive era in the cultural industries, a new model for residencies is required. Figure 2 above demonstrates the integration of project stakeholders into the concept of residency, and acknowledges the need to avoid a linear transmission of resources and information, since each element of the residency should be engaged in the development process. It is this model that will be applied to analysis of the V&A Museum Residency Programme, and which will provide the groundwork for discussion on the value of design to residency programs below.

## Design Thinking in Cultural Institutions

The fast-paced changes in conceptualizations of individuality and society are only slowly beginning to be reflected in the fabric of museums. Institutions have been criticized over this slothful development, and it is argued that museum practices could potentially be more responsive if human-centred design methodologies were introduced (Mitroff Silvers, Rogers & Wilson, 2013). Pitsaki (2007) brought scholarly attention to the fact that cultural product design is an amalgamation of the existing product, graphic, service, experience and cultural design frameworks. In addition, Pitsaki (2010) asserts that design can be used to define cultural organization performance by acknowledging design as the core of cultural product development and as a method to improve services and experiences offered by institutions. This theory is supported by case studies of internationally-recognized museums (SFMOMA, J. Paul Getty and the Queensland Museum)

who have used design thinking and design specific tools (e.g. rapid prototyping and customer journey mapping) to advance organizational practice through social design processes ( Mitroff Silvers *et al.*, 2014; Mitroff Silvers, Rogers & Wilson, 2013). Further still, Rieple and Pitsaki (2011) present a case for strategic design management in cultural products and services, stating that:

*[d]esign can create both a new vision of what the organization 'is' and reinforce and anchors its established 'essence' through the creation of artefacts and symbols that others interpret and use to shape what they do. It may also provide an important element in the implementations of strategy, through focusing on product or service functionality or the creation of emotional or affective bonds (p.2).*

Indeed, design is not only the subject of what a museum communicates to its audiences or how it communicates that information, nor is it simply a way to think about the way exhibitions are curated: rather, it is a way to frame the understanding of the development of cultural products and services, and as an approach to the strategic management of a cultural institution.

## **Methodology: Heuristic Research Placement at the Victoria and Albert Museum**

A six-month research placement at the V&A Museum in London offered the opportunity to gain some insight into the nature and phenomenon of a residency program through use of *heuristic research* (Moustakas, 1990). This type of research can be defined as the;

*search for the discovery of meaning and essence in significant human experience. It requires a subjective process of reflecting, exploring, sifting, and elucidating the nature of the phenomenon under investigation. Its ultimate purpose is to cast light on a focused problem, question or theme (Douglas & Moustakas, 1985, p.40).*

This placement was an opportunity to answer the research question; 'What is the nature and phenomenon of the V&A Museum's Residency Programme?' It allowed this researcher to be immersed in the museum environment and actively engaged in the events associated with the residency.

In addition, nine recorded conversations (the advised method of interviews in heuristic research) with eight individuals were conducted: this included fellow residents as well as those who participated in the residency program from different departments across the organization. The Museum's existing audience development research was scrutinized, and there was an opportunity to engage with visitors and extract the value that the residency program contributed to their Museum experience. This research identified and analyzed the value the program offers to the resident, staff and external networks, as well as the nature of the relationships created between these different individuals and groups.

Heuristic research is a six-phase investigation (Moustakas, 1990), although completion of the phases should not be the goal nor necessarily carried out in sequence, as this might lead to a mechanistic approach. Rather, the purpose of heuristic research is to be directed by feeling, to scope uncharted territory and develop the tacit knowledge of the primary researcher (Sela-Smith, 2002).

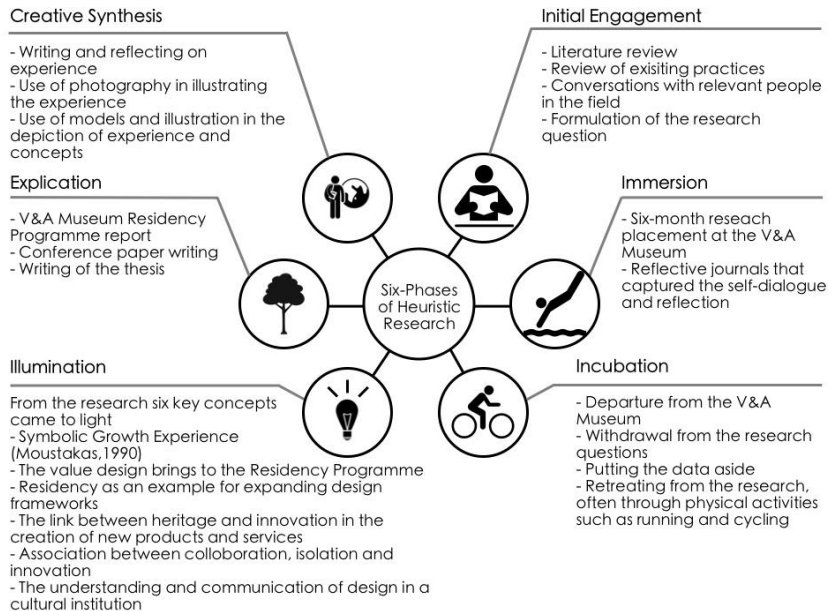
#### Six Phases of Heuristic Research:

- *Initial Engagement* is the discovery of the topic relevant to the researcher's personal values, and one that considers social meaning and significance of a particular phenomenon (Moustakas, 1994). The research question is then formed from the engagement with the subject through 'self-dialogue' and inner reflection on the part of the primary investigator (Moustakas, 1990).
- The *Immersion* phase is the point at which anything related to the question becomes raw material which offers insight into the understanding of the phenomenon. This includes a heightened awareness of one's interactions and environments, and the process includes spontaneous 'self-dialogue' (Moustakas, 1990).
- *Incubation* is the process of removing oneself from the intensity of the immersion phase: the researcher is no longer absorbed with the question, yet growth in understanding is still taking place. The incubation phase is a time of 'silent nourishment, support, and care that produces a creative awareness of some dimension of phenomenon or a creative integration of its parts or qualities' (Moustakas, 1990, p.29).
- The *Illumination* phase is the process that naturally occurs when the researcher is receptive to tacit knowledge and intuition, and is often described as the creative discovery. As Polanyi (1966) states, 'we

know more than we can tell' (p.4), and this is the phase in which the researcher recognizes the knowledge and understanding that has been discovered through the heuristic research process.

- The phase of *Explication* occurs when the researcher attends to their own thoughts to examine what has come to the surface in his or her consciousness, and to examine the layers of meaning that have presented themselves (Moustakas, 1990).
- *Creative Synthesis* is the final phase, and is achieved through tacit and intuitive powers when the challenge for the researcher is to present his or her insights on the core themes and their constituents revealed through the analysis of data (Moustakas, 1990). Often, this awareness (brought about through the research) is presented as a narrative depiction, but visualizations, poems, painting are also recognized forms of communication.

Figure 3 below illustrates these phases and their application to the research placement.



*Figure 3 'An illustration of the heuristic research process for the research placement at the V&A Museum.'*

## The Victoria and Albert Museum's Residency Programme

Derived from The Great Exhibition of 1851, the V&A Museum defines itself as the 'world's greatest museum of art and design'. The founders of the V&A placed creativity at its core, and viewed the institution as a hub for education, with a primary audience of designers and craft makers in addition to the wider public (Pavitt, 2009). The first Director of the Museum, Henry Cole, declared the institution 'a school room for everyone' (V&A, 2014), and since its inception, designers have played a prominent role in the establishment and development of the institution. They have always maintained a presence by working on V&A premises for most of its history: for example, the renowned designer and painter Godfrey Sykes was the in-house 'decorative artist', and managed the Museum's design studio from 1860-1866 (Marsden, 2013).

This fundamental organizational principal still exists, yet it is recognized that externalities will have an impact on the way this translates into the service the V&A provides.

*The V&A was conceived as, and continues to be, an engine room for the creative industries, but how does that conception translate into reality? What, one might ask, can a museum do that is relevant to a twenty-first-century economy? As we shall see, it can help designers by providing inspiration, learning, and access to technical expertise, and by giving them a showcase; it can create communities and networks of students, designers and manufactures; and it can influence public taste, thereby affecting patterns of consumptions and production. (Holden, 2007 cited in Pavitt, 2009, p. 93)*

This notion is further reflected in the Victoria & Albert Museum's Strategic Plan 2011-2015, which states that the objective of the residency programme is '[to] promote, support and develop the UK creative economy by inspiring designers and makers, and by stimulating enjoyment and appreciation of design' (V&A, 2011, p.12). This illustrates the continued interest the Museum has in maintaining a strong relationship with the design community, and also suggests that the residency is an essential part of the operational intent of the whole organization. If the residency is part of the business model, and 'the business model is like a blueprint for strategy to be implemented through organisational structures, processes, and systems' (Osterwalder & Pigneur, 2010, p.15), the residency therefore

becomes part of the strategic objective of the organization. This is crucial, as the research identified the prominence of strategic design in the process of planning and managing the Museum's Residency Programme.

The Victoria & Albert Museum Residency Programme has been running since 2008, and is an integral component to the Learning Department, assisting in creating a dynamic, creative museum. Since its inception, the Museum has hosted over twenty individuals or collectives working in the areas of design, craft, architecture and visual art. The programme offers residents the opportunity to develop new work, re-assess their practice or see work in different context by responding to and working with the V&A collections, using the Museum's resources to promote greater understanding of the creative process for the public. The Residency includes a research and development phase which enables the resident to consider new directions for their own work, as well as work with the collections and plan participative projects with the public. There is no expectation that a completed body of work is made during the residency period: however, the position is offered on the understanding that the resident allocates at least one third of their tenure to assisting the Learning Department in developing programs and events for visitors to engage first-hand with the process of creativity. Such activities include, but are not exclusive to: open studio sessions which allow members of the public to enter the residency studios and discuss the design process; workshops with invited school groups from primary and secondary schools from the London area (which can span two to four days at the Sackler Centre, but may also be broken up so that the resident works with the groups over two months); evening workshops with teachers or those working in higher education; leading activities during special events at the V&A (i.e. the yearly Sackler Conference).

The research placement coincided with two six-month residencies: a Games Design Residency and a Ceramics Residency. The Games Design Residency was the first of its kind hosted by the Museum: the resident was allowed six-month access to one of the residency studios at the V&A, with a further two-month production period in Dundee with the residency partners, the University of Abertay and the V&A Museum of Design Dundee. The production period was intended for a game based on the British Galleries of the V&A Museum and was to be developed as part of the residency. However, this expectation of a new design product is unique, as it is not normally required of the residency program. The Ceramics Residency was part of an ongoing residency program for ceramists located in the

Ceramics Galleries of the V&A Museum, and this program was specifically for an early career ceramist.

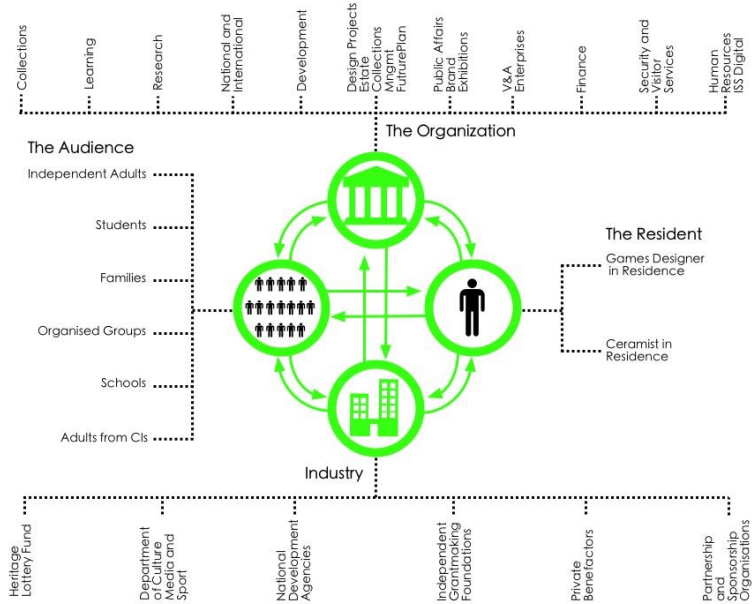
## Insights and Discussion

Using the residency model proposed, the research allowed for the complexity of the V&A Museum's Residency Programme to be mapped out (see Figure 4). In the illustration, the institutional departments of V&A organizational structure have been identified. As previously stated, the residency is situated in the Learning Department: however, the residents are allocated a curator from the Collections Department, and often have a lot of interactions with other members in different departments.

This model also illustrates the six definitions of key audience groupings as defined by the V&A Museum: independent adults, students, families, organized groups, schools and adults from the creative industries (Fritsch, 2008). This presents an interesting dilemma in thinking about the residency from a design perspective, as it becomes apparent from observing the residency programme that there are two varied *users* of the service. Firstly, the resident is a user who is given the opportunity to work within the institution and use the facilities and resources to develop new work, and secondly is the Museum's audiences in all categories. However, it is primarily the intention of the Museum to have the program as a means of attracting and engaging new audiences, who form the second group of users. The Museum's Residency Programme shares this tension, since although the resident is the primary actor of the service, in an echo of the *Interpreter Model*, he or she also becomes the conduit through which creative endeavour is communicated to visitors.



*Design For and Against Disruption: A heuristic inquiry into the Victoria and Albert Museum's residency programme*



*Figure 4 'A Stakeholder Map of the V&A Museum's Residency Programme using the New Residency Model'. This visualization offers insight into an alternative way of exposing the system and evaluating the design development of the residency.*

In this context, this residency views the designer in a similar way to other organizations who have shown an increasing understanding of the value of designers: namely, that the 'designer formerly seen as an external actor for the differentiation of the firm becomes an internal actor in the building process of core-competency through the differentiation of innovation process' (Borja de Mozota, 2003, p.93). As argued by Borja de Mozota (2003, 2006), there are four powers of design which create value in management, and these powers are the axes from which to evaluate the system of the organization; these are *design as differentiator*, *design as integrator*, *design as transformer* and *design as good business*. Using these four powers of design, the following is a discussion on the value of design transferred by the residency to the Learning Programme of the wider organization<sup>51</sup>.

<sup>51</sup> Due to brevity a full evaluative discussion of the research is not proffered in this paper. Instead it offers insight into how Borja de Mozota's (2003, 2006) four powers of design theory is

### *Design as Differentiator*

Hosting a designer to work in-house and engage with visitors is a source of competitive advantage for the V&A and can be considered a USP for the Museum. The program has been developed and is geared towards a customer orientation. It provides key audience groups with an opportunity to be a resident (and gain access to the Museum as a source of inspiration and development in their practice), or a visitor (to view a studio or speak with a resident to further understand the process of creativity). As one research participant explained in conversation:

*The residencies are an amazing opportunity to understand somebody's process or somebody's practice, and if we can get students experiencing that in the truest sense, then that's what we want them to be able to do. To come in and follow a similar process to what the designers are doing... obviously you can't completely replicate it, but it's allowing them to have that room to explore in a similar way to the way the residents are working with the collections.*

*(Conversation 5)*

As an approach to differentiation, design considerations exist in the election of an individual for the residency position; someone who is open to exposing their practice to visitors is at the forefront of the decision making process. As can be seen from the comment below:

*We need to have a balance between somebody who is an exciting practitioner and a practitioner of a high standing, because we are an international museum. We need good people and interesting people, but we also need people who are going to relate to our audiences, who are going to be able to communicate with them and who will give our audiences something interesting to engage with.*

*(Conversation 9)*

Having a resident present – visible and accessible – is perceived as vital in maintaining effective strategies in transmitting information from the Museum to audiences, specifically in providing an interpretation of the creative process. This is an existing objective. Yet, as design domains are expanding, and practice is morphing into new forms, the demand to have a

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applied to the V&A Museum's Residency Programme, and we consider how this may make a contribution to the concept development of a new service for an emerging design museum.

designer who can communicate the general subject complexities of design to the Museum's eclectic mix of visitors becomes increasingly important. This knowledge, skill and capability may arguably have greater significance in future design, selection and delivery of a residency.

### *Design as Integrator*

Based on the notion of design as a resource that improves new product development (Borja de Mozota, 2006), the contribution made by a designer-as-resident to a Learning Programme, and the overall engagement program of the Museum, is crucial. They tend to work with staff in the Learning Department to develop products (i.e. talks, events, workshops and/or resources) that are intended for visitors to use and actively engage with the V&A building or the Museum's Collections.

At V&A London, residencies are always themed by a certain type of practice, and apart from the Ceramics Residency, there is never a repeat of a specific practice. For this reason, the resident can disrupt the thinking or actions of the institution, and this new perspective can assist in the development of product or service for the Museum.

*I have been here quite a long time so I feel like I know the collections, or you develop your own way of understanding them. But then you bring in another person, another way of thinking, another process, and it allows you to rethink it and not to get really settled in one way of looking at things, which could be really easy to do. But then, because you have four to five different people every year that are making you look differently at things, it really helps in that sense, and that is obviously going to feed through into everything else that we do. We also work with teachers as well in the V&A Sanctuary Programme. Quite often they are delivered by the residents, and that aspect is really important. It's opening up teacher's ways of responding to the collections and ways of thinking in relation to design [...] This gets them to think really differently.*

*(Conversation 5)*

Design as an integrator in this experiential context is as a relatively neutral facilitator between past and present creative practice; inspiring and teaching educators to see and understand alternative approaches to working in a contemporary fashion with the asset (that is the V&A Collections).

Another example of ‘design as integrator’ can be seen in the way a resident can offer value to the organization through the creation of a resource object (see Figure 4). The object depicted in this image is a ‘Museum Trail’ intended for families. The Trail was developed by the Ceramist in Residence, and is themed around the subject of focus for the residency; namely, the building’s architecture and the hidden histories of the Museum. There were 5,000 copies of the trail printed, and it is currently one of three permanent trail activities provided by Learning to the Museum’s visitors. Since there is no obligation for a resident to present an exhibition of the work they create while in residence, this resource object is quite unique inasmuch as it is an artefact designed by the resident but intended to contribute to the ongoing development of the Learning Department services on offer to audiences.



*Figure 4 ‘A Resource, The Undiscovered Museum: V&A Family Trail’, developed by the ceramist-in-residence during their residency tenure. This activity is handed out to visitors of the Museum, and the intent is for a visitor to use it to explore overlooked areas of the galleries’ architecture.*

V&A London is an organization with over 700 staff and 12 departments. Based on initial findings from this heuristic study, there is scope to further

explore the value of design as integrator in the residency program beyond the Learning Department and into other areas of the Museum. In particular, the application of service design and systems design in the wider organisational framework is an interesting and uncharted territory, offering a potential to further enhance the level of innovation in organizational practice and experiment with new internal collaborative partnerships nurtured through design.

### *Design as Transformer*

The application of design as transformer verifies the importance of strategic design in the process of planning and managing the Residency Programme as it is one of few parts of the Museum's program that is subject to change, and can reflect the interests of the external environment and fluctuations in the sociocultural landscape. For instance, the Games Designer in Residence project was one of the first of its kind: indeed, only the University of California in Santa Cruz had previously offered a residency to a Games Designer (Stephens, 2012). The Games Designer in Residence program attracted national attention, causing a media stir that saw it featured in *The Guardian*, *The Independent*, *The BBC Breakfast Show* and many more news and online reporting platforms. The residency was devised during a period of increased interest from the Museum on the subject of 'digital' arts. The V&A Museum is currently increasing their collection of digital artefacts, and in August 2013, they hosted a Friday Late Event themed to the internationally recognized digital game *Minecraft* (Reynolds, 2013). This residency is part of the Museum's public actions to reflect a notable change in the times, and to evidence the fact that the Museum is responsive to topical interests, a key feature in design as transformer (Borja de Mozota, 2006). This strategic approach to design management is further discussed in the extract below, in which the interview participant explains how the Museum's Learning Department pursues new residency opportunities to capture increased interest from the Museum's audiences and non-audiences alike.

*Strategically, the aim is always more visitors engaging with more residents, and I think there is just such a wealth of disciplines [...] there are loads of disciplines that we haven't even touched yet. I think we are a long way from running out, and I think strategically we want keep on supporting Museum priorities, be that a major gallery opening like Europe, or big exhibitions, or collecting digital like the*

*way the Contemporary Team is now collecting digital things. For example, the Exhibition Road Residency Programme... the second residency is going to be XXXXXXXXXXX, so strategically that is lining up with the way that the Museum's collecting interests are going, as well as being aligned to a big project, so strategically you are always trying to hit as many targets at once, and have one eye on the public program.*

*(Conversation 9)*

This evidences the strategic design of the V&A Residency Programme, in which it is intended to discover new disciplines in an effort to build relationships with potential new visitors whilst simultaneously capitalizing on what exist in terms of shared resources and audiences. Understanding this method of employing design as a tool for transformation in the residency program offers new insight into the development and delivery of this service, specifically in regards to managing an evolving programme.

### *Design as good business*

*I think the Museum gets a lot out of the residents. I think it gets good value for money... what they provide, compared to what it costs, seems to me good value.*

*(Conversation 6)*

The Residency Programme offers the Museum an opportunity for new information on a certain discipline of design to be integrated into the Learning Programme and the overall organization. The Games Design Residency offered further added benefits to the Museum in addition to the resident working within the institution. As part of the residency, the games designer was expected to create a new game inspired by the British Galleries, and these galleries were the first to be renovated as part of the Museum's renovation strategy, 'FuturePlan'. The Games Design Residency gave the galleries a new lease of life, since the game that was created was based on a William Morris' Strawberry Thief printed fabric which the visitors were encouraged to visit to see the designer's inspiration after they had had the opportunity to play to game prototype (see Figure 5).

The benefits for the Museum in this instance was the new game, which is good promotion for the British Galleries, and its production, which was good value for money as the resident was an early career games designer and the residency cost a fraction of the normal price of commissioning a game from

a games design company. It also allows for the V&A to increase brand value by supporting a future iPad game and entering into the gaming industry. By the same token, the resident capitalizes on the association with the V&A brand to increase product exposure. This system of patronage could be developed by the Museum with an exploration into other disciplines and the mutual benefits shared by organisation and residents. This research verifies this exchange between organisation and resident, an important element of any residency program and may be used for scrutinizing future advancements in a reciprocal and mutually supportive relationship.



*Figure 5 'A young visitor plays the Strawberry Thief game prototype during an Open Studio session at the V&A Museum of Childhood'. Next to the game is a book of the works of William Morris, and the image on the page is a representation of the printed fabric that inspired the game.*

### *Future Implications*

This research conducted at the V&A Museum in London is part of a doctoral project that is sponsored by a future museum, namely V&A Museum of

Design Dundee<sup>52</sup> (V&A Dundee, scheduled to open in 2017<sup>53</sup>). The doctoral study sits within a larger partnership between the University of Dundee and V&A Dundee and the residency research was initiated in 2010-12 by Duncan of Jordanstone College of Art and Design researchers drawing (in part) on their research (2005-10). The insights gleaned from the placement and the tacit knowledge developed by partnership research, offers an opportunity to contribute to the concept development of new products and services of an emerging organisation. This new knowledge will be delivered to the Sponsor as part of an ongoing knowledge exchange process. Specifically, the research aims at structuring a theoretical framework that will be able to inform the development of a new residency program.<sup>54</sup>

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<sup>52</sup> Design Dundee Ltd is driving V&A Museum of Design Dundee and Design Dundee Ltd is a registered Scottish Charity, No: SC041219. Design Dundee Ltd is a partnership between the V&A, the University of Dundee, the University of Abertay Dundee, Dundee City Council and Scottish Enterprise. Professor Philip Long is the Director of V&A at Dundee. For further information: <http://www.vandadundee.org>

<sup>53</sup> The site mobilization of V&A Dundee is planned to commence autumn 2014. It is anticipated the building will complete in late 2016, with the first year of programming in 2017.

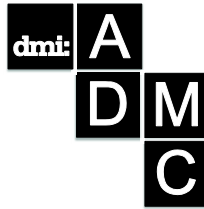
<sup>54</sup> The intention is to complete this doctoral study by May 2015.



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# Studio Design and the Management of Creative Production

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*This paper examines the design of recording studios in the management of relations within popular music recording projects. The creation of a pop song is a complex endeavor, requiring a large number of decisions involving highly subjective and often contested and contestable judgments. Organized in a flat structure and without established lines of authority this temporary assembly of people are faced with the challenge of making a product characterized by uncertainty over how to make it and what it will sound like once it is completed. The purpose of this paper is to understand how this is achieved. The study is based on observation of the practices, and relationships operating in a recording studio and supplemented by interviews with the participants. Using a socio-material approach, the spatial organization and use of technological objects are included to produce a contextual analysis of how actions are organized and decisions taken. What emerges is an understanding of how the designed arrangement of the participants and the application of sound production and editing technology are used to manage the development of the song and confer decision-making authority upon the music producer. When the spatial organization of the participants is altered by the introduction of new technology and new spaces, the decision-making power of the producer is challenged and artist power is increased. The management of creative projects is achieved through establishing spatial and material relations in order to overcome the challenge of making decisions between temporarily assembled teams engaged in tasks characterized by high levels of uncertainty.*

**Keywords:** Project-based organizing; studio design; recorded music industry; creative processes

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## **Introduction**

Project-based organizing is a common feature of production practices in the creative economy (Hodgson and Briand, 2013). A growing body of work is engaged with the challenging task of explaining how ideas are transformed into products, with studies on, for example, advertising (Moeran, 2009) film (Ebbers and Wijnberg, 2009), television (Antcliff, et al, 2007), computer games development (Cohendet and Simon, 2007), popular music (Lingo and O'Mahony, 2010) and the performing arts (Sedita, 2008). Shared across these studies is the attempt to account for how these temporary and uniquely assembled creative projects manage what are termed the nobody knows and infinite variety conditions of creative production (Caves, 2000). Namely the requirement to co-ordinate a range of protagonists with differing, possibly inimical interests, in a highly uncertain production processes to create products with largely aesthetic, ambiguous qualities (Caves, 2000; Townley et al, 2010). The contribution of this paper to the examination of these questions is to include the role performed by the physical setting of the project, the rooms, spaces and material objects with which and through which the management of a project is carried out (Callon et al, 2002; Latour, 1992; Orlikowski, 2007). This analysis of the socio-material design of project relations produces a different portrayal of their construction and reproduction and offers an alternative explanation for how creative projects are managed.

## **Managing creative projects: by fiat or finesse?**

A commonly proposed explanation for how creative projects are organised and managed is based on the use of contractual power supported by economic capital (Tschmuck, 2009). This application of contractual power is frequently justified by the conflicting interests of art and commerce, between the aesthetic approach of the artists, and the market orientation of the record label (Stratton, 1982). Though arguably overdrawn (Jeffcutt and Pratt, 2002) and undeniably something of a cliché (Frith, 1991), the emotional character of the project (Svejenova et al., 2011) plus differences in experience, attitude and resources have the potential to create conflict. However, the application of contractual power to overcome such contests should they arise is of questionable effectiveness. High profile cases such as those involving George Michael and Prince attest to the ability of artists to resist if not the letter of the contract then its spirit and in so doing weaken the commerciality of their product (Stevenson, 1994; Till, 2010). Further examples of the failure of contractual power feature bands such as My Bloody Valentine and Guns and

Roses, who took years to complete their albums and cost large unplanned sums of money in the process (Leeds, 2005).

Given the weakness of contractual power over creative projects, accounts that focus on the skills of the project manager offer a more promising explanation for how these difficulties of producing creative product and organizing creative individuals are overcome. In these studies, the project manager is described as a highly skilled individual able to weave together different interests (Simon, 2006) and judiciously resolve conflict (Lorenzen and Frederiksen 2005). In the case of popular music the project manager is the music producer. These, mostly freelance individuals, are hired by record companies to create musical product from their artist or group's demo (demonstration) song and deliver a marketable product to the record company.

Existing research into the project management practices of music producers reveals how they handle the ambiguities and emotions present in creating musical product by fostering generative relationships, building creative capacity and generally acting as a broker for the different ideas and perspectives that surround the decision making process (Hennion, 1989; Horning, 2004; Lingo and O'Mahony, 2010). However, though this work advances our understanding, there is a danger that the management of these creative projects is portrayed as an overly social and cognitive achievement. Framed by analysis that describes and explains the work of the creative project without sufficient attention being paid to the contribution of the physical environment and material objects through which, and in which, the project, and the skills of the project manager are carried out. The spatial arrangements of people and the objects they engage with to complete their tasks are key to understanding how organizing occurs, as organizing is fundamentally a practice of boundary drawing and role allocation (Hernes, 2004; Clegg and Kornberger, 2006). An indication of the potential value of including the role of material objects and spatial arrangements in the analysis of the management of projects can be seen in Lingo and O'Mahony's study when the authors discuss access to what is called the talk-back button – a switch that enables those in the live or performance room/booth to talk to those in the control room. They describe how the producer controlled access to the button and thus restricted the amount of open challenges that could be made on their decisions. Enabling the music producer to manage the conversation and effectively end debates, or at least restrict them. The button's part in the recording project's operation is revealing and suggestive, for it brings into view other objects and materials of the studio. What of the

organization of rooms in the studio, the computer displays, recording desk and audio software, the microphones and speakers? What part do they play in explaining how the project is organised and the project manager exercises his/her skill? Exploring these questions and identifying previously implicit or silent contributions of the material world to the management and organization of complex projects is the objective of this paper.

## **Research method and approach**

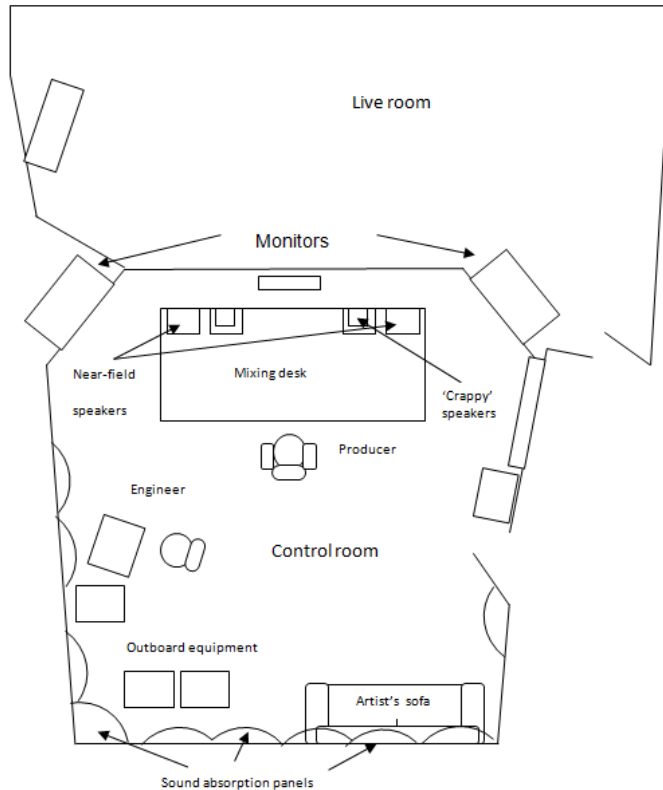
Including the material in an analysis of human interaction requires treading a fine line between two extremes, social-constructivism and technological determinism (Leonardi and Barley, 2008). Between the treatment of the material world as a set of tools to be manipulated by their users, and its opposite, gifting the object agency and thereby transforming the user into its tool. Both perspectives obscure interesting relationships between actions, the people who do them and the things they do them with. A socio-material approach offers a way of analyzing these relations between people and the objects that accompany their work by avoiding privileging either humans or the material world and treating them as mutually constitutive (Orlikowski, 2005; Suchman, 2007). In this orientation, the study of organizing requires conceptualising human relations as designed heterogeneous associations where the doing of an activity is an inseparable part of the material arrangements through which the doing occurs (Schatzki, 2005). Research informed by a socio-material perspective on human agency therefore needs to study actors, such as the producer and musicians of the recording project, as hybrid entities that achieve their agency by their position within a network of relations between other people and objects (Latour, 2005).

In addition to the richer picture of how organizing and the skills of management are carried out, a human-material perspective is well-equipped to examine the effect of the introduction of new technologies to working relations in an industry. This is because the constructivist view that it is people's interpretation of technological objects that is important has the effect of removing the technology being examined from the study of its effect (Markus and Silver, 2008, Orlikowski, 2009). While a technologically deterministic perspective focus reduces the ability of the analysis to consider the contest for power that follows the new outcomes that are made possible by new technology. A socio-material approach argues that the social and the material are intertwined and by examining the relations of people as a fusion

of the material and the social we are better equipped to address the question underlying study of technology – how it “works” (Leonardi, 2012).

Data were collected using a combination of participant observation (Gold, 1997) and semi-structured episodic interviewing (Flick, 2000). During the recording project the researcher visited the mid-sized professional recording studio in London where the project was taking place and sat at the back of the room while the engineer, producer and artists performed, recorded and mixed the song. To support notes taken during the sessions, photographs were taken and layouts of people, objects and rooms were made. A total of 5 hours of observation were supplemented by 24 interviews with music producers, engineers and artists. This mixing of observation with in-depth interviews allowed the researcher to situate the practices being described and witness human-material relationships that could sometimes be missing from the interviewee’s accounts of what they do and how they do it. Through this combination of observation, visual records and transcriptions of in-depth interviews, themes emerged from a step-wise coding process that identified and explained the composition and character of the various relational arrangements between the protagonists.





*Figure 1 Schema of the commercial recording studio layout*

## **Separation and control: the physical layout of the studio**

Studios are divided into two connected rooms, the live room and the control room. The live room, where the artist performs is a highly managed space involving intense scrutiny of the occupant. Recording involves dividing the song into individual or performances or tracks (percussion, guitar, vocal etc.), which are then subjected to scrutiny, adjusted and changed, before being recombined (mixed) to reform the song. In the process the artists are separated from each other, and indeed from the song as a whole, in order to provide the producer with the means to adjust and change the performance.

To obtain 'clean' capture of the individual performances, performers are placed close to the microphones often with additional screens placed round them to prevent the reflections of the room being captured. This is because if the microphones picked up reflections of the room, or the sound of other instruments, then it makes the later manipulation of the recorded performance more tricky as changes made would not only affect the instrument's sound, but the other sounds that have been recorded. Performers described the live room as 'clinical' and 'imposing', with red lights to indicate action, and an ever present concern that a noise (the creak of chairs/the knock of an instrument on a microphone stand) or a slight error in a note would make it onto the recording and contaminate the material. The live room was not viewed as a creative, expressive place:

*It's fun when you are performing (live), and fun when you are rehearsing, and then not so fun in the recording studio (artist)*

While the live room, where sound is discrete and the musician performs is a space of discipline and capture, through the observation window and into the control room and the producer, a very different organizing logic is in operation. The control room with its angled walls and carefully positioned speakers, or monitors, manages the reproduction of sound within the space, not to isolate and capture single instruments but to facilitate analysis of the sound of the performer during recording and when it is mixed with other tracks. Unlike the performer, the producer is faced with as a range of monitors that enable them to hear different representations of the sound. The control room is thus a place of analysis and decision making and the live room one of performance. This was demonstrated during observation and in the accounts of the protagonists of how disagreements between the artists and the producer over the quality of the performance were resolved. In these instances producers called the performer into the control room and organised A/B comparisons between different tracks or between tracks with different sound effects:

*If they rebel and I believe they are wrong, I'll play it to them and I'll show them and they'll go, "Okay. Yeah, I can see that". (producer)*

This use of the decision making properties of the control room is part of the spatially constructed power of the producer. In the control room they can hear all the tracks as they are recorded, identify desired changes and formulate an argument before bringing the artist out of the live room to

secure their agreement. A further spatially mediated aspect of the control rooms adds to this control over production decisions. There is a specific 'sweet spot' in the room, an area of the room where the full range of frequencies can be heard. Though the boundaries of this sweet spot vary, it is focused on the centre of the mixing desk where the producer's chair is positioned. Outside this zone, variations in sound were marked. One producer described walking around a studio he was about to work in to see when different frequencies were 'lost', not audible in a particular part of the room. This means that one's ability to evaluate the song and thus participate in decision making is not equally distributed around the room. All spaces are not equal. This is epitomised by the case of the studio couch. Each studio invariably has some kind of large couch placed against the back wall, and this is where visitors and musicians if they want to listen to the recordings, sit. However, sitting here changes one's experience of the sound of the song, as a producer described:

*Downstairs in Studio 1, if you sit on the couch there's lots of bass, because the room's tuned so when you are sitting at the desk you hear what's right. So when musicians come in and sit at the back they go "Wow, that's a lot! Bass is a bit loud isn't it?" So you have to say, you know, "It's fine".*

So not only is there a role creating spatial division based on sound management between the live room and the control room, but there is a further division of agency within the control room itself. An additional example of separation and control, with artists and other project participants being physically separated from the representation of sound needed to make judgments about the quality of the performance or the emerging mix.

The spatially mediated division between performance and analysis, live room and control room, sees the producer engage in intimate social management of the artists. It is a position that allows producers to be either very demanding, describing themselves as a task master, and or encouraging and supportive, with producers saying they sometime lie, say a performance was good but could they try it one more time? The pursuit of the desired performance can take many hours with musicians playing their section again and again. This requires endurance on the part of the performer but also on those listening:

*There's nothing worse than listening to drums on their own. It's the most soul destroying things in the world. No matter how good the drummer is...it is boring. (artist)*

The response of many artists in these situations is to flee the control room to recreational spaces in the studio where pool tables, table football, TVs and computer games help occupy their time until the producer recalls them to the live room. These distraction spaces within studios thus help to separate and organise the participation of the project participants. From the different treatment of sound in the live room versus the control room, to the studio couch and the pool table, the picture that emerges is of a spatially mediated performance of decision making and control. The next section considers the contribution of some of the objects inside the studio, the recording desk, musical software and the speakers to the operation of the producer's project management skills.

### *Fixing it in the mix: Sound and decision-making*

Once captured, decisions over which tracks to use and how to use them are made using a judgement on how something *will* sound once it is adjusted, given sound effects or placed within the range of tracks that will eventually make up the song. An example of this was provided when a backing vocalist was brought in by the producer to contribute to the song. The lead singer of the band described the performance as poor and unsuitable for the song and was surprised to hear the producer congratulating the singer. Once the singer had left, a discussion between the artist and producer over the quality of the recorded track followed. To resolve the issue the producer demonstrated how, by adding an effect to the voice and then placing it in with the rest of the recorded track, the contribution was actually very suitable. To the astonishment of the artist: 'I could have fallen off my chair, he just understood this guy's voice and how it could fit into the song'. This 'fix it in the mix' judgement heuristic restricts the ability of artists to make quality decisions during the development process. It also enables the producer to cut short debates amongst the project participants when there is a risk that they are turning into disagreements that could damage working relations, an ever-present danger in 'projects of passion' (Svejenova et al, 2011).

Unable to hear the sound as the producer can, uncertain how the performance will be changed with sound effects and unclear how the track will fit with the whole song, the artists appear enrolled in the producer's systems of calculation and measures of quality. This is the case with the

judgement over the timing and rhythm of their performance. Without the other members of the band providing the means to keep in time with each other, the performer is supplied with a click track by the producer. Set to the desired tempo, a noise is sent to the performers headphones to allow them to hear a tempo beat out during their performance. Though editing software is available to make adjustments to the timing and tempo, if the musician is too far out then the adjustment may be noticeable. The use of click tracks helps transform the music of the artists into raw materials for later manipulation by the producer. As it allows the different tracks to be lined up and merged together, a task made extremely difficult or impossible if there are variations in tempo. In this sense the performers perform the agency of the producer. Their provision of unadulterated, rhythmically disciplined recordings of elements of the song allows the producer to make changes to the sound and arrangement of the song. It also transfers the timing judgement of the artist to that of the producer. The resulting power was used by producers to sculpt the sound characteristics in the desired fashion, as the producer described: 'These parts are great, now we can move onto making them sound how we want'.

With the tracks having been recorded in the required 'clean' way, producers can apply a very wide range of sound effects and treatments to change the sound of the overall song into its desired form. This control can be exercised in different ways. In extreme cases, sound qualities can be imposed. Here is one artist describing what can happen:

*"Oh well, you're in an Indie band" [the record label managers would say], so they would go and listen to that week's crop of top bands like Lush or Ride and that's who you'd sound like at the end of the session, whether you wanted to or not.*

In other cases producers explained how they would carefully try and balance the requests of the record company to make a commercially suitable sound while also ensuring that the artists still feel it is their song with their musical or cultural values:

*Obviously, if you try and make it blatantly pop and not in the direction the band wants to go in, then they'll resist that. So it's a question of bringing in some of their personality and yet delivering to the label what they need.*

Another contributing object to the producer's decision-making abilities is the range of monitors or speakers in the studio. These speakers can be used to defend the producer's choice of sound treatment if questioned. During the mixing session the artists questioned whether a particular track favoured by the producer was the best. In response the producer fed it through the large speakers, and in comparison to the smaller sound of the desk speakers that we had previously been listening to, the sound of the track was indeed impressive. There were large smiles all around the room and the producer carried on. Other producers described using the pleasurable effect of volume on visiting record company managers who were reassured that progress was being made once they heard the mix at high volume through the wall speakers. Another type of speakers provided a way of connecting the studio and the product creation process to the outside world. These were universally referred to as 'the crappy speakers', with one producer describing how the foam the object was resting on was probably worth more money than the speaker itself. These cheap speakers were used to test whether the designed sonic qualities of the song survive when the sound is reproduced by the poor quality speakers in a phone, car radio, or computer.

Observation reveals that the management of a popular music recording project clearly involves the spatial design of acoustic spaces and relationships supported by various objects that help discipline and divide roles between the creators of the music and the producer of the song. This, plus the accompanying 'fix it in the mix' decision heuristic gives the producer a privileged ear on the emerging song, granting decision-making power to ensure that the song has sufficient commerciality by being comparable with genres or with currently successful music. Yet the sites of this spatially enabled project management skill are under threat. The availability of less expensive digital recording software and reduced industry revenues following the digitalization of music product (Leyshon, 2001), is connected to the closure of some well-established, large studios closing (e.g. Townhouse in London, and the Hit Factory in New York) and the appearance of new spaces in which to manage the recording project – the project or home studio (Leyshon, 2009).

### *Project studios and the 'eye versus ear' contest*

Project studios preserve or attempt to preserve the division of space of the commercial recording studio, there is a control room with a mixing desk, computer with editing software and various sound effect modules, and a live/performance room. However project studios are a world away from the

red lights, heavy sound proofed doors, acoustically treated rooms and banks of blinking lights and dials of the commercial studio. Their domestic location or simply the amount of time spent in the room by the producer, results in a much more informal, personalised spatial design. Studio rooms are reached not by going along hallways lined with gold discs, and signed photographs of music stars as is common in commercial studios, but uncollected post and children's drawings. These symbolic differences help shape the relations between the artist and the producer, which, depending on the performer, was viewed by producers as a help or a hindrance. Sometimes the relaxed space helped improve the performance of the artist, and on other occasions the producer missed the formality of the commercial studio that could be used to usefully 'intimidate' the artist and 'keep them on their toes'.

Though there is a superficial similarity in layout, constraints on space available and the construction of the rooms are different and this introduces a physical difference to the organization of tasks within a project studio. In project studios the performance room is very small, usually space enough for only one person, and has a small door with a window in it to connect to the control room. The control room walls are not angled and the room is not tuned to provide an even representation of sound frequencies. The performance room connects directly with the control room and this, plus its confined nature, means that the performer crosses the boundary between performance and analysis by simply opening the door and stepping out. In some instances the boundary is completely abolished, with the performer playing their instrument in the control room connected to the amplifier that sits alone in the performance room. The microphone picks up the sound from the amplifier and returns it to the producer and artist in the control room. The spatial arrangement of people and sound has now been reconfigured. The producer and the performer are joined and with the absence of a sweet spot, can hear the same sound. In this way the artist joins the producer in the inspection and evaluation of their performance and sound.

A further challenge to the division of judgement during the project involves the visual representation of sound produced by software packages such as Pro Tools. Visualized sound in the form of gridlines, curves, colors and graphs provides a challenge to the subjective, aural judgments of the producer. The forensic level of detail enabled by digitally representing sound can reveal previously undetected errors, or slight deviations from pitch and timing that were not picked up by the ear. The producer, perhaps mindful of the challenge to his decision making authority, warned the artists not to let the software influence them as attempts to increase accuracy could

sometimes lead to the performance sounding 'rigid' or 'lifeless'. Something he did a number of times when artists asked to see the screen to see if they were out of tune.

In the tighter space of the project studio, the lack of distraction spaces (e.g. ping-pong tables), and a blending of performance and analysis in the less delineated control and live room configuration, combined to enable the artists easier access to the computer screen's visual representation of sound. Producers described facing such graphically supported queries over their decisions and responded by denying the validity of the information: 'I don't look at the screen to tell me that it's right. If I hear it is wrong, then it's wrong and I don't care what the screen says'. Some producers described turning off the screen if they saw the artists looking at it, though because digital files are portable and the software to read them is relatively inexpensive, artists could take the recordings home and analyze the performances themselves. The genie is out of the bottle, and the means to challenge the 'golden ears' of the producer is always available.

## Conclusion

This research has explored some of the spatial and material relations through which the complex task of project organization within a creative industry is achieved. Observation of how popular music product is created has revealed how the design of physical spaces of the project help assign identities and associate them with particular practices that then enact the relations between the occupants. A range of new participants in the creative production project have been identified, the enrolment of which aid the management of the project - the tuned control room with its producer's chair and artists' couch, the ping-pong and table football tables, the red light, the crappy speakers, and the gridlines, curves, and dots of sound on a computer screen.

What becomes especially clear when reflecting on these findings is the importance of the body in the construction of agency (Reckwitz, 2002). The studio is an arrangement of bodies, of placing people in particular areas within the studio that are configured materially and symbolically with particular roles. The design of the studio thus enables a rapid formation and delineation of roles between the project participants, a facility that is extremely useful for temporarily assembled teams, working together without an established hierarchy in limited duration projects. The regulatory effects of space are also a benefit when the roles within such creative projects are fluid



and overlapping. The producer manages the budget of the project that is funded by the record company and paid for by the artists. The product is made up of the music performed by the artists, and the sound created by the producer. This blurred set of responsibilities and contributions when combined with the 'nobody knows' and 'infinite variety' characteristics of the process and product, endangers the project. In these circumstances the specialised circumscription of roles offers a way of organizing interactions and stabilising relations necessary for successful project management in the creative industries (Hernes, 2004). The importance of this embodied view of agency is demonstrated when the action moves to project studio spaces. In these more constrained spaces the squeezed design of the studio, the occupational jurisdictions of the producer and artist 'overflow' (Callon, 1998), and relations are reconfigured. In this situation producers needed to work much more collaboratively with the artists, though still used the 'fix it in the mix' rationale to forestall decisions and then ask the artist to come back once he had finished – to hear the final result. The increasing use of artist-producer credits on songs is recognition of these overlapping identities enabled by the different spatial and material settings of their relations.

A further insight into the management of creative projects concerns the particular skills of the project manager of creative products. As mentioned previously, accounts of these highly skilled individuals focus on the important activities of connecting or brokering between disparate people (Lingo and O'Mahony, 2010), sense-making (Simon, 2006) and establishing common grammars of interaction (Cattini et al., 2011). In addition to suggesting a more spatial and material, rather than cognitive, conceptualisation of how these outcomes are reached, this paper extends these tasks beyond the project to include the market. Producers broker, sense-make and establish common grammars not just between the project participants but between the project and the market, between the creators and the consumers. This is achieved by transforming the music of the artists into 'raw materials' so that sound creation and management techniques can be applied and the market qualities of the song established. That the preservation of the designed qualities of sound when released into the market was achieved with the aid of the crappy speakers, is a useful reminder that seemingly humble objects used within organizing can have a key role to play.

Also important to the successful management of creative projects is the way decision-making is organized. As Lingo and O'Mahony (2010) observed, the skill of the project manager lies in how they absorb challenges to their decisions or judgement. Though under greater pressure when carried out in

the project studio, this research has identified how the positioning of the actors during the production process reduced the frequency of such challenges. The division of performance from evaluation, the use of distraction spaces and appeals to the holistic nature of mixed sound waves supported the producer's use of a 'fix it in the mix' approach to manage the terms and times of debate. Creative project management involves punctuated decision-making process where, at appropriate times, producers structured reviews of the emerging work, organizing the remit of decisions with A/B comparisons and demonstrations of before and after versions to illustrate the outcome of their sound effects and mixing decisions. In this way the infinite variety of song qualities, the wide variety of views and the uncertainty of outcomes are accommodated without the project losing its way under numerous challenges, disagreements and returns to earlier versions.

Recognition of the importance of special configuration and material-human relationships reveals and identifies the possibility of change. For if the arrangement alters, then the practices and management control of decision-making also alters. In the popular music industry the use of project studio spaces and the accessibility and prevalence of digital audio software that enables sound to be portable and visually represented has increased the strength and frequency of challenge to the punctuated decision-making model of project management. Overflows of information - sound and image, empower the artist and bring them into the decision-making process. This was the case when artists used the objective systems of calculation exhibited on computer screens to rival the producer's expertise in an 'eye versus ear' contest that challenged the producer's authority and ability to restrict and constrain debate over product quality and process. In this way the skills of the creative project manager are revealed to be inseparable from the spaces and technologies that are part of their decision making and organization.

This account of the spatialised and socio-material management of music projects has implications for the study of other cases of creative project based organizing. The production of apparel designs, films, musicals, theatre plays, and radio and television programmes, all involve the use of designed spaces to organise and distribute roles and responsibilities. How does the enactment of these spaces and the human-material relations that occur within them stabilize relations and enable the management of decision-making under conditions of high uncertainty? How are changing technologies reforming these relations and what practices change as a result? Creative projects take place somewhere with some things. Research that incorporates these

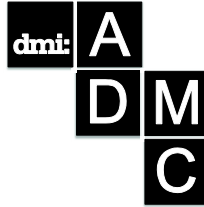
participants when analyzing the management of creative projects will be richer for their inclusion.

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# The Role of Networks in Fashion Designing: The disconnect between designers and manufacturers in London

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*This paper is an empirical study of the role of networks in fashion designing in London. There is evidence that the relationship between new, small, fashion design firms and apparel manufacturing is one of the weakest points in the fashion production chain. Analysis is based on our interview data as well as a critical review of the relevant literature. We propose that these problems have two main causes: a) designers are locked-in to the retail-led, London-based networks, which are dominated by strong links with the design colleges and industry-related institutions; b) as a consequence of this, their relationships with manufacturers lack trust, reciprocity and knowledge exchange for successful prototyping and scaling up of production to be achieved. Negotiation of constraints and specificities of designs are made more difficult because of personal, cultural, linguistic, physical and organizational differences, which create cognitive distance and incompatibility between the fields of fashion design and apparel manufacturing.*

**Keywords:** fashion design, apparel manufacturing, field, networks, London

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## **Introduction**

This paper is an empirical study of the role of networks in fashion designing. Despite the vast literature on the issue (Caves, 2000; Gereffi, 2001; Scott, 2002; Crewe, 2004; Crane and Bovone, 2006; Dunford, 2006; Evans and Smith, 2006; Currid, 2007; Hauge, Malmberg et al., 2009; Guercini and Runfola, 2010; Jansson and Power, 2010; Entwistle and Rocamora, 2011), the relationship between new, small, fashion design firms and apparel manufacturing is poorly researched. There is evidence though, that this is one of the weakest points in the fashion production chain (Karra, 2008). We have undertaken interviews with small fashion design enterprises and apparel manufacturers in London in order to understand how they interact. In this paper, based on our interview data as well as a critical review of the relevant literature, we develop theoretical propositions concerning some of the underlying causes of the problems these two groups face. We are particularly interested in the obstacles to the creation of sustainable production chains that would enable the potential of fashion design talent to be achieved.

In the UK, there is evidence that young, independent, fashion design businesses are not growing as effectively as they might be. The high-end fashion sector sees anywhere between an estimated 20 and 50 new UK designer/wholesale labels looking to break into the market each year. Some designers have achieved £2 million p.a. turnover within four years of their label's launch. However, this high growth is only achievable by approximately 10% of designer labels (DCMS, 2013). Some commentators acknowledge the disparity between the international visibility of the fashion industry and economic returns (McRobbie, 1998) and raise the question: Why do so many of the most talented designers go bankrupt within a few years of leaving college?

We propose that this has two main causes. First, they are strongly embedded and possibly “locked-in” (Wenting and Frenken, 2011) to the retail-led, London-based design networks, which are dominated by strong links with the design colleges and other fashion industry institutions. And, second, as a consequence of this, their participation in manufacturing networks and relationships with manufacturers, whether British or international, lack the necessary levels of trust, reciprocity and knowledge exchange for prototyping and scaling up of production to be achieved effectively. This limits the ability of independent designers to grow and develop their business.

## Methodology

This study is based on in depth interviews/case studies, which involved 5 fashion designers, 5 apparel manufacturers and 1 PR agent in London. It explores the relationship between small independent fashion designers and the manufacturers of fashion goods with references to other stakeholders in the fashion industry. The case studies help to highlight a broad range of practices concerning the processes of establishing a designer business and operating in the industry, displaying the role of links between designers and manufacturers. The role of other actors, such as customers, suppliers, rival/competitor firms, universities, public and private sector organisations, etc., in the formation of specifics of the axis designer-manufacturer is discussed as well. We reveal how small independent designers are at a disadvantage in the way they seek to establish and maintain their relationship with manufacturers.

The following sections combine literature and interview material to describe the London fashion and apparel manufacturing fields and interaction between the two.

This paper is structured as follows. First, we review the literature relating to: institutions, fields and networks; the field of cultural production; fashion designing; the fashion production chain. Then we describe the logics of activities and networks typical of designers and those of manufacturers. Finally, we discuss the problems they face in interacting effectively.

## Review of literature

### *Fields and networks*

In this paper we are interested in the relationship between fashion designers and manufacturers, which we suggest, despite being parts of the same production chain, belong to different fields: the fashion design field and the apparel industry field. A number of authors (e.g. Bourdieu, 1984, 1993; DiMaggio and Powell, 1983, 1991; Meyer and Rowan, 1977,1991) discuss the notion of field – a construct which describes the institutionalised orders in social relations and the bounds of a group according to their commonalities of ideology, language, behaviours and so on. Bourdieu's (1984, 1993) contribution comes from his bringing together in an integrated way the individual, with social structure, and power relations. Institutionalists and network theorists share many of Bourdieu's views on the notion of field (Dobbin, 2008). Institutional theories focus particularly on



how organized groups of actors gather and frame their actions vis-a-vis one another (Fligstein, 2008). Implicit is the idea that actors within different fields approach the world in very different ways. Such approaches or logics shape behaviour and, when reified, provide the institutionalised context within which interactions take place.

In the case of the fashion industry, one can discern a field of designers that includes a number of different genres or sub fields and a manufacturers' field, which includes different actors and involves different institutions. The embeddedness of various actors within a field means that contacts are more frequent, making communication, knowledge sharing and learning more possible. It also means that the effective relations between members are greater, and correspondingly the relations between members and non-members are less influential.

One important reason underlying the ties that are to be found within a particular field, is homophily: "the principle that a contact between similar people occurs at a higher rate than among dissimilar people" (McPherson, Smith-Lovin et al., 2001, 416). Crucially, homophily or cognitive proximity results in a higher level of trust, shared understanding, and interpersonal attraction than would be expected among less similar individuals (Ruef, Aldrich et al., 2003; Phillips, Tracey et al., 2013).

Homophily explains why the embeddedness in a specific field leads to the sharing of tacit knowledge and the creation of institutional logics. These, in turn, further shape actors' behaviour and reproduce the field (Dacin, Goodstein et al., 2002; DiMaggio and Powell, 1983, 1991; Tolbert and Zucker, 1996). The interplay and overlaps between different fields is an area that is increasingly being researched by new institutional theory scholars (DeFillippi, Grabher et al., 2007; Delmestri 2009).

The effects of homophily are well understood in respect of the various creative industries, including fashion. The literature emphasises the role of the cognitive proximity in the rapid transfer of knowledge between firms: once a firm has been able to capture information from 'outside', cognitive proximity among firms favours its diffusion.

Firms can, thanks to cognitive proximity, activate the observation of new products (and processes), giving rise to the mechanism of variation as firms have enough innovative capabilities to be able to follow an innovative-imitative strategy (Aage and Belussi, 2008). Cognitive proximity stimulates communication and learning between sectors, firms and individuals. Inter-sectoral linkages between two related industries such as, for example, music and fashion, therefore, are more likely to produce meaningful synergies and

spillovers than two unrelated industries (Boschma and Iammarino, 2009; Hauge and Hraacs, 2010).

There is also a substantial body of work showing that social ties and competence in building suitable personal networks of contacts play a key role in business/financial success (Baron and Markman, 2003; Jack, Rose et al., 2010; Phillips, Tracey et al., 2013).

The negative effects of homophily are also well described. There is a substantial body of literature that analyses the effects of institutional lock-in and strong 'relational proximity', which describes the amount and strength of communications between agents (Rice and Aydin, 1991; Da Silveira 2011). Such proximity explains the 'weakness of strong ties' (Amin, 1999; Amin and Thrift, 1994; Grabher, 1993; Granovetter, 1985; Uzzi, 1997) in which relationships within the field act to exclude relationships outside it. This literature suggests that there is a need for actors strongly embedded in cognitive fields to forge ties with their wider environment in order to prevent network closure and self-referential behaviour.

In addition to relational ties, logics and cognitive proximity, there is another important aspect of the institutional environment, which influences the character of the networks. The important aspect is the striation of the field: there is a centre and a periphery. These have different powers and play different roles in the reproductive and innovative processes within the field. Usually the periphery consists of new entrants who are seeking to establish themselves in the field, those who did not manage to succeed in being accepted by the core, and those who have deliberately chosen to distance themselves from the established rules and logics of the domineering core (Cattani, Ferriani et al., 2013).

The field is characterised by field-related capitals made of economic, cultural, social and symbolic capitals. Symbolic capital is only the credit and authority bestowed on an agent by recognitions and possessions of the three other forms of capital. The value of one form of capital is therefore highly intertwined with that of the other forms of capital (Entwistle and Rocamora, 2006, 2011). One form of capital can be transformed into others with different degree of probability (Pret and Shaw, 2012).

In the next section, we move on to discuss the specific nature of the product in fashion design, which, we argue, determines how the two fields of fashion design and apparel manufacturing interact.

### *The nature of fashion design product*

The cultural economy in general comprises those economic activities in which symbolic and aesthetic attributes are at the very core of value creation. Competition in these activities shifts from the 'use-value' of products to the 'sign-value' embodied in design and branding (Du Gay, 1997; Lash and Urry, 1994; DeFillippi, Grabher et al., 2007). The cultural economy involves craft and design industries such as clothing, fine furniture or jewellery (see, for example, Hirsch, 1972; Power and Scott, 2004; DeFillippi, Grabher, et al., 2007; Scott, 2010).

Fashion designing has been described as a hybrid form of cultural work (Hesmondhalgh, 2002), in that it is directed at the creation of products with both symbolic and utilitarian value. Fashion design has always been more linked to an economically valued production system than art or literature (Currid, 2007). However, the designing process in fashion is, in most cases, a creative act, a process of innovation or R&D, which determines the product's image, its symbolic form, which defines its distinctiveness and success (Storper and Christopherson, 1987; Crewe, 1996; Rantisi, 2002). Literature on creativity suggests that the production of creative work involves the re-assembling and re-arranging of pre-existing materials, practices and influences. In order to produce creative work successfully individuals have to operate within a network of interpersonal relationships. Social networks provide the fabric through which individuals may tap novel information for creative problem solving. Some authors suggest that creativity 'is all in your social network' (Brass 1995, p.94).

Creativity is a process which results in novel product which has to be accepted as tenable, useful or satisfying by a group at some point in time: it has to be legitimised (Cattani, Ferriani et al., 2013). Legitimation of creative work is simply not possible without a social network. Some authors (Csikszentmihalyi, 1988; Cattani, Ferriani et al., 2013) suggest that this 'networked' nature of creativity can be better understood considering the relationship between three institutional subsystems: the *individual*—i.e., the person who serves as the source of variations to the field; the *field*—i.e., the people (peers, critics, professional organisations or users) who are entitled to make decisions as to what should or should not be included in the domain; and the *domain itself* - i.e., the norms and rules of a recognized area of action (painting, music, fashion, etc.). Networks function as a tool for the talent recognition: in highly competitive areas, it is always necessary to affirm one's worth and to demonstrate the qualities needed to perform the work. The group functions as a kind of mirror that reflects the skills of

members and only the membership is the guarantee of the reputation of those who participate in the group (Lipovetsky, 1994; Aage and Belussi, 2008).

Legitimation in fashion design deals not with the idea of the product but with the product itself with demands for high quality in materials and craftsmanship, as well as fit, durability and performance. These can become part of the symbolic attributes of the brand or designer label but can also be seen as utilitarian characteristics of the product. Achieving utilitarian value in fashion design demands craftsmanship, rather than creativity, and manual rather than intellectual work. Goods are therefore produced (often) and reproduced (almost always) by completely different actors, which constitute different field - the field of apparel manufacturers. Though the 'depth' of the cultural economy that covers the entire 'cultural production chain' necessary for a particular cultural output is well recognised (Jayne, 2005; Pratt, 2005), cultural theorists seem to consider apparel manufacturing to be inferior to, and analysed separately from, the fashion designing process. Indeed, this is an example of institutionalised logics that arguably permeate the whole field of cultural theory and which perpetuate some of the institutional gaps that we describe in this paper. For example, at fashion shows, which are important legitimating institutions in the fashion field, the illusion of fashion as art is elevated and the effort involved in 'making' is obscured (Skov, 2006; Skov and Meier, 2011). However, manual work is an intrinsic part of creation and legitimisation of fashion products. It starts from the production of samples and limited collections of clothing, which are then demonstrated in showrooms, at fashion weeks and trade shows. The apparel designing process involves idea generation, experimentation with materials, cuts and themes, testing the production through the manufacture of samples, refinement and final decision-making (Rieple and Gander, 2009).

The production of a prototype and samples, which are the iterative translation of an idea, sketch, or drawing into a pattern/palette, which can demonstrate 'wearability' and quality, is a crucial aspect of fashion designing. Significant skill is involved in this making process. The designer has to communicate the idea to the manufacturer, but, as we demonstrate below, the manufacturer speaks a different 'language', especially in London, where the design emphasis tends to be on artistic quality. A complicating factor is that power lies usually with the retailer/fashion brand and in many cases with the manufacturer, but in very few cases with the designer.

The hybrid nature of the fashion design product suggests that there are two fields and two domains involved in its creation - the first related to the

fashion design and the second - to apparel manufacturing. The rest of the paper concentrates on the contradictory nature of these two fields/domains and characteristics of their interaction. Qualitative interview data is used to illustrate this.

## **Findings and discussion**

### *The fashion field in London*

As has been shown above, a vast literature is devoted to the description and analysis of the world of fashion. Concentration of fashion in major cities - Paris, Milan, Florence, New York, London - directed this research on the identifying the connections not only within the field but also with the wider set of urban actors and environmental patterns.

In the midst of fashion cities, London is identified as the best place to find raw talent in the world (Evans and Smith, 2006). Our interviewees (*Interviewee 1*) confirmed this:

*Paris is all about established brands and hierarchy, New York is all about business and profit, but London is for young designers, here we are helped and nurtured.*

Much of that creativity comes from the diverse cultures and energy that emerges from the specialist colleges and the 'street culture', which is a feature of London, and which is reflected in its distinctive designer fashion industry (Evans and Smith, 2006; McRobbie, 1998; Malm, et al., 2009; O'Barne, 2009). The fashion field in London has become highly institutionalised over the years (Pratt, et al., 2012). The processes of product creation and especially its legitimisation are strongly influenced by the amalgam of educational, professional and public institutions and organisations. Apart from 'traditional' fashion crowd of designers of various ranks, multiple cultural intermediaries (fashion editors, stylists, photographers, journalists, bloggers), models, celebrities and buyers the fashion field in London includes fashion colleges' academics and officials from industry and public/collective organisations. The fashion field's core actors are involved in the legitimisation processes of the selection and promotion of fashions, they control the dissemination of fashion through global media (Entwistle and Rocamora, 2011; Purvis, et al., 2013). The legitimisation of collections happens at events such as fashion weeks, fairs, and trade shows as well as celebrations of a fashion designer or *maison*,

opening of new flagship shops, film festivals, galas, which have the added significance as social institutions for the controlling elites of global fashion culture (Gilbert 2000; Entwistle and Rocamora 2011; Pratt, et al. 2012).

In London the fashion field's core includes Fashion Colleges (Central Saint Martins, the Royal College of Art and the London College of Fashion), many of which were established and gained power at the end of 1980s, and the British Fashion Council (BFC), established *in* 1983. They hold strong legitimising powers and contribute to the particularities of London's fashion domain known internationally by its appreciation of artistic value. Though worldwide fashion is now close to being a form of modern art, where experimentation, multiple disciplines and the absence of aesthetic rules dominate (Aage and Belussi, 2008; Lipovetsky, 1994), this is especially true for the London fashion industry, which is considered to be highly innovative and rather experimental. The fashion designer is celebrated as auteur, as an artist. Fashion schools teach fashion starting from its creative side, pushing students to express and experiment with their creativity as much as they can (Pratt, et al., 2012). Fashion/Art schools impose their own disciplinary vocabulary upon their subjects and this involves negating or dislodging the informal cultural practices, for example those associated with the street (McRobbie, 1998; Pratt, et al., 2012). In the London fashion field cultural value far outweighs any immediate financial gain, although the hope for designers entering the field is that the symbolic status they accrue will at some point in time, translate into financial success (Aspers, 2001, 2006, 2010; Aspers and Skov, 2006; Entwistle 2002, 2009; Entwistle and Rocamora 2011).

The networked nature of fashion designers' activities is relatively well researched (Aage & Belussi, 2008; Malem, 2008; Malem, et al., 2009; Wenting, 2008; Wenting, Atzema et al. 2008). Entry routes into the fashion field are characterized by whom you know. Social networks are especially important for independent designers as they allow access to knowledge and resources. The activities of independent designers are organised by projects and careers are flexible, it is therefore essential to rely on a large network of relationships to maintain continuity of work and to be able to move from one engagement to another. Mobility of personnel also spreads information on trends (Aage and Belussi, 2008). The agendas of the fashion domain as cultivated by the educational institutions are reflected in the types of networks that graduated designers establish and sustain. They maintain, for example, strong relations with the art world. In the networks they share with artists, designers obtain a large part of their creative inspiration (Pratt,

et al., 2012). London designers happily produce work for theatres, TV shows and commercials maintaining the overlaps between the fields of fashion design, music and cinema.

The homophily of the fashion field partly can be explained by the origins of many designers from middle class families, with parents being important investors in their children's cultural, social and financial capitals through funding their education, collections, apprenticeships, placements, labels and boutiques. This homophily is also maintained by homogeneity of the cultural capital reproduced by educational institutions. Getting educational credentials from London's art-oriented fashion schools, which are highly valued in the field, has become a strong contributor to the symbolic capital, which young designers are eager to build. Along with justifying the artistic ethos of their products the educational institutions and the BFC, which has strong relations with the fashion schools, encourage young designers to legitimise the best of their products by participating in fashion weeks, trade shows, etc. and to be noticed by established designers and fashion houses. The BFC, for example, organises many awards for emerging designers that offer the chance to present their own collection at the Fashion Shows. Therefore, the circle of cultural reproduction becomes absolute.

Students with a degree from the London fashion schools are already well inserted into the system and have a strong social capital of particular type - peers and teachers who often are fashion designers themselves, - on which they draw during their career (Pratt, et al., 2012). As one of our interviewees (Interviewee 2) described:

*There are strong links between educational institutions and independent fashion designers in London: first many students from colleges work as apprentices in designer firms, and second, designers often teach part-time in the colleges when the workload at the firm is low or not existent.*

Thus, both social and cultural capitals are easily maintained and reproduced (Pratt, et al., 2012).

The organizational ecology of networks of creativity and design is complex and conventionally conceived as *bi-polar* (French, et al. 2004). On the one hand, there are large organizations, with strong designer groups, who wield significant amounts of market power and control - the centre. On the other hand, there are small, fledging independent designers, often recent graduates from fashion institutions, who attempt to "go it alone" (McRobbie 1998), and often contribute very little into the economic success

of the industry expressed in volumes of GDP, employment and exports - the periphery (French, et al., 2004). Though also true for the Paris, Milan and New York designer fields (Rantisi, 2004; Wenting and Frenken, 2011) this is more complicated for London, which is lacking strong designer houses with high margins (Lane and Probert, 2004), though it is possible to list Burberry, Barbour, Paul Smith, Vivienne Westwood and Stella McCartney, among others, as exceptions to this rule.

Many of the small scale, independent fashion designers belong to the periphery of the fashion field with a rather precarious role in the industry. Their world is characterised by high levels of financial insecurity, under-insurance and a self-exploitation, as well as a need to have additional creative and non-creative jobs to compensate for the absence of steady income (Evans and Smith, 2006). There are a few rebellious mavericks at this periphery, which try to ignore the 'rules of the game' (Rieple, et al., 2013). For example, one of our interviewees (Interviewee 3) emphasised:

*I abandoned my course at fashion school because I did not want to 'make products for particular niche of customers' as the tutor required. Such restrictions did not fit my creativity, I preferred to be free from 'the system' and do my own thing.*

Other research (Rieple, *ibid*) reports the cases of designers trying to ignore the opinions of their peers, or buyers when designing. Others do not believe that fashion weeks help in the development of their carrier. Some of our interviewees reported that winning an award was important for their CV, however, it did improve their chances of business success (Interviewee 4). As other researchers have explained (Skov and Meier, 2011), if a designer has a company at all, it is such a small business that it cannot handle the steep increase in orders if they suddenly arrive as a result, for example, of winning an award. This demonstrates a well-known phenomenon of the delinking of contest/legitimisation and business success (Skov and Meier, 2011).

To summarise, the independent designers may serve as agents of change in the domain of fashion, they prefer to operate in non-hierarchical structures, they are adaptive in nature and prefer little bureaucracy (Vandeveldel and Van Dierdonck, 2003). In contrast, the field of apparel manufacturing has a very different structure. In the next section, we highlight some of the profound differences between the two domains.



### *The apparel manufacturing field in London*

Manufacturing is often considered to be responsible for just 'a simple input' into the symbolic fashion product (Hauge et al., 2009). What is emblematic is that almost no industry commentators from within the fashion field include manufacturers in their descriptions of the fashion industry. However, without this input, as we noted above, this product cannot be made, legitimised and reproduced.

There were around 8,500 jobs in designer fashion manufacturing in London (50% of total in the UK) in 2010 (DCMS 2013). In London, the industry is dominated by many small CMT (cut, make and trim) units embedded within ethnic economic enclaves, dominated by minority communities in the northeast and east of London. They are associated with the Bangladeshi, Turkish, and Greek communities of Tower Hamlets, Newham, and Hackney, and with the Turkish and Greek Cypriot communities of Islington and Haringey (Evans and Smith 2006) and, as we found, with new groups of migrants from eastern Europe. Ethnic minority owners in Britain are prominent in the industry, constituting around a third of owners (Lane and Probert, 2004). The industry also has relied strongly on home workers (Heyes and Gray, 2001; Warren, 2003) and is characterized by small highly flexible and responsive production units employing poorly paid, often immigrant labour with often low educational standards (Rath, 2002; Ram, et al., 2004). Profit margins for CMTs are low and, thanks to off-shoring, many firms are left with only small orders for sample runs and stock top-ups on the basis of an ability to produce and supply relatively quickly to high-street retailers and brands. Only for these types of production are buyers willing to pay a 'London price' (Evans and Smith, 2006). The majority of CMTs have inadequate financial capital and managerial networks for growth and development (Evans and Smith, 2006).

The field of apparel manufacturers therefore, includes very different people with different value systems. This is emphasised by studies, which describe a 'low-road' model of growing informalisation in the industry in global city locations, with firms attempting to cut costs through the implementation of poor working conditions, home-working and transgressing the law on minimal wages, immigration and social benefits (Bonacich and Appelbaum, 2000; Evans and Smith, 2006; Ross, 2002; Scott, 2002). Apparel production units have typically arm-length contractual relations with buyers among which the most important are considered to be large supermarkets and retailers.

Commentators (Evans and Smith 2006; Rantisi, 2004; Scott, 2002) have noted that the cities with high concentration of design provide manufacturing firms with an opportunity to include 'creative' activities in their work portfolios such as own-design and own-brand production. This has come about as a result of increased demand for more expensive quality fashion items, and governmental policies that focus on promoting fashion content and greater interaction between designers and suppliers (Panayiotopoulos and Dreef, 2002; Crewe, 2004, 2008; Crewe and Forster, 1993; Evans and Smith, 2006). Significant research has been conducted on the extent to which firms have been able to realise this opportunity and upgrade their production into higher value and more 'creative' design-oriented activity (Bair and Gereffi, 2003; Gereffi, 1999; Evans and Smith, 2006). Commentators point out that the upgrading strategies the firms adopt are connected to wider public policy discourses elevating the importance of creative industries in London, whereas others believe that they are a reaction to the power of major buyers and retailers (Evans and Smith, 2006).

In London various industry and public institutions have been involved in promoting and stimulating the link between designers and apparel production units. They include: UKFT, London Chamber of Commerce, and other specifically focused and often publicly financed organisations, some of which disappeared over time, e.g. the London Fashion Forum, the Fashion Capital web portal, the London Apparel Resource Centre, the Centre for Fashion Enterprise funded through the LDA's Creative London initiative, the Cutting Edge initiative (Evans and Smith, 2006), DISC (Designer-Manufacturer Support Centre).

Manufacturers, we interviewed, complained about the ethos created around the increased importance of fashion, related in their mind with power of buyers/retailers who dictate low purchasing prices and demand high quality and tight delivery times. Interviewees also complained about the idea of fast fashion in general, which disrupts their operations (Interviewee 5):

*'In older times people were wearing clothes longer and did not have so many of them and this is the right attitude to clothing and it's how industry should operate.'*

As we suggested above the domain for apparel manufacturing is very different from that of fashion design. It contains such hallmarks as clear tasks, costs reduction, a focus on profit margins, volumes at the requested

time, organizational recognition, and the reduction of waste and scrap (Vandevelde and Van Dierdonck 2003). Manufacturing is usually overwhelmed with keeping operations going and tends to sacrifice long-term concerns to the needs of the moment (Szakonyi, 1998). Its central point of attention is the process. Manufacturing is output-oriented, trying to realize economies through volume and mechanistic structures (Ginn and Rubenstein, 1986).

### *The interface between the two domains*

The material discussed above confirms that there are significant differences between the fields and domains of fashion design and apparel production. Indeed, design and manufacturing run the danger of developing separate self-contained societies (Dougherty, 1987). The design-manufacturing interface was investigated in the limited number of studies (but see Ettlíe, 1995; Ettlíe and Stoll, 1990; Hales, 1986; Lawrence and Lorsch, 1967; Vandevelde and Van Dierdonck, 2003). The literature suggests that the separation of designers from manufacturing is damaging for the industry (Kincade, et al., 2007). The problems of the gaps in interaction between fashion designers and manufacturers in London are described in the detailed study conducted by Karra (2008). Product designs that take no account of manufacturing constraints risk higher production costs, lower production quality and longer times to market (Da Silveira, 2011). The literature suggests that to overcome these difficulties designers and manufacturers have to work closely together, preferably being physically co-located (Swink, et al., 1996). The design knowledge of how to develop new products technically must be cross-fertilized with manufacturing knowledge on how to adequately produce the products (Vandevelde and Van Dierdonck, 2003).

British apparel manufacturers have appeared not to be interested in producing for art school trained designers: there is wariness and suspicion on both sides. Instead, there is a preference for the production of more functional clothing that is quite different from the ethos of fashion design. Apparel manufacturing is a slower and more utilitarian mode (McRobbie, 1998) and that is a characteristic of the beliefs and values in the manufacturers' field. Indeed, many CMT firms reported difficulties in working closely with fashion designers. The size of orders received is often very small, ensuring payment can be a problem, and they are not believed to be realistic when it comes to costs (Evans and Smith, 2006; McRobbie, 1998).

When these are added to potential resentment at the implied differences in status (McDonough, 1984), it is not surprising that there is a 'them vs. us' attitude, helping to maintain and even increase barriers between the fields. Manufacturers are outside the designers' creative (and commercial) networks. Designers, opinion formers, the press, stylists, PR agents, sales agents and retailers rarely see manufacturers as partners. Manufacturers are not in either the social or the ideological networks of the fashion designers, retailers and intermediaries in the fashion field. Designers generally, particularly those in micro businesses, view manufacturing relationships as problematic and tense (Karra 2008).

British clothing manufacturing firms generally compete on price, rather than on excellent design, and their large retail customers usually employ their own design teams. They attach a relatively little importance to design and little respect to the unique designing skills. One of our manufacturing interviewees (Interviewee 6), when asked whether he intend to employ a designer, said:

*There is no need in this. If I decide to add designing services to the activities of my CMT I can do designing myself. Over the years of working with fashion designers I leaned from them, it's not a big deal, I can do it myself if necessary.*

Additionally, independent designers are not rated well on their technical and commercial understanding (Lane and Probert, 2004). One manufacturer (Interviewee 7) told us that it is not right that designers spend so much money and time on participation in fashion weeks rather than investing in production.

Separate views and values lead to a misunderstanding of one another's goals, capabilities (Gupta, et al. 1985) and solutions. Different fields create their own technical languages and systems of meaning. Another cause of language problems is almost inherent to the evolution from idea generation to new product in production. Communication about objects that are intangible or non-standardized is extremely difficult. The more abstract the information, the more difficult it is to exchange the information between people with a different views, activities, background or interest (Vandeveldel and Van Dierdonck, 2003). Moreover, organizational structures, and different institutions involved in the formation of different fields and domains may strengthen cultural differences, for example, rewards that stimulate the members of different fields to maintain their own value

system, e.g. winning an award to participate in the fashion week (Vandevelde and Van Dierdonck, 2003).

In the UK, and in London specifically, differences in ethnic culture, education, training and background can add to the difficulties of achieving symbiosis and understanding between different cognitive fields (Vandevelde and Van Dierdonck, 2003). Manufacturing staff often have poor spoken English language skills. One of our designer interviewees (Interviewee 1) reflected:

*No, I don't consider people who make cloths for me at CMT firms to be members of my social network, they cannot become my friends. They are usually much older, and they are mainly immigrants and there is a language barrier in communicating.*

It is difficult to overestimate the importance of finding a suitable manufacturer for the independent designer. The production of samples and collections for fashion weeks and trade shows are extremely important for the legitimisation processes that the independent designers are involved in. All our designer interviewees emphasised the importance of finding the right manufacturer. Search usually relies on word of mouth and recommendations from other designers or by rather haphazard trial and error process. However, errors, when they occur can have devastating results. One of our interviewees (Interviewee 8) described her search for a manufacturer for her second collection:

*I visited the manufacturer in person and he agreed to produce my collection. However, when the order arrived I realised that the quality was poor and my target price could not be achieved. In fact, few people would even buy a product of this quality. My collection lost a substantial amount of money. Moreover, I could not represent the collection at the London Fashion Week that year.*

This was just one of the consequences of lack of integration between the fields and domains of fashion design and manufacturing. All of our manufacturers and designer interviewees were critical of each other: there is a mismatch in expectations, lack of understanding of each other's business operations, workflow, and financial restrictions (Karra, 2008).

## Conclusions

In this paper we have described a profound gap between the fashion design and the craftsmanship/production fields, despite policies directed to create designer-oriented manufacturing (Malem et al. 2009). This gap can be described as a division between art and commerce, between fashion as 'art' and fashion as 'rag trade' (McRobbie, 1998), where art and creativity carry greater symbolic and cultural value than commerce. This gap is emblematic of the British and London fashion industry, as it is currently constituted. This is not helped by institutions such as fashion schools and industry organisations, which do not emphasise the craft 'know-how' and production aspects of the industry (Pratt et al. 2012).

At the same time, many commentators emphasise the paradox that despite their reputation for innovativeness many of the businesses within the London fashion system seem not able to profit from it. This makes it hard for young designers to become successful businesses. We argue that this is because the fashion and manufacturing industries are both trapped by the 'cognitive distance paradox' with no straightforward answer of whether to couple or de-couple creative and routine work (DeFillippi et al., 2007).

There are different types of production chains and national and global production networks in the fashion industry, typical of different countries. These different types are embedded in powerful historical and institutional legacies. These types are, for example: the "umbrella holding" company in France, the "flexible embedded network" in Italy, and the "virtual organization" in the United States (Djelic and Ainamo, 1999). Each of them assigns a specific role for independent fashion designers and for manufacturers in organisational structures of fashion industry (Djelic and Ainamo, 1999). British fashion industry network is closer to the American model than to any of European ones (Lane and Probert 2004, 2009). Only in the Italian model designers and manufacturers exist in some symbiosis, where craft skills coupled with short and flexible production chains (Dunford, 2006; Pratt et al., 2012). For example, in Florence fashion companies are composed by the creative office and the company's factory, where designers and stylists, developers and craftsmen work together on making of the prototypes. Once they are developed, products are made locally by dense networks of small businesses (Pratt et al., 2012).

British policies directed on upgrading businesses to work for a high designer end of apparel manufacturing tend to be based on this 'Italian' model that ignores the inherited path development of this industry in the

UK. It may be useful to consider more closely the possible ways of and the possible policies directed on integration of fields and domains in fashion design and apparel manufacturing. Our study is an ongoing one that in the future will examine in more depth the structure of and institutionalised gaps between the manufacturing and design fields within the fashion industry. From this, we hope to develop propositions on ways of dealing with the gaps between the different fields and domains.

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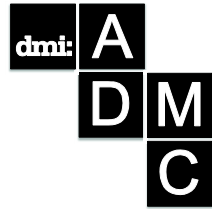
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## Design and Identity Formation in Cultural Organisations' Strategic Performance

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*In the present research, we examine design as a major contributor to the formation of identity. We refer to two notions of identity: one within an organisational context, and another, which exists externally among the clients. We show that these concepts are strongly linked and constitute an element of strategic performance. Furthermore, we suggest that in the cultural industries, a clear and consistent corporate identity must be shared internally between the group of employees and externally; ideally, a cultural organisation, because of its non-profit, educational, ethical, etc. status, would like to see its identity perfectly matched with that of its audience. Organisational brand identity signals what the corporation is and does. Therefore, it provides reasons to be favoured by clients and helps to build loyalty and attachment to the company. This is a deeply selective and interpretive process and one that plays a major role in strategy. In the present paper, we review key texts on identity formation in relation to design and brand strategy; we describe a case study of various museums and galleries; and finally, we arrive at a set of conclusions about the role of design in the articulation of a clear and distinctive identity for both cultural corporations and individuals interested in cultural products.*

**Keywords:** Design, Identity, Cultural Organisations, Audience

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## Introduction

In our previous paper, “The Strategic Role of Design in Cultural Products and Services” (Pitsaki & Rieple, 2011), we undertook a critical review of the literature pertaining to the strategic use of design within the cultural industries. Our main aim was to develop a better understanding of how design can aid the development and implementation of strategy, and to introduce an extensive list of generic strategic applications of design in the cultural sectors, in an attempt to create a more systematic approach to design in relation to strategy. There currently exists sufficient literature on the subject. However, experts hold diverse perspectives that often obscure and hinder rigorous developments in the field. For this reason, in our subsequent paper, “Design in Strategy: the Case of Cultural Organisations” (Pitsaki & Rieple, 2013), we took our focus on design and strategy a step further: we suggested a distinction between design as a vehicle and set of methods that facilitate strategic decision making AND design as an integral part of strategy and its implementation (“design FOR strategy” as opposed to “design IN strategy”, respectively). Furthermore, we created a core-list of “design IN strategy” applications and tested this approach through a museums case study with a strong practical focus.

During the process of our research, “identity” came up as an important concept referring to two particular entities: a) the intention of a corporation to define a number of distinctive characteristics that describe what the organisation is, what it does and how, and finally, which communicate those facets to its clients; and b) as something shared by a group of clients with common values, tastes, interests, and beliefs, among other elements. The interconnections between the two notions of identity (corporate and among a group of individuals/consumers) are noted frequently in the literature. As in previous cases, we hope in this paper to take an extra step, by discussing the role of design in bridging the gap between the two notions we’ve identified. In addition, we consider the strategic aspects of this role, which leads us into a territory of strategic brand management and particularly, one of corporate branding mirrored to match consumer behaviour and identity. Hopefully, in the pages that follow, these interconnections will become eminently apparent.

At this juncture, we would like to discuss some of the main concepts we used and how we approached them. We define ‘Strategy’ as ‘a set of actions through which an organisation ... develops resources and uses them to deliver services or products in a way which its users find valuable, while meeting the financial and other objectives and constraints imposed by key



stakeholders' (Haberberg & Rieple, 2007). We believe that successful strategies provide an organisation with some quality that is unique, or at least rare, and which makes consumers want to buy its goods or receive its services (for example, those of a corporation that made the strategic decision to invest in innovation or to develop a strong corporate brand identity).

Furthermore, we define an 'organisation' as 'a group of individuals, a social arrangement that has a particular structure and is managed to meet collective and personal goals'. The structure of the organisation determines performance and defines the relationships between individuals and the tasks that they perform in order to achieve these goals. Organisations both affect and are affected by their environment. In a commercial setting, the internal environment of the organisation affects and is affected by the external environment. For example, the corporate brand identity shared among the group of employees influences and is influenced by the perceived or shared identity between the clients.

For the purpose of the present research, we establish that a clear corporate identity formation process works in a similar way as does that among a social group or a group of consumers. In addition, we examine design as a key contributor towards this process. Identity formation is one of the most relevant aspects, frequently considered in connection with cultural organisations and the audiences whom they target. For example, in the fashion industry, one function of design is to facilitate the expression of an identity around the creator (the designer) and the buying community. Consumers need to feel that they belong to a group of like-minded individuals, with similar aesthetic tastes; the selection of the products of a strong brand makes explicit what they share in common. Also, one of the benefits of attending fashion shows is the sense of witnessing a special performance or occasion, enhanced by interactions with the 'star' and the other spectators; design then becomes a 'platform' for the exchange of a meaningful experience. These and other aspects are considered in our research, in the particular context of a cultural organisation, a museums group. Museums and galleries form an important cultural sector and the way identity operates therein is equivalent to its development in other cultural sectors, such as publishing houses, galleries, art foundations, theatres, and more. Design is not sufficiently discussed in these contexts, and we believe this gap represents an interesting challenge and unique opportunity to manifest the strategic value of design for such organisations.

## Methodology

Our methodology combined findings from our previous research, an extensive literature review, and analysis of a case study on a group of UK-based museums and galleries.

### *Literature review*

Our literature search was as follows: in addition to books, we systematically and purposefully searched for papers that contained specific keywords, narrowing our search to academic papers or essays with these explicit references. For the search, we used EBSCO's Business Source Complete and Art Full Text databases as principal sources, supplemented by Google Scholar. These sources include all the major business journals, as well as the majority of contemporary design-focused journals. A small number of other relevant journals, such as the *Journal of Design Research* and *Design & Culture*, which do not appear in these indices, were searched separately.

We used sequential Boolean search terms in 'all fields' and identified a number of relevant papers published between 1992 and 2013 (in total 182, which we then narrowed down to 93). Our search terms took shape in various combinations: *corporate identity*, *brand identity*, *business strategy*, *strategic management*, *competitive advantage*, *product design*, *design management*, *cultural industries*, *museums management*, and *culture*. In addition to these terms, we looked for papers that contained 'design' in combination with the specific cultural sectors that we are interested in (e.g. museums and art galleries). Searches like 'design strategy and cultural industry' or 'museums and competitive advantage' yielded no results, and we often had to fall back on our own knowledge of the fields to bridge these discrete bodies of literature.

To summarise the principal finding of our literature review, we might say that design is described as a means of communication which makes the organisation's values and strategy more visible and more easily communicated to consumers and employees alike. Design allows for a physical, tangible manifestation of strategy, both externally and internally. Externally, this occurs through the creation of products that serve the communications, advertising, or websites that put the strategy into practice, and through the visual expression of the values of the brand. Internally, it allows the strategy to be more easily communicated to employees through its expression within internal communications, the use of spaces, and the

way processes and briefs are explained (e.g. in the management of design recourses and the brand).

There were some intersections between these two perspectives (internal v. external) and the potential gaps between them were particularly interesting to us. Therefore, we considered the specific literature and discourses described below.

### *Corporate Identity and Design*

Corporate identity is often viewed as a relational concept constructed in the interface between strategy, organisational culture, and image (Hatch & Schultz, 2001). In this process, managers focus their efforts on 'reducing the gaps between top management vision for the company, its culture referring to 'internal values, beliefs, and basic assumptions that embody the heritage of the company and are manifest in the ways employees feel about the company they are working for' and the image as reflected in the views of its various external stakeholders', including the consumers (Gyrd-Jones & Rygaard Jonas, 2014). Furthermore, in the literature, we often see a discrepancy between identity and image: while identity is described as a set of distinctive characteristics, defined internally and projected externally, it is still a 'desired' projection rather than the real 'image' perceived, accepted and shared by individuals.

Cheng, R., Hines, T. and Grime, in their paper, 'Desired and perceived identities of fashion retailers', show that although there are some similarities, considerable gaps exist between the desired and perceived corporate identity of organisations. The paper concludes by giving practitioners better insight into the gap between desired and perceived identity with a view towards improving strategic interventions (Gyrd-Jones & Rygaard Jonas, 2014).

In this communicative process of identity projection and interpretation, the role of design is to interpret and capture the set of unique characteristics of the corporation, translate them into physical manifestations of 'who the corporation is', and put them at the disposal of individuals in order to express their own views on it, share it, or reject it. Concretely, the physical manifestation of corporate identity through design outputs involves the creation of products, retail environments, graphic communications, digital media, imagery, and clothing, among others.

KL Keller (2003, 2013) offers a perspective of this communicative – interpretative process, expressed in a model of four simple steps for

building a strong brand<sup>55</sup>. Each step corresponds to a fundamental question that customers invariably ask about brands and, therefore, corporations need to answer about themselves when they build their brands or define their identity. These are:

1. Who are we? (brand identity)
2. What are we? (brand meaning)
3. What do customers think about us? (brand response)
4. What kind of associations and how much connection would customers like to have with us? (brand relationship)

We consider this model to be integral to the internal and external identity formation process, and for that reason, we have chosen to discuss it in connection to our research. For the purpose of the present work, we were particularly interested in considering each of the components of the model and the role design plays therein. The following are the principal outcomes of our reflection:

### *1. Who are we?*

KL Keller describes brand elements as core attributes of corporate identity. Concretely, he says that logos, slogans, names, and, generally, the basic physical aspects of the brand are important in building *Awareness*, which is defined as the ability of customers to identify the brand in diverse circumstances. We believe that design determines these elements and, through sensorial stimulations (visuals, sounds, touch and smells), answers the question 'who are we?' Moreover, this is communicated among employees, constantly reminding them what the corporation is about, and becomes the means for the expression of a common belief and understanding of the brand. It is logical to consider that an identity that is first internally shared and understood will be better expressed and therefore, more accurately perceived by customers when projected externally.

Gyrd-Jones & Rygaard Jonas (2014), in their paper, 'Where is the Brand? Multiple Level Brand Meanings in Retail Brands', describe a case study of a retail business that reviewed and re-established its corporate identity internally, as well as the connections with clients and relationships resulting

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<sup>55</sup> We are aware of the work of authors, such as Gyrd-Jones & Rygaard Jonas (2014), that distinguish between corporate identity and brand identity. However, in the context of this research we decided to treat those as equal, because the formation of a corporate or brand identity operates in very similar ways, and was exactly this process we were interested in.

from the sharing this identity externally. 'The internal branding strategy chosen to change behaviour had a cross-functional perspective, integrating HR and marketing. The goal was to make work communities see their identity as a team and their practices in a broader context, i.e. the brand identity and market development. Visible artefacts as clothing, interior design, assortment and written, rule-based change in work processes were central HR tools' (Gyrd-Jones & Rygaard Jonas, 2014). In this example, we see design outputs such as uniforms (clothing), environments and furniture (interior design), and graphic communications (written documents), becoming key tools used by HR to drive the dissemination of this redefined corporate identity.

## *2. What are we?*

In Keller's four-step model, this question corresponds to brand *Performance* and *Imagery* (the latter being the intangible aspects of the brand and how people think about it in abstract terms). *Performance* denotes the 'design and delivery of products that fully satisfy customers' needs and wants, and is a prerequisite for successful marketing, regardless of whether the product is a tangible good, service or person. [...] Brand *Performance* relates the extent to which the brand satisfies utilitarian, aesthetic and economic customer needs and wants in the product or service'. In other words, brand *Performance* is all about the successful design of products, which depends on the work of designers and their teams: the way they interpret the needs and wants of the users, bring them into focus, and deliver products that hold value for both the clients and the corporation.

## *3. What do customers think about us?*

This is answered through the definition of customer *Judgments* and *Feelings*. *Judgments* have to do with the perceived quality, credibility, consideration and superiority of the brand. Design contributes to most of these by guaranteeing quality and superiority (e.g. properties of luxury). *Feelings* refer to individuals' emotional responses, such as fun, excitement, security, social approval, and self-respect, among others. Once more, design can influence people's sensorial, aesthetic, and emotional responses, and therefore acts as a catalyst in the process of emotional exchange between the brand and its followers.

#### *4. What kind of associations and how much connection would customers like to have with us?*

The final step of the model focuses on the level of identification (as associated/shared identity) that the customers have with the brand. Brand *Resonance* is its main component and refers to the nature of the relationship and the extent to which individuals feel they are 'in sync' with the brand. *Resonance* is characterised in terms of the intensity and the depth of the psychological bond that customers maintain with brands. In the example of a luxury brand or company like Apple, we see design serving a primary driver of strategy based on achieving solid bonds with individuals. *Resonance* is achieved via high-quality, unique, inimitable, and innovative products, and results in customers feeling special, or privileged, when they purchase and possess them.

To conclude, we see Keller's model as one that describes the phenomenon of moving from internal brand identities to the collective external customers' identities. As previously mentioned, we consider this model integral to both external and internal perspectives, which is what makes it such a useful tool for the exploration of practice in the context of our research. Specifically, the model's four steps and the ways design relates to them support our understanding and development of a practical view of the identity formation process at the early stages of the research (literature review). We used this perspective to draft our case study questionnaires and to enhance the analysis of the interviews. Within a broader scope of researching the reality of a museums group, based on this model, our previous research, and the literature review, we were able to ask questions that directly answer to the strategic importance of design.

We would now like to introduce the museums case study and offer some insight into our interviews with professionals in the sector.

## **Case Study**

Based on the findings of our previous research and those yielded by extant literature at this stage, we drafted questionnaires and conducted interviews with two senior managers, a curator, a designer/design manager, a project manager, the Marketing & Communications Officer, and a researcher who had been investigating the circumstances of the organisation for about two years. They all work for a North-East English museum group (Tyne & Wear Archives & Museums, comprising 12 venues, and attracting 1.5 million

visitors per year). The interviews were focused on design and branding, and on how projects were managed strategically. Questions included:

- What does 'design' mean to you?
- How is design linked to the various strategic aspects of your work within the organisation? (e.g. the brand concept, corporate identity and the missions of the museum).
- How can design serve or influence the vision of the museum (strategic direction of the group's individual venues/brands and expression of a distinctive or common identity)?
- What are visitors' expectations, and how can design be used to meet them? (e.g. ability to manage design as a means that facilitate a dialogue with individuals).
- How central is design to the brand identity at both the project and corporate levels? (e.g. design used as a core element in the search of a clearly defined identity).
- How can design serve or affect the role the museum plays in the formation of identity of your audience? (e.g. do employees perceive design as a vehicle for engagement with the audience and identification with the brand?)

In answer to these and other questions, our participants shared with us the following observations:

*Marketing & Communications Officer.* 'Design is about yielding aesthetically pleasing, easily accessible, and useful outputs for the audience. Design reflects the values of the brand and essentially materialises them for specifically targeted groups. It also helps to make the offer interesting, by encouraging people to be part of the brand, lending consistency, enhancing brand recognition, and allowing people to develop positive associations with it. As an example of how this affects my work, take the recent capital development and renovation undergone by one of our museums. Initially we built our design approach by contacting marketing research firms in order to define who the target audience was and consult on the image we should reflect. In the future, we would be very interested in exploring the following aspects:

- **Internal Design and Brands management** – looking at the brand system of the group or hierarchy in order to establish brand values for the TWAM brand and also for the 10 venue brands (9 museums/galleries and the archives) and mapping how these might align with corporate, venue, and stakeholder objectives. Working with our internal staff and stakeholders to establish what the perceived corporate identities are with a longer-term view in order to develop and communicate values that match objectives and which will be embraced by staff.
- **External Design and Brands management** – this should involve exploring how TWAM’s audiences (public) perceive TWAM’s brands and their corresponding corporate identities – particularly the venue identities, but also the overarching TWAM brand. This would indicate whether the audience’s perception matches the internal brand values and corporate objectives.

Establishing better coordination between internal brand expressions and external brand image would bring tangible benefits to TWAM by helping us align our stakeholders’ objectives with our own, and by allowing us to determine whether our brands and branding systems are working effectively. This is particularly crucial to our organisation, at a time when public funding is severely limited, forcing TWAM to make sure it is using its resources efficiently and effectively, in order to maximise performance and ensure that both internal and external audiences are being served.

Having a unified approach towards design and branding systems is an integral component of achieving a sustainable and quality museum service. Brands that are more clearly and consistently expressed, both internally and externally, can help us build greater confidence in our museums and galleries. This is important for stakeholders and the public – their attachment to our brands will ensure repeat visits but also, during a time in which museums are striving to be more commercial, this step will also help sell the museums’ products and services, and ultimately, raise revenue’.

Manager A: ‘We recently went through a complete renovation of the museum, for which we outsourced the design services to London-based agencies. There are projects that we can only carry out working with internal designers, because that allows for better planning of the work and more effective exchange of ideas and expression of our identity. However, internal designers can easily grow too accustomed to a venue, and so in



many cases, it's preferable to bring in a new, fresh approach. I believe that designers play an important role in our processes, because they actually execute the ideas we hope to get across, and they help us develop the narratives we wish to tell through the exhibited collections. I like getting designers involved from the initial concept stage. Designers can explore a question and tell us what we might do differently. Innovation can happen "when the sky is the limit" and designers can help in that by suggesting innovative ways to access objects. Every organisation has certain pre-set principles, but instead of telling every story an object could possibly have, we should try to tell the story that best matches our particular organisational principles (i.e. the principles of the corporate brand and identity). Museums should help people to understand their place in the world, and define their identity; design is integral to how they access and experience the museum's cultural offerings. Design also serves as a bridge between what the curator intends to share, and how people experience it or engage in a dialogue with it. This has become very obvious in interaction design'.

Manager B: 'Design adds professionalism and makes everything more appealing. Web design has become crucial to what we do and how we engage people. There is a shift needed in the way museums learn about people's interests and what museums stand for. Museum strategy is moving towards more inclusive approaches where the public shapes ('designs') the exhibitions. Our office's role is to co-design the museums' offers with the community. Therefore, user-centred methods that are regularly applied in design fields can help us better discover what local communities need. Museum visitors expect to acquire knowledge and have enjoyable experiences. Design can make these experiences more inspiring. A heavier focus on design would mean a greater focus on experiences that are developed more holistically'.

Design Manager: 'Design makes our strategy visible, and therefore it is crucial that it is managed in a consistent way across the various projects that we take on simultaneously. Consistency also has to do with the budgets allocated to different projects; in these times of austerity and diminishing returns, low budgets can have a significant impact on the quality and scope of design, often forcing designers to be ever more creative, in keeping with the age-old axiom "doing more with less". This attitude has a major impact

on strategy implementation and normally results in less efficiency and poorly communicated brand identity’.

*Curator.* ‘Design means many different things to me: 2D graphics, 3D displays and products, branding and logos, the specific atmosphere you create in a determined space, the coordination of all these and, ultimately, the entire experience of the exhibition altogether: the meaning of what is displayed, the messages that the visitors perceive and what they generally derive, the quality of information and how accessible it is, the notion of breaking cultural barriers. Design is absolutely crucial to our work as curators; if it goes wrong, all our efforts could be wasted or completely compromised. Meetings with designers should take place in order to achieve good understanding. We need to engage with them closely, and ideally, they should grasp very quickly what we are trying to achieve and what our main idea is’.

*Project Manager.* ‘{...} In the context of this specific exhibition, design underpins the entire process at all levels of the project. It is a kind of framework that helps to define the theme and various aspects of what we want to achieve. It also has to do with practical issues, like bringing in the designers and giving them a brief about how the exhibition should look. In our most recent project, designers came in towards the end of the process, mainly due to budget limitations. Design encapsulates the creativity that should be brought into the process early. It makes things relevant, appealing, and fresh to the audience. It suggests something unique and brings about a context that encourages people to get involved. Visitors expect to get inspired and become enthusiastic about their experience. In that sense, design should challenge, respond to, and surprise visitors, suggesting a meaningful journey and making them want to be part of it’.

The findings from our interviews added new perspectives and confirmed several of the pre-established functions of design and its link to strategy and identity formation. In the following section, based on the insights of the interviewees and their contrast with prevailing views from the literature, we offer some conclusions about design and identity formation in cultural organisations’ strategic performance.

## **Conclusions about strategic performance**

Following up on our theoretical discussion of the role of design in the formation of brand identity (and identity shared with customers/consumers), we wanted to explore these aspects in practice. We were interested in confirming whether professionals at cultural organisations think that the expressions of brand identity should also take place internally and whether they apply this belief in their day-to-day performance. In addition, we wanted to understand what design means to them and to what extent they see and use it as a key element of identity formation (e.g. the identity of the products/projects and organisations they work for). In light of previous experience, and also because we interviewed employees with different specialisations (senior managers of creative projects, curators, design and programme directors), we expected to capture very different perspectives. In addition, we were prepared to listen to ideas that refer to design or branding without the interviewees actually being aware that they were talking about these; they could refer to design in the way we define it in the design management discipline without realising it, perhaps because they lack the necessary theoretical background or are not familiar with design management and branding concepts and principles. For example, in the abovementioned transcriptions, we read testimonies about the 'organisational principles to be followed in any project'. We believe that these principles refer to corporate or brand identity, although such terminology is not explicitly used by the interviewee. Furthermore, in the cultural industries, discussing marketing and branding is often avoided; arts professionals often consider marketing to bring about a commercial perspective that clashes with a pure notion of art and its purpose. Consequently, we had to read between the lines of the transcripts. In that sense, the analysis of the interviews was challenging and involved contrasting knowledge from various fields – mainly design management, project management, marketing, cultural management and curation – with the responses we received.

More specifically, with respect to the outcome of our research, we might say that design in association with strategy aims to create distinctive products, services, and experiences which deliver value. In addition, it serves to make this value difficult to substitute or imitate. In that sense, 'design is a strategic resource that can shape the offer and the organisational or product identity. Furthermore, it provides tacit guidelines that shape employee behaviour and ensure coherence in the organisation's offer' (Rieple & Pitsaki, 2011). These strategic approaches to design apply to most sectors,

and can be contrasted with applications that are likely to be central to the cultural industries. It is relevant to note that we consider museums to be an important category of cultural organisations and one which is highly representative of a generalised reality in the cultural sectors. When it comes to the active use of design as a strategic tool, museums, galleries, and art foundations are comparable to publishing houses, music production companies, and theatres. Among cultural organisations and in relation to identity, we find fashion enterprises to be the one category that uses design in a more advanced and sophisticated way. In other words, professionals in the fashion sectors are more aware than those in other cultural sectors about the importance of design as key element of identity formation, and consequently, more aware of its strategic performance. Therefore, museums remain an intriguing and interesting area to investigate.

Below follow some conclusions yielded by our research on design, strategy, and the cultural sectors:

**Design is a means of developing identity and, therefore, represents a key strategic tool for cultural organisations.** Through aesthetics, function, communication, and the capacity to keep an offer connected to the organisational principles or brand elements, design allows individuals to share their values and to see their own identity reflected through the brand. It therefore leads to stronger bonds and a steady exchange between them and the organisations behind them (Pitsaki & Rieple, 2013). 'Design shapes an organisational or product-group identity or brand so that employees and consumers alike understand what the organisation is about (Kuksov, 2004)'.

In this paper, we are particularly interested in underlining the importance of design as a contributor to strategic performance, and in demonstrating that it can't be treated as an attribute external to the cultural offer. Indeed, design is a core element of any kind of tangible or intangible value delivered in the cultural sectors. **It is itself a significant strategic resource that delivers economic, symbolic, aesthetic and functional values and that therefore should be aligned with the stakeholders' main objectives.** In the cultural sectors, the search for coherent competitive advantages becomes more and more imperative. Trying economic times and spending cuts call for a more strategic focus on the ways in which cultural organisations operate. Design can play an important role in this circumstance.

The interviewees admit that design makes the museum's offer more attractive and likable; facilitates a long-lasting relationship and dialogue between the museum and its visitors; and enables more meaningful interactions between the brand and its audience. Furthermore, our interviews confirmed that design within the cultural industries is often perceived as an element of quality and innovation. This notion was also confirmed in the literature: Cooper & Evans (2011) show that design is a differentiation factor and delivers value through aesthetics and innovation. Therefore, it **should be implemented as an integral part of the organisation's strategy** (Pitsaki, 2013). Furthermore, as one of our interviewees, the researcher, suggested, 'Design is integral to how we tell stories and how we interpret things, and it becomes even more relevant when we use technology, because it allows people to more directly interact with exhibits or archives. Design is connected to the museum's essential function, in the sense that it engenders dialogue about identity, and allows people to reflect on and feel proud of an effective exhibition. Design shapes the exhibition by playing a role in people's emotions and empathetic faculties'.

In addition, **design proved to be a key element of identity formation and communication**. Through their choices, people share the museum's identity and can potentially become part of it. Design is a key component to both the processes of forming identity (e.g. the brand) and sharing it (e.g. aesthetic value, cultural content, meaning, etc.). Therefore, it should be managed within the context of an institution's strategic goals. Part of TWAM's strategic plan indicates a mission to 'help people determine their place in the world and define their identities'. Through their cultural offer, museums narrate true stories, educate people, and shape people's aesthetic tastes values. This is clearly reflected in TWAM's vision, as well as in its strategy. Moreover, this vision should be manifested first and foremost in the way the organisation establishes its own identity, its corporate brand (TWAM) and its individual brands (12 venues/museums).

**Furthermore, design is a significant contributor to brand consistency and coordination**. In the lifetime of a brand, constantly changing external factors and general management decisions can jeopardise the stability of identity and the projection of a clear image thereof. Consequently, it is necessary to carefully manage the brand in order to achieve consistency in all core elements and communications. Design contributes to the strategic management of the brand by ensuring parity across different brand levels, such as the corporation and the product levels. Furthermore, the

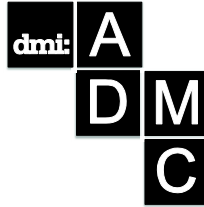
coexistence of several brands in any cultural organisation makes their management and alignment with strategic aims somewhat complex. For example, in the case of TWAM, there is an institutional brand, 12 venues / museums brands, and several exhibition brands. More specifically, moving from top to bottom in a brand hierarchy, we find the group brand (TWAM), the corporate brand (the Discovery museum), the product brand (the exhibition), and the artist or exhibit brand (a specific artefact relevant enough to constitute a focus of the museum's marketing communications, (e.g. the bulb of Joseph Swan). Therefore, every curator or project manager should consider how the specific exhibition connects to the museum's overall brand (the Discovery) or the overarching institutional brand (TWAM), and should carefully incorporate the elements that make the exhibition part of a clear vision, as previously defined by the organisation. In brand hierarchies and architecture, design acts as a visual and content connector between these, facilitating coordination, and enhancing the fulfilment of the strategic aims across all brands and at all identity management levels.

To conclude, we might say that design is a strategic resource for the formation of a clear identity, and it should always be managed in a way that reflects this strategic importance. A good model for design management is needed in order to bring about the corresponding contribution to cultural organisations identity and how individuals connect to it. Design is an indispensable part of what the organisation does and stands for. Finally, the present paper has aimed to introduce an approach that bridges the gap between the business and cultural perspectives.

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## Designing Organizations in the CCI

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*Drastic cuts in government budgets will force cultural organizations to reconsider their position by initiating internal discussions on how to avert the risk of these cuts. In order to avoid gradual withering of their proposition, cultural organizations will increasingly search for new organizational constellations with new business models. Converting the cultural organization into a hybrid organization combining cultural as well as business values, is one of the options and a major challenge. There seems to be pressure on preserving the cultural values that belong to the artistic core. This paper investigates the application of the IDER-model, that combines design thinking and design related implementation theories that take the potential conflicting value systems into account as well as a focus on the subsequent realization of associated organizational changes. An additional challenge is to realize the new structure in a way that it stays flexible as were it of a prototypical nature. Based on this theoretical discussion the paper proposes an agenda for future research to generalise our findings. The model explicated in the paper relates to the fundamental choices underlying the adaption to external changes through hybridization.*

**Keywords:** Hybrid organizations; creative organizations; design thinking

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## **Introduction**

The position of cultural institutions is currently under discussion from various angles. From a cultural-sociological angle, they are encouraged to actively redefine their position as bastions of imagination in an increasingly flat, instrumentalized and neo-liberal society (Gielen, 2013). From that neo-liberal angle, the culture-political discourse in the Netherlands pushes subsidized cultural organizations into the direction of cultural entrepreneurship and increase of self-generated income, i.e. ticket sales and sponsoring, as a solution to the financial problems that follow from the government's reduction of subsidies for arts. In these debates, the structural elements of cultural organizations seem to remain undiscussed. Gielen foresees institutions to pick up new and urgent culture-societal responsibilities from within their traditional structural and regulatory confines. Also, the culture-political discourse surrounding entrepreneurship doesn't automatically promote a fundamental organizational discussion (Kolsteeg, 2014).

Still, by interpreting the term entrepreneurship beyond its intended aim of merely financializing existing operations, some, but few, organizations move in the direction of re-evaluating their business model and developing new public-private, "hybrid" organizational structures. Examples are found concerning the combination of public libraries and commercial bookshops, cultural foundations that start separate, for-profit ventures to realize commercial offers for new target groups and museums mediating commercial activities for artists, such as artistic interventions. The underlying reason cultural organizations have difficulties in building new business or hybrid organizations is because the value system belonging to their cultural core diverts too much from the value system as dominant in business. There is no experience with this type of process and there is no institutional bedding in which such fundamental experimentation is appreciated. A strategy of hybridization seems a promising avenue for adaptation, considering the above mentioned discourses. However, the literature doesn't tell how organizations could change and transform into a hybrid organization, hence the subject of our paper. We aim to present a potentially interesting model that could explicate and address possible dilemmas encountered in organizational redesign and that could be of help in making such a transition.

First we will focus on what hybrid organizations are and some of the challenges these atypical organizations could encounter. We will discuss hybrid organizations and possible obstacles as found in literature and

elaborate on the essence of the dilemma encountered in the cultural sector. Then we will introduce the IDER-model and finally apply this to the situation of an imaginary organization in the cultural sector that aims to make a transition towards becoming a hybrid organization.

## Hybrid organizations

As indicated earlier the transformation of cultural organizations from an organization with one specific goal and associated operational processes to an organization with multiple goals and operational processes is suggested to be one of the promising strategies to adapt to changed external circumstances. A 'hybrid organization' understood in this paper is an organization that simultaneously operates in the public and the private sectors, hence combining 'different activities and revenue streams, different values and cultures and different modes of governance.' (Brandsen, Karré, & Helderma, 2009, p. 4).

There are barriers and risks to realize the hybrid organization. Among these risks are financial risks, risks involved with combining different organizational cultures and risk, experienced at the political level, of losing control. Looking at hybridization of organizations (in a non-cultural context) Brandsen et al. find however that "some of the supposed risks do not necessarily materialise and opportunities may be salvaged" (Brandsen et al., 2009, p. 3) if proper conditions are met. These conditions pertain to resistance to pressure at cultural level, and an institutional effort to create a framework "against which the financial performance of organizations could be judged" (ib.).

Tensions in processes of hybridization do not tend to threaten 'the structural integrity or quality of the provided services', is a point made by Karré & In 't Veld (2007, p. 200), who suggest the discussion on hybridization should focus less on the acceptability of hybridization as such, and more on how positive effects can best be effectuated, and how negative effects can best be limited. Among the factors that can make a process of hybridization into a success, Brandsen et al. found a sound professionalism that makes an organization 'more resistant to the pressures of hybridization at the cultural level' and the existence of clear generic guidelines concerning the administrative handling of diversified funding streams' (id.).

Successful combination of organizational cultures, modes of governance and underlying value systems, it seems, requires careful approach of cultural organizational differences, realistic - not overrated - estimate of risks, clear

financial agreements and a 'let's do it'-attitude. So for hybrid organizations to be successful, one needs to keep a clear eye on all the differences settled within the various parts of the hybrid.

## **Cultural organizations in transition**

For the cultural sector we follow the definition of the hybrid organization posited by Brandsen et al. (2009) and understand a hybrid cultural organization as an organization that simultaneously operates in the public and private sectors and simultaneously operates different operational processes. An important addition to this definition is that a hybrid organization combines, as quoted above, not only different 'activities and revenue streams', but also 'different values and cultures and modes of governance' (Brandsen et al., 2009). Also Mommaas describes hybridization (in this case in the context of cultural clusters) as moving 'beyond conventional subsidy-based coalitions towards hybrid, public-private models, based on a mixture of resources and management relations [...]' (Mommaas, 2004).

The combination in cultural organizations which is encountered more often, that of a financial model based on diverse (i.e. institutional and private) sources of income, does not make such an organization hybrid in this definition. Instead, successful hybridization needs to be found on the level of integration of cultures and values that are traditionally experienced to be distinct: values related to the artistic core of an organization, and values related to the process of economic transaction, embedded in a conducive culture-political context.

## **Obstacles seen from a theoretical perspective**

As stated above, hybridization of cultural organizations remains a rare phenomenon, which is not surprising knowing that these organizations have typically a limited size and a small amount of associated resources. An analysis of strategic documents of Dutch cultural organizations shows that they all describe pragmatic partnerships with organizations inside the cultural sector, while cooperations with private organizations outside the cultural sector are virtually absent (In 't Veld, Gerdes & Gooskes, 2012: 29). Cooperation is not the same as hybridization, but they both pertain to finding a productive 'interaction' between, or better a transcendence of the dichotomy between artistic and economic values.

The inhibition for cultural organizations to open up to a non-cultural context is inherent to the current culture-political discourse. Based on research done in the Netherlands by Kolsteeg (2014) we identify following issue. The process of strategy formation in cultural organizations is predominantly based on the values of artistic identity and network position, which affects strategic deliberations on topics such as growth and development. The government introduced the term entrepreneurship in the culture-political discourse as a financial strategy that hardly addresses values like risk-taking, creativity an artistic identity, values which are traditionally strongly represented in cultural organizations. As cultural organizations attempted to relate to entrepreneurship, it became a discursive topos, removed from the cultural organizations' true concern: their artistic development.

Kolsteegs research illustrates how innovative entrepreneurial behaviour in the cultural sector is in fact systemically inhibited. An additional element is that the moments in which cultural practitioners are held to define their cultural/economic position vis à vis their subsidisers are relatively scarce. This is different in the for-profit creative sector, arguably the forefront of creative and organizational innovation. Here, the practitioner is held to continuously explicate the creative/economic balance in the daily routine of interacting with clients. For-profit creative firms tend to experience the relationship with their context as enabling to tactically overcome the dichotomy of creative and economic values. Here, we see a field where innovation and entrepreneurship lead to, among other things, innovative organizational constellations (network organizations, project organizations, to name but the most obvious ones) that are recursively related to the context in which they are embedded (Scott, 2006: 4). The institutional context of cultural organizations contributes to the lack of entrepreneurial and cross-over activities and furthers organizational rigor. So obstacles for hybridization can at least be found in an equivocal culture-political discourse which does not adequately define the relationship between cultural and economic values and a lack of routine in cultural organizations to define their artistic-economic identity. Hybridization, understood as a combined public-private organizational constellation around a cultural-economic core activity, needs to break this discourse in order to successfully combine cultural-economic values.

## **Examples of hybridization in the cultural sector**

Hybridization of cultural organizations is a relatively new research subject. A preliminary conclusion from research conducted in 2010 among a (relatively small) sample of hybrid theatres in Finland is that hybrid theatres (here understood as private theatres with public ownership) showed that these theatres more resembled public theatres than private ones, in that 'norms and practices related to public governance, like using permanent employers instead of temporary ones, are more easily adopted to the theatre's activities'. (Ruusuvirta, 2013: 234). Mixed-owned theatres are not independent from the public sphere nor are they fundamentally autonomous and 'in control of their own affairs', making it hard to understand what the advantage of hybridization is. Basically, the tension between cultural and economic value systems is captured in a discursive compromise, instead of capitalizing on strong points of the public and private constituents, for instance the fact that private theatres tend to be more efficient than public theatres.

In the Netherlands several examples of business diversification that point into the direction of hybridization present themselves. A well-known example is forming constructions that improve real estate exploitation for example of a private museum housed in a municipal building, or museums or theatres developing hospitality activities as a side business. Also, there are examples of organizational "ramification": subsidised cultural organizations developing commercial (side) products, for which they set up a new organizational entity. One step further into the direction of hybridization is a combination of separate organizations in the same creative field, found in the example of a municipal library that rents out space to a bookshop.

In general, the existing examples in Holland and Finland suggest that the cultural municipal paradigm is the most dominant one when thinking about innovation of organizational form. They are strategies to secure the cultural offer in a city and rescue exploitation of existing organizations, with the cooperation of the local administration. Observed hybridizations are restricted to the financial operational area of cultural organizations and tend to lack a fundamental redefinition of the relationship with the context. They don't fundamentally address issues pertaining to for instance the organization's societal position or the essence of the cultural product they present. They reflect the characteristics, nor do they describe a new cultural offering in relation to societal discourses.

We suggest it would make sense to frame hybridization in this discourse and investigate whether a fundamental process of redesign and reorientation is imaginable that allows a reassessment of the relation between cultural and economic values in which the underlying discourse of arts support, which at least in the Netherlands keeps artistic-creative elements separate from political-economic ones, is problematized leading to a perspective of artistic-economic identities. Such an angle would lead to a designerly approach of the need for change, taking internal and contextual circumstances as equally important drivers for change and 'co-evolution', to coin Lewin and Volberda (1999). The reason to evaluate hybridization of cultural organizations from the designerly perspective is:

The combination of public / subsidised and private / commercial activities is positioned as a logical answer to both the culture-political discussion on, and financial consequences of the retreat of government support, and the societal-political pressure on the cultural sector to establish stronger relationships with non-cultural sectors. The development of solutions for this problem seems to involve sensitivity for underlying discourses on the relation between culture and economy, and sensitivity for traditional institutional roles and responsibilities. One could identify these elements as variables in a design process. The question discussed in the following paragraph is how the societal repositioning of cultural organizations can be understood in terms of the IDER model.

## **Problem statement**

Cultural organizations are challenged to develop new organizational constellations that can secure the future of their artistic mission. Hybridization is observed as a potential strategy to avert the risks faced. Cultural organizations are however inhibited to explore this by the dominant cultural value in strategy (Kolsteeg, 2014) and their traditional operational routines (Ruusuvirts, 2013). The development of organizational innovation that transcends traditional cultural/economic routine and brings organizations from the conceptual level to realization, poses a fundamental design challenge.

## **The IDER-model**

The recent application of design thinking to many situations is received very well in business because it seemed to be of help to break out of present

settings, small alleys of thinking and repetitive ways of acting. Liedtka and Ogilvy (2010) pointed at the differences between traditional managerial attitude and a designerly one (Figure 1).

	BUSINESS	DESIGN
<b>Underlying Assumptions</b>	Rationality, objectivity; Reality as fixed and quantifiable	Subjective experience; Reality as socially constructed
<b>Method</b>	Analysis aimed at proving one "best" answer	Experimentation aimed at iterating toward a "better" answer
<b>Process</b>	Planning	Doing
<b>Decision Drivers</b>	Logic; Numeric models	Emotional insight; Experiential models
<b>Values</b>	Pursuit of control and stability; Discomfort with uncertainty	Pursuit of novelty; Dislike of status quo
<b>Levels of Focus</b>	Abstract or particular	Iterative movement between abstract and particular

*Figure 1: Comparing business and design attitudes (source Liedtka and Ogilvy 2010).*

Thinking out of the proverbial box for identifying new avenues, blue oceans and attractive horizons brought design thinking inside the business discourse. On the other hand this univocal use of design thinking received some mixed feelings in the design research community, in terms of, ‘this is our territory’, we know this best, etc. However, the design community could also see this as an opportunity and help to explore unknown design territories. The application of design thinking beyond its traditional field of application could bring essential contrast that leads to additional perspectives on the field of design research. One of such perspectives is to describe the original organizational context of where design thinking had its roots, namely the context of industrial product development (Smulders, Dorst & Vermaas, 2014). In that particular context one could observe that after design has delivered the concept for a new product a phase of product and process engineering prepares that concept in such a way that it can be produced, transported and sold to customers, that is, to be realized. The engineering activities form the bridge between the concept from the D-phase and the operational processes like purchasing, production, logistics and sales in the R-phase. Engineering in its widest sense validate and consolidate what ever comes out of the D-activity and this goes beyond the product only. Also all other operational processes that need to undergo any form of adaptation need to go through an ‘engineering’ cycle. According to these authors, the end result of the product innovation-cycle is not so much

only a new product on the market, but an adapted socio-technical reality covering all organizational processes including the adapted processes related to the customers. This in a sequence is first Design, then Engineering and finally Realization of what has been developed, hence DER.

Although ideas could come from anywhere, in most models of product innovation there is also a phase preceding the actual design of the concept, namely the front end of innovation. During the front end, often referred to as fuzzy front end, market research, market analyses, need assessment, etc takes place. Smulders et al. refer to this as Initiating phase and in concordance to the literature this phase covers the work aimed at scoping the upcoming innovation activities and typically ends with a project brief. Seen from this perspective the full-fledged cycle that surrounds the actual design activities reads like IDER. As one IDER-cycle already results in organizational change (Smulders, 2006; Junginger, 2008), be it minor, then many IDER-cycles over time may result in a totally different company. Think of the organization of Apple thirty years ago with the Lisa and now with the wide spread of market propositions.

For the argument developed here we need to go one level deeper into these phases and describe these as socio-technical systems. In companies that are to some extent healthy and profitable, a certain routine level must have been reached in all of these phases. The application of all these routines will result in the regular development of new products and new business. In other words, they know what they should do to initiate, design, engineer and realize new products. And 'they' here stands for series of disciplinary and specialized actors, in the fields of marketing, consumer research, formgiving, electronics, software, mechanical, moulding, processing, assembly, etc. For a company like e.g. Cannon-Océ, these easily amount to 300 people that all have their own discipline related contribution to the various IDER-phases. So 300 people that are responsible for renewal of the product portfolio and not just have their disciplinary routines, but also their interdisciplinary (boundary crossing) routines. The latter sets of routines are a necessary prerequisite for interdisciplinary coordination and synchronization (Smulders, 2006). In total, one should see the respective I, D, E, R routines as (specialized) capabilities that in a combined matter enable an organization to innovate and adapt to changed external circumstances.

At least, as far as they concern the development of new business propositions. Good to realize that each of these capabilities is much wider than just the dominant activity. For instance, the engineering capabilities



not only cover the making of calculations, the detailing of the design but also cover the planning of the production ramp-up in the R-phase. Even so, the purchasing of materials, outsourcing of injection moulded parts, the division in sub-assemblies, layout of production and assembly lines, etc. Also the I, and D activities cover a total set of integrated capabilities that together stand for respective 'initiation' and 'design' work. Finally, these IDER-phases are not just separate steps with hard transitions that end the former and start the next phase. To a large extent, these phases overlap and slowly fade away as progress moves on towards final realization (Authors, 2014). The problematic element of embarking on more disruptive forms of innovation could be found in missing capabilities and knowledge structures to bridge between the conceptual idea and the realization (Authors, 2014), that is, there is no 'engineering' knowledge in its widest sense.

In the next section we will map the IDER-model over the problem as introduced earlier in this paper.

## **The CCI's challenge through the lens of IDER**

The first section of this paper described the problematic situation of the cultural organizations within the Creative & Cultural Industry (CCI). It foremost illustrated that these organizations have trouble to adapt to the changing environment. This is not to say, that these organizations don't adapt at all. Of course, they made many changes to buildings, the programs they offer, the quality of the programs itself, etc. They are surely capable to do that. In terms of the IDER-model, these adaptations are better indicated with the lower case letters 'ider', illustrating that these changes are variations within one and the same frame. These minor adaptations made it possible for these organizations to keep fulfilling their cultural function in a more or less stable environment. Now the world is different and in order to survive larger adaptations are necessary. This raises the question as posed in the introduction, do these organizations have sufficient capabilities, meaning, do they possess the right IDER-capabilities for transforming their organizations? It is at least questionable, whether deployment of their present ider-capabilities will make it possible.

For CCI-organizations to deploy a sustainable hybrid organization, two things need to be taken into account. First, there is the transformation from non-hybrid to hybrid, and second there is the successive adaptation to again changing external influences once it has become a hybrid organization, meaning in parallel to making the transformation it also needs to build up

sufficient innovative capacity to become sustainable. Although we limit our focus to the first, we will apply a product innovation cycle as a carrier to realize that transformation. The product innovation cycle as by itself helps to change the conversations (Ford, 1999; Smulders, 2006) and by that changes the organization to the hybrid state.

### *I = Initiating the hybrid organization*

As said, the initiation process aims to create an understanding of the task related to the upcoming innovation process including the possible changes and adaptations to the present socio-technical reality. In the case of hybridization, organizations need to make sure they do realize what the consequence of such an innovation process could be and subsequent make sure to structure the remainder if the IDER-cycle accordingly. Hybridization must be understood in relation to - or as a consequence of - product innovation. Cultural organizations have a routine in developing products inside the traditional cultural paradigm, but need to be challenged to develop products in a new hybrid artistic/economic framework. Initiating a new product life cycle here refers to initiating a new product-type life cycle. A routine needs to be developed in creating a cultural/economic proposition including its associated processes without cannibalizing its present processes and thus create the hybrid organization.

The constituents of the hybrid organization bring along their own position and products additional to the present position. The new organization needs to 'negotiate' a position in a creative network and the relation with the institutional context needs to be reformulated. Whether the organizational form is designed to be permanent or temporary is not relevant since change is the constant and not stability.

Initiating the hybridization by the identification of a potentially interesting cultural-economic proposition is an innovation process in itself aimed at framing the scope of the actual innovation process that is initiated. Because of its possible disruptiveness such an 'I' requires a large scale, open design process which in itself perhaps contains an IDER loop, resulting in a paradigm for the subsequent organizational innovation that will follow and a validated direction for further development. Figure 2 aims to illustrate that in each IDER-phase there is a dominant way of working that includes also activities that are typical for the other three phases. Meaning, within I-phase there is also D, E and R activities. The scope of what these activities however, becomes increasingly smaller until the final details of socio-technical routines are being set.

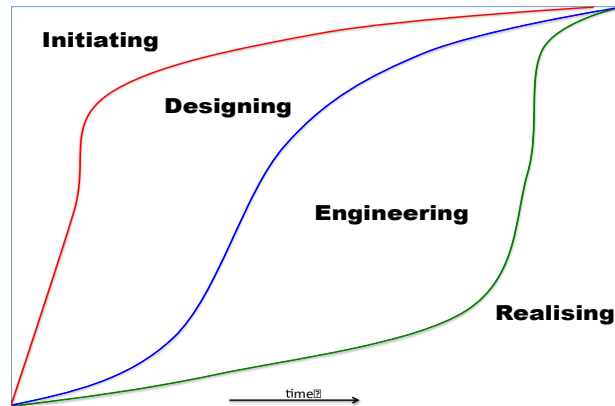


Figure 2: The nested processes of the IDER-model (based on Authors 2014)

Being an open process, the identification of the right partners by engaging in various types of open discourses and way-finding search processes resembles very much the fuzzy front end of product innovation. Social activities as ‘dialogue mapping’ in which the actors aim to create coherence among the culturally diverse backgrounds (Conklin 1995) might be of help in identifying common ground. Once an interesting direction is identified the first contours of a promising new concept might lure at the horizon. At the same time new or changed conversations are initiated. Such a strong feeling can be seen as the validation of the direction chosen and points towards the readiness of the transition to the ‘D’ phase in which the concept for the future hybrid organization including the associated cultural-economic propositions are further designed and validated.

To finalise the I-phase is to create a project team of organizational actors, possible partners, budget and a clear assignment.

### *D = Designing concepts for new proposition and the hybrid organization*

The aim of the D-phase is to validate the frame that represents the future hybrid organization including its first set of propositions. Further piloting and collaborating with partners is of key importance. Inside this cultural – economic paradigm propositions can be (further) framed. For this, co-creation seems to be the most logical way to go. The role of design in cultural product development has been discussed by Pitsaki et al. (Pitsaki et al., 2010) in relation to the multidisciplinary aspect of the cultural experience. Taking the visitors’ perspective, or the visitor as the ‘center of

gravity around which all activities take place' (id.) is a basic element that influences not only the cultural good itself, but also marketing and management. In design literature this is often referred to as user centred design.

The concept of the proposition needs (at some point) to be accompanied with the concept for the future hybrid organization and its processes. Not necessarily all this need to be ready at the same time, but it needs to be understood that such for that part of the new socio technical reality also a concept is needed. Like during initiation, the concept also needs to have a certain credibility or validation. Is this really what we are going to bring towards realization? Is this what is going to help us in compensating for the lost revenue streams from the government? Probing such hypothesis with future partners and future customers could bring such validation. In fact prototyping the new business with some sort of minimal viable product (Ries) offer might provide huge learnings and insights that help to identify possible flaws of the concept on one hand and ways to 'robustinize' the whole concept on the other hand. Here the actors are involved in reflective conversations with reality and where they must maintain a 'double vision' (Schön, 1983: 164). An open perspective aimed at opportunities to change the concept and an engaged perspective to increase its coherence at deeper as well as broader levels. The stories resulting from these experiments equally help to further strengthen the changing conversations and enriched vocabulary as part of a new language (Lloyd, 2000). In fact, what happens during probing and prototyping is running quickly (not dirty) through an E and R phase to foresee what becomes important if we move full towards engineering and realization. Finally it needs to be said that, if necessary here a possible necessary change to the buildings of the cultural organizations need to be initiated by involving an architect.

### *E = Engineering the proposition and the hybrid organization*

Now the hybrid business concept and its propositions have reached the phase in which becomes dominant a process of rational problem solving and thus of engineering. This happens once we have a good and well supported feeling of its potential success as well as the areas that deserve extra attention during this phase. Here the collaboration with business partners becomes much more intense and requires formal engagement. They might contribute to the detailing of the business processes in such a way that efficiency leads to profit. They know how to value customer experiences into prices, they know how to create customer value by 'tweaking' the

business model. Also contracts are being detailed in this phase and structural changes to buildings are being made. The latter might of course go through its own IDER-cycle with the involvement of an architect and builders.

The engineering phase for the kind of business thed here covers lots of testing and refining. Almost in such a way that the organization and its propositions seamlessly transform to the realization phase.

### *R = Realizing the hybrid organization and its proposition*

As mentioned there could be a seamless transition from the E to the R phase. However, during all these transitions it is of prime importance to keep on paying attention to the socio-dynamics of the people involved. People do want to change, but don't want to be changed. So keeping an eye on opportunities to support the actors in their change process is important. But as we mentioned earlier, the whole process of realizing the hybrid organization must not end up with the new organization casted in the proverbial concrete as to remain flexible enough to adapt to new external challenges. In fact, the realization of this first new situation must be seen as the initiation of the next IDER-cycle. Meaning, if organizations successfully transformed themselves into hybrid forms, then they need to be able to innovate starting from that new hybrid organization. If not, then eventually the cultural organization will still find its 'Waterloo'.

## **Conclusions**

We have suggested organizational hybridization as a possibly viable strategic avenue for cultural organizations faced with the challenge to redefine their societal, artistic and financial position. We have described how the culture-political discourse poses systemic barriers for cultural organizations to develop cooperation outside the cultural domain, let alone fundamentally jeopardize their artistic identity. Our first conclusion is that in order to further cooperation and hybridization, the administration needs to allow an innovative entrepreneurial context.

Negotiating a position in a creative network and a new relation with the administration introduces this administration as an actor in the design process. This requires the administration to abandon the unilateral focus on a control responsibility and investigate the possibilities of trust (and regulatory safeguards) as a driver for the innovation of organizations, and subsequently of the relationship between the cultural sector and its

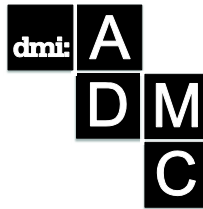
contexts. The administration could for instance be a 'broker' for the establishment of new product/organization combinations.

This article proposes to understand organizational hybridization as an iterative process in which all stakeholders (local administration, audience, the arts) share responsibility. Our conclusion is that since the IDER model allows for sensitivity for design-phases as socio-technical constellations connecting to existing inherited innovation routines in the organization, hybridization understood along along this model leads to a process that acknowledges the relationship between organizational form, cultural product design, and clear artistic-economic positioning of the organization. Once inside a new cultural-economic paradigm, a hybrid organization can routinely produce and innovate cultural goods and services.

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# Omnipresent Access: User perceptions in new media ecosystems

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*Technology has altered the world mostly in a pragmatic way - transportation and mobility, energy generation and distribution, transformation of natural resources into consumable products all changed human behaviors in that we adopted and adapted in order to harness the obvious potential of such progress in evolutionary speciation. Yet, the nature of information-centric technologies is paradigmatic in that it alters the character of humans and consequently the ways in which we relate to systems, experiences, objects, and to each other. It is therefore of utmost interest to investigate to what extent such impact occurs with the advent of yet another aspect of information-centric technological ingenuity. The past decade under the dominance of social media-related developments such as omnipresent access to streaming video services has been particularly disruptive. It may indeed have altered consumers' perception of entertainment altogether. Extending the existing framework of human-computer interaction with the novel human-centered research approach phenomenography, an exploratory study was conducted with 8 participants to define constructs that capture the experience of consuming streaming video. Grounded theory-based analysis of recorded interviews yielded five categories of variables that describe the nuanced experiences of participants. These in turn could then be composed not merely to conceptualize hardware and software development of upcoming mobile technologies, but could lead to the design and development of fundamentally different business models, digital experiences, and ecologies of coproduction.*

**Keywords:** Digital Culture; Phenomenography; Social Media

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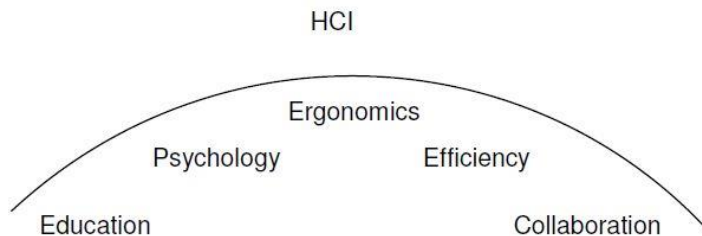


## **Introduction**

In October 2013, the Dell Computer company announced another tablet computer, the XPS 15, complete with an “HD+” display capable of showing high definition programming streamed wirelessly through Wi-Fi and over cell phone data (Whittaker, 2013). This tablet adds to the myriad of devices on which to consume streaming video including televisions, cell phones, video game consoles, computers, and other mobile devices. Also, Amazon recently released “Alpha House” and “Betas”, two originally scripted comedies made available through the Amazon Prime Instant Video service (Lewis, 2013). Amazon’s strategy to release originally scripted programming is a response to the success of the online media company Netflix, who have aggressively developed original content. With a data connection, these streaming video services are made accessible through desktop and mobile devices from anywhere and at any time. This convergence of technology and digital content embodies the growing presence of ubiquitous computing. Ubiquitous computing is commonly referred to as a post-desktop paradigm for computing (Galloway, 2013). It includes any combination of networked, mobile, embedded, location- and context-aware technologies (from GPS to RFID to sensors and smartphones) that can support “anywhere, anytime” communication (Galloway, 2013). Consumers of streaming content now possess “omnipresent access”, or the ability to consume a vast and rapidly changing library of content any time and in any place. Much research has been conducted in the field of human-computer interaction (HCI), but what qualitative effects does omnipresent access have on streaming video consumers’ lives? How do these experiences inform the design of future streaming experiences? The purpose of this pilot study was to explore the human-centered experience of accessing streaming video on mobile devices. Extending the abundant research devoted to usability and technology focused systems, this study uses the framework of phenomenography to understand and find meaning from experiencing “omnipresent access.”

## **Human-Computer Interaction**

Human-Computer Interaction (HCI) is a vast field of research that spans from the 1970s until today. HCI has become an umbrella term for a number of disciplines including theories of education, psychology, collaboration as well as efficiency and ergonomics (Hinze-Hoare, 2007).



*Figure 1: HCI Components*

Alan Dix, Janet Finlay, Gregory Abowd & Russell Beale (2004) define HCI as the discipline that involves the design, implementation and evaluation of interactive systems in the context of the user's task and work. HCI encompasses three components: the human, who is the user trying to complete work using the technology; the computer, which is any technology ranging from desktop computers to large-scale computer systems, a process control system or an embedded system, which could include non-computerized parts and other people; and the interactions which are any communication between a user and computer either direct or indirect (Dix et al, 2004, pp. 4 & 125). HCI research usually aims to create a more usable system by creating interaction frameworks such as Norman's model of interaction (Dix et al, 2004).

### **Norman's Model of Interaction**

1. Establishing the goal
2. Forming the intention
3. Specifying the action sequence
4. Executing the action
5. Perceiving the system state
6. Interpreting the system
7. Evaluating the system state with respect to the goals and intentions

There is an abundance of HCI theories related to usability, however it has been shown that "HCI theories are not yet fully established and that the discipline is highly fragmented, making it difficult to characterize a single method of approach or even a set of accepted principles" (Hinze-Hoare, 2007). Furthermore, HCI research that is related to usability tends to neglect the cultural and emotional experience of the human using the technology. Ann Galloway (2013) writes that HCI research has long brought together the

social and the technical, although cultural interest and methods are most often used in the service of technological development and implementation (pp. 53). Leading HCI researcher Alan Dix et al (2004) state, “An understanding of the capabilities and limitations of the human as information processor can help us to design interactive systems which support the former and compensate for the latter” (pp. 55). Galloway (2013) writes that the outcomes of HCI studies and research come down to whether researchers privilege the technology or the people who use it (pp. 55). More HCI researchers need to conduct studies that privilege and accommodate human’s cultural and emotional interactions with technology. Reeves & Nass (1996) argue that individuals’ interactions with computers, television, and new media are fundamentally social and natural, just like interactions in real life. Reeves & Nass (1996) continue, “By understanding the social and natural interactions with media, then there are a number of unexpected ways to improve the design of media” (pp. 8). Reeves & Nass also point out that people are not evolved to twentieth century technology and “the explanation of how that interaction works will depend on the psychology of the people who use them, not just the technology per se, nor the industries that make the appliances and produce the content” (pp. 12).

## **Phenomenography**

In order to explore and interpret the cultural and emotional meaning of experiencing technologies and platforms that deliver streaming video, we chose to use phenomenography as a method to understand the nuances of the lived experience. Shanna Daly, Robin Adams, & George Bodner (2012) describe phenomenography as an interpretive, qualitative research approach used to capture the variations that exist among differing understandings of the same particular aspect of the world and reveals the critical components that comprise that variation. Ference Marton (1981) also stresses phenomenography as a tool to reveal the qualitatively different ways of experiencing various phenomena. Marton (1986) further strengthened his view of phenomenography stating, “a careful account of the different ways people think about phenomena may help uncover conditions that facilitate the transition from one way of thinking to a qualitatively ‘better’ perception of reality” (pp. 33). Daly et al (2012) share this view stating that the value of using phenomenographic methods is the ability to create a landscape view that encompasses diverse perspectives that distinguish critical features of this landscape of awareness while

simultaneously highlighting the relationship among these variations (pp. 193). The outcome of phenomenographic research is to create a categories of description depicting the different ways in which a certain phenomenon is experienced and the logical relationships between them.

Phenomenographic research has been traditionally used within the study of learning, however it is increasingly being utilized in the professional and business world to uncover customer insights. In a recent Harvard Business Review article, authors Madsbjerg & Rasmussen (2014) state that CEO's see a lack of customer insight as their biggest deficit in managing complexity (pp. 82). Madsbjerg & Rasmussen (2014) observe that a growing number of organizations globally have begun to apply sense-making (phenomenography), having recognized that "it can help solve some of the toughest business problems, such as finding new growth, winning in new markets, and capitalizing on cultural change" (pp. 88).

## Methodology

### *Procedure*

Phenomenographic research requires qualitative interviews and observations in the Grounded Theory-tradition. Grounded Theory interprets a multitude of language and paralinguistic-based subjective impressions until it reaches "saturation", i.e. the categories start emerging from the interviews as repeating themes.

We conducted our interviews over three weeks at three sites: the Elmer Holmes Bobst Library at New York University, the Eugene Lang College at The New School, and the Directors Guild of America in New York City. Participants were asked to list the devices they use to watch streaming video and to verbally respond to the following questions: Why do you watch programming online? How does it feel to watch on a mobile vs. a non-mobile device? What does having access to programming on multiple devices mean?

Finally, we asked each participant to send us a digital photograph of their "natural viewing environment," or where they typically watch streaming video to enrich and triangulate our understanding of their verbal responses.

### *Criteria and Collection Procedures*

We took an interpretive approach to this study, maintaining an open framework with no specific end-point in mind. Participants responded directly to questions, but veered off from the experience of streaming video

itself to more specific content that they enjoy. Phenomenography requires openness as every response is relevant and that most participants will have different words for similar experiences.

The methods to collect data were recorded interviews, note taking, and photo-study. Transcribed interviews are useful to document the participants' lived experience and the recorded responses are used as a reference to develop themes. Interviews were recorded with Smart Voice Recorder developed by Smartmob Development, a voice application enabled by a tablet computer. By taking notes and listing the devices they use, more accurate reports about their viewing habits and how those habits correspond to their chosen device could be documented. Participants were instructed to take pictures of their "natural viewing environment", which is defined as where participants typically watched streaming video. By asking each participant to send a photo, we hoped to gain an understanding of how their physical environment contributes to their experience of omnipresent access. The photo-study not only helps to further build the context of their experience but can also illustrate their viewing habits in a more literal way.

Finally, a "Research Protocol" printout of the research questions was used to record participant responses.

### *Analysis Procedure*

Data were analyzed in three different ways. Participant responses were summarized and transferred visually via mind maps. According to Hanington & Martin (2012), mind maps can "provide a means to visually represent their unique thinking patterns in a nonlinear, visual way" (p.118). In how this is relevant to qualitative research, Hanington & Martin (2012) continue, "it allows us to summarize and test assumptions, make and break connections, and consider alternatives while we shape the data into meaningful themes and patterns" (p.118). An example of one participants' mind map is illustrated in Figure 1.

Secondly, participants' photos were analyzed against their responses to determine if their unique experiences were manifested in the photos. Hanington & Martin (2012) state that photo-studies "Can lead to unique discoveries about users, their behavior, and priorities" (p.134). Hanington & Martin (2012) also appreciate the exploratory nature of photo-studies stating "Patterns and themes might emerge across an inventory of several photos from multiple participants, providing insight for design implications" (p.134). Finally, all photos were combined into a collage and analyzed in a

photo-study to identify similarities and whether the identified themes are manifested therein.

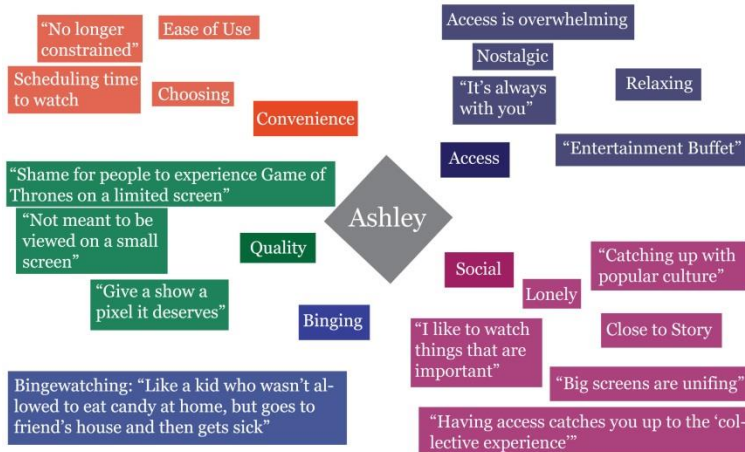


Figure 22: Mind Map from Interview

## Results

Participants were asked to name the devices they use to watch streaming video. Brands of the devices were not recorded, and were bracketed out of the research. Most of the descriptions of the devices are self-explanatory; however the notion of “Streaming Box” was separately defined as a digital media device that is mainly used to stream services such as HBO GO, Netflix, etc. A “Streaming Box” is usually connected to an external computer monitor or television fitted with inputs for the device. A distribution of devices between participants is illustrated in Figure 2:

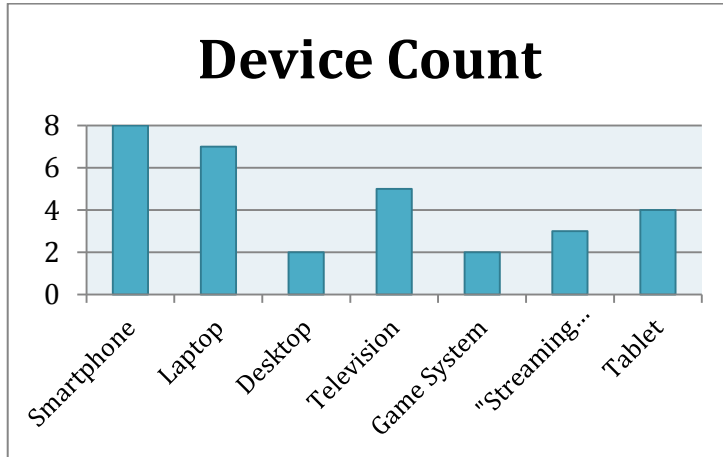


Figure 2: Devices Used to Consume Streaming Video

From the eight recorded participant interviews, 43 significant statements were chosen for coding. Each significant statement was analyzed for its formulated meaning, and all related meanings were clustered and arranged into 5 thematic categories.

Table 1: Categories of Description

Theme	Description
Convenience of Access	Always on connectivity enabled by the internet allows anywhere/anytime access to content libraries on mobile devices
Control and Agency	Users have more control over their schedules and can adopt market offerings with greater ease
Social Adaption and Cultural Adoption	Social viewing is being redefined in the age of omnipresent access as users are able to more actively participate in and easily discuss popular culture.
Quality and Value	Users feel they are receiving greater value from always on/always connected devices and place quality on bigger devices over smaller ones
Addiction	Users are able to consume enormous amounts of content on a seemingly endless supply of material

### *Theme 1: Convenience of Access.*

All participants quickly cited convenience as a reason to watch streaming video on multiple devices. One participant described multiple access points as “freeing” because “you are not tied down like with broadcast television”. One does not need to be in front of a television at a particular time to consume what they want to consume. One participant praised the convenience of mobile streaming services that “enable long-tail access to a wide database of choices.” All participants stated that accessing a vast library of content at your fingertips in your own home is far more convenient than taking the time to travel to a movie theater or to a video rental store to attain a physical copy of a show or movie. One participant enjoyed downloading a copy of a television show to watch on the subway as he traveled. Two participant photos illustrated convenience as one participant would watch a show in the bedroom and physically take their laptop with them as they went to their kitchen. The convenience of omnipresent access frees you from delaying consumption and enables multitasking.

### *Theme 2: Control and Agency.*

Most participants felt empowered by the ability to choose their viewing schedule, whereas in the past, as one participant stated, “I would have to wait for a show to start, but now I can start it whenever I want.” The fact that streaming video is something that you have to choose makes participants feel that they were in control of what they were consuming instead of having to wait for a scheduled show to start. “Flipping channels is a thing of the past” said one participant. Traditional television and movie theaters have strict schedules that they need to plan their life around. One participant response noted the difference stating, “Watching TV is passive and new media is active.” When asked about the meaning of having access, one participant stated: “watching a show is now personal to you... I watch to relax.” Economic agency was also apparent as one participant offered, “other traditional mediums require you to pay [more] for access to what you want, so I feel like I am getting a greater value with Netflix” while another agreed stating, “I’m getting more for my money.” Photographs submitted by participants illustrated control and agency by showing how participants who mainly watched on their laptop or mobile device controlled where they watched. A few photos showed participants away from home, scheduling their viewing around work and school, rather than needing to be at home at a certain time in order to watch what they want.



### ***Theme 3: Social Adaptation and Cultural Adoption.***

Consuming media has always been a social phenomenon, but not to the scale as it is today. Participants described how they are adapting to new social interactions enabled by omnipresent access. One participant stated, "Access enables interconnections" and "One day, you might be able to see what people are watching in real time on social media websites, and privacy will be very important." However, one participant is weary of such connectivity by reporting "People may see you watching in public [on a mobile device] and ask questions [...] I want to avoid that." As screens become smaller, social viewing lessens. Mobile screens cannot accommodate multiple viewers, and one participant noted that "big screens are unifying." Although multiple viewers may not be able to watch on a single mobile device, others are watching on their own devices during their own schedule. One participant felt it was her duty to "catch up to everyone else" so that she could feel a part of the group. This participant also stated that omnipresent access enables her to catch up to the current state of the viewing culture stating: "I feel left out when I have to not hear a conversation about Breaking Bad." Participants placed high value on social viewing with one arguing, "You tend to communicate with people at the theater non-verbally while watching, but you cannot do that with mobile devices... I'd like to see a way to continue that at home." One participant photograph illustrated how mobile devices and laptops ease the act of sharing content with others, but it also showed that it can take greater effort.

### ***Theme 4: Quality and Value.***

Participants stated strong opinions related to the quality of the viewing experience on mobile devices and the perceived value that they receive by participating in online subscription services. Screen size was a major factor in determining their quality tolerance. Participant responses about quality varied including, "[your device] should give a show the pixels it deserves", "The bigger, the better," and "Small screens on mobile devices take away from overall experience." Participants felt that they were receiving value from new media streaming services as one participant stated, "It's an easier, faster experience." One participant described how an online video subscription is a great value stating, "New media helps you save money by preventing you from going to the theater." Another agreed stating, "Other traditional mediums require you to pay [more] to access what you want." All participants had a sense that the content available online was better than

what could be accessed by television broadcast, with one participant arguing “TV can be brainless entertainment.” One interesting observation is that although every participant owned some version of a smartphone, all participants stated that they do not prefer to watch their favorite movie or television program on a smaller device because it lessens their overall viewing experience.

### *Theme 5: Addiction.*

Some participants who reported to be avid users of streaming services gave descriptions of video consumption that closely resembled descriptions of addictive behavior. Binge watching was something that all participants stated to be recently engaged in. One participant described their content binging as “Needing to get my fix” and another said that having constant access enables “Instant gratification.” Another participant described constant viewing on multiple devices as having “momentum.” One participant described how new media viewing mirrored her experiences at the movie theater stating, “There’s something perfect about getting popcorn, sinking into your chair, watching 10 minutes of previews, sipping your coke, and getting lost [...]. I think we still have that: we still get the *rush*. But, we get it for hours at a time” One participant who watches programming at home and at work admitted she may be addicted to streaming media, and the photograph of their desk illustrated how she views programming at work in her cubicle.

## **Discussion**

Human-computer interaction studies have traditionally focused on the practical and the rational, i.e. the pragmatic aspects of usability, where streamlining work paths and technology efficiency are the main outcome from such research. Phenomenography can be introduced as a tool for achieving human-centered designs in non-design contexts. This pilot study with eight participants developed five themes that help to elucidate the experience of possessing constant and diverse access to streaming video on multiple devices, herein described as “omnipresent access”. Through understanding the user perceptions of omnipresent access, we as designers and design managers can direct the adoption of new technologies through a re-design of the digital experience. Designing for the social and cultural values of the user will inevitably inform the design of the service and/or platform for viewing streaming video.

Participants' feelings towards possessing "omnipresent access" were overwhelmingly positive. All participants stressed the importance of choice and that entertainment selections before the availability of streaming media was limiting as constraints of schedule, length, and location determined the participants' capability to consume. They now have the choice to be entertained on their schedule, however long they like, and where they prefer. This capability suggests that participants are enjoying new agency in their lives; discovering video becomes more of an active experience for the user who are enabled by convenience, rather than be controlled through scheduling or barriers to entry. Mobile devices facilitate consumption and are capable of replacing traditional devices to watch programming. It is this very *adaptation of users* to the newly created contexts and capabilities both socially and financially, rather than the traditionally assumed *adoption of the technology and adaptation to the needs of the users* that intrigues us.

The two themes that were also of particular interest to us were *Social Adaption and Cultural Adoption* and *Quality and Value*. We believe that these themes are not only of interest to HCI researchers but also design managers, who have a vested interest in designing experiences that take into consideration human insights and perceptions to increase adoption of technologies that require constant interaction. The theme of *Social Adaption and Cultural Adoption* tells us that users desire access to streaming video as a means to connect with others through popular culture and though personal interactions facilitated through technology. The feeling of "always being connected" not just alludes to the technology, but the person themselves. Design entrepreneurs should be aware of these insights while developing business ecosystems that leverage value propositions that place importance on social viewing or interactions with streaming video. User perceptions related to *Quality and Value* help us to understand that as the quality of video increases, the willingness to view such programming on a smaller screen decreases. This theme also shows that users are conscious of the opportunity cost of streaming video to their personal devices versus watching programming through broadcast or at the movie theater. These themes extend beyond traditional usability research as these insights should inform the journey of the digital experience before the development of the platform and usability testing.

Human-centered design approaches have been proven to bring value to businesses by uncovering and highlighting human behavior. Understanding how humans behave within technology ecosystems can inform the design of a new ecosystem. Digital media companies should be aware of how

streaming video consumers perceive their viewing experience as it affects the users' willingness to continue viewing, what they would prefer to view, and how they choose to watch. The themes mentioned are descriptive of the consumer's tolerance to quality on a mobile device, the social adaptations of consumers, and how a convenient viewing experience can facilitate customer loyalty. The findings in this study also suggest that consumer perception of traditional viewing is shifting. "Omnipresent access" to content is becoming the preferred method to consume.

## For Further Research

There are several opportunities for further research to be conducted from this pilot study. Design incorporates insights from human experiences, cultural contexts, and economic environments. This research aids in identifying a few social, cultural, and economic attributes of the human experience of consuming streaming video as well as their perceptions related to financial decisions. Although these insights are not novel, we have identified two themes that could be expanded upon through quantitative analysis. A questionnaire could be formed related to social and cultural experiences in new media ecosystems that could inform the design of digital experiences. There is much room for testing these themes in larger qualitative studies in different cultural environments. Testing related to social viewing on mobile devices is limited and we envision a series of tests being conducted that develop a more solid understand of how the desire for social viewing affects the user's willingness to adopt new technology. The perception of what is a quality experience is varied among participants so we recommend testing different designed digital environment to discover user's tolerances for screen size and picture quality and how it affects the adoption of new technology.

Lastly, the notion of "omnipresent access" does not simply involve streaming video over the internet. We briefly touched on the fact that users perceive that their lives are drastically altered though ubiquitous computing and we posit that this perception reaches further into their lives. Omnipresent Access has enabled not only the rapid consumption of media, but rapid production of ourselves into an interconnected web of hyperactivity connected to everyone, all the time, and at any place. We believe a study can be conducted that explores the process and perception of an omnipresent, hyper-production of ourselves online and how that reality affects users' lives in the physical world. Those insights could serve as

a foundation to design transformational experiences that bridge the digital and physical worlds.

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**Section 3c: Social and Sustainable Design  
Management**

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# **Editorial: Social and Sustainable Design Management: A brave new era**

Rita ALMENDRA and José VICENTE

Social and sustainable design emerged during the last century as a brave new field, committed to answer the urgent needs of humanity. Due to its relativity newness, there is a lack of definition about its territory, scope and practices. This is demonstrated by the multitude of terms and expressions used to describe almost similar methods and approaches. Some of these relate to collaborative work with social sector organizations and others to designer's own initiatives to help society face the most complex social, environmental, cultural, political and economic challenges.

Social design and sustainable design are intertwined since both advocate a change of paradigm. Human well-being is a common goal to both social design and sustainable design. There is no sustainable design without balancing social/individual/ cultural dimensions with economic and environmental ones. And social design can be seen as assuming sustainable design principles and translating them into practice with a specific focus on social issues.

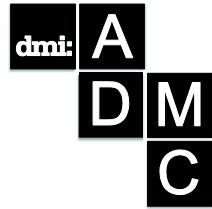
Both possess in their DNA high levels of responsible and ethical commitment. Nevertheless there is still much to be discussed:

Are the outcomes of responsible design (either social or sustainable) still creating more damage than good? How can we reduce that damage? Do we have enough information to take the correct decisions? Is our focus too narrow? Are we, designers and other stakeholders, ethically determined and motivated? Do we manage the design process with a human-centred approach? Do we know how to involve the communities, leading to real partnerships processes, and not designer dictatorial ones? Are there paths that lead to greater accountability and involvement of all stakeholders, namely designers? Can we promote local development combining design with other disciplines? Can we promote commercial success with responsible design? Can we create a responsible design without a commercial success? Do we have the best measurement tools? Or even better, are we measuring the right things? Should we focus on qualitative human well-being metrics? And, finally, is our design education on social

and sustainable design and design management enabling the development of a solid and newer praxis?

Without revealing the end, its fair to say that the discussion around these subjects leads inevitably to the understanding that the sophisticated complexity of this area demands high levels of empowering and knowledge of the designers, alongside with awareness, motivation and ethical determination of all stakeholders.

Can we manage a brave new era towards sustainability?



## Socially Responsible Design or ‘Bear Favours’

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*Since Victor Papanek in 1991 addressed the social responsibility of (industrial) designers, a plethora of books and papers on aspects of socially responsible design has emerged. However, this literature is far from having solved the environmental and social problems faced by the world today. In this vein, this paper focuses on a major problem for many socially responsible design initiatives, namely that, although they may be the result of the best of intentions, many of these involve a danger of doing unintentional harm. On this basis, the paper raises the question ‘how to avoid that socially responsible designs end up doing more harm than good?’ The question is addressed by defining the different levels of uncertainties associated with such projects, and by arguing for a consequentialist ethics to govern socially responsible design in the future.*

**Keywords:** *Socially responsible design; sustainable design; design ethics, uncertainties; design management*

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## Introduction

Victor Papanek (1991) was one of the first to address in detail the social responsibility of (industrial) designers. Since then a plethora of books and papers on aspects of socially responsible design has emerged. Examples of design philosophies with the purpose of improving the wellbeing of humans and/or the environment include design activism, design ethics, ecological design, environmental design, environmentally sustainable design, environmentally conscious design, emotionally durable design, ethical design, green design, nudging, responsible design, social design, sustainable design, triple bottom line and welfare design. More terms that denote socially responsible design approaches exist, and such new 'names' may even be invented, as we write this paper. However, it has been argued that this literature is far from having solved the environmental and social problems the world faces today (e.g., Stegall, 2006; Fuad-Luke, 2007).

This paper focuses on a potential problem of socially responsible design initiatives, namely that, although they may have the best of intentions, many of these may overlook a danger of doing unintentional harm — in part because of having too narrow a focus and because of starting from socially responsible theories unapt for the complex environment in which design takes place. This kind of problem is captured in the fable 'The Bear and the Gardener'. The fable is of eastern origin and was introduced to western readers by La Fontaine at the end of the seventeenth century. In brief the story describes how a solitary garden lover (gardener) encounters a lonely bear with whom he strikes up companionship. In return for food, the bear is given the responsibility of keeping flies off the gardener when he naps. At some point, the bear is unable to drive off a persistent fly, which in turn compels the bear to use a stone to crush it. However, in doing so the bear unintentionally kills the gardener as well, as the fly came to rest upon the gardener's head. In this paper, we argue that designers and decision makers in their eager to solve societal problems may overlook important consequences of their solutions and, therefore, risk to do more harm than good — in this paper referred to as 'bear favours'. To address this issue, the question raised by this paper is 'how to avoid that socially responsible designs end up doing more harm than good?'

To address the question in focus, this paper first provides a brief resume of the history of socially responsible design. Next, the paper uses the literature to illustrate how several socially responsible design initiatives have failed or at least have been questioned in relation to their overall benefits. Hereafter, the paper uses an uncertainty perspective for explaining why

well-intended designs sometimes may fail to deliver the expected effects or have unforeseen side effects, which in some cases imply that they cause more harm than good. Next, the paper addresses ethics in relation to socially responsible design. Finally, in the discussion and conclusions section, the paper places socially responsible design in an ethical framework, on which basis the consequences are pointed out in relation to future socially responsible design.

## **A brief resume of socially responsible design**

The idea that design practice needs to display social responsibility goes back a long time. For example, the English artist, writer, and textile designer William Morris (1834-1896) together with the English Arts and Crafts Movement championed traditional craft production as opposed to division of labour — not only because he believed that this manufacture method led to superior quality products, but also because of the well-paid and honourable employment that he believed craft production provided (Gorman, 2003). In America, designers began to consider social responsibility in the 1930s and 1940s, when, according to Whiteley (1993), the first generation of American industrial designers (including Norman Bel Geddes, Henry Dreyfuss, Walter Dorwin Teague and Raymond Loewy) were trying to justify their practice in terms of contributing to a better world by making products more efficient, easier to operate and more user-friendly. However, some of the downsides of mass production became evident and were criticised in the 1950s, for example, concepts like 'planned obsolescence', which was addressed by Vance Packard (1957, 1960).

A radical critique of the practice of design was forwarded by Austrian-born US-based designer Victor Papanek in 1971 in the book 'Design for the Real World: Human Ecology and Social Change'. This book is widely understood as the seminal text of twentieth-century 'design activism' (Clarke, 2013). In this book, Papanek argued that designers do harm because of their function in supporting over-consumption. Instead, Papanek presented the idea that designers and other creative professionals have a responsibility to cause real change in the world through good design, for example by designing for people's needs rather than their wants. This paternalistic approach requires that the designer is to decide what is (morally) right for people. The topic of 'design activism' has been of growing interest for researchers throughout the past decades (e.g., Thorpe, 2008; Faud-Luke, 2009; Julier, 2013; Markussen, 2013). Generally, design activism

is defined to describe the central position of design in relation to: (1) promoting social change, (2) raising awareness about values and beliefs (for example, in relation to sustainability), or (3) questioning the 'negative' role of consumerism on people's everyday life (Markussen, 2013). However, despite the great attention towards socially responsible design approaches, Papanek's agenda is far from being systematically embedded in design education and practice (Boks and Diehl, 2006; Ramirez, 2006).

It was not until the mid-1980s that environmental problems became widely recognized by scientists and intellectuals, and social and environmental concerns were conceptualized on a larger scale and introduced to the public (Er and Kaya, 2008). An important event in this area was the 1987 report 'Our Common Future' by the Brundtland Commission (formally known as United Nations' World Commission on Environment and Development) that positioned 'sustainable development' as a necessity to guide all future human endeavours (WCED, 1987). An oft-quoted definition in the report is that sustainable development concerns the "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." Soon after, in 1989, the United Nations Environment Program (UNEP) began the work of identifying and implementing solutions to prevent pollution, and from the early 1990s, industrial designers increasingly focused on cleaner production and began to pay attention to reducing the negative impacts along the entire life cycle of a product (Keitsch, 2012). A central element to this development was (and is) the centrality of the so-called precautionary principle, which advises that lack of evidence about the outcome of an action is not in itself a reason for not taking precautionary measures. An often cited formulation of the precautionary principle is the formulation found in the 'Rio Declaration on Environment and Development' (or 'Earth Summit Declaration') from 1992: "In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation" (UN, 1992). In the context of the bear and the gardener, the precautionary principle would advise the bear that the stone should not be dropped, on the grounds that there would be inconclusive evidence about the effect of dropping it (assuming that the bear was acting out of ignorance).

Since the 1980s a number of approaches that deals with environmental and/or human problems have emerged along with the increased awareness of

environmental and humanitarian problems. A central discussion in relation to such approaches is the role of the market when facing the challenges of environmental and humanitarian problems. The argument of the need for more radical approaches than those, which can be accomplished in corporation with companies, echoes the agenda by Papanek, namely that socially responsible designers must organise their interventions outside the mainstream market. A counter-argument is that it is not per se impossible to make progress inside the market mechanisms (Cole, 2012). However, it is widely agreed that the world will continue to face environmental and humanitarian problems, perhaps at an accelerated pace, in the 21st century (Stern, 2006; Er and Kaya, 2008; Chapman, 2009). This message was further emphasised on March 31, 2014, and April 13, 2014, when the Intergovernmental Panel on Climate Change (IPCC) issued its second and third working group reports respectively. According to these reports, CO<sub>2</sub> emissions have been continuously increasing, resulting in climate changes that need to be reacted upon quickly and dramatically, if humanitarian disasters should be avoided (IPCC, 2014, March 31; IPCC, 2014, April 13). Given the negative development in more than two decades, during which the main focus has been on making progress inside the market mechanisms, it appears unlikely that such initiatives alone are enough. In worst case, they may give us the illusion that we are actually solving the problems at hand and thereby take away the focus from doing what is necessary.

## **Critiques of socially responsible designs**

During the last decades, various socially responsible designs have been implemented. Many of these, however, have had minimal effect on a global scale, and some have even been questioned as to whether they are in fact doing more harm than good. Table 1 shows a small selection of the initiatives, the benefits of which have been questioned. It should be emphasised that it is not our purpose to assess if these criticisms are justified or not.

*Table 1 Examples of possible problems of socially responsible designs*

Initiative	Promoted as	Critique of initiative
Urban agriculture	A means to reduce negative effects of food transportation.	Allocating metropolitan land to agriculture results in lower urban density levels, which results in longer commutes, which is far more energy intensive than food transportation (Glaeser, 2011, June 16).
Green roofs	A particularly	Rainwater runoff from green roofs transfers the

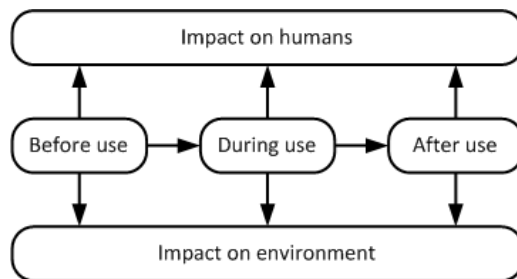
	convenient way of making buildings sustainable.	pollutants seized by urban vegetation from the atmosphere to the surrounding environment (Speak et al., 2014).
Electric vehicles	A less polluting alternative to combustion engine cars.	Electrical vehicles do not have a much lower global warming potential, but exhibit the potential for significant increases in human, water and soil toxicity (Hawkins et al., 2013).
Biofuel	A means to reduce fossil fuel need and pollution.	<i>The increase in the production of some types of biofuel may threaten biodiversity</i> ; some types of biofuels demand more fossil energy to produce than the fossil energy saved by using them (Groom et al., 2008; Pimental and Patzek, 2005).
Bio-degradable products	A means to reduce environmental impacts of waste.	Biodegradable products may not be more environmentally friendly when disposed of in landfills because of the methane gas they release when they degrade (greenhouse effect) (Levis and Barlaz, 2011).
Vegetarian products	A means to promote animal welfare and minimize environmental impacts.	The switch to vegetarian products implies an enormous need for palm oil and soya, resulting in massive carbon dioxide emissions, placing animals on the brink of extinction because of the need for plantations, and involving a heavy use of pesticides that contaminate ground soil and water (Audsley, et al., 2009; McCutcheon, 2013).
Vegan clothing	A means to minimize the need for (polluting) animals.	Vegan leather and faux fur creates toxic discharges that contaminate local air, water and soil; plastic-derived products are not fully biodegradable, leading to waste issues (McCutcheon, 2013).
Using less or more natural materials for packaging	A means to become more environmentally friendly.	Cutting back too much on packaging or using recycled material can result in damaged products during shipping because of smaller durability, which implies wasted energy and natural resources; the production process for a paper shopping bag, as compared to a standard plastic bag, demands more energy and water, and it releases more greenhouse gases (Porter, 2013).
Fish farming	A means to take off the burden on wild fish stocks.	Fish farms increase the spread of diseases and parasites in the wild ecosystems (Krkosek, 2010).



## Uncertainty in socially responsible design

As shown by the examples in Table 1, it seems that sometimes socially responsible designs fail to produce the intended effects and/or have unforeseen negative side effects. This phenomenon may be explained by the uncertainties related to the effects of any solution. If such uncertainties imply that solutions are chosen, which turn out to do more harm than good, we have what we in this paper term 'bear favours'. In order to frame this discussion, we shall first introduce a few definitions that will allow us to pinpoint the ways in which 'bears-favours' may originate and the likely causes and conditions of origin. These definitions will also help us in our discussion of the relevant ethical aspects pertaining to different cases.

The first definition focuses on defining the type of processes that can produce negative effects. In this context, a distinction can be made between impacts on humans and the natural environment, and another overall distinction can be made between the phases in the lifecycle of a product, building or service — i.e. 'before use' (manufacturing, transport, etc.), 'during use' (energy consumption, health issues, etc.), and 'after use' (disposal, recycling, etc.). These two distinctions produce six dimensions that are to be considered to gain a full understanding of the effects of a design. This is illustrated in Figure 1.



*Figure 1 Dimensions of socially responsible design*

The second definition concerns a distinction between focus and side effects, and one between direct and indirect effects. Focus effects refer to the effects that a solution aims to achieve, while side effects refer to other positive or negative effects. Direct effects refer to the actual effects of a solution, while indirect effects refer to the lost effects of another solution that the chosen solution takes the attention or resources away from. Using these two distinctions, four types of 'bear-favours' may be defined:

- 1) Negative direct focus effects: Aiming to achieve an effect in one area, but eventually doing more harm than good in this area. For example, using more fossil energy to produce biofuel than the saved fossil energy as a result of using the biofuel.
- 2) Negative direct side effects: Aiming to achieve an effect in one area, but by doing so, doing harm in another area. For example, using less packaging material to save resources, but in effect causing more products to be damaged, and thereby wasting other types of resources, as well as causing troubles for individuals and companies.
- 3) Negative indirect focus effects: Aiming to achieve an effect in one area, but by doing so, blocking for more efficient initiatives in this area. For example, focusing on certain types of alternative energy sources at the expense of more efficient ones.
- 4) Negative indirect side effects: Aiming to achieve an effect in one area, but by doing so, blocking for initiatives in other areas more in need of attention. For example, every time funds are given to sustainable initiatives addressing one area, at least in principle, it is at the expense of using these funds on initiatives addressing other areas, which some may consider to be more important.

These four dimensions are illustrated in Figure 2.

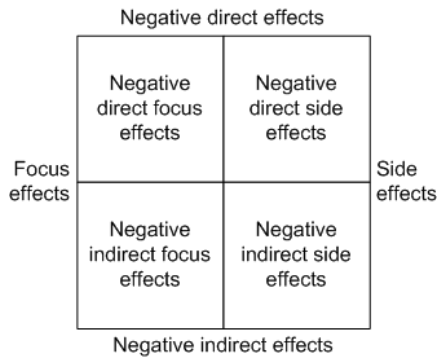


Figure 2 Types of negative effects of socially responsible initiatives

The third definition concerns the notion of risk, and it may help us understand why initiatives that produce undesired effects are carried out. According to Hansson (2004, p. 10), there is a tendency to use the concept of risk to denote any of the following: 1) an unwanted event that may or may not occur; 2) the cause of an unwanted event which may or may not

occur; 3) the probability of an unwanted event which may or may not occur; 4) the statistical expectation value of unwanted events that may or may not occur; and 5) the fact that a decision is made under conditions of unknown probabilities. It is not our goal to decide between each of these suggested usages that Hansson found in the literature, but it should be highlighted that risk, as it pertains to actions and their impact, can originate both in cases where the probabilities of different outcomes are known and in cases where they are not. Furthermore, for any action that is carried out, there is always a chance that outcomes different from those expected might occur. Some of the causes for this will be within our range of knowledge (safe range of prediction) and/or control, but some will not be. Because of the probability that can be assigned to each of these outcomes, there is a risk connected with the action, namely the risk of an outcome that was not intended by choosing that action. In worse cases, we may have a grasp of the possible outcomes of an action, but have no idea about the probabilities of the outcomes. In fact, there may be even worse scenarios, namely those where we do not have a full grasp of the possible outcomes of an action that we take. In those cases we do not know whether we have taken every possible harmful outcome into consideration (Sahlin and Persson, 1994). Although it may seem that such actions would be few and far between, it takes little imagination to recognize that in fact many if not all of our actions have uncertain outcomes. The causal chain initiated by any action stretches out in time, i.e. into the future where we (sometimes) have absolutely no clue what the long-term effects of any action might be.

In summary, there is a distinction between decisions (to act) under risk, i.e. those situations in which the probabilities of different outcomes are known in advance, and decisions (to act) under uncertainty, i.e. those situations in which the probabilities of different outcomes are unknown. According to Altham (1984), the ethics of risk cover both. In the context of socially responsible design, five types of uncertainties may be derived, as illustrated in Figure 3.

The first uncertainty refers to the decision as to which problems are most relevant to solve. Recognising that we have only limited resources, or that we are willing to invest only a certain amount of resources, a prioritization needs to be made. This kind of prioritization is obviously extremely debatable and raises issues such as how to prioritize short-term versus long-term effects and which people deserve attention the most. The risk of this uncertainty is that it may result in decisions that address certain areas at the expense of others, which we may later discover to be in more

need of attention. It may also result in favouring present or nearby present (in time) people over future people (Parfit, 1984). The second uncertainty refers to the knowledge as to what are the different means for addressing a problem. The risk of not knowing the full set of possible solution types is that less efficient means may be chosen at the expense of more efficient ones because the decision makers were not aware of their existence and therefore did not investigate. The third uncertainty refers to the direct effect of particular solutions. The risk of this uncertainty is that inefficient solutions may be chosen at the expense of more efficient ones. The fourth uncertainty refers to the total effect of particular solutions. The risk of this uncertainty is choosing solutions with negative side effects in the form of new problems on a similar scale as those they solve. The fifth uncertainty refers to the problem of comparing the total effects of different solutions. The problem of this uncertainty is that it involves a prioritization as to which positive effects are most desirable and which negative side effects are most tolerable — i.e. there may not be a general consensus about this issue, which can make it difficult to implement such initiatives. Thus, such uncertainties may imply be that solutions needed are not implemented in order to avoid what some perceive as being unacceptable negative effects. However, given that the problems probably cannot be solved without anybody having to pay a price, the emerging question is how we can make such decisions? This is to a large extent an ethical issue, which the subsequent section starts to address.

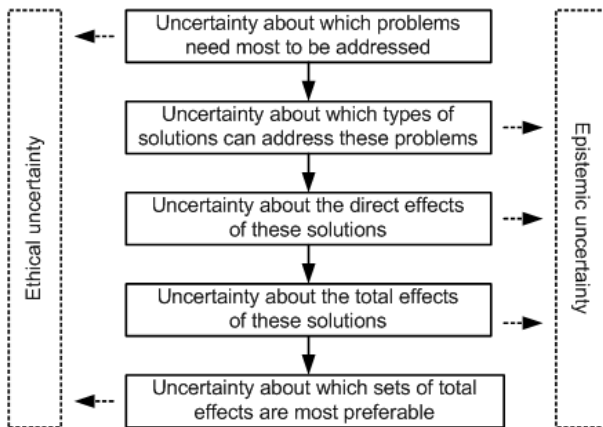


Figure 3 *Uncertainties in socially responsible design*

## **The ethical aspect of socially responsible design**

According to d'Anjou (2010), ethics in the design disciplines has essentially been articulated around notions that from an overall perspective correspond to Kantian (deontological ethics) and Aristotelian (virtue ethics) perspectives, where the Kantian perspective is the most common in relation to professional codes of ethics and practice. D'Anjou, in turn, argues that Sartre's view of ethics has to be seized as a possible foundation for design ethics. Although we sympathise with d'Anjou that it is unlikely that the solution of the deepest moral dilemmas may be forthcoming, we do believe that there is more to say, and that granted a more consequentialist oriented perspective, we can also make headway towards making better-founded moral choices in design. Broadly speaking, consequentialist ethics is based on the assumption that the morally right choice is the choice with the best outcome. This stands opposed to an Aristotelian view according to which a morally good choice is made when it is a product of good moral character, and opposed to a Kantian perspective according to which a morally good choice is a choice that is made out of regard for 'the moral law' (based on his idea of the categorical imperative). Which moral theory is chosen as the starting point is crucially important to define how we understand ethical responsibility in a design context.

The examples in Table 1 make vivid that in many cases the attempt to obtain outcome goal with ethical consequences of one kind has ramifications for an ethically important goal of a different kind. That we do have coexisting and sometimes conflicting ethical aims is not new, but it is not immediately transparent in neither an Aristotelian, nor a Kantian or a Sartrean view of ethics. On the other hand, a consequentialist ethics neatly captures our predicament as moral agents with multiple moral responsibilities and goals. Consequentialism is the ethical theory that tells you that the moral goodness of an action is a function of the consequences of that action. Consequently, the morally best action is the action with the best outcome. However, this generalised formulation does not define 'the scope of relevant outcomes' and what constitutes a 'best outcome', i.e. what the moral measure should be. In the variety of consequentialist theory being discussed, we find different candidates in the history of philosophy, for example Mill's utilitarian theory, which advise us to maximise utility, implying that the goodness of an act becomes relative to its effect on the total happiness: "actions are right in proportion as they tend to promote happiness; wrong as they tend to produce the reverse of happiness" (Mill, 1861/1979, p. 7), with happiness roughly defined as pleasure and absence of

pain. A related but more recent concept is that of wellbeing, sometimes understood in terms of 'quality of life'. From modern positive psychology we find the vocabulary of preference satisfaction, or simply satisfaction, measured on a scale from e.g., 1 – 10. In economics, outcomes are weighed against one another in terms of monetary value. Indeed, one of the major obstacles for modern economics is setting values for such diverse outcomes as environmental catastrophes, species extinctions, the pollution of a lake, and quality human life years.

It is apparent that there are significant challenges inherent to the view in terms of selecting a common measure for ranking outcomes against one another. On the other hand, the view both has the welcome consequence that it allows for ethical thinking in economic planning, but it also allows us to navigate ethically, when it comes to evaluating the moral goodness of certain design strategies over others, although those strategies have potentially multifarious outcomes with impacts on different aspects of human life and the environment (see, for example, Broome's (2012) discussion of discount rates in relation to environmental problems).

## Discussion and conclusions

Acknowledging that when we decide on which actions to carry out, there is a probability that the outcome of our actions is different from what we expected, which raises immediate questions about what the threshold of probability should be for deciding whether to carry out an action or not. This issue pertains to the level of evidence that is relevant to what the consequences of choosing a particular action are. Furthermore, depending on the badness of the possible outcomes of an action, it also raises the ethical question of what the threshold should be on the probability of a very bad outcome, in order for us to abstain from carrying out an action. The situation of course becomes worse, if it is admitted that for many, if not for all, of our actions there is a level of radical uncertainty, which means that we are never in a position to know if there is a possibility of a very bad outcome for all of our actions — and if that is case, what is the rational response?

When a design is aimed at achieving a particular good, or a good of a particular kind, the idea, generally speaking, is that by implementing one type or novel kind of design over another, we are likely to achieve a better outcome with regards to this perceived good than we would be by implementing the other kind. The goodness of a design, so to speak, in this picture is a matter of the good consequences that it brings about. As

highlighted above, the ethical theory that mirrors these assumptions is consequentialism. According to consequentialism, whether a particular design strategy or design is the morally right one, is determined by the actual outcome of that strategy. But, as we have been considering so far, any outcome is governed by some degree of risk — be it either in cases where probabilities of outcomes are known in advance or in cases of uncertainty. Thus, the right design strategy to initiate at any given point in time must be decided upon by the expected outcomes of implementation. This expected outcome is a function of the probabilities of possible outcomes. In cases where we can carry out a calculation of this kind (where the estimated probabilities are known), we can weigh the expected risk of a design against the expected benefits, granted that we have a way of quantifying outcomes, i.e. in measures of utility, wellbeing, money, etc. In traditional economic fashion we may conduct a cost benefit analysis of the situation.

First and foremost, the consequentialist approach requires calculations of good versus bad outcomes, together with a fairly fine-grained ranking of possible outcomes. These kinds of calculations require much information — a pressing issue is therefore the extent to which information of the required kind is available? Lack of information is one way to interpret the story about the bear and the gardener — i.e. the bear's actions being a result of the bear being epistemically limited or incompetent but not necessarily ethically incompetent. The bear, in many ways like us, has limited information as to the state of the world and as to which actions, brought about at any given time, have which effects. That fact that we are epistemically imperfect means that we have to rely on educated guesses and that we have got to take precaution when the situation calls for it. In the case of the bear, it might be that the bear had simply no experience with rocks and soft creatures (indeed with rocks and the effects of bashing them against surfaces at all), and thus had no clue of the impact that it brought about. When we are interested in socially responsible design, we are interested in designs that are precautionary in nature and which we consider likely to decrease the probability of (or to stop) developments towards certain undesirable outcomes or in other ways to contribute to an individual or a common good. In situations like these, we are (ideally) working with a well-defined value set — one that supports the ethical dimension of our design. Furthermore, we are working on the assumption that we are adequately informed about the causal mechanisms that underlie the processes that we

wish to manipulate, so as to make likely the wanted outcomes on the basis of the suggested manipulations.

However, if we keep the distinction pertaining to our epistemic situation separate from the normative requirements that pertain to realizing certain outcomes, we do not get the full picture. One thing is the norms that direct us towards realizing certain attractive goals, another thing is the norm that requires us to gather evidence of the, at the point of decision-making, unforeseen consequences of doing so. The adverse effects that any project aimed at a positive outcome may bring about, may, on the whole, make the very project one that we should abstain from engaging in. Also, cases with the absence of significant evidence, but with a possibility of a very negative outcome, are ones that we perhaps should not engage in, as advocated by for example the precautionary principle. However, when using the precautionary principle to minimize the probability of a harmful event, precautions should never be excessive. If so, there is a danger that the response to a perceived and plausible threat might be simply to ignore it. Of course this would not constitute an ethical action. In other words, not being willing to make sacrifices is not a valid excuse for not solving the enormous environmental and humanitarian problems we face. Finally, in cases where we have spent time to uncover the potential risks of a project, we are able to weigh risks and benefits against one another in ways that are, everything else being equal, more responsible. The key point here is evidence gathering and weighing in relation to the potential gravity of positive and negative outcomes that projects may have.

Socially responsible design is premised on the assumption that the values, which we have identified and seek to promote, are in fact the right ones to promote. But, of course, it is a rare occurrence that the benefits of a design can be harvested without any negative costs — and not all values can be put on the same scale, for example, the value of living a stress-free life, enjoying the benefits of beautiful surroundings, and the freedom to practice ones religion of choice or the religious value assigned to a plot of land. Furthermore, since the decisions carried out often have consequences way beyond those relating to the decision makers themselves, there are a number of moral questions that immediately present themselves in this connection. If a cost benefit analysis is carried out, and the benefits of a design is considered to outweigh the possible costs (i.e. the risk of harm), there may still be a problem if the harm befall a number of people who are not involved in the decision to implement the design in question —implying that we are putting people in possible harms without their consent. If



people, who are not decision makers, are potentially negatively affected by a design, they only carry the risk of the project without any expected benefit from it, which can pose a moral wrong (Altham, 1984). This is an issue that should be considered especially in situations in which potential 'bear favours' take on the form of indirect consequences, as this type of consequence is the one that we are most likely not to take into consideration.

When we isolate one aim, as the one to promote, or isolate a possible outcome as the most important to avoid, we are in serious risk of aiming blindly. However, often when we are interested in enhancing the good for that population overall, this at the same time decreases the goodness for particular individuals of that population, which again raises the issue as to how this should feature in a consequentialist ethics for socially responsible design? Such solutions include making the harmed persons' interests count relatively much, compensating the harmed persons in other ways, or choosing solutions implying that the ones with the highest living standards make the greatest sacrifices. If, on the other hand, we do not allow the goodness of the population to happen at the expense of someone inside or outside of that population, we can ask ourselves if it is possible at all to solve the problems at hand.

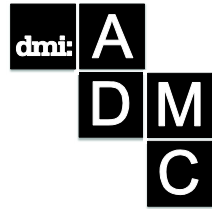
In summary, the discussion may be reduced to three overall arguments: 1) understanding the defined five types of uncertainties in socially responsible design is crucial for being able to choose the 'right' solutions and avoid choosing 'wrong' ones; 2) a significant explanation for the lack of results of socially responsible initiatives in recent decades is that we seek solutions with minimal negative harm to anyone (often economic or lifestyle related), and in this way we end up with solutions that are incapable of solving the environmental and humanitarian problems we face; and 3) a consequentialist ethics may help us to implement solutions that are undesirable to some people, but necessary for solving our environmental and humanitarian problems. Failing to recognise these messages may in effect imply that in our quest to make the world a better place we eventually end up doing more harm than good — either by unintentionally doing harm because of failing to deal with uncertainty issues, or by not doing what is needed in a long-term global perspective because of protecting certain interests or having a short-term perspective. In either case, although there are good intentions behind such actions, the results are 'bear favours'.

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## Achieving Responsible Design Within the Commercial Remit

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*Drawing on findings from research conducted in the UK and Ireland, this paper discusses what is required for responsible design goals; such as sustainable design, inclusive design and socially responsible design; to be addressed more widely within industrial design consulting. It posits that achieving an impact ultimately centres on commercial success, and to effect a positive change on society's greater needs, therefore, design consultants must create persuasive and appealing solutions which meet the demands of the commercial context, and which fall within the expectations of the client and market. The paper explores the individual designer's motivation and sense of responsibility to address society's needs; along with the set of challenges facing the management and pursuit of design practice towards those goals. From this, a series of areas with potential to improve the spread of responsible design are highlighted; including: empowering designers to argue cases more effectively; increasing the design consultant's sense of responsibility and intention to act; and improving the demand, recognition, and value these goals receive. The paper concludes that the success of commercial responsible design requires more sophisticated understanding, metrics and examples, which have greater relevance to business goals and the full set of participant parties.*

**Keywords:** *Responsible design; industrial design; design consultants; sustainable design, inclusive design; socially responsible design; social and sustainable design management*

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## Introduction

Since its origins, industrial design has been dependent on industry for its *raison d'être* (Heskett, 1980; Sparke, 1983; Meikle, 2001); however, since the mid-twentieth century, concern for the designer's role and tensions between serving commercialism or society have been evident, not least of all from designers themselves (Sparke, 1987; Whiteley, 1993). Author's such as Papanek (1971), Whiteley (1993) and Pirkel (1994) advocated industrial design's potential to have greater impact on larger societal issues; such as environmental concerns, ageing, disability, social inequalities, poverty, and diminishing quality of life. Recent growth in the awareness and exploration of these topics has reinforced the call for designers to exercise a positive influence beyond commercial goals. Ageing populations and the increasing number of older users are demanding that designers incorporate inclusivity and the needs of a wider population in their work. Similarly, the increasing importance assigned to social and environmental welfare, suggests that future designers will in part be required to refocus design more towards quality of life, sustainable systems and socialisation (Cooper et al., 2009; Lasky, 2013). However, while consultancies such as IDEO, Frog and Fuse Project have taken up the challenges to various extents, research has shown that for the most part larger societal issues are still extraneous to the daily activities of most industrial designers (Dong & Clarkson, 2007; Andrews & Robbins, 2010; Stevenson, 2013). This dulled response, and the misalignment between expectations and action, begs for further understanding as to:

- why more responsible design activities are not occurring;
- and what is required to bring about wider uptake.

This paper aims to address these queries with regard to industrial design consultants by presenting a discussion of the influences and challenges composing their circumstances.

### *Research Background and Methodology:*

The discussion presented in this paper is based on the findings from an EPSRC (Engineering and Physical Sciences Research Council) funded doctoral research project which investigated what affects industrial design consultants addressing more responsible design goals within their commercial remits. The research was undertaken in the UK and Ireland and consisted of two main studies. The first was an explorative workshop which ran as part of a national seminar organised by the Sustainable Design Network. 19 participants from academia and design practice were involved; including 3 leading authors in

the research field. Activities were primarily based around group discussion and were supported by a set of tools, including prompt cards and personas, developed from an extensive literature review. The second, and primary research study, consisted of a series of semi-structured in-depth interviews involving a total of 31 participants comprised of:

- 22 industrial design consultants; of which, 18 were managing directors, directors or sector managers; and 4 were senior or lower-tier designers
- 4 leading academics in the research area
- and 5 design-related strategic consultants.

The activities from both studies were recorded and transcribed in preparation for analysis in NVivo software. The data analysis process involved four stages: a line by line initial coding of the data in place; course coding into provisional groupings; fine coding using descriptive and thematic coding; and clustering to form constructs and themes (Boyatzis, 1998; Ezzy, 2002; Saldaña, 2009). The findings provided a thorough representation of the circumstances surrounding designers undertaking responsible design, and were formatted as in-depth portrayals of: the product creation context; the system of determining factors; and the antecedents to an individual's responsible design behaviour (Stevenson, 2013). This paper draws on the research outcomes to discuss the prospect of industrial design consultants undertaking responsible design more widely. It explores the realities of commercial product design and the challenges they raise, with the aim of informing efforts towards responsible design action and its management.

### *Responsible Design*

This discussion centres on the notion of 'responsible design', which is used to signify design that aims to incorporate broader societal issues; such as our ageing population, environmental crisis, diminishing quality of life and social inequalities. The term encompasses the key design movements directed towards those topics; including sustainable design, inclusive design and design for social responsibility, and is intended as an umbrella term for succinctness. It was also adopted to avoid the separation of the different goals; as there is no reason, for example, why sustainable design would not also aim to be inclusive. 'Responsible design' is used in this paper as a single descriptor to represent the potential for design to have a greater impact across the goals, and is intended to represent: *design which effects a positive change on the greater needs of society.*

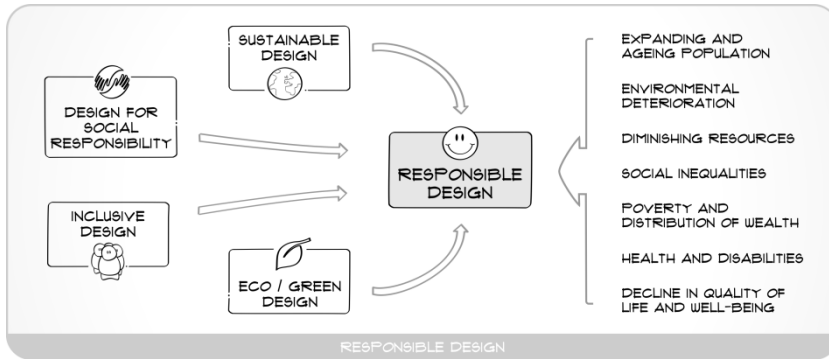


Figure 1 Explanation of responsible design

## The Demands of Commercial Product Design

Through the course of the research project, it was evident that a design consultant's potential to effect positive change centres on the products they design. Although designers can inspire or educate with the concepts or processes they generate, a positive impact ultimately rests on them contributing to more responsible products and services being produced, bought, and used; and as such, their efforts and success are firstly subject to the demands of commercial product development. The following section examines this to set the scene for the discussion that follows, and also to outline the key requirements that responsible design will need to overcome if it is to have effect.

### *Design Selection*

The basic and foremost requirement is for the consultant's (responsible) design to be selected by the client. It was obvious from the research that to achieve this, a proposal must appeal to the client, and their ideas of what is appropriate for the market. It must also be manufacturable and saleable within suitable costings; and moreover, it needs to be the best option in contention according to the priorities of the project. Such priorities include numerous factors as diverse as whether the product is on brand, to whether it has a sufficiently strong feature set in comparison to competitor products. However, the research participants explained that these details are not always apparent upfront, and that in many cases clients only find the means to communicate their preferences once they have something to react to. On the



other hand, participants also described how some clients will know exactly what they want, but in so doing are unresponsive to alternatives.

Ultimately, design selection comes from the client side, and as such, their interests and objectives constitute the crux of the process. Each aspect of a design proposal will need to appeal to the selectors and be recognisable to them as something of value, if it is to be chosen. The success of responsible design, therefore, is primarily dependent on gaining the client's approval, and will require design consultants to present persuasive proposals that are not only within the expectations of the brief, but which are competitive with other directions. It was also evident from the research, however, that at the core of consultants' actions is their wish to satisfy clients in order to maintain and grow their own business, and the work they present is unlikely to put that objective at too great a risk. In cases where the client has not assigned explicit priority to responsible design goals, therefore, consultant's may not wish to push for it.

### *Production*

Following its selection, a (responsible) design proposal needs to then survive through development with its intention intact. The research revealed that this is no mean feat given the array of potential influencers along the way; many of whom often have greater impact than the design consultant. Respondents stressed how procurement teams, for example, whose decisions are often dominated by cost concerns, can have a significant impact on the final version of the product produced. Similarly, manufacturers, or sales teams along with the background histories of previous projects, can have dramatic influence on a proposal's development. One design director explained:

*You talk about sustainability; materials from polymer to metal are getting changed ... We could do a lovely eco indicator and just tell them where to spend their time on materials, we could do all these -; but the Chinese manufacturer will go 'well, I've got this grade material' or 'I'll just use this reground material over here' ... It's still 'wild west'-like in these areas, however hard you try.*

Ultimately, the (responsible design) proposal needs to reach production if it is to have impact, and this is dependent on company decision-makers and financiers approving the investment required for tooling and manufacturing. Research participants emphasised that this can be substantially larger than the design and development budget, particularly where third party

manufacturers are involved. As such, the decision to go to production is a key *go-gate* in the process, typically driven by evaluations of costs, market opportunities, viability and risk; with the main assessment tending to rely on quantifiable measures. In simple terms, the (responsible) product will need to be recognised as sufficiently beneficial to business goals and potential profitability if it is to be taken forward. Both direct and indirect benefits are relevant, and in this regard, CSR (corporate social responsibility), brand image and customer opinion may gain importance for supporting responsible design proposals. However, these are relatively minor enablers. If deeper responsible design impacts are to be achieved, larger changes to product offers will need to gain approval, which will demand ample backing to gratify business evaluations.

### *Availability to the Market*

A further basic requirement is for the (responsible) design to actually reach the market. Where a client company is reliant on third party retailers and distributors, those parties will have to consider the product something they can sell and gain profit from if it is to be held in stock and gain 'shelf space'. The respondents explained that this depends on the product offer and price mark-up, but more significantly, on the retailer's perception of their customers' requirements and whether they feel the product will appeal to them. Participants stressed that it is not unheard of for retailers to have direct involvement in the design process, and they may even be the decider in whether a product is actually produced. One design director explained:

*... so the retailer might say 'sorry we're not going to accept your design, you may well think it's wonderful, but I don't think it'll sell'. ... so you've not succeeded in designing a [successful] product if a retailer isn't accepting it ... they've a lot of power.*

This serves to emphasise that achieving more widespread responsible design hinges on collective action and on an alignment of several perceptions from parties across the process; including customers, users, retailers, manufacturers, consultants, design firms, and the various members of the client company. Without a shared interest and willingness to embrace responsible design goals across all these groups, attempts towards it are unlikely to progress.

### *Purchase, Use and Engagement*

Finally, once a (responsible) design reaches the market, it should to be acquired and used, if it is to have effect. Although markets can be influenced; and possibly lead to some degree; each sale rests on a purchasing decision from a customer. This decision can incorporate aspects such as price, performance, features, ease of use, semantics and aesthetics; as well as the influence of trends, advertising, competitor products, and the psychology of the individual. Participants stressed that while designers can play a significant part in the lure of a product, many of the elements affecting purchase decisions can lie outside their influence (particularly if they have only a partial involvement in the product's development).

For a product to have any real impact on responsible design goals it should ideally be used for an ongoing period. Reasons for owning products, however, have multiple facets; including personal rewards; outward expressions; or even notions of identity (Barthes, 1972; Whiteley, 1993; Molotch, 2003; Sudjic, 2009). Moreover, many of these drives and desires are susceptible to regular change; not least of all due to the shifting influences generated by commercial industry. Business prospects often depend on this turnover of products, and clients typically commission consultants for the very purpose of helping to generate alternative options and new desires. If people's satisfaction persisted, or was based on sufficiency, and if products could last, and industry could blossom regardless; expectations of ongoing product engagement could be directed more towards the designer; but unfortunately, this is not the situation. Instead, responsible design will have to find a way to fit within the commercial context, and to satisfy the requirements it poses.

Figure 2 summarises graphically the requirements to achieve responsible design commercially, as discussed above.

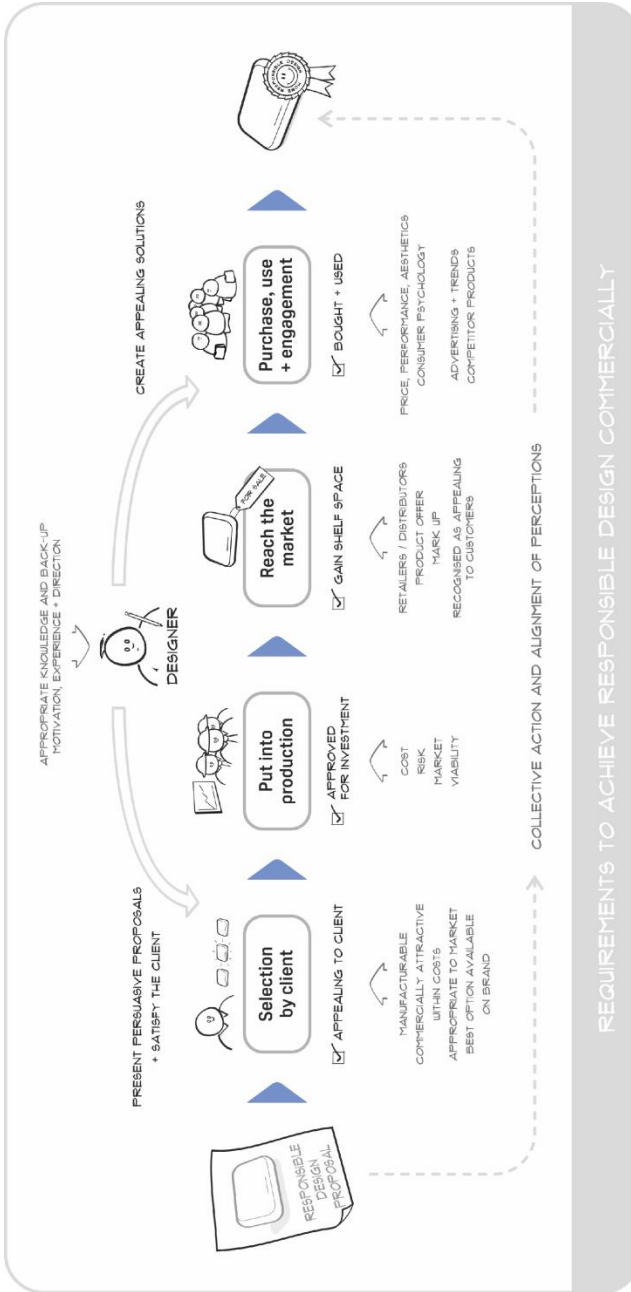


Figure 2 The requirements to achieve responsible design commercially

## **Achieving Responsible Design Commercially**

The product development milestones described above outline the vital steps for a product to gain success, and they indicate what is required if consultants are to have effect, regardless of whether the goal is responsible design, sustainability, or promoting a preferred styling direction, for example. The distinct difference, however, is that certain goals; such as those related to aesthetics or usability; often align more easily with business objectives and commercial success. Those goals relate well to attracting the purchaser; they have a perceived value more readily recognised by the various parties involved; and they are also more central to why design consultants are typically commissioned. For responsible design goals to be regarded in a similar manner, products would have to be considered attractive and commercially viable because they are responsible. The research indicated this is not the case, and that it would require significant change in the mind-set and perceptions of not just consumers, but of each of the parties involved in the product's creation (clients, manufacturers, retailers and designers). Participants stressed that given the motives currently driving product production and purchase, this is likely to be a slow change, and it is improbable that responsible design will become a dominant driver. Instead, it was clearly apparent that if responsible design is to achieve greater success (within a profit-oriented system) it will need to do so in addition to being commercially attractive and meeting the milestones above. As such, achieving the goals should be at little or no additional overall penalty, and preferably with added benefits for the client's business. Extra time or cost incurred would need to be justified by demonstrating the opportunity for return, and the overall design proposal will need to be sufficiently appealing from a business perspective.

Another point raised in the findings is that if responsible design is to occur, it either requires clients to accept it; or alternatively, for the designer to operate stealthily and possibly circumnavigate any need for persuasion. The latter approach, however, seems limited in its reach and unsuitable to longer-term action as greater impact on society's needs requires more weighty changes in products, which is unlikely to be achieved unbeknown to the client. Any significant movement towards more widespread responsible design, therefore, will require clients to share in responsible design concerns; or at least be receptive and then persuaded of their importance. The consultants interviewed explained that all too often, however, a client's approach to product creation is heavily dominated by comparison with competitors, or considerations of cost, price and features. As such, justification for responsible

design approaches will also need to overcome existing mind-sets, and the resistances to change and risk which the respondents stressed occur. Central to this persuasiveness is the need for sufficient back-up, but participant consultants expressed that there is a lack of supporting evidence or suitable metrics to help underpin proposals and to help them persuade clients. One director provided the following explanation which summarises well the overall difficulties:

*... there are probably far too many designers who just don't get it at all, in terms of their responsibility for the downstream impact of their actions. But for those of us who do get the responsibility ... there is a duty there to push and nudge and try and get better behaviours. But there's a very crystal clear line which is that when we've tried pushing - it can be as simple as trying to not paint phones - we'll just hit a brick wall because the knowledge about the impact is too fuzzy; you're not quite sure what the recovery value chain looks like and so you're asking your client to potentially compromise the immediate saleability of their product in order to take a very long, odd, uncertain bet that somebody in the future might actually benefit from that. Now that kind of choice will never be won. That's just a dumb choice.*

It is clear from this that if responsible design is to progress in the commercial sector it needs to relate to the workings and objectives of that sphere. It is understandable, therefore, that there is often a focus in the literature on the commercial benefits afforded by the different approaches; such as how inclusive design broadens available markets, or ecodesign provides cost benefits (Tischner & Charter, 2001; Dong et al., 2004; Bhamra & Lofthouse, 2007). However, it was apparent from the research findings that more appropriate and reliable information is still required in order to support any significant change.

## **Motivation to Undertake Responsible Design**

The individual designer's interests and motivations constitute the main determinant in whether they will pursue responsible design goals as part of their design activities. Ultimately, if responsible design is to be enacted to a greater extent, it needs to be an intrinsic part of designers' thinking and intuition, as well as their methods for understanding problems, posing solutions, and making judgements and evaluations. It was evident from the research participants, however, that they hold clearly different views on what

constitutes a contribution to society's needs. Some appeared to only regard the segment of society they themselves belong to; while for others, reducing annoyances, or adding beauty and convenience to peoples' lives was felt sufficient. Some, however, saw their role simply as serving their clients' needs: *'I see my job as helping my clients achieve what their objectives are - trying to do it in the best way from a design point of view'.*

Such outlooks may be due to how challenging it is to pursue responsible design goals; but they also suggest a possible shortfall of awareness, knowledge, interest or connection to the topics. It was clear from the research that overall design consultants act predominately in response to the requirements of their clients and those of the design firm they work for. Despite their drive to push boundaries, a consultant's outlook is affected significantly by what they are led to prioritise, and what is expected of them in their role. One designer explained:

*As a working consultant, I am ultimately reliant on the philosophy of the company; the design consultancy, that I work for. ... [As a consultant] your ambitions are always mitigated by your responsibilities to the client's perspective.*

The research demonstrated that responsible design goals typically occupy a low priority in the commercial setting (if at all), and it was apparent this has a large influence on designers' motivations to undertake them. Even when consultants are willing to challenge briefs or question assumptions, they still tend to do so for the good of the product and ultimately, for the good of the client. But responsible design hinges on other interests, additional to those of the client, also being represented.

Levitt and Dubner (2005) highlight that humans respond to incentives, and it is pertinent to ask why design consultants would take on responsible design, or what their incentives are for addressing it? Where clients make requests for it, there is an easy response; however, the research indicated that this is rare, and it is curious why designers would try to take it on in those other cases, particularly where it is not at all valued by the client. Moreover, there are ample avenues facilitating consultants to turn a blind eye or abdicate responsibility; such as role morality, or the immunity afforded them by acting as a consultant (Gibson, 2003; Owens, 2006; Stevenson, 2013). The research findings indicate that most uptake of responsible design (outside of legislative requirements) seems predominately driven by designers wishing to gratify their own personal values and altruistic or prosocial tendencies. They pursue it because they have sufficiently strong feelings that it is the right thing to do.

In their theories on altruistic behaviour, Schwartz (1977) and Geller (1995) propose that prosocial actions originate from an individual actively caring; and that they are driven by awareness of the consequences of their actions, and their ascription of personal responsibility for those consequences. The research findings demonstrated that this motivation varies greatly with each designer. It was also apparent that their motivations to enact responsible design are not only dependent on character, background and experience, but also the social norms and interactions that inform their ideas and values (Stevenson, 2013). These external influences are relevant both because designers function as part of a larger product creation system; and also because they plug into the social context and zeitgeist to inform their designing.

A central part of this is the value and priority responsible design goals receive in comparison to the other aspects of product design; such as aesthetics, novelty, innovation or use of technology. This also relates to what is considered 'good design', and links to the various evaluators of design; from awards, to advertisements, to the media; each of which contribute to informing designers (and the other parties involved). Unsurprisingly most people; especially designers; are seduced by the more desirable aspects of design, such as aesthetics or new technologies, and accordingly these attract more attention and appreciation. Furthermore, in many sectors; for example consumer electronics; those more desirable facets tend to be the primary reason for a product existing at all. Either way, it is unlikely that responsible design will trump aesthetics, brand or technology in what people favour. Its success, therefore, relies on designers being sufficiently motivated, not only to overcome restrictions and challenges, but also to overcome their attraction to the other more 'desirable' facets of design enough to incorporate it as an additional objective.

The key issue is the balancing or resolve of the multiple requirements of each project, and to what extent the needs of a broader society are included. How responsible design goals are incorporated into the designer's thought process is central. For example, if the goals are at a foundational level in how the designer approaches a design task, there is the potential for a more fundamental impact than if they are an ancillary consideration later in the process. This highlights the importance of nurturing responsible thinking as early as possible in an individual's development (even before they are directed towards design).

Reflecting on the research, however, it was discernible that there is a shortfall of external influences effectively promoting responsible design in the



commercial setting. Many of the mechanisms that do exist; such as conferences and publications; rely on voluntary uptake (requiring a pre-existing interest or concern) or tend to occur more in the academic sphere, which is typically apart from professional practice. In the documentary film 'Objectified' (Hustwit, 2009); Valerie Casey, while discussing the formation of The Designers Accord, relates an anecdote of discovering a toothbrush they had designed washed up on a holiday beach in Fiji. Without comparable moments of realisation and cause to redress, it is questionable whether many designers will contemplate or revise their standpoint, particularly because they do not often have the time or capacity to monitor and review their own broader situation. This is worsened by the fact that the majority of drivers in their daily working lives direct them towards business targets, and there is little to direct them towards prosocial concerns.

One possible disruption is the waves of younger designers graduating from design courses with an increasing regard for the topics. Educators have a crucial influence in the early stages of a designer's development; however, their impact can dwindle as a career progresses and as the designer's views alter with the complexities of the commercial world. While it is fair to assume that the growing attention responsible design topics receive in education will aid progress, it is also important to identify that without ongoing reinforcement, those ideals may not survive in a commercial setting which responds differently than the university institution. The research identified that where a personal interest does exist, it is important to sustain it. Motivated designers will need to gain a level of belief that progress is possible, or that the goals are achievable in some measure. One consultant designer commented: *'I want to make sure I'm toiling away in an area that's going to make a difference'*. This relies on the availability and communication of evidence which demonstrates progress and positive outcomes. Moreover, the topics need to sustain their importance. There were warning signs in the research that if designers perceive responsible design goals as transient topics, they will be cynical or slow to give them real consideration.

On the other hand, the topics have only been identified relatively recently, and it was also apparent from the findings that a greater understanding and knowledge needs to be established if responsible design goals are to receive consultants' further attention and application. Participants were quick to highlight the need for clear, consistent, and useful guidance which is appropriate to how they work; and more importantly, which they can have confidence in. Professional, or regulatory bodies are one potential anecdote. Were they in force, they could provide guidance and precedents for what is

expected from designers while also offering a conduit for imparting the required knowledge and information, once it is generated. In the UK, however; despite recent progress in the growth of BIDA; there is as yet no significant influence from this direction. As such, the main onus remains on the individual designer and their personal drive or altruistic motivations.

## Potential Leverage Points

Reflecting on the outcomes of the research, it is possible to identify a set of opportunities or leverage points to potentially improve the uptake of responsible design. Many of these require further investigation to be effective, and as such, they also represent potential areas for future research.

A first consideration would be to look at increasing designers' motivation and intention to address larger societal issues. Improving their awareness of the topics is an obvious point of departure; however it is widely accepted that an increase in knowledge alone does not directly lead to pro-social behaviour (Grob, 1995; Kollmuss & Agyeman, 2002; DEFRA, 2008). Instead, it is the designer's overall sense of responsibility which is crucial. Behavioural theories advise this will depend on personality factors and an individual's altruistic tendencies (Schwartz, 1977; Hines et al., 1987; Geller, 1995), and further exploration would be beneficial to understand how these may be influenced. The designer's motivation to act is also affected by their sense of enablement; their past experiences; and the social norms and incentives that inform them (Triandis, 1976; Bagozzi & Warshaw, 1990; Jackson, 2005). One key opportunity therefore, is the general recognition the goals receive, and more importantly the value assigned to them in comparison to other design objectives. In addition, stronger demonstration of success through case studies, clearer knowledge and suitable metrics would also support a greater sense of being able to have effect; while also aiding designers to recognise when opportunities do exist. Disseminating this understanding to practicing designers in a mode appropriate to their needs is also a challenge requiring more attention.

Another main avenue of approach is to help increase the demand for responsible design, both from the consumer, and the client. This begins with identifying and marking existing interest or support more clearly. It would also include finding better ways to communicate in business terms what is to be gained from responsible design. Success in this area likely relies on providing suitable metrics or measures to demonstrate effects. More importantly, responsible design could be better enabled by encouraging designers not just to

enact what is required of them by their clients, but to assert greater leadership, particularly towards societal issues. The topic of role assertion is a complex area, which has had little exploration in relation to this subject. At a basic level, however, improving the designer's potential to influence their clients would again benefit from broader availability of case studies and other forms of evidence to back-up arguments. Progress towards industrial design's professional status would also improve the designer's credibility, and by extension their possibility to have greater influence.

## **Conclusions**

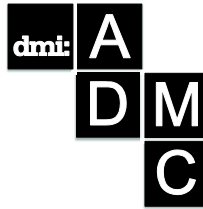
Achieving responsible design impact ultimately centres on product outcomes, and to effect a positive change on society's greater needs, design consultants must create persuasive and appealing solutions which fall within the expectations of the client and market, and which meet the demands of the commercial context. The success of commercial responsible design relies on more sophisticated understanding, metrics and examples, which have greater relevance to business goals, and the key participant parties. If it is to gain broader uptake, designers require consistent knowledge and guidance, which is appropriate, and which they can have confidence in. In addition, responsible design's success is critically dependent on designers' awareness and motivation to take on the topics; particularly their assertion of responsibility towards the larger consequences of their design work; along with their willingness to recognise and avail of the opportunities that do exist.

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## Designing For or Designing With?

Helena KRAFF\* and Eva Maria JERNSAND

*A major challenge for social design is related to roles, and the relationship between designers and those that a design proposal is intended for. Human-centred design processes are supposed to start with the people we are designing for. However, by using the phrase “designing for” instead of “designing with”, it is implied that something will be delivered, rather than created in collaboration. Similarly local stakeholder ownership is often highlighted as important. Yet, the underlying framework is most often set by a design team: it is they who set the topic, own the tools, and therefore have control and power over the process. It needs to be recognized that by doing so, alternative views might be pushed back, and we might not notice what topics are left out or who is being excluded. The purpose of this paper is to contribute to a more nuanced discussion of social design by problematizing the concepts of local stakeholder ownership, roles and power. This is done through a critical reflection of the authors’ own active involvement in a social design project in Kisumu, Kenya.*

**Keywords:** *Social design, participation, roles, process ownership, critical reflection*

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## **Introduction**

*For about one and a half year we worked with a social design project in Dunga beach, Kisumu, Kenya. In the process local organisations and residents participated in the development of ecotourism concepts, products and services. When reporting the project we have highlighted the positive aspects of working in a participatory manner, and how this allowed for a democratic and transparent process, however after a while this rather optimistic focus started to feel uneasy. We wondered if we weren't merely justifying already pre-set assumptions, and at the same time suppressing the complexities and challenges that we knew were there. Further the aim of the process in Dunga had been to reach local stakeholder ownership, but since the underlying framework was set by us as researchers, and since it was we that owned the tools, did that not mean that we had been working against this goal?*

In the same way as in the reflection above, other scholars have acknowledged challenges related to social design, for example that “the ideas behind it are rarely discussed critically” (Steen, 2013, p. 16), and that even though user involvement is seen as crucial, it is treated as unproblematic (Bödker, 2006). Also, since projects often involve underprivileged communities (Lasky, 2013) that might not have appropriate social safety nets, there is a need to move away from traditional “consultancy models” (Botero & Saad-Suulonen, 2013, p. 9). If the results of projects are to alter living situations, questions need to be posed in regards to how the population in question will be affected. Will they win or perhaps even lose out (Hamdi, 2009)?

The purpose of this paper is to contribute to a more nuanced discussion on social design, by problematizing the concepts of local stakeholder ownership, roles and power and at the same time being aware that we will only be able to discuss a fraction of the complexities that these concepts entail. First we present an overview of the current discourse on social design, with an emphasis on challenges and tensions, as acknowledged by scholars in and outside the field. This is followed by a description of the empirical case, which is then used to critically reflect on our own involvement in the process. Finally, we conclude by discussing areas for further exploration.

In order to critically reflect on the empirical case, the methodology used is a problematization approach (Alvesson & Sandberg, 2013). The aim is to question and see beyond the dominant and already established, to challenge our “theoretical position” (Alvesson & Sköldbberg, 2000, p. 246), as well as to reflect

through alternative and opposing theories. By turning our gaze to the researchers' person, the research community as well as to society as a whole, the empirical material is reflected upon on multiple levels (Alvesson & Sköldbberg, 2008).

## Theoretical framework

Social design projects, where local stakeholders are involved in the process, have their roots in participatory design practices. In 1971 the first major conference on participatory design was held in Manchester, where for example Nigel Cross (1972, p. 6) expressed an urgent need of methods for citizen participation in design and for architecture and planning, as a way to eliminate "many potential problems at their source". At about the same time participatory design emerged in Scandinavia, where industrial workers were involved in the development of their workplace (Ehn, 1993; Björgvinsson, Ehn & Hillgren, 2012). Participatory design was then founded on two principles: The first dealt with democracy and the notion that the actors influenced by a design should have a say and be involved in the process (Björgvinsson, Ehn & Hillgren, 2012). The second was that the industrial workers' professional skills were seen as an important contribution for successful design solutions (Ehn, 1993). As Ehn (1993) points out, it was not only the workers that were seen as participants but also the designers, in a process entailing common efforts and mutual learning. The breakthrough of participatory design was connected to the introduction of a "design-by-doing approach", where prototypes, mock-ups, and scenarios were used (Ibid, p. 58) that enabled workers to "express in action" what might not be possible to state merely with words (Ibid, p. 67).

Since then participatory design practices have evolved and moved from focusing mainly on workplaces towards being "increasingly engaged in public spheres..." (Hillgren, 2013, p. 76), through projects all over the world (Bason, 2013). This includes projects within for example, health care, education, crime prevention, and community development. Focus has also moved from being mainly set on products, toward a focus on designing for "people's needs or societal needs..." (Sanders & Stappers, 2008, p. 10). As a result of this development there has been "a growing interest in design for social good..." (Bason, 2013, p. ix) with conferences, doctoral courses, exhibitions, and academic as well as non-academic publications discussing the topic. This has also led to the emergence of an abundance of terms, such as *interaction design*, *service design*, *transformation design*, *design for social innovation*, *socially responsible design*, *human centred design (HCD)*, *empathic design*, *public*



*interest design* and *social impact design*. Common to all of these terms is the participation of concerned stakeholders, although they differ in their approaches. Sanders (2006, p. 5) see a division between a user-centred and a participatory approach. The former is characterised by an expert mind-set, where the involved stakeholders are seen as subjects, informers or users, and where the designer designs “for people”. The latter is a participatory approach where participants are seen as co-creators throughout the process and where focus is on designing “with people”.

In this paper social design is used as an umbrella term for all of the above-mentioned types of participatory design practices. The following section gives an overview of challenges acknowledged by scholars within the field of design, as well as challenges acknowledged by Nabeel Hamdi, from the neighbouring field of participatory architecture and planning. Further the criticism raised by scholars from social geography, social anthropology and political science in regards to participatory development is highly relevant to social design, which is why this is also brought into the discussion.

### *Tensions and challenges - as seen from the field of design and neighbouring fields*

Scholars and practitioners within the field of design have pointed out challenges related to the complex nature of social design projects. Bödker (2006, p. 5) mentions a “lack of reflection or reflexivity on behalf of designers...”. At the Social Impact Design Summit in New York in 2012, a main goal was to explore challenges and issues in the field. In the resulting White paper, it was proposed that designers need to “tread sensitively” in order not to provide communities with “ineffective or inappropriate efforts, or even creating real harm” (Lasky, 2013, pp. 22-23). At the same time it was acknowledged that there is a lack of “standards and ethical guidelines” (Ibid, 2013, p. 6). Further, Otto von Busch (2013) pinpoints some crucial challenges in regards to participation, which are interesting to explore further: Who is included and who might be excluded? Who benefits? Does everybody want to participate? And for whose interest are we as designers working for?

A major challenge that has been on the agenda for a long time is the notion of roles and the relationship between designers and those that the result of a project is intended for. In the 1970's it was argued that we need to “blur the current distinctions between ‘designer’ and ‘user’” (Cross 1972, p. 6), or even reverse the roles (Roy, 1972) since “participation in any radical sense is about giving all the people access to the tools, resources and power which have been the jealously guarded prerogatives of the professionals” (Cross, 1972, p. 11).

Banham (1972, p. 18) mentioned that when people can “invent their own rules of the game, then I think design participation is getting somewhere”. This can be seen as an early attempt to allow process ownership to be with the users, however we could question how much has really happened since then. For example in 2011, Steen (2011, p. 55) mentioned that it is easy for designers to interpret projects narrowly, stay within their own comfort zones and “privilege their own ideas and experiences, over users ideas and experiences”. In 2013 it was argued by Staszowski and Winter (2013) that we need move away from the user-centred approach where users are seen as subjects. Further a common goal with participation that involves local communities is to aim for local ownership however, Jégou Delétraz, Massoni, Roussat, and Coirié (2013, p. 141) point out that even though users might be highly involved, it is mainly the designers that “interpret and transform the results/.../into ideas and vision”. This indicates that if we are to move away from a user-centred approach we need to adapt our mind-set and see the potentials of a “dynamic exchange of knowledge”, (Amatullo, M. in Lasky, 2013, p. 22) where the process is “seen as a two-way street, where we learn from each other...” (Amadei, B. in *Ibid*, 2013, p. 22).

If we look to the neighbouring fields of participatory architecture and planning, Nabeel Hamdi has highlighted challenges similar to the ones discussed by design scholars. Hamdi (2010, pp. 85-86) sees a need to “reflect more thoroughly on some practical theories that underpinned it all – to get up to date with some of the latest thinking on the strengths and pitfalls of participation, before moving on”. He also mentions how colleagues sometimes feel uneasy about their presence in a community. They wonder what roles they are actually playing, when to intervene and when not to, and if “intervening can become interfering” (*Ibid*, 2010, p. 85). Hamdi raises the issue of roles by not calling himself an architect or planner, but a development practitioner, a title that includes everybody: people, inhabitants and communities. Likewise, he quotes Rose Mulokoane of the South African Federation of the Urban Poor (FEDUP), saying: “Don’t call us beneficiaries. Don’t call us end-users. We want to be your partners” (*Ibid*, 2010, p. 92). Further, referring to John Gaventa, Hamdi (2010, pp. 85-86) sees the need to view participation not as an invitation but as a human right, by “[e]xtending the concept of participation to one of citizenship...” (see Gaventa, 2004, p. 29).

So far we have discussed challenges as seen from within the field of design and from the neighbouring fields of architecture and planning. If we broaden our view and look beyond these fields we find harsh criticism that challenges the whole concept of participation.

### *Tensions and challenges – as seen by scholars in other fields*

Outside the field of design, scholars in for example social geography, social anthropology and political science have raised criticism towards participatory practices and participatory discourses generally and to planning and development projects that deal with social and economic marginalized groups in particular (Cooke & Kothari, 2001). The critique is often targeted at Participatory Rural Appraisal (PRA), which has many similarities with social design, for example in regards to the methods and tools used to reach participation.

It is argued that participation has “become an act of faith in development, something we believe in and rarely question” (Cleaver, 2001, p. 36), and that project workers are “naive about the complexities of power and power relations” (Cooke and Kothari, 2001, p. 14). It is not enough to merely analyse project activities, rather focus needs to be put on “power dynamics, on patterns of inclusion and exclusion” (Cleaver, 2001, p. 54), and participation needs to be linked to bigger issues such as democracy and anti-imperialism (Mohan, 2001). Cooke and Kothari (2001, p. 15) see a lack of rigorous and critical self-reflection, but at the same time argue that “authentic reflexivity requires a level of open-mindedness that accepts that participatory development may be inevitably tyrannical, and a preparedness to abandon it if this is the case”.

It is mentioned that project facilitators from the outside shape the direction of processes, since it is they who “own the research tools, choose the topics, record the information, and abstract and summarise according to project criteria of relevance” (Mosse, 2001, p. 19). The risk with this is that the local communities that are involved might shape the way they “construct their needs” in order to be able to take part (Mosse, 2001, p. 20). Also the nature of participatory projects enable project leaders to step back and act merely as facilitators, which means that the responsibility of the results are moved from the development agency to the people that participate (Henkel & Roderick, 2001).

Further, it is argued that the notion of empowerment is treated as unproblematic, that it is “often unclear exactly *who* is to be empowered...”, if it is the whole community, individual persons or certain marginalised groups (Cleaver, 2001, pp. 37-38). Community empowerment might not actually mean that everybody is empowered since “some individuals or groups have the skill or authority to present personal interests in more generally valid terms, other do not” (Mosse, 2001, p. 21). Instead, according to Kothari (2001), participation can lead to that already strong groups gain even more control. It is even questioned if participation really leads to empowerment at all, since even

though participants “draw their own maps” during a workshop, the underlying framework where it is decided that a map is suitable for depicting local needs, has been decided by outsiders (Henkel & Roderick, 2001, p. 182). It is also mentioned that participatory projects often carry symptoms of ethnocentricity, with a language including terms such as community and local people, that stem from a “colonial anthropology”, where distinctions are made between “‘them’ and ‘us’” (Cooke, 2001, p. 105).

The above discussion highlights participation as highly problematic. Mohan (2001, p. 167) however, do mention an exception to this negativity, a Village Aid (VA) programme that went “beyond participation” since it was the local community that set the framework whilst the outside agencies took on a responsive role (Village Aid, 1996, p. 8, see also Mohan, 2001, p. 167).

## **Description of the empirical case**

The empirical case addressed here has been funded by Mistra Urban Futures (MUF), an international centre working with sustainable urban development. MUF has a Local Interaction Platform in Kisumu (KLIP), where researchers and PhD students from Jaramogi Oginga Odinga University of Science and Technology, Maseno University and the University of Gothenburg work in a transdisciplinary manner with the aim to produce knowledge and practical results through cooperation between academia and society. The overall theme of sustainable urban development has been narrowed down to two focus areas, of which one is ecotourism.

Kisumu is Kenya’s third largest city, and face challenges such poverty, poor waste management, and an underdeveloped infrastructure. Researchers within KLIP have identified ecotourism as a possibility to “enhance environmental conservation, promote preservation of cultural heritage as well as to provide an alternative source of sustainable livelihood” (Hayombe, Agong, Nyström, Mossberg, Malbert, & Odede, 2012, p. 158). Through KLIP, connections between researchers and the county government have been initiated, and research is seen as an important influence on policy.

Researchers at KLIP have identified potential areas for ecotourism development, one of which is Dunga Beach, situated about six kilometres from Kisumu city. In Dunga the majority of the inhabitants belong to the Luo community, and the languages spoken are mainly Dholuo and English. Due to its closeness to Lake Victoria, 80% of the community relies on the lake for their income, working as fishermen, fishmongers, boat builders, and related jobs. However, the state of the lake is a cause for concern due to the decrease in fish

stock caused by overfishing, pollution and the infestation of the water hyacinth. This makes it crucial to find alternatives for livelihoods, and ecotourism is seen as an opportunity to do so.

In the early 21st century two community members from Dunga found an interest in ecotourism after attending a workshop organised by the Ecotourism Society of Kenya. They saw an opportunity for Dunga to develop and decided to start a local tour guide organisation, a group that has now grown to include 16 members from the community. In Dunga there is a community-elected Beach Management Unit (BMU) in charge of land allocation, which works to improve the general situation of the community. There is also the non-governmental organisation (NGO) Ecofinder Kenya that focuses on education and conservation regarding the lake, its adjacent wetlands, and the village.

The fieldwork was carried out over a period of one and a half years, with twelve weeks spent in Kisumu spread over four occasions. Our key contact and closest collaboration partner was the tour guide organisation. Residents from the community participated in three workshops in the initial stages of the process, which focused on mapping of stakeholders, the identity/identities of Dunga and hopes and fears of ecotourism development. These were combined with an available project space at a central location in Dunga, including a project wall and a suggestion box. Four public presentations were also held, and three reports have summarised what was going on in the process. The reports included issues and ideas that had been generated through the participatory workshops, our interpretation of the place, as well as theories and inspirational examples on tourism development. Further, in order to develop some of the ideas, four workshops were held with the tour guide organisation (one of them conducted over a period of three days). In most of these workshops, two or three community members attended as well as local craftsmen or craftswomen. The workshops resulted in for example, a signage system, a recycling point and a test of two full day tours, one with national tourists and one with international. The tours included fishing, cooking local dishes, stories of the local culture and making craft products of water hyacinths. In addition to the tour guides, local restaurants, craftsmen and women and members of the community took part. For example, a community elder participated as a storyteller.

The research material also included meetings, observations, questionnaires and informal talks in Dunga. Also comparative studies, and interviews with local and regional tourism officials were conducted. At the end of the process, we interviewed the local organisations and members of the community to inquire how they had perceived the process and the activities in it.



Figure 1 Sign and recycling point under construction



Figure 2 Craft activity during test of full day tour

## **A critical reflection of the empirical case**

### *Working with a pre-set framework*

One of the reasons for working with Dunga was that they had a local tourism business in place, where the tour guide organisation worked actively with ecotourism development. This meant that ecotourism was not a concept that was introduced by us as researchers. However we failed to problematize our definition of the concept, taking for granted that our interpretation of it and that of the tour guide organisation coincided. Apart from our view on ecotourism we also brought in the concept of participation, and our pre-set assumptions that participation is inherently good, suitable for any context, and any purpose, in this case to develop ecotourism in Dunga. Referring to Cleaver (2001) it was something that we believed in so strongly, that it did not even occur to us to question it.

In initial meetings and a workshop with our key contacts in Dunga, issues such as appropriate ways to involve residents, if it was okay to take photos in the village and how these photos would be used were discussed. However, these issues could be seen as minor, whereas the overall framework of participatory ecotourism development had already been set by us as researchers, and was not discussed.

Further, we failed to consider if the concept of ecotourism was accepted by the whole community, and we did not take the time to explore what they felt, thought or knew about the concept. Instead, the topic in one of the first participatory workshops where residents participated was identity, which was considered a basis for ecotourism development, and since this choice derived from our already pre-set framework, we could argue that this topic was imposed on the participants. In other words, we the researchers, as Mosse (2001, p. 14) mentions, intentionally “shape[d] the direction of the process”. Thus what could very well have happened was that the people of Dunga felt the need to “construct their needs” (Ibid, 2001, p. 20) in order to be able to participate in the project.

Here we can question what would have happened if we had started without our set agenda of ecotourism and participation. What if the process had been held open initially, so that the residents and local organisations could have shaped the project according to their needs and desires? What would have happened if we had been there to support residents and local organisations in charge of their own process, right from the start? Or what if we had not been there at all? Would other actors then have taken over, developing the site with

their own goals in mind? Did we create harm through our efforts, a possibility suggested in Lasky (2013), or did we prevent harm?

### *Local process ownership?*

By working in a participatory manner, we hoped that the process would strengthen the community and local organisations, thus enabling them to feel that they had ownership of the process. Nevertheless, even though it was what came forth during workshops that established the content and direction for coming activities, and even though the set-up of the workshops was changed after discussions with the tour guide group, these changes were negligible, such as number of participants, venue and schedule for the workshops. It was we researchers that chose the main topics, elaborated upon, and designed the workshops, which all went in accordance with the project frame (Mosse, 2001). Taking a critical stance here, we could say that even though the workshops and activities were participative, the framework of the workshops was not (Henkel & Roderick, 2001).

The ideas that were taken forward were those that had come up in workshops, informal discussions and interviews with the local organisations and residents, however, the information gathered from all these activities was filtered through us as researchers (Mosse, 2001). When we presented the ideas in for example a public presentation in Dunga or in the written reports there were certainly aspects and ideas that did not make it in there. Some views that were presented and documented stemmed from our own assumptions on how things should be, without having discussed our interpretations with the other people involved.

The process was somewhat taken over by the local organizations, which took initiatives to take several ideas to implementation such as for example a cultural event and an improvement of the entrance to the beach. However, because of our established framework, and the fact that we owned the tools and designed the activities, local ownership was not established from the start, which led to an unequal distribution of roles.

The above discussion is connected to the issue on how much time local stakeholders are able to put in to the process. The tour guide group did not have the means to engage in the process to the same extent as us, for example they sometimes (most understandably) had to leave a workshop to cater to tourists. Since us as researchers got paid for the time in the project whereas the members of the tour guide group did not, we were the ones that could spend time analysing and interpreting the material.



### ***Power relations and empowerment***

Cooke and Kothari's (2001) opinion that project workers coming from outside are naive about complexities of power is also relevant to discuss here. Our main choice of partner, the tour guide organisation, was well established in the community and had a strong position. Yet, looking back, it was easy for us as outsiders to work with an already established group that was engaged in a notion that matched our pre-set framework. But, what about other groups, such as fishmongers, boat builders, women, poor or socially excluded? What would have happened had we chosen one or several of them as one of our principle partners? Who is to be empowered, as Cleaver (2001) probes? Some groups, according to Mosse (2001, p. 21), use their "skills and authorities" for their own interests, while others do not, and who are we to judge? It is safe to say that issues of power were not integrated enough in the process in Dunga. As outsiders we did not have sufficient insight to the power relations in the village, nor did we have the theoretical knowledge, we were in regard to this issue mere generalists.

Another power relation is the ethnocentrism that comes with projects where people from western countries work in developing countries, and where distinctions between "them" and "us" are easily made (Cooke, 2001, p. 105). There are situations where we need to "tread sensitively" (Lasky, 2013, p. 22) in order not to perpetuate or exacerbate ethnocentrism. An example is the use of terms, such as "local people" which according to Cooke (2001) stems from colonial anthropology, or attempts to impose our own customs and practices on other people. The example above on written reports and public presentations in Dunga is such a case where there is a risk that we as outsiders use our own understanding and culture to interpret the material produced in workshops and discussions.

## **Concluding discussion**

A major challenge in social design is related to roles, local stakeholder ownership and power. These issues have been on the agenda since the 1970's, when it was stated that we should not separate the roles of designers and users, and that people should have access to tools, resources and power (Cross, 1972). However, these issues are still with us. It seems as though we are stuck in a way of working, where the acknowledged needs of moving away from user centred approaches and consultancy models (Botero & Saad-Suulonen, 2013, p.

9), toward processes of dynamic knowledge exchanges (Amatullo, M. in Lasky, 2013, p. 22), are and will be unobtainable if we continue to approach social design research the way we do today.

We must engage in a critical discussion on social design to a greater extent, open up and discuss when and why we feel uneasy about our roles when engaging with communities, and doing so through the lens of the harsh critique towards participation. This was the aim of the empirical reflection, which shows that even though our goal was to reach local process ownership, the distribution of roles was not equal. It was mainly we, the researchers that steered and owned the process. This can be seen to be due to two main reasons; the processes started with a pre-set framework set by us as outsiders, and it was us that owned the tools and filtered the information. However, this merely acknowledges the critique towards participation and in order to move forward the discussion needs to broaden further.

Firstly, to attain real partnership we must go “beyond participation” as suggested by Mohan (2001, p. 167) and move away from the concepts of participation and social design. Participation can be seen to imply that people participate in something set up by someone else, and social design has the connotations that we are doing something for a social good, where we are there to help *them*, rather than creating in collaboration. This means that these concepts hinder us from ever seeing beyond the roles of user and designer, which in turn will also hinder local process ownership.

Secondly, there is a need for fundamental changes in the way projects are organized between stakeholders. Frameworks are today often set before local communities are involved due to time limits, efficiency aspects and pre-set conditions from organizers and funders. However, this does not cater for a sustainable continuation if the ownership then lies on those who initiated the cooperation. Support structures that allow for collaborative ways of setting up frameworks are needed so that partnerships are reached from the start, and where there is an equal distribution of management. All stakeholders involved need to be given the means to participate on equal terms, both in regards to how much time can be devoted, and how and when to share knowledge. For the case in Dunga the setting up of the project should have been open for the community to shape as they thought was appropriate, in collaboration with us, instead of us acting as project leaders. Further, since large parts of the framework were set up beforehand, and we were engaged in action research, it caused a sense of urgency to reach practical results quickly. Under such conditions, there is a risk that complex ethical issues will not be given the attention it deserves. Support structures are therefore needed to enable active

and continuous work with democracy, anti-imperialism (Mohan, 2001), power dynamics, and patterns of inclusion and exclusion (Cleaver, 2001).

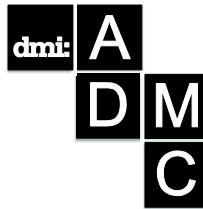
Lastly, due to the complexity that participatory projects entail, we should seek knowledge from and engage with scholars and practitioners from other fields, who have expertise in areas where we can ever only be generalists. It requires us to associate with people that are critical toward participation, in a discussion where we continuously view our core concepts critically, always being open to, if, when and how participation could be tyrannical.

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## Design Approaches to Creating Social Metrics

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*SME's and societies face complex problems to maintain and sustain economic and societal growth within the current economic environment. Resilience, innovation, sustainability and diversification are capabilities required by emerging and established businesses to nurture growth and productivity (Scottish Enterprise Rural Group, 2008; Thackara, 2005). Within the process of evolving and honing these capabilities, lies a business opportunity to engage a deeper level of understanding and appreciation of values intrinsic to both community and business beyond Gross Domestic Product (GDP). The prospect of design contributing towards the development of new approaches for value identification in order to support the development of social cohesion as a model, leading to community prosperity and economic growth (Stiglitz, 2009), is now a realistic and compelling one. Although initial attempts have sought to address such complex endeavours, these have failed to articulate a generic set of criteria that span both the societal and financial aspects; they tend to fall to either side of the divide. By bringing together reports and literature from a wide platform inclusive of Oxfam and Carnegie, HPI, NEF, GNH, and incorporating the strategic use of design into workshop developments, the paper discusses research in progress that 'identifies and presents values and philosophies that lie beyond GDP'.*

**Keywords:** Communities; Shared Values; Business; Prosperity

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## **Introduction**

This paper considers how design can contribute towards the development of new approaches for value identification, through newly co-designed indices encompassing value, growth and prosperity.

Using this approach greater insights can be brought to the debate around sustaining and supporting prosperity and growth to occur for both businesses and communities. This paper focuses on Scottish rural SME's and communities.

The Scottish economy is largely supported by its SME sector (small to medium enterprises) composed of business and companies with 0-250 employees (The Scottish Government, 2013. European Commission, 2012). Scotland has some 343,105 SME's operating within the private sector providing employment for 1.1 million individuals across the nation, (one fifth of the populous) (The Scottish Government, 2013). However, although providing consistent and valuable input, the SME sector is an undervalued and often hidden asset within the Scottish Economy (The Scottish Government, 2012; OECD, 2013; Ester & Phipps, 2013).

SME's exist within communities which are inherently complex to navigate, i.e. they have underlying wicked problems (homelessness, hunger, poverty, crime, unemployment, isolation) which compound and complicate strategies for development and sustainability. As a result they face a complex set of factors in maintaining and sustaining economical and societal growth within the current financial environment. There are many barriers in development, including financial pressures, legal complexities, resource capabilities and resource availability (OECD, 2013). Furthermore, the components and capacities available and required to address the needs and issues in each location are not necessarily replicated across different rural communities.

Recent years have seen values become more integral to decision and policy making structures and are now being approached by a plethora of experts and researchers from a wide and varied field base. The past 7 years have seen a flood of information and data surrounding new and innovative approaches towards considering values beyond GDP. At a global level a categorical shift has occurred towards generating a fuller appreciation and understanding of more than what the financial actions of a nation can provide.

### ***1. GDP: A Different Measure of Value - Economic***

It is clear that measuring GDP is very effective as a narrow measure of the financial environments occurring both locally and globally, however this alone cannot provide insight into how we generate more cohesive and thorough responses towards assessing prosperity and wellbeing. We can already see

business promoting and extending their values, and there is a unique and fresh opportunity to interlink business growth with creating positive societal impact. This situation offers opportunities to consider the weaknesses and strengths of GDP, and how development of comprehensive, socially aware indices, methods and metrics might compliment and support a more holistic perspective of prosperity.

Designed by Simon Kuznets during the 1930's, GDP offers companies, nations and governments opportunity to assess and compare growth, failure and stagnation. As a uniform metric it provides an appreciation of both internal and local financial situations and supports globalised comparisons (Kuznets, 1934). GDP is a quantitative method for statistical analysis of finance but it does not have qualitative capabilities. For instance it does not take into account societal aspects of life such as voluntary work, quality of life experienced or the quality of goods being exported and created. Nor does it consider the impact and ramifications of wars and disasters beyond the repercussions which effect finance, (events such as these cause an un-natural influx in levels of GDP) (Picketty in Clark & Domokos, 2014; Picketty in Moore, 2014).

GDP has been continually scrutinised since its inception accruing a position of value and meaning that is outwith its original domain. Globally it receives consistent criticism regarding its inability to effectively represent the societal realities experienced (Danson and Trebeck 2011; Gauntlett, 2011; Fitoussi et al, 2009; Schmuecker and Wallace, 2012). It has accrued value and meaning that far outreaches its original task.

It is not only politicians, governments and academics that are aware of the importance of values. Big businesses and multi-nationals which are purely profit driven are recognising that the adoption of certain values 'humanises business' and can create positive financial and societal results. As opposed to the 'Price War' and undercutting environment that was previously present, the past few years, these giants of commerce have migrated towards patterns more of societal benefit to ensure market longevity, for example, Sainsburys 'Living Well for Less Campaign endeavours to engage with its customer base through appreciating their values and needs. By becoming more socially aware, environmentally friendly and sustainable along with engaging in activities supportive of educational programmes, culture, sport and the eradication of inequality, these institutions are engaging with society at newer and deeper levels.



## ***2. Beyond Economic Measures: Happiness and other Studies***

Since the creation of GDP, calls have been made for further consideration to be given towards alternative measures to reflect the multi-faceted aspects of societal wellbeing. Simon Kuznets, GDP's inventor, gave cautionary warning to the American Cabinet in 1934 emphasising that national welfare could not be inferred through assessing and measuring national income alone.

Robert Kennedy, 1960 and more recently Joseph Stiglitz (2009) supported this perspective, considering the implications of GDP to be lacking and inappropriate for assessing the prosperity and wellbeing of humanity.

*Gross domestic product (GDP) is the most widely used measure of economic activity. There are international standards for its calculation, and much thought has gone into its statistical and conceptual bases. But GDP mainly measures market production, though it has often been treated as if it were a measure of economic well-being. Conflating the two can lead to misleading indications about how well-off people are and entail the wrong policy decisions (Stiglitz, 2009).*

The concept of assessing happiness to provide alternative insights towards societal wellbeing has been underway for over the past 40 years. The term 'Gross National Happiness was coined in Bhutan in 1972 by the Fourth King Jigme Singye Wangchuck. This term supports the legal code of 1729 which states that: *"if the government cannot create happiness for its people, there is no purpose for the government to exist."*

Subsequently, The Centre for Bhutan studies worked towards the development of an indice capable of acknowledging contributory factors of Happiness into policy making structure. This culminated in the creation of the first Gross National Happiness Survey initially undertaken in 2010. Bhutan are not isolated in their endeavours to develop complementary and alternative methods to assess wellbeing and prosperity beyond GDP. Prior to 2003, studies and indices which gave consideration to this and similar factors were generated globally at a slow but consistent rate. Since 2006 at least 1 new indice, metric or institution has emerged yearly to provide insights into mechanisms appropriate for determining and understanding wellbeing and prosperity. Figure 1 shows a table overview of the developments which have occurred in this field over the past 33 years.

Year	Activity
1980	World Database of Happiness
1981	The World Values Survey
1984	The Centre for Sustainable Economies
1986	The New Economics Forum
1989	The Centre for Sustainable Community Development
1990	HDI - Human Development Index
1995	The Genuine Progress Indicator
1998	World Database of Happiness Website
1999	GNH - Bhutan - 1st Survey
2003	The Global Footprint Network
2006	The Social Impact Forum
2007	Oxfam Humankind Index launched
	Global Peace Index - IEP
	Legatum Prosperity Index
2008	Gross National Happiness Report
2009	The Institute for New Economic Thinking
	The Institute for Economics and Peace
2011	Better Life Index - OECD
	First World Happiness Day
2012	Sustainable Development Solutions Network
	Social Progress Imperative
2013	Social Progress Index
	World Happiness Report (SDSN)

*Figure 1. Societal Engagement with Alternative Assessments.*

Each of these institutes, reports and metrics are part of a progressive global endeavour moving towards comprehension of the needs, wants, drives and sustainability of modern society. Collectively, this information provides a richer view of societal needs, identifying areas where concerted effort for change is required.

These endeavours support an inclusive and holistic overview of a wide range of societal aspects. They attempt to consider appropriate responses in order to combat global 'Wicked Problems'. These works support and facilitate a greater understanding and appreciation of unseen and unheard needs and wants of people, aiming to assist in the creation of a prosperous economic structure beneficial for both community and business development.

These activities allow for important key factors such as those that contribute towards the ability to live well, to be taken into consideration and understood by potential external and internal factors of influence, such as local council constabularies and larger governmental bodies. Rather than reliance on GDP as the key and sole indicative measure of progression within societal structure, these indices take a more holistic approach enabling foresight when determining potential effects of new policy shifts. It can be argued they consider unseen values and drivers which support community development and long-term sustainability.

### *3. Design Approaches to Wicked Problems*

Communities across the globe have evolved into heterogeneous systems, which are also home to a plethora of social, environmental and economic instabilities and inequalities. Often referred to as 'Wicked Problems' (Rittel & Webber, 1973), these issues are structurally un-definable, containing multiple co-related factors. A scaffolding of interlinked, yet individual problems of equal complexity supports them. Attempts to define and understand issues within these areas often bring further revelations pertaining to complex underlying problems that require attention.

These wicked problems have challenged and destabilised the environment of trust previously experienced across the public towards businesses and governments (Porter & Kramer, 2011; Fox, 2013). If this effect is to be reversed there are necessary actions to be taken towards strengthening and building relationships. One such action includes implementing an eco-system supportive of shared values. Through nurturing a deeper understanding of the value systems that both drive and constrain business and community structures, arrives the potential to develop and establish approaches for creating necessary, supportive and assistive mechanisms.

### *4. Understanding Value(s)*

'Value (s)' is an ambiguous term with multiple inferences and meanings. The OED provides definitions inclusive of our capability to appreciate varying life factors in relation to their impact and effect upon our wellbeing.

To elaborate, the opinion of this paper is the following:

Value(s) are :

- Intrinsic to life giving context and support to our actions and reactions.

- Grant meaning and guidance across situations we face, in rationalising our actions and decisions, or providing grounding and scope to re-evaluate
- Negotiable and considerate towards accomplishable compromise
- Influence behaviours, attitudes and response mechanisms
- Form the ideals from which we shape our lives.

Values are built and refined through time and experience, influenced by multiple factors and in return effecting multiple factors (Schwartz, 2005; Schwartz, 2009). Some are shared throughout communities and cultures, whilst others are individually determined from our own perspectives (Schwartz, 2009). Emotively descriptive, they can be determined and vocalised both through singular terms, and structured statements. They enable us to position ourselves and actions across a wide variety of events, situations and day - to - day life.

Within the context of business structures, values play a similar role, guiding and defining standards for forming approaches and plans. They are the principles that sustain and give foundation to strategies for present and future action. Collective values such as those found across communities provide an umbrella perspective of social structure, goals and ideals. Schwartz describes them as "Universal Organisation of Human Motivations" (Schwartz, 2009). Appreciating values has provided insight towards both individual, and collective actions and responses providing insight around facets of evolution within societal construct (Schwartz, 2009).

### *5. The Applicability of Co-Design in Business*

Businesses can contribute to both economic and societal growth through shared values, creating positive social impact in local areas thus allowing new opportunities to arise (Porter & Kramer, 2011). The strategic implementation of design methods provide opportunity to instigate these steps, supporting the generation of co-developed, self-sustainable support mechanisms for future resilience and prosperity.

Design interventions can enhance the experiences and potential outputs created through collaboration between businesses and communities through knowledge exchange (Follett & Marra, 2012). Societal problems are context related to their communities and local environments. The most constructive approach towards tackling these issues is to directly engage with the people who live there (Day & Parnell, 2003). Community members are privy to knowledge that can offer invaluable insight towards potential resolutions (Arias et al, 2000).

The long term benefits of utilising design to construct new and innovative processes to address these complexities allows consideration and positive action to be driven around issues of economic and social contention; the promotion of business generation, societal security and long term recovery. It is perceived that without embracing a new approach towards these aspects of society, the world economic structure will not achieve a full or lasting recovery.

Through developing a deepened understanding and appreciation of the multi-faceted value structures which are inherent to community and business eco-systems; businesses and companies can pro-actively involve themselves in not only regenerating the larger economic structure, but create a stabilisation within local economies. If businesses can engage mindfully and integrate themselves into their supporting local eco-system, there is the potential for profitability to occur both socially and financially.

Design approaches are being implemented globally to instigate and support business growth, societal improvement and social innovation (Thackara, 2005) creating environments of shared values across community and business eco-systems. We now see systematic shifts from traditional and conventional business practices towards newer models that incorporate more socially responsive ideals, beneficial for both company growth and societal benefit.

The revolution which occurred across Design as a practice has allowed it to develop from purely production line output to a 360 degree encapsulation of process, which when implemented correctly enhances the potential for success with endeavours. Furthermore, design has emerged as *"a key tool for analysing, evaluating and visioning future company developments for change"* (Follett & Marra, 2012).

Over recent years the field of design has seen an upsurge in the utilisation of participatory and co-design methods. It is no longer sufficient to accept a brief and produce an output without first engaging and interacting with stakeholders to determine their needs and wants. The public are impacted both positively and negatively by ongoing developments, design methods offer the capabilities of garnishing deeper understanding, engagement, co-operation and support when implementing change.

## *6. Design Thinking*

Co-Design is an approach applied by designers which encourages and supports the development and delivery of resolutions through engagement with the stakeholders involved.

It is a mechanism which supports the creation of shared understanding and shared languages to occur around proposed service/project/area's. The

concept is pinned by a belief in generating successful outcomes through direct user involvement. Through engagement with 'users' designers are enabled to support them throughout the design process from the 'fuzzy front end' towards a clear outcome which they themselves have had an active and key role in generating. It supports users to design their effective, desired outcomes driven by their needs and wants, with the designer taking a more supportive, facilitative role. It is a Human-centred process which places ownership of process and output into the hands of the stakeholders.

Engaging members of communities with models that support active participation, allows exploration surrounding pre-conceived assumptions and unknown areas. Members of communities are host to 'unconscious knowledge pools' (Day and Parnell, 2003); they have an awareness of the day-to-day facets that create challenges within the social, economic and environmental layers of their societies (Day and Parnell, 2003). The complexity and variability of social problems are too great for any one individual to tackle independently, but through utilising resources, knowledge, skills and experiences, a richer perspective situations can be obtained.

### *7. Envisioning Value(s)*

To determine the complexities of community and business relationships is a long standing need. The revolution of design from product to experience focus, supports and enhances the value and impact of Knowledge Exchange and re-focuses attention into the stakeholder pool. Design has emerged as a leader within the fields of Social Impact, supporting its workers in development of processes considerate and responsive to the needs and wants of stakeholders. If it were to integrate the responsibilities of values into the process, it may enable a stronger and more responsible attitude towards engagement and positive impact to occur. The past years have seen rise to transitions within westernised societies, the tipping points of engagement, understanding and empathy have been glimpsed. Design approaches are leading the interactions possible and supporting potential avenues of success.

To explore and evolve methods for value extraction a workshop was developed to consider effective methods for 'Value Identification' from a design-led perspective. The intended benefit for participants at this initial stage of exploration was to develop an understanding of their practice or research network and then determine a wider context of the potential value(s) their work may have.

The 8 hour workshop was undertaken with 15 Master of Design for Services students. It aimed to support investigation and development of methods and tools to identify values and drivers. The Workshop was broken into 6 stages,

rotating between group and individual activities. As shown in Figure 2, the stages of the workshop were as follows;

Stage	Type of Work	Purpose	Core
1	Paired	Exploration of the benefits of 'Boundary Objects' (Griesemer, J & Star, S. 1989) discerning individual values	Active Listening
1.5	Group	Generating an overview of the 'collective whole'	Clustering and Conversing
2	Individual	Creating an overview of the stakeholders involved/influential and linked to work. Working through a primary, secondary and tertiary system of impact.	Reflect & Disseminate
2.5	Group	Sharing and considering stakeholders from a collective perspective	Discussion
3	Individual	Considering the drivers and values of the stakeholders who may be involved.	Reflect & Disseminate
3.5	Group	Sharing and considering stakeholders values and drivers from a collective perspective.	Discussion
4	Individual	Synergy Alignment. Identifying areas where individual values may co-exist with stakeholders, and areas where conflicted values structures might occur.	Reflective practice to enable identification of potential actions.
Stage 4.5	Group	Considering the wider group perspectives, determining areas of strength and weakness within a project and discussion around positive actions to make.	Discussion & Mapping
Stage 5	Group	Ideation surrounding positive impact assessment and measure. Lasting legacy.	Ideation, Future Casting, brainstorming, Mapping, Timelines
Stage 6	Group	The integration of terminology and language used to initiate generation of a collective manifesto	Discussion. Shared Perspectives. Group formation.

Figure 2. Workshop Development

When considering values beyond financial output, it was important that the process embraced the occurrence of both reflective thinking and knowledge exchange.

Early findings provide a start point for guiding development and dissemination for potential avenues of exploration within community and business structures. The workshop revealed that effective methods for identifying values were predominantly collaborative activities as opposed to individual. The methods which promoted discussion and questioning supported and enhanced individual exploration and self-reflection.

Each stage focused development and exploration around varying types and perspectives of values.

Stage 1 which was an active listening, object based conversation activity generated findings (Figure 3) of individual value(s) being situated around the following areas:

Learning	Connections	Creating	Drivers	Emotion
Guidance	Stories	Balance	Family	Bravery
Support	Culture	Beliefs	Friendship	Courage
Challenges	People	Hobbies	Memory	Connection
Skills			New	Thoughtfulness
Development			Environments	Openness
Life Experience			Experiences	Need
Reflection			The Past	Love
Practice				Time
				Tradition
				Curiosity

Figure 3. Individual Value Exploration

Through a multi-layered mapping activity Stages 2 through to 4 explored the values and drivers of stakeholders and designers from both individual and group perspectives. Primary findings showed similarity between both parties, (Designers and Stakeholders) (Figure 4.) This is to be revisited a further 3 times over a 9 week period to determine and assess where assumptions were both correct and misplaced.



Drivers of Stakeholders	Designers
Mutual Inquiry	Reciprocated give and take in relationships.
Idea Exchange	Generating positive change in self and others.
Participatory Engagement	Building Empathy
Opportunity	Supporting Communication.
Creating something meaningful	Hearing Voices
Love	Employment
New ways of Working	Curiosity
Increased Equality	Desire to create change
Learning	Willingness to help
Collaboration/ Networking	Travel
Replicable Model Generation	Opportunities.
Self Promotion and Growth	Future Collaborations
Satisfaction	Network Generation
Trust Development	Kindness
Similar Values and Directions	Being able to help
Knowledge Exchange/ Sharing	Impacting the Workforce
Evidencing and Sharing Stories	Making a difference for people
Best Practice	Improving Engagement.
Money/ Promotion/ Power/	Improved quality of service
Security	Changing Interactions
Experience	Generating awareness of issues
Sustainability	
Alleviate workload	

Figure 4. Identifying Drivers and Values of Stakeholders and Designers

Stages 5, was a group activity focused upon future outcomes and measures of success. The students developed short presentations documenting their current perspectives of what might create a successful outcome. These will also be developed in future workshops over a 9 week period. There was however discernible benefits gained through group discussion around successful outcomes and lines of action to take forward.

The final aspect of the day, (Stage 6) culminated in the generation of a collective manifesto considered emotional terminology that the group had verbalised throughout the discussion phases (Figure 5.)

These were:

Emotion Based	Activators
Thoughtful. Kindness. Inquisitive	Knowledge. Experience. Sharing.

Shared Values. Realisation Unique. Inspiring. Equality. Positive Effect	Skill building. Opportunity. Impact Conversations. Networks/ Connections Self development. Recognition Inspiration
-------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------

Table 5. Emotional Terminology and Drivers

## 8. Conclusion

A prosperous financial situation does not guarantee wellbeing or happiness of individuals or communities. The complexities of life are subjective to the opinion and perspective of those involved, encompassing both physical and psychological aspects to provide a more three dimensional outlook. Finances constitute a complimentary factor within the overall picture, and the numbers are require to be seen in perspective and viewed in balance with the experienced quality of life of citizens.

The task of understanding and defining values into comprehensible and comparable indices brings with it complexities. Values are determined by both physiological and psychological factors that are responsive to and effected by life situations and perspectives. Like any design opportunity, this task requires both macro and micro exploration to identify methods which can provide quantifiable measures of assessment sympathetic and responsive to the communities involved.

To enable the generation of a matrix to support a synergistic response to occur, promoting and enabling the development of a human-centred focus; primary actions require to address effective dissemination and consideration of current methods of value assessment from a diverse range of fields inclusive of societal endeavours, social science studies, anthropological endeavours and design thinking approaches. There is considerable opportunity to expand, enhance and develop our appreciation of the concept of value(s) from understanding how, why and where they develop; what impact they carry across into daily lives and behaviours; causes and ramifications of fluctuations in the collective perspective; their formation and development and resulting influential control.

This ongoing research aims through a design thinking, co-design approach to continue to discern processes and methods for uncovering the needs and values of businesses and their communities as they develop and evolve within the current economic and political climate.

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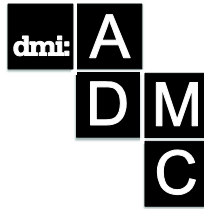
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# Moving Beyond the Consultancy Model: Strengthening Design Approaches for Public Good

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*This paper considers both the positive and negative implications of this business model from the perspective of both the public sector client and a design agency while proposing new forms of partnership models for design to be used as a catalyst for the development of new products and services that may arise from a co-creative process. We consider the need for new forms of partnerships and processes to evolve between commissioned design agencies and statutory public bodies that allow the space for design driven innovation to flourish, and explore what skill sets are needed to maximise the impact of partnerships working. This paper is a collaborative piece between the public body client and appointed design team centered around the appointment to work on a six month mental health project. The project utilised service design methodologies to co-design future services that young people would like to see in the Greater Glasgow area. In the conclusion, proposals are made for new models specifically derived from the experiences of the six month commissioned project and a criteria of conditions for the commissioning of design teams from experience of both embedding design inside organisations and commissioning design teams from the perspective of a statutory public authority. Our core intention is to inform the reader and develop debate and insight around the management of design within the public sector, crucially, from both the client and design agency perspective.*

**Keywords:** design, health, mental, management, procurement, Scotland, service, interaction, system

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## **The Consultancy Model**

In recent years there has been a development of high profile organisations within both the public and private sector 'embedding design' within their organisations. However, design is still largely commissioned under the consultancy model.

Typically in today's procurement landscape, although there are shifts taking place, procurement calls are largely focused on the delivery of pre-articulated outputs from a public body or local authority institution. This often means calls are weighted on cost and the process to tender can often leave design teams without a full understanding of what is required for a successful outcome.

In many circumstances within procurement, relationship building can take place before a call to tender and this process can be seen as a formality with a consultancy, however, the personnel who will be closely involved in the project, in many cases, are not able to make the final procurement decision or have an in-depth input to the design-brief set for public tender processes.

There remains today, despite calls for more open forms of procurement and support of SMEs (Nesta, 2007), a large focus on the 'solution' in procurement. This often takes the form of design briefs asking for service or product developments in the form of new apps or websites to counter modern developments and not considering the full series of service needs from users and providers throughout the whole system.

Particularly in the case of digital development for service re-design, there is more focus needed towards developing platform standards, data streamlining and business processes developed to continue to implement a service proposition over time than a quick fix 'solution'.

We are now seeing the design brief evolve (Hands & Murphy, 2012) to allow for more open, participatory forms of design. However even this progression to commissioned problem identification and articulation is often considered as research. Further development is still required to consider how to procure expert skills from the private sector to drive forward work streams post commissioned work.

The consultancy model, considered as an 'outside' approach usually takes the form of a design consultancy delivering solutions and insight to public sector bodies commissioned by public tender. In many circumstances

this brings obvious benefits including kudos, specialist expertise, i.e. technical knowledge and a fresh perspective.

However, this approach is not without barriers for both the commissioner and public authority and the design consultancy. The core issue is in moving from insight and proposed design solutions into working prototypes and usable products. This brings frustration not only for the design team, but also the client who has commissioned the original work and cannot create the budget or remit for the work to be continued by the team who has developed the knowledge from the initial research (see Figure 1).

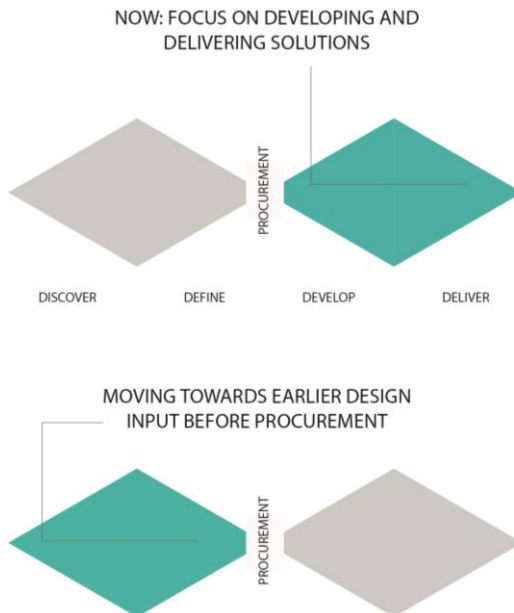


Figure 1: Project 99 (2014), Double Diamond process in relation to procurement

## Commissioning Design

There is growing interest within the public sector in adopting design approaches to service change (Mulgin, 2013), driven by the need to address complex societal challenges within the constraints of highly pressured public finances. Well-recognised drivers such as an ageing population and the growing burden of chronic diseases mean that methodologies that yield deeper insights into the experiences of service users, help shift inefficient



practices, redesign key service elements and capitalise on new opportunities have a vital role to play. A number of key aspects of public policy discourse have in recent years also added to the impetus for a more people-focused approach to public service delivery, including in Scotland the Christie Commission (Scottish Government, 2011) and NESTA's People Powered Health Programme.

However, adoption of such techniques is still relatively novel and there are significant hurdles to overcome in seeing their effective utilisation in the public sector. The most powerful of these is that they represent a positive challenge to traditional power balances that have governed the delivery of public sector services for some considerable time, by placing the experience of service users at the heart of redesigns and innovations. At its best, service design gives voice to protagonists whose experiences may have been fairly marginal to-date. Linked to this is a set of expectations built up around commissioning processes that tend towards setting out in advance what the deliverables will be, and specifying this with some precision in the contract specification. With the level of public scrutiny that all public sector spending attracts, being prepared to go with the flow of open-ended processes, and being primed to respond to potentially significant critiques of current practices takes a degree of confidence and courage. There's a chicken-and-egg dimension in addition, in that an in-depth understanding of the strengths and limitations of service design approaches is only likely to be generated by hands-on involvement. As Mulgan (2013) notes:

*'...few signs of public services building up the capacities needed to be good commissioners of design.'*

## **The commissioned Mental Health Project**

An emerging understanding of commissioning Service Design can be seen in Project 99 (2013), focused on exploring internet based approaches to support youth mental health in the Greater Glasgow area. The project undertook a co-productive approach to research and develop future strategies, products and services focusing on young people, social media and how this impacts on their mental health and well-being. This was undertaken by a prominent design agency, leading youth charity, foremost mental health charity and the client, a statutory public body.

The public statutory body and its local partners were looking to establish a time-limited development project to explore the potential of the internet, social media and mobile technologies to promote better mental health and

wellbeing for young people. A commissioned partner or consortium of partners was sought to collaborate with GGCNHS and its local partner agencies in developing a collaborative programme with local young people, aged between 15-21. A focus was put on participatory methods with young people, with an intention to co-produce a number of multimedia resources and guides to the internet and mental wellbeing. The project was aimed to guide longer term developments in the youth mental health sphere in the wider health board area.

The origins of this work span several years, and grew out of two linked processes. The first of these was a formal Health Board led policy development process, drawing in multi-agency partners, that created an overall strategic framework for addressing the preventative and early intervention aspects of child and youth mental health. One particular priority to emerge from this process was the need to expand the range of communication and dialogue approaches being utilised. The second strand was a more informal exploration, conducted via the professional networking activities of a small number of colleagues - often using social media channels - to discover and connect with an international body of innovative practice in mental health fields. This latter activity provided sufficient evidence of digital innovation in the health sphere to build a case developed to attract Health Board investment in a programme of exploration.

The commissioning method adopted was the traditional model of competitive tender, in line with the Board's Standing Financial Instructions (SFIs), which are designed to ensure compliance with relevant national and European procurement legislation. The Health Board's Procurement Team played a crucial role in this stage and remained an active partner throughout the tender, selection and award stages.

Several aspects of the contract specification, however, lent themselves to a more collaborative approach from the outset; a co-production approach with young people was an integral element of the specification, as was a requirement to draw on the resources and expertise of a network of local partners. These were brought together in the form of a project steering group, including colleagues from health, local authorities and the voluntary sector.

Drawing in the knowledge and connections of this network of local partners was a crucial element of the approach - for example being instrumental in identifying within a relatively short timescale a shortlist of potential youth agencies, then continuing to support young people's

participation, for example via the network of youth workers already in place in the participating youth projects and initiatives.

Above all, upon award of contract to the successful three-agency consortium, significant early work was put in to build up relationships among the commissioners, contract holders and the multi-agency steering group partners, in the testing of expectations and assumptions and to establish ground rules and share insights. Some key elements of the eventual suite of final outputs were shaped collaboratively through this kind of dialogue, such as the concept and overall outline of the “digital assets map” (Project 99, 2013)

## **The project process and outcomes**

Across 2013 the consortium worked with youth agencies across Glasgow undertaking a series of co-design workshops with young people, providing them with bespoke design tools that allowed them to visualise and put forward a range of ideas on how to improve mental health services.

As a dual process, the interaction with these groups of young people was analysed for insights on the various types of support needed and the preferred format for communication and form of services.

In order to gain a deeper understanding of young people’s needs, one-to-one interviews were undertaken where their journey was mapped through a variety of health and youth services they had interacted with in order to understand points in their lives where more support was needed and in what format.

In addition to field work, desk research was undertaken to build a service map of existing resources and platforms (both specifically designed to support mental health and existing digital tools) which were later aligned to a service map. The objective of this service map was to support health professionals and relevant stakeholders working in the mental health sphere on how to use these tools in the support young people’s mental well-being.

In addition to this qualitative work, a survey of young people’s social media habits was produced collating over 600 responses and the results later analysed to understand how young people were accessing the internet, (how, when and what for) to inform design solutions.

The process was a blend of researching existing needs and then presenting these needs back to young people in a safely designed space to develop early stage ideas and directions for improving the Health Board and

wider stakeholders' ability to support young people's mental health both inside and outside of the health care system.

Through this open innovation process, the groups of young people were always given the freedom to develop elements of the project as they wished. This resulted in a non-commissioned piece which became part of the wider report. This took the form of a self-developed manifesto for mental health by young people, which the design team developed into a series of visuals for final presentation back to the health board.

From the tender process, outputs also included the development of a youth guide to mental health and well-being. This took the form of an animated GIF youth guide which included animations of advice regarding to stay mentally well and recommendations by young people on what to avoid online.

The final report contained all of the above and an overview of wider insights gained during this research and development project, outlining potential opportunities for future exploration.

The final outputs (report, service map, wider research) (see figure 2) were presented back by the commissioner, appointed consortium, the design team and the group of young people.



Figure 2: Project 99 (2014), Executive Summary: Overview of outputs

These outputs and presentation have been re-presented at various mental health conferences in Scotland and released online. It is important to make a distinction between outputs and outcomes at this stage. The wider outcomes included transferral of knowledge and engagement of the young people, giving the groups the opportunity to have a voice. Often the

commissioning process focuses on outputs with these as tangible deliverables. In this process, outcomes are left to the side and are an affordance of the core delivery of outputs.

The report and supporting work highlighted the importance to recognise the need for the health sector to build both new and adopt existing digital platforms to work with young people in managing their mental well-being at all stages of their journey.

The outputs from this project are both hard and soft. Solid service proposals are contained within the report but the issue remains that to reach this stage to develop ideas a series of concurrent workstreams require development to make this a reality.

These include social media and data governance developed to allow for the solutions to exist, an education in the possibility of internet-based tools for the wider health sector and a change in mindset that digital and internet-based tools can be used positively to support young people.

## **Beyond Project 99**

A consideration for highly innovative programmes such as Project 99 is that in order to achieve impact and forward momentum, it is necessary to undertake significant internal development work within the commissioning organisation, as there are often major barriers to overcome. These can be a combination of technical, cultural, financial and political. Even if such negotiations are fruitful, they can typically be very human resource intensive, time consuming and requiring of compromise. It may also be necessary to conduct negotiations with a range of additional key partners - increasingly important given the drive towards further integration of public services, such as with health and social care (see Figure 3).

The time taken on internal processes, and the necessary semi-visible nature of much of this effort, can in turn place strains on the positive dynamic with external service designers, participating service users and wider stakeholders. In the case of Project 99, the focus on digital communication technology, and particularly social media presents particular challenges, given the need for the NHS to work through issues such as information governance, data security, patient confidentiality, staff conduct and management of organisational reputation issues. The concept of co-designing health services directly with young people is also a far from commonplace practice, despite many years of policy imperatives focused on patient involvement.

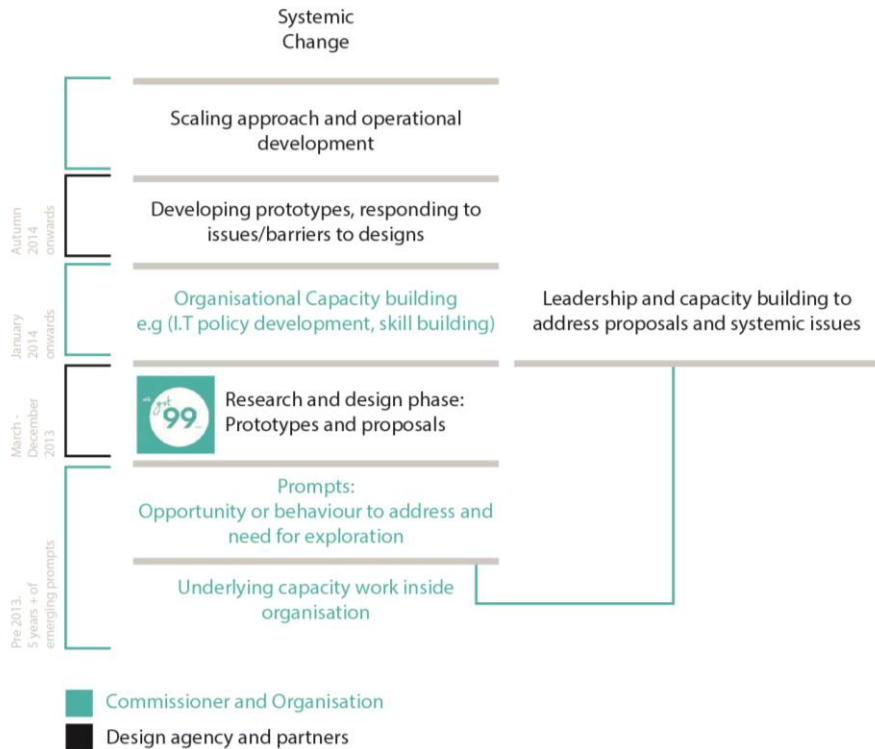


Figure 3: Project 99 (2014), Internal development and challenges commissioner perspective

What greatly assists in working all these issues through, and in preparing and securing resources for follow-on stages of development is the ability to connect with like-minded colleagues in other public sector agencies, to be able to share experiences and resources, and to be able to illustrate the potential benefits that can accrue from adopting a service design ethos. Also crucial, but very challenging, is the need to maintain a dynamic link with representatives of service users and involved communities throughout any negotiation of next steps and ‘mainstreaming’. The challenge comes particularly from a potential disparity of expectations around the pace of change, and from lack of investment in the practical requirements of such on-going involvement.

Finally, the ability to explore and select from a wider palette of options in terms of investment and commissioning arrangements needs to be taken on board, if the maximum benefit of service design is to be harnessed for the benefit of more effective public services. Initiatives such as the Scottish Government's support for use of Public Social Partnerships is one example among many that needs to be given more widespread consideration. (Scottish Government, 2011)

## **New Models of procurement and partnership in design**

*"...A design team should be involved at the earliest stage of commissioned work with internal teams using design tools to help explore and shape the requirement prior to any procurement being established. This avoids the risk of 'getting the right answer to the wrong problem'." (Policy Connect, 2013)*

This project highlights the benefits of an open research approach which allowed for the use of co-creation tools to steer the direction of the outcomes and open up wider work streams that may need taken forward in alignment to produce 'outcomes' that were not recognised at the commissioning process.

In order to commission projects of this type that adopt an open innovation approach, we need to extend the knowledge of open innovation approaches within the public sector and set up the proper conditions for both internal and external understanding of potential outcomes.

There are several models we outline that we do not intend to be taken as isolated solutions but should be recognised, if adopted, as complementary to one another.

*"Social labs bring together a diverse group of stakeholders, not to create yet more five-year plans, but to develop a portfolio of prototype solutions, test those solutions in the real world, use the data to further refine them, and test them again. Their orientation is systemic—they are designed to go beyond dealing with symptoms and parts to get at the root cause of why things are not working." (Hassan, 2014)*

There has been an increase and general recognition of Social Labs that utilise elements of design (co-design, visualisation, prototyping methods) and social science, and the collaboration of stakeholders to explore solutions to problems facing society.

We believe an embedded form of social labs could begin to extend the understanding and create the framework for open investigation into procuring scaled solutions and multiple work streams that align to tackle systemic issues.

It could be said that embedding design tools and capacity into an organisation could support the development of smart procurement that allows open investigation of a subject domain and guides articulation of procurement documentation. As NPRU (Nesta, 2007) points out, this could combine early supplier involvement with outcome-based specifications allowing suppliers to learn more about the underlying problems that procurement is attempting to address.

Following on from this a wider recognition and development of policy around Innovation Partnerships (Taylorwessing, 2014) could be adopted. This would allow the commissioning authority and supplier to work closely together to develop iterative work plans, with the authority purchasing the results or entering into a formal partnership with the organisation to develop proposed projects post investigation period.

## **Design focusing beyond solutionism and towards platforms for co-production**

A fundamental shift in the way needs are met and services are delivered requires a fundamental realignment of the relationship between the community and the services they use. Co-production and co-design approaches can play an important part in this shift of approach, but to succeed, significant attention must be focused on the practicalities of enabling community participation. Public services and their partners, including service design agencies, need to actively work to address perceptions, capacities, potential barriers and above all to invest in the time and energy required to make community participation a serious part of the mainstream effort.

For example, as the recent Royal Society of Edinburgh investigation of digital inclusion in Scotland (Royal Society of Edinburgh, 2014) revealed, there are still many people in Scotland - and elsewhere in the UK - who are not digitally connected. Almost one in five Scots live in postcode areas



where most of their neighbours are unlikely to be online. As this report, and allied work shows, digital exclusion is not simply about lack of access to connection or equipment, it is as much about skills, confidence, cultural norms and whether one perceives a net benefit to the effort of getting online.

In the instance of the project we discussed, recommendations highlighted a need to develop co-production based platforms and forums for continuing knowledge between commissioner, design team and service user. The design team recommended that the Service Map be turned into a live site for knowledge curation and a series of recommendations on where and how internet based tools are being used to support young people by the whole community. In addition, an ongoing networking and content building role for the site on and offline was specified. This form of output considers not only 'service users' but a multitude of needs for the health sector that may have not been articulated in the original tender specification.

Supporting communities through practical initiatives that build skills and confidence is therefore crucial, as is designing engagement processes that are responsive to the needs of respective communities, such as addressing potential financial or childcare barriers to participation, and avoiding off-putting jargon. Above all the biggest shift is attitudinal, from commissioners and service providers - moving decisively away from viewing communities only as passive consumers and instead seeing them as bringing a huge wealth of experience, aspiration and ideas that can drive change.

## **Blend a range of skills and approaches**

*"Good designers recognise that their skills only become useful when combined with other complementary skills." (Mulgin, 2013)*

Extension of knowledge and understanding by designers and commissioners is needed through education and case studies to highlight new forms of design processes from service design and open innovation to work with authorities to consider the complexity of building new services and products. This a movement from focusing on the solution to the development of knowledge across an innovation process. In addition to this, larger consortiums of both internal and external expertise are required to complement knowledge of past research and existing infrastructure. The building of multi-disciplinary teams is needed to develop work streams and solutions that can be continuously developed over time and fit within the

existing system infrastructure and recognising where there may be need for training or capacity building.

## Conclusion

While there is a growing body of work using co-production principles across many facets of the public sector, this still represents a small proportion of the overall effort of service commissioning and development activity. Moving from innovative case studies through to creating a more mainstreamed approach will take considerable effort. However, there are positive initiatives underway to boost this approach, such as the Scottish Co-production Practitioners Network, and the wider UK network.

A successful design-client relationship works when other systemic issues are identified as part of a larger work package and are carried through in procurement. Therefore, we recommend that statutory authorities invest further in the development of co-production based commissioning and work closely with service users, communities and design teams in the initial stages to specify clearly the desired outcomes from a commissioned piece of work.

A strong focus on outcomes can set the compass points to a clear destination for a project, while allowing the client, service users and design teams to adopt an iterative and exploratory approach to determining how they reach the desired destination. Use of such an open and creative procurement process, also allows the design team and service user to develop their own maps and guides, producing the type of outputs they feel best articulate the most important focal points of the project. This avoids the constraints of pre-determined route maps.

To set the framework for such an approach, a preliminary investment, recognising the benefits of design-led approach to innovation, should fund a foundational procurement exercise which allows identification and co-production of this set of outcomes. This may also identify the need for the procurement of a wider range of work packages that not only explore how the desired outcomes might be achieved, but then provide the funding for communities to be engaged in co-producing the services developed, ensuring momentum is maintained post project and that knowledge is embedded in the system.

This is no easy task and further research is needed into what practices and systems might embed the design approach and maximise the benefits of the social lab. However, this paper highlights the need for commissioners

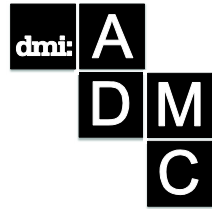
to think beyond setting specifications for the procurement of narrowly defined and specified work packages and projects, with prescriptive emphasis on output over outcome. A wider perspective allows consideration of the range of supporting workstreams and future developments required within the organisation, to embed project learnings and the transferral of knowledge. It is our hope that this open approach to producing design briefs, with service users and designers involved earlier in the commissioning process, will help the procurement and tender process to evolve, increasingly leading to a systems-led model with a focus on the best outcomes for communities and service providers.

The project discussed in this paper might be considered a 'breaching experiment' (Sniggle, 2014) in that it has tested the ground for the development of these theories in practice. The value of the approach and the potential impact, both in terms of outputs and outcomes, has been recognised at a senior level in the client organisation who are now considering the development of new workstreams to take the project to the next level.

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## Where the Social and Sustainable is the Territory

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*The contributions that industrial designers can make in achieving greater degrees of sustainability in the sectors that design serves are sizable. However the greening of product manufacturing has been largely transferred away from the remit of design and into technical and managerial areas within the manufacturing construct. This paper reflects on a decade of privileging the “social and sustainable” as core to the professional and pedagogic construction of industrial design in an undergraduate degree program in Australia, and the two decades of theory for sustainability in design that has informed it. The paper charts the modes and intensities of theory in this domain and describes the issues of design for sustainability as a technical, managerial or moral discourse for design within undergraduate industrial design education. In discussing the transitions of theory in design for sustainability the paper points the way toward new forms of social and sustainable design management and leadership as a possible future trajectory for industrial designers that look to direct their work towards environmental and social concerns.*

**Keywords:** *Industrial Design, Design for Sustainability, Product-service System Design, Social Design*

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## **Introduction: The Social and the Sustainable in Industrial Design**

For the past two decades sustainability has sat as a core negotiation in the professional and pedagogic construction of industrial design in the undergraduate degree program that the authors locate their work. As notions of sustainability have matured inside design discourse opportunities have emerged and been played with to test the efficacy of meanings of design that privilege the social and the sustainable. This exploration of how industrial design deals with issues of environment constitutes a really fertile space for the navigation of complex systems and implications that presents industrial design education with a useful set of models for managing the structuring and conduct of design activity. Sustainability in this context is treated as an agenda for intervention in entrenched social and technical practices through design. Industrial design is treated in a similarly open way, in that we define it as a socially engaged and negotiated creative practice of campaigning for dematerialization, envisioning plausible futures and the proposition of self-sustaining social entrepreneurship ventures. This work draws on theory from the sustainability domain, but applies it in perhaps less direct ways than the theories themselves suggest. This is not some misapplication of theory, but rather a re-figuring of ideas to fit the particular circumstances of a disciplinary context that is in reality quite different from what the discourse from sustainability and design management present.

Increasingly the role of the designer in the sustainability domain in the context of design education is less about materiality and the manufacturing aspects of a product, and more about the social life of products within in complex systems of products, technologies and users. Established technical methods such as life cycle assessment while informing the ways in which designers do what they do have migrated from the remit of the designer to become quasi-managerial discourses in their own right undertaken by expert service providers that work alongside or after the procurement of design development processes. Other methods such as eco-design strategies and life cycle thinking are readily absorbed as methods for design and provide useful ways in which the uncertainty that designing can produce can be mediated.

The transitions of sustainability methods and discourses inside industrial design education discussed in this paper have produced a diversity of approaches that can be drawn on for particular kinds of design investigation. Projects undertaken by the authors over the past decade span technical product design, sustainable interaction design, social design inside the

community sector, social innovation and service design, envisioning and product-service systems design. Out of this the potential of new forms of design management and leadership are becoming visible in the career trajectories of graduates – as they position themselves as particular types of advocates and activists within design, business, research and educational communities.

Like in many education disciplines Industrial Design in Australia carries with it the shadow of old meanings of practice that are successively layered with the inclusion of new concerns, but rarely discarding the old modes. Developed initially through the global British Schools of Design movement in the last decades of the 19<sup>th</sup> century, Australian industrial design (or industrial arts) was remade and remade again in response to the reformation of European and North American design industries in the post war periods in through adopting elements of the curriculums of the Bauhaus and HfG Ulm Schools (or their North American interpretations). Central to the development of the profession was an accepting of the role of industrial design as a professionalised means of activating consumption, without being seen to champion it in a gratuitous manner. Seen as a key mechanism for economic resilience in the mid 20<sup>th</sup> century this notion of the role and meaning of design set in motion an educational response inciting continual material consumption and thus building manufacturing capacity and qualities of material appreciation in a consuming public through formal design capability. This discourse is still very much alive but actively problematized through the inclusion of sustainability in the formal education of industrial designers.

Undertaken as a process of collectively reflecting on the various tensions and transitions of meanings in the practice of sustainability inside industrial design education this paper attempts to position pro-sustainability strategies used in design as discourses that sit within an enlarged discourse of design management. It does this by returning to the theory that we have used inside our teaching and to figure it against the contextual particularities of industrial design in Australia. What emerges through this reflection is an account of how design in the university context uses the systematic nature of sustainability theory in a robust but overtly moral way, not to produce professional designers that are necessarily able to directly apply these theories inside a manufacturing concern or consulting practice, but rather as a significant component of their moral, civic and importantly managerial development through design.

## Contemporary Sustainability Theory

With the emergence of the need for industrial design to properly attend to the environmental and social implications of its capacity to proliferate material things the discourse of sustainability has largely been about reducing environmental impacts of manufacturing and consumption patterns. Generated from, and located within, the research interests of academics in design and affiliated disciplines, this pressure to confront the un-sustainability of 'normal' design practice has manifested in a series of iterations of design for sustainability that have significantly influenced the nature of the work of the authors and the professional preparation of their students.

Concepts, methods and tools for Sustainable Design developed from early eco-design or eco-efficiency approaches of the mid to late 1990's. Initially referred to as Design for Environment (DFE) or cleaner production (Lewis, Gertsakis, Grant, Morelli, & Sweatman, 2001) these approaches evolved to include discourses from manufacturing engineering and management, social science and public policy. The early work done in the late 1990s into eco-redesign and eco-efficiency (Lewis, Gertsakis, Grant, Morelli, & Sweatman, 2001; Roy, 2000; Ryan & Fleming, 2004) was extended by emerging discourse from Product Service System (PSS) approaches in the early 2000's (Roy, 2000; Mont, 2002; Ryan & Fleming, 2004), and more recently to considering aspects of behaviour change (McLaren, 2008). With the emergence of each approach a new body of theory and method leveraged and complimented the previous.

This changing of concepts and methods reflects the recognition by designers and researchers of the increasingly complex nature of dealing with the environmental implications of designing, and highlighted the transition from design offering creative and propositional processes to deal with environmental challenges to design strategies becoming managerial toolkits aimed at limiting the potential environmental risks of otherwise naïve design decision making. As such, initial strategies focusing on individual product elements expanded to total-product, industrial and business systems (PSS and triple bottom-line approaches).

Through this work designers and theorists alike have come to understand sustainability as a series of interactions in complex and contextually contingent systems of the social, the environmental, the economic and the political. This has ultimately led to the combination of technical, managerial and social science discourses with design processes



and the development of behaviour change models – all of which locate the sustainability agenda as a particular form of design process management.

Early approaches in the Design for Environment (DFE) domain tended to focus on issues pertaining to an individual product where an analysis of impacts could be determined and improved through various strategies such as reducing impacts of production and use, toxicity, energy efficiency and waste streams (Lewis, Gertsakis, Grant, Morelli, & Sweatman, 2001; Roy, 2000; Ryan, 2004). Life cycle analysis (LCA) became a way of objectively quantifying and bench marking a products performance across its life-cycle and has since evolved to be a technical service in its own right and a set of tools that are commonly deployed inside design process from problem identification methods to tools inside design software. This contributed to developing the need for designers to consider their decisions across all life-cycle stages of a product under design rather than a traditional focus on the manufacturing and use phases up to warranty (Lewis et al, 2001). In the early 2000s Design for Sustainability (DFS) gained momentum building on the numerous DFE strategies and eco-design tools (Pardo, Brissaud, Mathieux & Zwolinski, 2011). DFS expanded the scope of engagement in sustainability via the approach of People, Planet, Profit that mirrored the triple bottom line approaches used in the business and sustainable development fields. The triple bottom line structure and systems focus of DFS assisted in moving away from strict product-orientated DFE approaches to incorporate understandings of stakeholders and business development (UNEP, 2009).

Design as a strategy for dematerialisation emerged soon after with the prospect, the beginnings of legislation for, and the voluntary implementation of Product Stewardship and Closed-loop systems that promoted or enforced take-back schemes and extended producer responsibilities. Making companies responsible for resources consumed and wasted across the whole of product life-cycle (Mont, 2002; Ryan & Fleming, 2004; Frankl, 2005; McLaren, 2008; Lewis, 2005; Toffel, 2002) Product Service Systems (PSS) flagged the proposition for design that material and energy flows could be de-coupled from economic growth, and in doing so elevated the managerial discourse of sustainability from being concerned with robust and accountable processes to being strategic and holistic in intent. PSS approaches advanced the investigation of products and systems thinking by exploring how efficiencies can be achieved (and innovation introduced) by looking at the potential for the products function to be delivered through service schemes or leasing options rather than through

traditional product-user-ownership (Manzini and Vezzoli, 2002) (Mont and Tukker, 2006) (Morelli, 2006) (Roy, 2000) (Vasanthaa, Roya, Lelahb and Brissaud, 2011). Tukker and Tischner (2006) describe PSS outcomes as 'a mix of tangible products and intangible services designed and combined so that they jointly are capable of fulfilling final customer needs' (p. 1552).

Models for PSS became a mixture of product design and development processes, environmental or sustainable design strategies and tools, systems and service design thinking. Vasanthaa, Roya, Lelahb and Brissaud (2011) in a review of PSS models and methodologies identify three common themes '...namely the development of innovative business models, the integration of products and services into a unique offerings and extending services to increase the value realisation of products. These observations show that PSS design should focus on integrating business models, products and services together throughout the lifecycle stages, creating innovative value addition for the system' (p. 639-640). PSS offered a way for companies in developed nations to innovate through product/ service mixes as well as develop more efficient solutions that helped companies compete with the lower labour costs of developing nations manufacturing. These models sat well in places like Australia that saw a shift from manufacturing as the backbone of their economies to becoming Service economies.

In the last decade a new set of theories and methods have added to Eco-efficiency and Systems thinking approaches by looking at the role of people and their behaviours and beliefs. Loosely known as Behaviour Change, Moloney, Horne and Fien (2010) give a comprehensive summary of the methods and concepts relating to the field, which derives its epistemology from areas such as the Social Sciences, Design, Business and Marketing (Barr, Gilg and Shaw, 2011), (Peattie and Crane, 2005) (Peattie and Peattie, 2009). Conceptual and methodological approaches within this field can be divided into two key approaches each with an emphasis on either the micro or macro sociological. The micro-sociological concerns an individual's motivations, beliefs and behaviours 'that influence or shape what goes on inside a person's mind, such as awareness, knowledge, values, attitudes, behaviour, rational thought processes, emotional states and entrenched habits. These vary between individuals and within an individual as a function of life stage and context.' (Moloney, Horne and Fien, 2010, p. 7615) The macro-sociological, has an emphasis on how 'External variables are located in the physical, social and discursive environments in which a person lives.' (Moloney, Horne and Fien, 2010, p. 7615).

The macro-sociological focuses less on individual responsibility and more on the way an individual is a socially constructed being affected by external forces and systems. Behaviour change approaches inside design are not benign or merely analytical activities that look to understand the particular phenomena of a change in ways that a socio-technical practice is undertaken. They are approached instead a means of finding the right levers to pull to induce a strategically defined change. Often these levers come in the form of a purpose-designed product, service or process but the intent is to manage across a population of consumers or users the transition of one form of practice to a potentially less environmentally impactful one.

The focus on environmental strategies for limiting the potential negative impacts of design decisions has over the past two decades has produced a raft of tools and methods for designers and for those that procure design services in product development and manufacture. Early on Ryan & Fleming (2004) published 'The Six Strategic Principals of the New Eco-Innovation Paradigm' and summarise the totality of research and practice into various sustainable design thinking up to then. Their principals comprised of 'Valuing prevention, Preserving and restoring 'natural capital', Life-cycle thinking (closing system cycles), Increasing 'eco-efficiency' by 'factor x', Decarbonising and dematerialising the economy and Focusing on design – of products and product-service' (p. 30). While continually changing, the types of Sustainable Design tools available for designers are largely DFE oriented and tend to focus on eco-efficiency, analysis and problem identification. What is important to the authors is the widening of DFE and Sustainable Design strategies to account for business and stakeholder needs and influences in the decision making process. Mont and Tukker (2006) describes this as

*...the need to link hard and soft issues such as technology and sociology, products and services, and to view existing environmental problems from a systemic perspective... the development of multidisciplinary approaches that require inputs from a broad range of disciplines, such as economics, management, environmental studies, sociology, psychology, product design and engineering. (p. 1451)*

The trans-disciplinary nature of the expanding field of design in the sustainability domain is reflected in the structure of the Life-cycle management (LCM) frameworks that have emerged recently to deal with the increased complexity of attending to sustainability in business practices.

In strategically managing a company's shift towards a holistic model of Sustainable business and production, LCM describes a whole of business approach categorised into three main areas: Organisational Aspects that include environmental strategies, decision making and capacity development process and the structure and responsibilities of the organisation; Internal LCM Projects involve product design and development, business operations, supply chain and environmental management systems, and End-of-life management; and, Environmental Profile which is made up of various forms of communication including environmental product declarations, standards, sector level requirements, Environmental reports, life cycle studies, Stakeholder relations and communication strategies to build networks for change (McLaren, 2008). As explained by McLaren (2008) LCM is

*'...the systematic application of life cycle thinking in business practice with the aim of providing more sustainable goods and services. It involves the development and implementation of a product-oriented management system; this seeks to improve the sustainability of an organisation's product portfolio(s) across the entire life cycle and value chain.'* (p.1)

In many ways LCM frameworks mirror the approaches used by the authors in their teaching and describes a general trend in Sustainability strategies that require a multi or trans-disciplinary approach and an understanding of social and behavioural systems that sit behind the technical systems of a product. A three pronged approach of **Eco-efficiency, Systems Thinking and Behaviour Change or Management** constitute a multi-strategy approach to design-led projects in the sustainability field and allows for a capture of variations between types of problems, categories for consideration and strategies that might be deployed as a way of mapping a problem, designing a solution and managing its implementation and effect.

### *Sustainability in the workplace*

RMIT University, and particularly the work of the Centre for Design has been a significant location for eco-design discourse in Australia for the best part of 20 years. Under the leadership of Chris Ryan in the latter half of the 1990s the Centre saw itself as a "catalyst(s) for change, a way of shifting the terrain of competition for new product development"(Ryan, 2003, 10-12). The Centre pushed the idea of "Eco-Redesign" through a widely distributed video, courses and training programs and presented eco-redesign as a

definite process that designers could undertake in redesigning products to make them more environmentally efficient. This push linked universities and design consulting firms with product manufactures to do some exemplar projects in the areas of household appliance design and early product distribution and recycling station product service system design. With hindsight we see that while the Eco-Redesign movement with Government funding was being developed as a future way of design practice Australia's manufacturing base was at the same time shrinking both in total scale and in diversity. The decline in the local manufacturing sector gathered significant pace over the past decade as companies off-shored their manufacture in response to a stepped reduction in import tariffs and the development regional trade agreements. As opportunities to practice eco-redesign in local mass-manufacturing contexts were diminishing design began to privilege a discourse of making one-off artifacts or using design for new product development (NPD) rather than redesign. As a result Eco-Redesign strategies were used less directly than initially devised and often as an ideological or intellectual aspect in the conceptual stages of design.

The Australian situation is itself perhaps unique in that design has had to wear three hats in the sustainability agenda: the eco-design or DFE hat for theorising and seeking to optimise design processes inside a product manufacturing construct that was premised on a scale of mass supply; the designer-maker hat that limited volumes of production and controlled all aspects of manufacture, and thus by-passed the need for managing run away environmental impacts by limiting supply ; and, the design innovation hat that worked in a way that either did not use or did not have precedents from which define appropriate courses of action. Perhaps because of this shift in the nature of industrial designs engagement away from a practice of re-design to one of design and innovation evidence of the 'stickiness' of eco-design or sustainability as explicit in the curriculums of design schools was fairly limited in the early years of the millennium (Ramirez, 2006). In the years since sustainability as a central discourse is perhaps more evenly spread across Australian industrial design education providers than it is was and broader notions of sustainability are now common in the professional work of design graduates.

Industrial design has long positioned itself as a profession that would react to design briefs set by a client. This approach to the ways designers worked created quite sensibly a format by which engagement with sustainability would be an activity of redesign or incremental improvement thus setting the framework for methodological conduct for sustainability

approaches. Two critical things happened that limited the impact of design for sustainability in this vein that from inside design are quite clear but perhaps opaque from the outside. The first is that industrial designers that engaged closely with manufacturing realised that affiliated fields, such as engineering and environmental management, had taken up the challenge and put in place systems that solved many of the eco-efficiency problems that had previously made manufacturing wasteful.

The second was that these systems for greening the making of goods were rapidly transferred through various supply chain compliance requirements to the very performance of the goods made. When engineering adapted methodologies of manufacturing practice, such as Total Quality Management (TQM) and value engineering, to include issues of pollution and other waste streams new specializations of engineering that could incrementally transform product manufacturing towards more environmentally appropriate practices were created. That 'big industry' would not be needing designers to work on the eco-redesign of their products was largely ignored by its devotees both inside and outside of industrial design - a pattern of being repeatedly rendered irrelevant that plays out frequently as other technical and managerial professions adopt and adapt design concerns formed through designs ability to link the social, technical and contextual in order to tackle problems and to propose alternatives.

For instance in Japan eco-design became a subject within mechanical engineering quite early on and big industry began to build eco-redesign as a key component of best practices. In France and other European countries legislative reform produced a new form of compliance that required all involved in the product design, manufacture and procurement process to develop new systems for management.

The emergence of ISO 14000 and Total Quality Management (TQM) effectively removed the imperative for industrial design to carry the burden of decisions as advocated in the DFE and DFS discourses of the last decades of the 20<sup>th</sup> century and marks a significant departure of eco-design discourses as having centrality in industrial design curriculums. While marking a loss of potential agency in the determining the net implications of things designed this migration from a set of design strategies to a fully fledged system of checks and balances inside the mass manufacturing construct opens new opportunities for design in the sustainability domain. This we see in the growth of a considerable environmental business and public sector in Australia. However, with "green jobs" being identified as

one of the most significant growth areas in the transition from a high to low(er) carbon economy, very few of the design jobs with this growing field of work really require designers to use the eco-design tools and methods that they might have acquired through sustainable design theory or practice while at university. Typically these jobs sit inside the services sector and offer auditing and technical expertise that get utilised alongside or after the engagement of design.

Critical to these shifts in the meanings of sustainability in design has been the disjuncture between the discourse for (and from) design and the actual boundaries of responsibility for environmental decisions inside the professional domain of design for manufacture. Two decades of systematising design processes for greater eco-efficiency has shifted many of the hard and analytic negotiations that designers and other specialists initially tasked themselves with to other professionals in the engineering and logistics domains of product manufacture. Similarly much of the theory and theorising in the design for sustainability space have been undertaken from disciplinary positions outside of design – social science, business, engineering and environmental management. While design inside the university context has readily accepted and actively developed these ideas into their ways of thinking and teaching design it ought not be assumed that such an adoption necessarily presupposes an intention for application outside of an educational context. Systematic approaches to sustainability inside the teaching of creative practice - be they commercial, clinical or technical in their focus - provide on one side a means by which design decisions can be subjected to various methods of validation and management, and on the other an ideological dimension that can be used to carry forward design in innovative and contextually sensitive ways.

The sustainability imperative inside industrial design has thus split – producing two distinct orientations; sustainability as an ideological or moral discourse encountered through design and sustainability as a managerial discourse for design. Inside industrial design education the latter is not possible without the former: the former feeds students into the latter. It is in this former, the ‘moral’ territory, that the notion of the ‘social and sustainable’ is worked on by students and teachers keen on inhabiting the space of design activism. By its very nature this produces a kind of design engagement that looks at sustainability as a community engaged activity. Researchers within university contexts find a ready ecology of enthusiasm and energy for particular service design and social innovation projects that have an activism flavour. While it is easy to recruits students into

sustainability from an ideological and moral standpoint, those who enter in this way may develop a position that is in opposition to big business and that finds difficulty with industrial designs underlying consumptive agenda.

University communities with a sustainability bent thus present students with two pathway choices; one leading towards advocacy and another towards realizing sustainability through technological innovation. This latter pathway contains within it notions of product management and stewardship within the framework of an engagement with the notion of best practice in business. This pathway potentially leads out of design, and the other leads forward into an integrated practice of sustainability and design. As a consequence the existence of a robust Industrial Design practice within the corporate ecosystem of sustainability in Australia remains unclear. The capability development for sustainability within design however continues on.

## Conclusion

Once a fairly isolated concern sustainability as a central intellectual pursuit inside industrial design is evidenced in a rise in publications about sustainable behaviour change from a design perspective and the ideological orientations of students that seek to develop careers in industrial design and its variants. Although often not explicitly defined as such sustainability discourses inside industrial design education and practice are by their very nature discourses of design management. The “ability” to “sustain”, or more precisely the “ability” to reduce the probability of “un-sustainability” if positioned as a method of management for design provides powerful ways of structuring and planning an approach to design and opens out and leaves space for a diversity of meanings to be made through practice inside the design-sustainability negotiation. The two decades of development of systematic approaches for design to be less un-sustainable than it might otherwise be have however produced a dilemma for proponents of sustainability in ways similar to the dilemma that design management negotiates: that designers and design discourse frequently shift the boundaries of practice to reflect the meanings of design that both derived from actual practice and that are desired from future practice. The problem thus confronted by the university academic compelled to prepare professional designers with sustainability capacity is the divergent nature of a knowledge ecosystem and the disjuncture between the theoretical and its application inside design practice.



The application of theory from eco-design, LCM and more recently behaviour change has found its way into design education and design research practice within the universities. While this work is often significantly focussed upon technical innovation the ability to function within and amplify the domain of sustainability within what we refer to as the management discourse of design is slowly gathering momentum. Design for Sustainability sits alongside User Centered Design as foundational design methods subjects inside the RMIT undergraduate industrial design program. Students undertake design theory and methods courses in sustainable service design, consumption studies, social design and design activism, and are presented options to undertake sustainability and social innovation focused design studio courses. Studios see students and staff frequently engaged in collaborative projects with research groups such as the Victorian Eco-Innovation Laboratory and the Centre for Design, and international sustainability networks such as LeNS and DESIS as well as local service and product making firms that see a sustainability agenda as core to their business operations and development.

In the final honours year of the program about a quarter of all students undertake year-long design research projects that deal explicitly with environmental and social innovation concerns. The prospect of industrial design being able to break into the other side of sustainable management inside the services sector has been extended through the development of a new double degree program with Sustainable Systems Engineering. In a similar way, but aimed at tackling design for lean processes inside the manufacturing domain a double degree in Industrial Design and Mechanical Engineering has also commenced. Through this combination - of locating sustainability as both a technical and managerial practice and as a critical topic for socially negotiated creative practice -the potential of establishing a significantly diverse design-sustainability-management capacity in our graduates is promising.

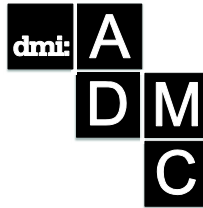
At this juncture the future nature of application of sustainability inside the formative education of industrial designers remains fuzzy. Changes to the design and manufacturing sectors continue and the industrial design profession in Australia seems to becoming more resilient in the ways in which deals with uncertainty. However, in positioning these discourses as discourses of design management within the formative development of design professionals provides an opening for the crafting of design capability

that is robust in its ability to plan and evaluate new courses of action inside a rapidly changing manufacturing and services sector.

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# Application of Patina for Product Sustainability

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*Affluence in the mass production-mass consumption era has resulted in the fast consumption of products. Fast consumption leads to product waste with short life cycles, and these short life cycles have raised environmental concerns. Sustainable design has thus emerged to cope with these environmental challenges. Despite the concerted efforts in sustainable design and, further, sustainable consumption, the product life cycle has remained short; products have recently been short lived long before their due life cycles. These short life cycles at least partly hinge on the durability of the products' relationship with their users. This study is an attempt to address sustainable consumption by forming ongoing relationships between users/consumers and products. To enable products to have a longer life cycle, we are proposing the concept of patina in product/product-service design. Patina enables a product to be more valuable to its user as time goes by. We utilize a case study as a method to explore the concept and the applications of patina in design. Various cases dealing with patina have been analyzed. Based on the above analysis, we suggest various types of patina and the implications drawn from each type of patina. The understanding and application of patina can help to prolong the life of a product and is a critical element for designing a sustainable product.*

**Keywords:** Sustainable design; Digital patina; Consumer-product relationship; Attachment

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## **Introduction**

Society has long engaged in both massive production and indiscreet massive consumption, which has resulted in the environmental impacts including an unfathomable amount of waste, serious depletion of resources and significant environmental damage from waste products. For the past 40 years, designers concerned about the gravity of the problem have criticized consumers' mammonism and extravagant consumption and endeavored to pursue sustainable design. These designers have successfully approached technology, function, use and material for product design, devising sustainable designs using eco-friendly materials (Blevis, 2007), while sustainability from the consumers' perspectives has not been investigated much.

Traditionally, people have long cherished products with intrinsic value, although they live in a highly-industrialized society with material richness by massive production and consumption. As time passes, attractive products purchased even a short time earlier are treated badly and disposed of, frequently before the end of their physical life span. The reason why consumers are willing to discard products so soon and replace them with new ones is mainly because these consumers can easily get bored of them. Due to the consumer's indifference and reckless usage, products that fail to gain status as a favorite with the consumer are generally devalued and thrown away before the end of their life span (Chapman, 2005). Therefore, in the current consuming circumstances in which products are easily consumed and deserted, sustainable products can be identified by the relationship between product and consumer. That is, the long-term intimate relationship between consumer and product is strongly related to the product's life span and has great influence on sustainability. Thus far, product sustainability has sought physical and superficial durability, but it is now necessary to build up metaphysical durability. In this regard, many research focused on product and consumer relationship for sustainability; Jung(2010) suggested ways to promote sustainable interaction design to promote users' attachment to artifacts, sustainable behaviors, Hanks et al.(2008) explained the qualities of objects being cherished, and Spangenberg(2010) distinguished design for sustainability from eco-design and emphasized the effects of satisfier efficiency and sustainable consumption.

With this study, we try to identify ways to be able to extend the life span of products and strengthen sustainability by focusing on consumers who make decisions to purchase, use, and dispose of products. We suggest that

patina can meet consumers' personal needs and reinforce the relationship between product and consumer, thus enabling durable use and retention of products.

## Skeuomorphic design

As 'analogue' has been replaced with 'digital', skeuomorphic design has appeared in order to increase consumers' intuition and understanding. Skeuomorphic is from the Greek '*skeuo*', which means 'vessel' or 'tool' and '*morphe*' meaning 'shape'. Skeuomorphic design means 'duplicating the design of the shape and features of an original tool'. Examples include light bulbs shaped like candles or a chandelier, and tire wheels reflecting wooden wheels; skeuomorphic designs keep the metaphoric shape of the original and apply it into the design, although not necessarily due to developments in materials and technology (Gessler, 2012).

Keeping pace with technological development, therefore, skeuomorphic design provided consumers with a metaphor that explained why the artifacts changed in shape and helped them accept brand new goods or new technology with ease. When the skeuomorphic design is applied to new and innovated goods, users will be able to analogize the time and experience of the goods they use so that they will accept new products without adverse reaction and become accustomed to them. This merit in skeuomorphic design is that it provides intuitive data to consumers and reinforces affordance and usability. Transferring the feeling of using analogue products to digital products enables users to increase their intimacy with the products. Without any information on an e-book, if we apply the skeuomorphic design shape of a book containing a complex of data, readers can instinctively realize how to turn a page and use the index; also, they assimilate just as do when they read an analogue book. Maintaining the feel of an analogue device lets even users who are not accustomed to smart phones readily accept e-books. Since the skeuomorphic design is an intuitive tool relying on vision, it helps the user to sense the user interface (UI) with ease, even if the user has never before encountered an online arena. In addition, the familiarity of this tool helps users to obtain information and use brand new products without difficulty so that their intimacy with the products increases, regardless of the users' age, gender, or nationality (Coyne, 1995). Despite these diverse advantages, however, skeuomorphic design still leaves much to be desired since it has not contributed a lot to

forming a relationship between product and consumer, or to extending products' life span.

## **Flat design**

Flat design, as the name implies, means a simple design with the application of flat style without any specific effect. It emphasizes the definite appearance that excludes useless design factors and makes the most of simplicity and intuition. Flat design has vestige of analogue images and this is its difference from skeuomorphic design, which may appear boring and old-fashioned. Thus, flat design can be regarded as modern and trendy. Discarding the heavy images of skeuomorphic design that provide overflowing information and too much explanation, flat design emphasizes simplicity and intuition, thus allowing more freedom for analysis in order to let the users feel orderly.

Skeuomorphic design has been criticized in particular for the icons of applications that reflect the shapes of the devices; it became difficult to achieve consistency in the look and feel. The need for flat design has consequently increased. Flat design reflects the modernism and tidiness of digital devices to the users who have grown weary of the analogue's familiarity and it lets them feel unity with their products. At first, this simplicity limited the flat design in information delivery; however, flat design not only improved weaknesses by using typography, but also gradually provided consumers with advantages, including exact information about applications, which emphasized symbolic images and created identity. Flat design containing diversity and flexibility has been used longer. Additionally, as skeuomorphic design has been criticized for its lack of fundamental introspection on the new environment and new products, flat design has become more highly valued. This may mean that the metaphor of skeuomorphism, related to facilitating connections between people's physical world and digital world, is no longer necessary. A design with a musty analogue metaphor is not needed by consumers who have already become familiar with the digital world and its new products, and flat design is becoming more powerful because the most users have not experienced the products motivated by the current skeuomorphic design. This likely creates concern about the difficulty of transmitting the experience. In addition, a new UI design was needed that incorporated necessary functions, easily performed in simple digital format, as convenient manipulation in analogue is difficult on a digital screen. Thus, there was the

need to eliminate useless layers and components. In the rapidly changing digital circumstances, as both the diversity and complexity of digital devices are getting increased, a fast, intuitive, and effective design was required and it evolved into the flat design. This change has created the optimal environment for interaction between humans and computers. This change also focused perception on each element as a design element a palpable purpose. Flat design contributed to decreasing the perceptive complexity and increasing the digital product-user interaction. However, it has not influenced the relationship or intimacy between products and consumers.

## **Digital Patina**

The general understanding of Patina is usually a green film formed naturally on copper and bronze by long natural exposure or artificial treatment (with acids); a patina is often valued aesthetically for its color (Webster Dictionary).

Patina originally signaled its owner's symbolic social status, background, and historical legitimacy. Since the Industrial Revolution in the 18<sup>th</sup> century, mass consumption of the massively produced products has become the norm. Yet, such massiveness in consumption began to fade and finally vanished (McCracken, 1996). Classical goods and styles were regarded as outdated, while new styles came with the best technology and applications. People kept shopping in order to keep up with the trend. Therefore, they put novelty before tradition and memory. People began to tend toward ostentatious consumption, and continuously obtaining new products became a symbol of wealth and social status rather than owning material or products indicating social position (Braudel, 1973). Consequently, people purchased goods and utilised them in order to distinguish themselves from others. They tried to gain social status with these behaviours (Braudrillard, 1991). Patina had lost its role as the symbol of incumbent social position. In digital era, patina has been newly endowed with meaning as the users' trace which has personal value or a distinctive shape formed by interaction between product and user. Users personalize products to invest their own value into them by transforming the products, specialising their uses or accumulating use traces on them. By the flow of time and repeating usage of the goods, the users' personal and social identity is potentially accumulated on products. Thus, the patina of products can be defined as the change or influence accrued in the products, users or surrounding environment by means of the process of repeated interaction between



people and products (Lee & Nam, 2013). The users enter into a close relationship with the products through this patina and come to get emotional affection to the products (Straw, 1998). The meaning of digital patina has evolved to include the feature of relationship and quality being constant over time, or the life span of the product. (Pelletier, 2005). That is, through the patina, which is the trace of consumer use left to indicate ownership while consumers are using the goods, specific goods endow identity with social meaning and these products have more value via interaction as time goes by. The relationship between product and user evolves so that the product becomes more meaningful, and consequently obtains psychological and emotional durability that keep people from easily discarding it. In particular, patina has more meaning in digital products. Digital products such as websites, applications, and smart phones are not aging in the same way as other products. In contrast to analogue products that become battered as time passes, digital products have a tendency to not easily age or wear out, which means they stay good as long as a specific technology or product dominates the market; consumers exchange them only for new or radical technology development or if significant advances in convenience are introduced. Additionally, digital goods are ethereal and have no materiality, while analogue products have real weight and texture. Digital products make it hard to create an emotional experience and cannot induce emotional connections such as affection, while analogue products create that emotional connection by means of interaction and enable the consumer to experience the product with all five senses. Therefore, analogue products are rather far from the goods that arouse something emotionally valuable and desirable to retain for a long time, so they are humbly consumed and end up being discarded. The life span of digital products depends not on physical durability but on the users' personal and social meaning for the products - their relationship with products and emotional affection for them. Therefore, patina in digital arena is significant as a means of inspiring analogue feelings about a digital product. Digital patina solves the non high-tech and non-publicized digital products' problems by inspiring something that was regarded as insignificant but contained high value; thus, digital patina can eliminate clumsiness and inconvenience (Pelletier, 2005). In addition, digital patina provides more value over time by connecting analogue emotion with imperishability and aplastic nature of digital products. Digital patina bestows vitality to digital products by transmitting the more psychological effectiveness than its original function, and it arouses sympathy and increases the sustainability

with intimate emotional relationships between consumers and products. Due to the trace of users' interaction with the products, the products become meaningful, symbolic and more beautiful (markboulton.co.uk, 2012). As they get aged, they become more useful. The close interaction that is at first an unfamiliar experience turns to intimacy and affection for the digital product (Pelletier 2005). Like this, the digital patina, including the products being produced for a long time, the trace of interaction between and among users, and the beauty of aging, contributes to forming the relationship between consumers and products; it inspires added value in the products and expands the products' life span. That is, it increases sustainability consumers intend to retain the products longer.

In this study, in order to materialize the concept and character of patina, we search for patterns of patina and its application in detail based on smartphones. Smartphones are usually located near at hand or in hand with the switch on and are more frequently used than any other devices. Besides, they are also used as camera and MP3 player and for access to the Internet and e-mail; they involve diverse interactions. Smartphones are among the most suitable products for researching patina as they are the devices with the most abundant accumulated trace from use both hardware(physical) and software(digital).

## **Classification of Patina**

As consumers make use of the products, the remaining patina on the products can be classified by various patterns depending on interaction among products, period of interaction, and type and location.

Lee & Nam (2012) suggested a pattern classification of patina based on the type and location of creation by means of case analysis of interaction between products and users. They separated the patterns by the patina formed on the product, such as wear and tear, and texture change, and the patina of users, such as memory, emotion and habit. The patina is accrued in the surrounding circumstances in the form of writing experience or uploading pictures to a blog or other media. In addition, products develop a material patina like scratch, wear, or intentional marks and non-material patina such as the information of experience and memory.

Table 1. Classification by forming locations and patterns of patina (Lee & Nam, 2012)

By location of forming	Formed in the products
	Formed in the users
	Accrued in the surrounding circumstances
By patterns	Material
	Non-material

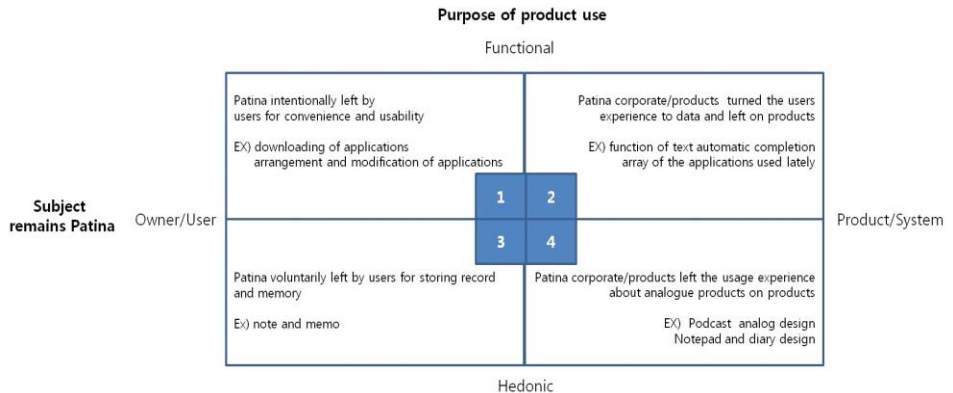
In contrast, Schütte (1998) applied the concept of patina to his study on the history of digital products and classified the patina patterns by agent, object and remaining trace. This is separation based on the accrued history of patina, which remains as time goes by from the interaction of users, and this can be a classification for exploration of various processes of patina formation.

The purpose of this study is to search for sustainability through building the relationship between users and products and expanding the scope of the relationship. We have focused on the interaction between users and products for classification. The main subjects are the consumer's usage pattern of products and the creation of patina. Products are divided by the buyer's desire and the purpose of the goods into functional/utilitarian goods and hedonic/symbolic goods. Purchase of functional/utilitarian goods is mainly motivated by mechanical and functional needs, whereas hedonic/symbolic goods are purchased based on the experience of consumption which has already provided fun or pleasure. (Dhar & Wertenbroch, 2000: Hirschman & Holbrook, 1982). However, such classification by functional and hedonic goods does not classify the goods themselves but is arbitrary according to the consumer or functional purpose (Okada, 2005) and the two classifications cannot be applied at the same time to one product. Therefore, Tractinsky, Katz and Ikar (2000) classified the factors of the experience digital goods provide from the perceptive aspect, such as utility or usability, and the beauty and sense aspect such as the attractiveness and pleasure. Hassenzahl (2004, 2008) studied users' experience related to digital goods by separating pragmatic and hedonic goods. In this study, we try to divide the pattern of patina by experience and the functional/hedonic utility of the product.

Another classification is by remaining patina. Users can leave traces intentionally to signal ownership of the product or unintentionally by means of the manufacturer's system while the user is using the product. In the process of purchasing and determining the utility of digital goods, buyer involvement is necessary. The buyer must be involved in purchasing,

downloading, and installing the product. They actively and intentionally leave the patina for customisation. Users' involuntary trace can also be left on the goods. Picture 2 demonstrates the consequent patterns of patina.

[Picture 2] Classification of patina



#### 4.1 Patina left by users for pragmatic utility of the products

While users are using smartphones for pragmatic purpose, in relation to functions, the standard examples of patina intentionally left involve downloading and installing new applications and customizing products, such as modifying the icon array by sensibility and accessibility.

The structure of the first screen of smartphones has special meaning to users in relation to function customizing because it functions not only to express character and make screen design, but also as a window connecting to the utility of applications. After users purchase smartphones, they install and array the applications to suit their preference or lifestyle, then they create categories by similarity. In the process of this manipulation, users engage with the products so that they can control the functions of the products for their own purpose. This engagement can lead to improvement of product.

Like this, users intentionally leave patina on the first screen of the smartphone to optimise its functionality. This process reflects the user's characteristics and contributes to product development. Additionally, users specialise their use and purpose from the patina left by participation and experience. Consequently, the smartphone comes to mean something to

the owner. In the process of users' modification of the screen provided by the manufacturer, users become manufacturers themselves by participating in the product design to produce customised goods and thus their emotional affection for the product grows.

#### *4.2 Patina left on the product for pragmatic use*

While users use the products for pragmatic purposes, despite users' intentions, traces are occasionally left through the system. The patina is left from use by, for example, the function of making data based on repeated patterns of use and realising customisation like text automatic completion, instantly visible functions of the applications used recently, frequently used applications, and automatic sound volume control. 'Text automatic completion' does not work in the beginning, but, as time goes by, the device saves the user patterns to carry out the function. Users can conveniently send texts because this function remembers their frequent texts. Users experience convenience, speed, and functional superiority and their ownership is enhanced by this customizing. This patina is similarly applied when users listen to music. At the first use of listening function, users perform the function 'music added lately'; later they can conveniently use the function 'most frequently played'. The more data are saved in the smartphones and the longer the data are saved, the more automatically arrayed the data are in the system so the usability increases. Additionally, users can also experience another patina, 'the function of automatic volume control'. At the moment a user connects the earphone to the smartphone, the volume automatically fits the same volume as established at the last use. This means the extension of usability through the patina formed in the short term. By means of the interaction between consumers and products, both usability and convenience are increased. The more users make the use of the smartphone, the more experience the smartphone accrues; thus, smartphones remember user patterns, personalise related functions, and provide improved usability compared to the basic functions.

#### *4.3 Patina left by users for hedonic use*

Users contain their identity in their smartphones, modify wallpaper to decorate the screen, or save memos, a diary and photos to store their own experiences and memories for hedonic purposes. Thus, patina for hedonic use is all patterns of record intentionally left by users. This includes everything about the users themselves that they save in the phone. As the IT environment began to allow transmission from the personal computer (PC)

to mobile devices, smartphones become representative of personal devices and, moreover, became users' second self. Users inspire the meaning of ownership of the phone by modifying the original wallpaper into the one with their own style; including photos or other images that expresses their preference or characteristic. Besides, the story revealed by the photos and memos about the owner are not only the sign representing specific occasions of memories, but also something long and worn representing history and old times. This strong affection has to do with the meaning users inspire in the products. Just as we do not throw away a teddy bear we grew up with just because it is worn out, the patina stored in the products with personal memories creates a connection between users and products.

#### *4.4 Patina left by products for hedonic use*

This patina associated with hedonic use provides the digital goods with experience or emotion users remember through design factors in the process of transmitting from existing goods people have used for a long time to digital ones. This is a good example of the patina applied to digital products from analog designs used for pot cast service. With the newly introduced pot case service through smartphones, we can use various content such as news or drama in the form of internet-base audio and video files, which provides great convenience because consumers can enjoy the recorded contents, while they reserve time for real-time news or drama without them. The new name 'pod cast service', converting the existing service to digital and then providing users, is delivering familiarity and comfort to consumers and has got more understanding from users because in the design the service applied a metaphor that reminds people of analog service. This applies to the case of the notepad in the same way. The most general color, yellow, was applied to the icon for the notepad, which is frequently used in iPhone or iPad. Besides, by leaving a trace like a torn shape made by the users at the top of the notepad, the patina, the trace of use, is applied in the icon design. It also makes the page look real when pages are turned; application of a real shape in the page design strengthens the connection with experience.

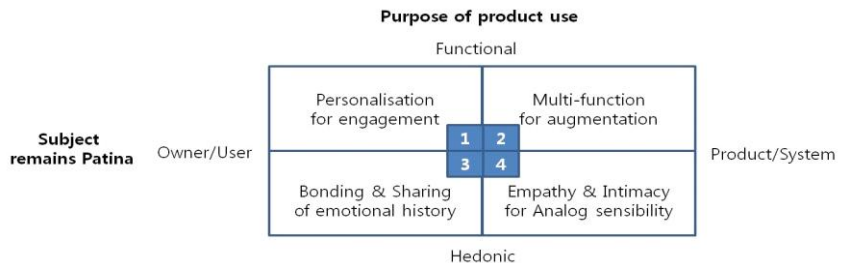
Consequently, patina which contains memory of an analog product connects physical world and digital world, so it helps consumers understand products and interaction with them. Patina suggests the method consumers have used and controlled in physical world and helps them use products in digital world without difficulty. Since people come and go between analog real society and digital cyber world, they are involved in two life systems.

Therefore, patina provides users with mental richness and the emotional affection to apply the original analogue design to digital products.

## Application of patina

In the course of interaction by patina classification, we have studied the characteristics and features of the patina left on products. Patina accrued as time passes reinforces the products' function and value, inspires emotional affection, and help product design through high sustainability and an extended life span. Reinforcement of each factor in patina will create a dense relationship between products and consumers. The four classifications illustrated in Picture 3 offer a strategy to strengthen patina factors.

*[Picture 3] Application of patina*



### *Patina left by users for pragmatic use of the products: strengthened user's involvement*

In order to strengthen pragmatic use of the products, users themselves intentionally leave patina, and therefore personalisation of products is necessary. Modern consumers who have strong self-assertion tend to own their personal products with their own brands; thus, the popularity of the products which enables consumers to make their own product and to have ownership is high (Blom and Monk, 2003). Consumers can even hack smartphones to personalise products and manage the applications and services without any restrictions. From this process, personalised usability increases. In addition, personalisation and strengthened factors in design reinforce the relationship between products and users, and make the products more meaningful in themselves. The personalisation of digital

products, depicted as 'ensoulment' by Odom, Pierce, Stolterman & Bleviset (2009) is possible by means of patina, identity and intention for use left by the users, which increases the degree of connection with involvement, users and products. A relationship developed through personalised experience and participation can significantly influence sustainability by attracting consumers' strong and positive attention.

### *Patina left on the product for pragmatic use: understanding on the context of use*

To employ the patina left on the product by transforming users' experience into data, we need to analyse the consuming environment and context and the functional diversity according to consumption purpose and intention. Otherwise, the patina may fall to an element that results in inconvenience. This frequently happens if users do not intend to save their use patterns or do not intend to keep their previous repeating pattern. We communicate in a little different language depending on to whom we speak. When we comfortably use internet terms with friends or speak with teachers or elder people, we use different patterns of language. Therefore, the function of automatic text completion can be convenient or not based on the saved words in the situation. It is necessary to customise use experience in more detail in order to make the best functional use of the patina unintentionally left by users. In the case of automatic text completion, we will be able to avoid user inconvenience in advance if we use the patina that is individually saved. Users can enjoy more if the patina is applied to an obvious purpose, like having users see all related phone numbers after typing a few initial numbers.

### *Patina left by users for hedonic use: abundant sensitive record and sharing*

For patina users who voluntarily save to record their own memory or experience, it is necessary to reinforce the convenience in saving, diverse saving factors, and factors for sharing memories. Products containing the users' history and spirit should be reinforced to keep the spirit rather than repaired or turned into goods that are only a little better (Odom, 2008). Especially, when personal stories can be recalled, the spirit will be reinforced. Remembrance has been created in life between one person and others over a long time and, as time goes by, this remembrance becomes more valued. This phenomenon has a thread of connection with the patina mechanism. For instance, it provides humanity and emotion in that the user



takes photos, saves them and adds some notes to them, just like the feeling or emotion at the moment of the shot. As the photos pile up in the products, consumers come to value the products more. This value is amplified in diversity as the consumer's history is saved and it enriches the spirit in the products. Rather than good image quality and high resolution, by means of enabling the instant addition of feelings to the consumer's actual memory, saving the record to revive later provides emotional value. The patina, as personal record and story, encourages people to share experiences and memories with related people and becomes a powerful medium. The sentiment of ownership of 'having' or 'keeping' a digital material could build strong relationship and attachment in the same manner as physical one and sharability may help foster ownership of sharable resources and digital product. Moreover it could reduce material consumption by enabling sharing of digital data or software contents (Jung et al.,2010).

*Patina left by products for hedonic use: analog sensitivity*

Lastly, to strengthen the patina, infiltrate analog sense and become familiar with a new technology or service, empathy and intimacy should be reinforced. The existing analog method is disappearing due to the development of digital products. People are reading e-books through digital products instead of reading paper books. Because mobile products such as iPad, utrabooks, and tablet PC provide much more convenience and effectiveness, they have replaced paper notes. Nevertheless, digital products can never provide an experience like tactile paper, scents or other experience such as underlining with a pen or inserting reference marks. The fact that digital products are fast and accurate, makes it possible to modify them at anytime, to keep data for a long time that is focused on technology, functionality and usability rather than emotion. However, the skeptical perspective on the modern society which has already been digitalised longs for the past material subject and value system. In this process, analogue design naturally becomes recognised as the object of longing. Because digital products are improved in usability not through the interaction of users but only through technology upgrade, users can not develop strong affection for digital artifacts; on the other hand, users appear to have more affection for analogue products since they are becoming 'users' goods' and getting increased in usability as time passes (Odom and Pierce, 2009). Therefore, having memory of the analogue products alive in the people's mind, the analogue design containing patina such as memory of the old

things and longing will inspire emotional factors associated with digital products that indicate the digital products are overly mechanical; it is difficult to develop affection for them and reinforce the interconnection between users and products.

## **Conclusion and Implication**

In an environment of both massive production and consumption, as consumers spend more frequently, studies conducted in diverse disciplines have examined products' sustainability to deal with environmental/social problems. In this study, we suggest not only that the design factors can enhance durability using eco-friendly material or new technology, but also that the application of patina as a searching method strengthens sustainability as well.

As the interaction between users and products is ongoing, usability has gained more importance, and the reinforced emotional relationship delays the disposal of products and actively leads to the alternative use instead of disposal. By means of extending the life span, products can be turned into sustainable products.

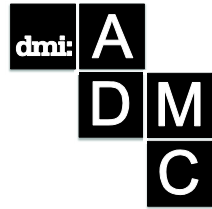
Therefore, in this paper, we have defined the concept of patina as the trace of use through interaction with a product and classified the patterns of patina. Since we are aware that it is difficult for digital products to form intimate affection with users in explaining patina based on smartphones, we have searched applications of patina for forming relationships with consumers and development. Lastly, we have identified the application of patina for future design to increase sustainability of products and extend their life span. Active application of patina that increases practical and emotional value, and enables the forming of relationships of affection is significant in designing sustainable products.

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## Design for development management

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*Due to the evolving role of development organisations over the years, critical questions are being asked of their accountability and performance throughout the development literature. The complexity of the challenges these organisations are facing are accelerating faster than can be addressed with traditional, analytically based management approaches. The design community has much to say on how it can play a more significant role in this context.*

*Consolidating an in-depth literature review with applied, hands-on and in-the-field experience, we propose new perspectives on how more human-centred design approaches assist development organisations. Particularly, how these organisations may achieve greater social accountability by moving beyond quantitative measures in defining and delivering initiatives to address real human needs. In addition we extend Buchanan's 2001 seminal body of work which introduced the role of human centred design as affirming human dignity through the empowering of people and communities to engage in decisions that work for them rather than being recipients of external and sometimes misaligned "solutions" to them.*

*Our work is relevant to a mixed audience comprised of designers, development managers, donor organisations, and other actors involved in the design of new futures for marginalised populations in developing countries.*

**Keywords:** *Development management, international development, non-profit, human-centred design, sub-Saharan Africa*

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## Introduction

It is becoming ever more apparent that the existing nature of political systems and business practices are proving unable to adequately address the underlying large-scale problems which are causing poverty to prevail. With increasing pressure on global resources and funding availability, non-profit organisations who administer aid and development programs are increasingly being expected to do more with less, particularly around building local capacity and co-designing solutions based on shared value rather than long-term dependency for beneficiaries.

The growing criticism of development organisations extends to the ineffectiveness and unsustainability of their traditional, linear and cause-effect models of change, which have had minimal long term impacts on marginalised communities in developing country contexts (Dennehy, Fitzgibbon et al. 2013, O'Dwyer and Unerman 2007, Collier 2007, Britton 2005, Madon 1999). These linear approaches have ensured accountability to be directed to donors more so than beneficiaries, and on project needs more so than human needs. Whether intentional or not, this has resulted in limited beneficiary participation in defining the need or solution possibilities early enough to really influence key issues which directly affect them. Human centred design offers prospects for a strengthening of development organisations' social accountability and performance. This is achieved through balancing out the current over-reliance on survey data, averages and quantitative measures with more qualitative representation of human need through nuanced representation of the voices of the beneficiaries themselves.

Just as human centred design delivers competitive advantage for businesses and governments who use it (Westcott, Michael et al. 2013), it also has the potential to support international development organisations in achieving more inclusive and community-driven innovation. Victor Grau Serrat, Co-Director of D-Lab at MIT notes:

*“the emphasis has shifted, more from designing for poor people, to designing with poor people, or even, design by poor people. The key aim now is to develop the local capacity, so that villagers themselves can develop their own technology. Instead of viewing them as needy and vulnerable, we view them as resourceful and creative” (Chandler 2012).*

The characteristics of human centred design provide gap fillers in this context and contribute to the way real human need is understood and used to inform decisions in development management practice.

Some development industry professionals liken human centred design to the anthropological concept of ‘participatory development’ and that the idea of engaging local populations in development projects in the hopes that projects will be more sustainable and successful (Mohan 2008) is not new at all. However, human centred design is different in that it is not just about stakeholder engagement. It borrows much more from the designer’s tool kit, specifically, to empathise, visualise and create end-to-end solutions with user needs at the centre of any management planning, decision making and evaluation.

Bringing together analysis and insights from Design, Business and Development bodies of literature, as well as in-the-field observations and narratives with designers and development practitioners, this paper puts forward the case for the integration of more qualitative design-based approaches in development management practice and decision-making.

## **Today’s challenges in development management**

*Why is this important? A new level of consciousness  
(Moyo 2009)*

Across Africa, there are many pieces of expensive medical equipment lying around with no one trained to use them (Perry and Malkin 2011), pump wells lying idle because a part unavailable locally has broken down (AE 2011), and education programs that fail to leverage the cultural context and so don’t achieve a sustained impact (Schweisfurth 2011).

Then there is the greatest issue of all: traditional approaches to charity reinforce peoples’ reliance on others to help them – rather than building a notion that they are able to help themselves (Moyo 2009, Andrawes and McMurray 2014). Moyo claims aid to Africa has made the poor poorer, and the growth slower, arguing that:

*“Africa’s development impasse demands a new level of consciousness, a greater degree of innovation, and a generous dose of honesty about what works and what does not as far as development is concerned”  
(Moyo 2009)*

From another perspective, Collier (2007) argues the design, organisation, distribution and implementation of development initiatives are what's central to the issue. Development organisations and their donors have persisted with conventional management practices and knowledge systems, despite their limitations in achieving sustainable economic growth and poverty reduction (Moyo 2009).

This calls for a more nuanced approach to the management of development initiatives (Collier 2007) if these organisations are to improve their effectiveness and extend their accountability to those they are claiming to serve.

### *What needs to change? The accountability paradigm*

The call for greater accountability toward key beneficiary constituencies in the development literature is termed 'social accountability' and has been discussed extensively for years (Burger and Seabe 2014, Newcomer et al. 2013, Unerman and O'Dwyer 2010, Ebrahim 2005, Cronin and O'Regan 2002, Najam 1996). In practice, however, development management accountability to beneficiaries is not as prioritised as accountability to donors, on whom development organisations depend on for survival (Gent et al 2013, Edwards and Hulme 2002; Najam 1996).

Donors place great emphasis and importance on 'functional accountability,' which is short-term in orientation, requires reporting on resources and resource use, preferences high levels of control during implementation and prioritises the measurable and quantifiable over more ambiguous and less tangible changes in human development (Newcomer et al. 2013, Dennehy, Fitzgibbon et al. 2013, Unerman and O'Dwyer 2010, Ebrahim 2003, Edwards and Hulme 2002). This is in stark contrast to long, iterative and people-centred projects that do not provide quick, tangible results or may not correspond with the outcome perceived by the initial intervention thus making this latter approach unfavourable to donors, even if the project addresses the real needs of the beneficiary population (Dennehy, Fitzgibbon et al. 2013).

There is a significant push for development organisations and their donors to move beyond a focus on narrow, functional accountability and more towards a social accountability one that engages their key beneficiary constituencies more (Cronin and O'Regan 2002; Dillon 2004; Ebrahim 2005; Lloyd 2005; Najam 1996). Embracing this broader form of social accountability has been challenging within a funding environment which



concentrates on upward accountability through financial reporting on activities and short-term impact.

*What is stifling progress? An over-reliance on logic*

Chambers and Pettit (2004) write about the changing nature of development rhetoric to include words like partnership, participation, empowerment and transparency, which imply changes in power and relationships in recent years. This rhetoric seems not to have been matched in practice, rather:

*“power and relationships are governing dynamics that... prevent the inclusion of weaker actors and voices in decision-making” (Chambers and Pettit 2004).*

In practice, most donors require the use of the Logical Framework Approach (LFA) as a planning and evaluation framework to demonstrate accountability for spending designated monies for designated purposes (Najam 1996). It is now, and has been for decades, the global standard endorsed and required by many donors for planning and evaluation relating to development initiatives. The LFA, as adopted by many development organisations and required by many donor organisations, is considered to stifle participation, as it:

*“reinforces relationships of power and control... [and] embodies a linear logic associated with things rather than people” (Chambers & Pettit, 2004).*

The use of the LFA in formulating development programs has reinforced patterns of exclusion (Tacchi, Lennie et al. 2010). Power et al. (2002) state that this particular tool is not conducive to community processes and can prevent communities from driving the development process. It is important to build systems and procedures starting from the community's needs and abilities, instead of expecting communities to conform to donor requirements of using tools such as the LFA (Dennehy, Fitzgibbon et al. 2013).

The structures and approaches that are put in place by the donors, through mechanisms like the LFA do not allow the space for management styles that encourage innovation, collaboration and participatory ways of working (Tacchi, Lennie, & Wilmore, 2010). The requirement to fit within the framework encourages development managers to focus on work which can

show reasonably predictable outcomes in a relatively short time frame. As a result, they tend to lose sight of emerging opportunities and unintended positive and negative impacts (Bakewell and Garbutt 2005). This failure of the LFA to cope with unintended consequences should not be taken lightly. It is these unexpected consequences which might be the most important consequences of all. There are many case studies of development initiatives where the most striking success was seen in areas not anticipated in the plan, making it very difficult to report with the logical framework:

*“In cases where donors have a distaste for reporting beyond the terse numbers neatly set out in the logframe’s rows and columns, insights of real value are highly vulnerable” (Harley 2005).*

In practice, most development initiatives are experiments, but the LFA sets them up to be judged by the criteria of what they set out to do. This reduces the possibility of supporting initiatives which are explicitly experimental – looking to see what happens rather than predicting a narrow set of outcomes (Bakewell and Garbutt 2005). What this one dimensional approach fails to consider is the messy and complex realities facing development actors. The sector’s reliance on the LFA seems to produce more confusion than clarity, and reinforces:

*“mechanistic views of the development process in which inputs automatically lead to the specified outputs” (Bornstein 2003).*

Development initiatives do not operate within a self-contained system – there are often many factors involved which lie beyond the scope of the planned initiative that will change the way things work (Bakewell and Garbutt 2005). The challenges facing development managers are changing and with that comes new opportunities for improving both the effectiveness and social accountability of development programs through new and complementary ways of working.

## **Tomorrow’s opportunities for design in development**

### *What is the way forward? A more nuanced picture*

As seen with the LFA, most development organisations have adopted conventional management practices from the business world which has resulted in an audit culture of obligatory tools, frameworks and reporting

(Jenkins 2012, Angus 2008). Two key issues with some of the more linear management approaches are:

*“the attempt to make a science of planning with its subsequent loss of creativity... [and] the excessive emphasis on numbers” (Liedtka, 2000).*

In the same vein, Joel Best (2001) challenges why there is a tendency to refer to statistics as absolute facts that cannot be challenged: *“people gather statistics much as rock collectors pick up stones.”* His point resonates with the status quo in development organisations today where there is a reluctance to recognise that all statistics are shaped by human actions:

*“people have to decide what to count and how to count it, people have to do the counting and the other calculations, and people have to interpret the resulting statistics, to decide what the numbers mean” (Best, 2001).*

The excessive emphasis on numbers, when those numbers are in fact social products, does not provide a nuanced or holistic picture by which development management decisions can be made effectively. The use of such quantitative-heavy measurement frameworks also place pressure on development organisations to show their donors that everything has been done in a positive light, and subsequently stifle the possibility of learning within and outside the organisation (Taylor and Soal, 2003).

This risk averse management style does not value or reward attributes of experimentation, action learning, risk taking and creativity (Angus, 2008). Over the years, however, there has been growing critique and unease with this over-reliance. These quantitative-heavy and linear approaches to inform decision-making cannot hold their own in such complex environments. However, neither would a purely qualitative one, hence why a mixed method approach is what is being proposed. Increasingly today, the design discipline is becoming of particular interest in strategic management circles as an approach to dealing with complex realities (Johansson-Sköldberg, Woodilla et al. 2013). As is the case in businesses and governments the world over, development actors are increasingly turning to the design community for ways to better represent and respond to a more nuanced understanding when serving their beneficiary populations.

Thomas Lockwood defines human centred design as *“a process that emphasises observation, collaboration, fast learning, visualisation of ideas, rapid concept prototyping, and concurrent business analysis”* (Lockwood

2010). Human centred design offers a complementary knowledge system that offers approaches that are more widely participatory as well as:

*“more dialogue-based, issue-driven rather than calendar-driven, conflict-using rather than conflict-avoiding, all aimed at invention and learning, rather than control” (Liedtka 2000).*

**Field example: Understanding farmer circles of trust**

In one example in Kenya, designers have worked with a development organisation, a private sector bank and farming communities to understand how best to provide farmers with access to new types of financial products and services. As part of the user research activities, the designers mapped out the trust relationships of farmers in several semi-urban and rural communities. Who do they go to first for various purposes? Who do they go to second? Third?

Figure 1 is a visual representation of trust relationships which would be difficult to communicate through more statistical means. The depiction is not meant to be an accurate representation for each and every farmer, however, it has provided development managers with new ways of understanding concepts of trust and reach for the user group they are seeking to benefit. It also provided an immediate reality check which challenged prior assumptions around how farmers perceived financial institutions.

As depicted in Figure 1, most farmers preferred to borrow and save money through informal means such as family and neighbours, mainly out of fear of losing their homes if they could not pay back a bank. One development manager reflected by noting:

*“we assume that all farmers want credit, but this tells us that just because they want it, it doesn’t mean they trust it coming from us or even our local financial services partners” (personal communication).*

There is significant investment from donors for the development of financial products and services for low-income consumers in developing country contexts. The financial inclusion space is full of statistics informing us of the majority ‘unbanked and underserved’ populations in Kenya for example – however what these statistics don’t tell us is some of the contributing factors as to why – why it may have more to do with trust and perception than a lack of access as is sometimes assumed. This is the point

we argue – quantitative approaches tell us ‘how many’ but qualitative approaches tell us ‘why’ (McMurray, Pace and Scott).

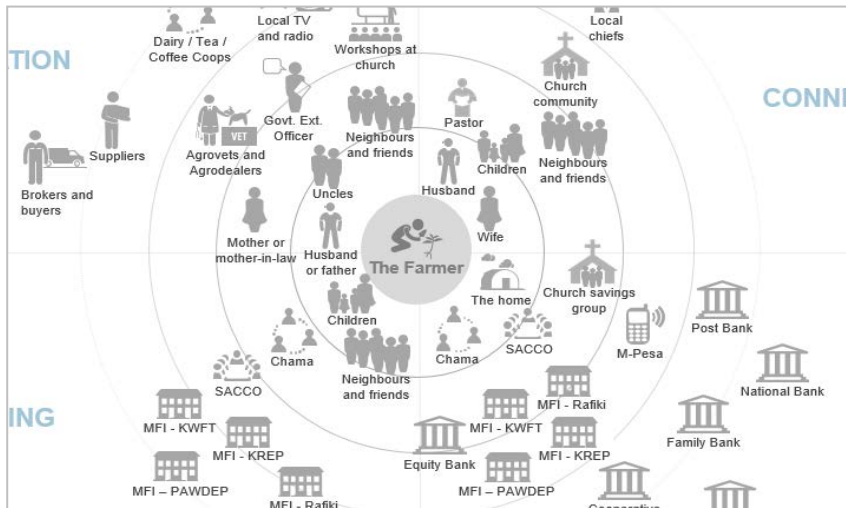


Figure 1: Visual mapping of farmer circles of trust. Source: ThinkPlace Foundation and Grameen Foundation: AppLab Money Kenya Research Findings Report (2014)

As seen with this small example, human centred design provides more nuanced perspectives when identifying beneficiary needs from which to base strategic management decisions. This contrasting approach offers development managers the opportunity to lean more on a knowledge system rooted in iteration and experimentation, with:

*“sequential attention to idea generation and evaluation in a way that attends first to possibilities before moving onto constraints”  
(Liedtka, 2000; Liedtka, King, & Bennett, 2013).*

Through new ways of working adopted from the designer’s toolkit, development managers’ assumptions are being challenged, more and more, decisions are being based on grounded empathy and a deep understanding of the complex realities faced in context. The conversation is changing regarding what’s really important.

### *What can human centred design do? Affirm human dignity (Buchanan 2001)*

There are many powerful examples of the application of human centred design methods for the development and marketing of tangible products in developing country contexts (Thomas 2006, Prahalad 2005). To date, human centred design's contribution to poverty reduction can be determined as either of two things, (1) the production of goods and (2) the consumption of goods (Thomas, 2006). However, Richard Buchanan's 2001 work takes the concept of human centred design further than that, it is:

*“fundamentally an affirmation of human dignity. It's an ongoing search for what can be done to support and strengthen the dignity of human beings as they act out their lives in varied social, economic, political, and cultural circumstances.”*

This suggests that human centred design has a more significant role to play than just developing new products and services. It actually has an extended responsibility to advance people's dignity. The work of London and Hart (2004) agrees with this, suggesting that the traditional business logic model of introducing products into low-income markets requires fundamental rethinking – suggesting a stronger participatory focus on local capacity building and inclusive processes of co-design of innovations.

#### **Field example: Empathising with nurses through nurses' words**

In Ghana, designers worked with development managers in understanding the intrinsic drivers of rural community health nurses and possible solutions to their day-to-day challenges through strongly grounded ethnographic research and facilitated co-design workshops with the nurses.

One of the techniques employed was a process and experience mapping exercise designed to understand nurses' greatest sources of frustration – in their words – this led to a nuanced understanding of what was working and where things were breaking down in the system. It was clear that supporting rural community health nurses goes beyond providing them with the means to do their jobs, but also hinges on making them feel appreciated and rewarding them with professional development opportunities.

This is not revolutionary in and of itself, however, visualising what was learned in new ways, such as figure 2, offers a new way of responding to human need that is significant for addressing many of the challenges development managers face working in such complex environments.



### *What is the designer's role? Solutions rooted in humanity*

Designers depict issues as experience by making things visual and tangible. Whether sketches, models or prototypes, these are all used to mobilise people. Designer strengths lie in creating artefacts around issues which development managers can gather to interpret and discuss. The point here is not so much that these artefacts are visual but rather that they embody knowledge that cannot be easily articulated using tables, words and numbers. The visual evokes emotion and as seen in the field examples, influences the nature of conversations being held at senior levels within development organisations.

This approach tends to provide development managers with an experience which helps them understand what it might be like to be involved in a particular social context or scenario from a user's outside-in perspective rather than the traditional organisation's inside-out default.

While the basic role of development management remains the same as in business management, that is, getting the job done effectively and efficiently, it has the additional task of needing to affirm human dignity. Human centred designers' support development managers to do this through ways to listen to, interpret and represent beneficiary needs, their voices, their values, and enable empathy to be at the centre of development planning and evaluation. In addition to this point, what this demonstrates is that by applying human centred design beyond traditional product and service design, to develop tools for more effective and human centred ways of working within and outside organisations (Buchanan 2001, Brown and Katz 2009, de Mozota 2013, Lockwood 2013, Liedtka 2014) poises a significant opportunity for development organisations to continue their evolution of learning, innovating and optimising their effectiveness.

A human centred design approach provides a stark contrast view of solving social problems to the status quo where a problem can be fully described and then solved in a linear way. The messy, iterative process that designers know how to organise and work effectively through is closer to the complex realities development actors are faced with in their contexts.

As demonstrated by the points above, the design community, now more than ever, is looking at better supporting development managers to think about problems as systems, rather than individual parts. As noted by Buchanan (2001) in his seminal work, by expanding their approaches, designers can go beyond aesthetics and basic form and function, to solutions rooted in humanity.



### *Where to from here? Rethinking measurement sector-wide*

The current nature of funding dominated by quantitative outputs and measures, understandably drives donors to invest in development initiatives which generate predictable and tangible returns on the dollar. Although the current way of operating is working, it is not optimal to maximise outputs. Development organisations, as with other types of organisations, need to consistently innovate in order to keep pace with current trends, remain sustainable and persist as leaders in their respective fields of expertise.

Since their inception since World War II, development organisations and their business practices have matured and the way they function needs to evolve to keep pace with this evolution of maturity. As we move into a different era, organisational architectures and mind-sets require a blended methodology approach to defining human need and measuring their impact in order to remain sustainable – for both these organisations and those people they seek to serve.

Taking into consideration that development sector success is predominantly being measured on per-capita economic growth (Morse 2013), it is clear why there is an unhealthy obsession with numbers in the sector as reflected in donor demands and development management dynamics. For some time now, there have been growing concerns about the relevance of current measures of development performance, in particular those based on GDP figures. The conclusion of the Sarkozy Commission Report (2009) supports the idea that those organisations concerned with genuine human-centred development need to shift their focus from narrow measures of economic progress to broader measures of human wellbeing (Stiglitz and Sen, et al. 2010).

No doubt having numerical and defensible measures of success is critical for the continued legitimacy of international development initiatives, but what if an over-emphasis on this approach is coming at the expense of human dignity and wellbeing? Although less familiar and less tangible than substitutes such as the 'dollar-a-day' proxy, developing measures for terms such as 'dignity' and 'wellbeing' is key in shaping a new approach to how development organisations measure their success (McGregor and Burns et al. 2012). Anecdotal evidence from the field supports this, human need should be depicted in terms of what is important in people's day-to-day lives in order to shape new metrics for development sector success.

Working towards the promotion of a more holistic measure for human development requires development organisations to engage in human-centred and multi-method approaches. This is paramount to better

understand what people define as their needs and allow for their voices to contribute to deliberations over policy direction and programmatic implementation which will have a direct impact on their lives.

The key challenge of this change is to bring the beneficiaries' voice in dignified forms to the decision making table as well as defining success through broader measures of wellbeing, dignity, rights, quality of life or satisfaction. In order to protect and promote human wellbeing it is necessary to increase awareness of alternative, human-centred measures as development indicators, find out where and how they are being used, and consider how they can be adapted by development organisations (McGregor and Burns et al. 2012).

## Conclusion

We triangulate the criticisms outlined in the literature review, combined with anecdotal evidence and in-the-field first-hand experience. The findings suggest there is a pressing need for development organisations to integrate their beneficiary needs, as framed by the beneficiaries themselves, as early as when in funding gathering and planning mode. This is generally not the case across development organisations. The inflexible and linear management approaches required by donors have led to many initiatives focusing on projects and not beneficiary realities, resulting in limited or no beneficiary participation in defining the need or solution possibilities. Development organisations have followed this rigid model for long enough.

The real challenge is to move from intermittent cases of product successes to a systemic approach to development planning that integrates beneficiary needs, through participatory methods, before programs become too rigidly attached to their narrow set of LFA outputs and outcomes. There are growing interest as more development organisations are looking to challenge the status quo as they experiment with human centred design approaches to help them achieve such an integration.

The way development organisations empathise, interpret, design, implement and evaluate initiatives is where designers can play a more significant role. There is scarce mention in the literature of the design community's responsibility within development organisations, and the sector at large. We suggest future research to focus on the issue of how designers can play a role, beyond the current mode of facilitating the production and consumption of new goods and services, rather in how

greater social accountability and participatory practices can be achieved at the strategic management levels of development organisations.

Based on the gaps in the existing literature, we argue that human centred design approaches can offer an unconventional, yet powerful way for development organisations to manage fast-changing and ever-increasing complex realities – while moving them toward more human-centred ways of working in developing country contexts.

In consolidating the literature with in-the-field experience, we also propose further investigation into redefining success measurement specific to the development sector. We do not propose to discard the current dominant quantitative paradigm but instead build and extend on it with the inclusion of qualitative approaches facilitated through human centred design. We assert the proposed shift to multi-methods facilitates, and thus impacts on, the wellbeing and human dignity of people living in developing country contexts. This poises the opportunity for further research to better develop the conceptual framework and necessary rigour to support the arguments made here.

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— Chapter 4 —

**Management Futures**

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**Section 4a: New Modes of Design  
Management**

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# Editorial: New Modes of Design Management

Anne STENROS and Pia TAMMINEN

The meaning of design management and industrial design or service design to companies and company ecosystems is a common nominator of the papers presented in the themed track *New Modes of Design Management*. Design has various functions, it can for example be an integrative agent and/or process for interdisciplinary teams, it can play an important role when creating new business models, and it can be used when developing attractive products and services that enhance well-being of the users. Design can also contribute to the development or renewal of company strategies or value-creating networks. The papers presented in this themed track bridge design also with innovation, creativity, branding and sustainability.

Langrish has a “biological” view of design in his article about a Darwinian design in the era of disruption. He discusses the changes of the Design Method Movement, and the complexities that today’s development has brought about. According to Langrish, rational views cannot alone describe the present era of disruption in design management but Darwinian view could be applied. Barquero et al. distinguish an emergence of new social structure on the market. It challenges the traditional design management methods and increases the role of uncertainty when developing new products and services. Barquero et al. introduce the future foresight approach as a tool for the design management to describe and envision the possible futures.

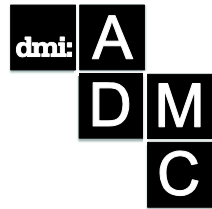
Abrell explores the connection between design thinking and corporate entrepreneurship. His study reveals ambiguous results; understanding the user can lead towards new opportunities and the organization needs to be able to act upon them as well. Strarostka presents three different case studies of companies who use design strategically, yet, in different ways. The main strategic objectives of the companies are 1) design for finding new opportunities, 2) design for building strong brand, and 3) design for challenging the status quo. Sathikh’s conceptual paper discusses the differences between creativity and innovation within industrial design; “design and designers are associated with creativity, while management and business are associated with innovation.” He also examines whether the

framework of design managers is creative or design-driven, or even both at the same time. Tamminen enhances a business design model for design-oriented communities that could be used in any collaborative project organized by small organizations. She also sheds light to the potential of design-oriented communities in the future.

Åman and Andersson explore the future directions of design management from the knowledge integration perspective; “the integration of design indicates a functional orientation and a limited role for design, while integration *by* design may indicate a strategic role”. Corlett introduces an agile “live” prototyping method with continuous releases for hardware product development in “microbranding” context. Monguet et al. introduce a collective decision making support system CID, Cells of Innovation Development, for innovation management. The system enables professionals to be involved and participate in decision making processes.

Two of the papers touched on the role of a designer from different viewpoints; the study by Murto and Person focuses on designers’ role in the context of sustainable product development, and Niinimäki et al. examine designers’ involvement in design interventions. According to Murto and Person, there are many possibilities to create sustainable design solutions in a networked development project of a large passenger ship but due to for example regulations and existing production methods, holistic design approach and multidisciplinary collaboration turned out to be the most important factors when developing sustainable complex products. Based on the findings by Niinimäki et al., companies can benefit of design interventions as they provide the broader understanding of design to the companies.

As the papers in this research track propose, design management is transforming into new modes as the line between tangible and intangible world becomes more and more diversified and complex and the behaviour of the people in the network society is inclined to be more unpredictable than ever before.



## Construct the Future: new models and visions

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*The new social structure and dynamic is transforming the way in which the organizations are operating on the market. The design management became the main vehicle for the development of products and services, as well as for the instigation of innovation processes. Its methodologies have to be oriented towards the user and the market and from a social point of view. The design management is a process, which is continuous, complex and fast at the time of making decisions that determine a strategy within an increasingly uncertain and new context; it must be turned into a transversal operating discipline that integrates wider, more complex and interconnected knowledge. The management methods and definition of strategies have to be based on tools that are highly flexible, reflective, collective, participatory and interactive. Foresight is a discipline that tries to remove uncertainty through anticipation, which draws up the strategic action plan. A new approach of the design management should be to determine and vision possible futures through foresight. Build the future, determine possible directions, take optimal decisions, determine and select possible scenarios, assume changes quickly as a constant and, fundamentally, transform the mental schemes of professionals who are involved in these processes.*

**Keywords:** methodologies, foresight, strategy, decisions-making, anticipation

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## Introduction

The last decades of the twentieth century and the first decades of the twenty-first century are characterized by the global transformation of societal structures in their widest sense, affecting economic, political, social and cultural dynamics. This profound transformation is referred to by some authors as “the great disruption” (Fukuyama, 1999), which is produced by the convergence of a number of interactive processes, including the technological revolution, the global economy and processes of cultural change.

The technological changes produced in different areas are represented by the impact of information and communication technologies on not only the business and professional sectors, but more importantly, the personal and social sectors. The key feature of these developments is the convergence of various technologies (Burton, 1992; Papp, 1998), which, in a fast and different way, is transforming both the established structures and its associated dynamics.

The technological revolution is based on two operating principles:

- A focus on the processes; its effects include all spheres of human activity; and
- The fundamental raw material, as well as its main result, namely information.

Simultaneously, and with the impetus that are permitted by the new technologies, a number of multidirectional, economic and social processes are generated, which are defined as globalization (Levitt, 1983; Albrow, 1990; Ohmae, 1990; Porter, 1990; De la Dehesa, 2001). On the other hand, but in an interrelated way, a profound cultural and social transformation is occurring: new ideologies and ways of life are on the rise and social and family structures are being transformed. These changes define a completely new paradigm.

These phenomena result in a new type of society, discussed at length by various authors using a multitude of terms: post-industrial (Bell, 1994), programmed (Touraine, 1976), red (Castells, 1997), post-capitalistic and information society (Masuda, 1981) or informational (Castells, 1998), and the more advanced knowledge society (Burton, 1992). As Toffler indicates, “We are the final generation of an old civilization, and the first generation of a new one” (Toffler, 1994, p. 21).

The civilization of the information, that will succeed the agricultural and the industrial, will be based on the productivity of the same information,

through the use of computer-mediated communication. (Masuda, 1981, pp. 70–72)

From the approaches and characteristics analysed by the different authors, the key feature defining this new society is the value attributed to information, both its creation and its use, in terms of the capacity to transform this information into knowledge, as well as generate, with the help of the acquired knowledge, wider knowledge.

These processes are produced at a much more accelerated rate than expected and have a direct impact on the lives of individuals. Other key features describing the new society are:

- The rupture of synchrony and linearity of space and time;
- An increase in the production of services at the expense of products, causing the transformation of the concept of benefit. The post-industrial societies are characterized by exchanging produced goods for service activities; and
- A shift from the division of professional work to the integration of disciplines.

These factors have increased the complexity and uncertainty of the environment, making adjustments in all areas that must be structured in a completely new form, in which the traditional and valid guidelines, now are no longer tenable.

In fact, these transformations require not only redefining the organizations and the management methods, but also understanding the functioning of the new market, as well as the new users involved in it, who will position themselves and interact with the environment and its elements in completely new and different ways. The organizations must adapt themselves to the new environment characterized by innovation, flexibility and unpredictability.

These characteristics present a fundamental challenge for organizations, affecting their internal structures and dynamics, and above all, their market activity. We understand that the development of new products and services is the form in which organizations present themselves on the market, while design management is the way in which they anchor themselves between the internal and external processes.

The analysis of the organizations within this new environment has to be systemic, and their processes should be treated considering their complexity; in this regard, traditional management methods are no longer valid. Alternatives for the models of traditional management must be examined in relation to the market, as well as the fact that the organizations

themselves will progress more effectively. The enterprises have to assume management methods that permit them to be more flexible, innovative, effective, stable and productive.

The objective of this study is to propose new methodological models for the design management of organizations, based on the new context they now face and the demands of the new market and the new user.

## **A new paradigm for design management**

The new socioeconomic scenario is characterized by a number of features that have a direct impact on organizations:

- The worldwide use and power of information and communication technology, fundamentally shown in the interconnection and integration of networks: the Internet, intranets and entrepreneurial extranet;
- Knowledge management defined as the “leveraging of collective wisdom to increase responsiveness and innovation” (Koulopoulos & Frappaolo, 2002, p. 28). In today’s enterprises, it is of vital importance to find the best way to generate, communicate and apply knowledge, taking full advantage of the “intellectual assets”;
- Growth in the materiality of the service sector and of the workforce dedicated to it in all economic activities (Quinn, 1992, p. 4);
- Changes within the market; currently, clients/users not only demand a quicker response, but are better informed and have more power (Naisbitt & Aburdene, 1990, pp. 283–294); thus, they must convert themselves into technological partners of the enterprises, becoming involved in the production processes (Quinn, 1992, p.178; Tapscott, 1996, p. 68);
- The rapid pace of innovation as an indispensable requirement for the competitiveness on the market;
- The redefinition of mediation, as a consequence of the capacities of information and communication technologies, goes to the providers and consumers; the middlemen have to provide services or add value that is valid for the new paradigm;
- Virtualization through the use of information and communication technologies in order to realize effective and efficient interactions among individuals, without spatial limits:



the origin of countless virtual communities connected by common interests;

- The importance of developing competitiveness at an international level within an interconnected and globalized world;
- The technological and sectorial convergence; and
- The digitalization of all types of information.

Having characterized the new paradigm and defined knowledge as the driving force of the new social structure, the necessary changes within the enterprises and the management, including design management, should be determined, both in their structures and in their dynamics.

The organizations always had, used and exploited knowledge for the realization of their objectives, although it seems that they suddenly became aware of the need to define and instrumentalize ways to manage that intangible asset.

A transformation of information intensive organizations is produced by means of the intelligent use of information and information technologies with the aim of being more competitive. Analyses of the most advanced organizations in the world seem to indicate that what makes an organization successful is the intelligent management of information and knowledge. This includes having people on-board who know how to develop methods, processes and cultural forms, thereby permitting the combination of the input information from the environment with the information generated in the interior in pursuit of the final aim of innovation and generating differential knowledge. Such organizations also know how to project information of their activities towards the environment (Davenport & Prusak, 1998). Thus, the described environment, loaded with uncertainty and complexity, requires the determination of flexible and adaptable strategies.

At the same time, a welter of tools and methodologies linked to the management of enterprises of different kinds arises: management of the information, management of technology, management of innovation (Roberts, 1996) and the management of knowledge (Cabrera, 2001). In this context, knowledge, innovation and technology are concepts strongly related to each other. All are valuable in the strategic processes of an enterprise, with the management of knowledge agglutinating the most relevant and necessary aspects for the current context. The knowledge management is of an organizational nature: it is a method or an array of

possible techniques to radically transform the working environment in such a way that what the individuals know will be shared, created or secured.

To be more concrete, the knowledge is the main axis of the new society, and innovation the imperative for the enterprises, whether or not it is of a technological nature. Within the enterprise's environments, the creation of new knowledge, which is materialized in new products, processes, services and organizations, is directly linked to the capacity of invention and innovation. The assimilation and generation of innovation, in turn, is one of the factors that significantly contribute to the introduction of change within the enterprises, and to increased competitiveness.

Design management must be involved in the processes of knowledge management, since the development of products and services cannot be understood in isolation from the creation of new knowledge and innovations. Concentrating on design management, we have to revise its roll in relation to the development of products and services. In fact, when there is not yet a general agreement on the definition of design, the value of the design within the development of products and services, and how to formulate the design management together with the strategic entrepreneurial definition, which in the end should be focused on the self-management of design, has been transformed, specifically the structure on which those disciplines and dynamics are based.

This statement necessitates the resetting of not only each of their positions, but also the relationships and values that they assume in the connection process between what is defined strategically by the enterprises as new products and services, and their effectiveness in answering the new demands of the market and the users, i.e., the key participants of said market.

*The market and the user are changing in a somewhat incisive way, beginning with their own terms "market" and "consumer" that became increasingly inadequate for the description of the underlying complex reality. (Fabris, 1995, p. 2)*

During the second half of the twentieth century, the designer and manager were required to have an enhanced approximation of the organization, its knowledge and dynamics, thus assuming an important role in the strategic entrepreneurial processes, and focusing on the elements of competitiveness and benefits.

The new context is demanding for the growth of organizations, moving the focus to social sectors, the market and the user who defines it. In this

way, the methodologies linked to the development of new products and services, and the management of those processes in the business environment, must assume an approach that focuses more on humankind and the social sector, and logically on solving problems and facing a more global and complex environment.

Assuming that innovation is more necessary today than ever before, we have to establish a mode in which the development of products and services will be, at its core, a process that is closely linked to innovation. During the last decade of the twentieth century, the term 'innovation' was inseparable from technology; in fact, Oslo Manual (1997) only defines innovation in connection with technology. His initial definition of innovation quickly became obsolete, indicating that it does not respond to the real necessity of the context. During the last few years, the term transitioned towards social innovation, thus permitting an appreciation of the relevance of the social arena in innovative processes.

An approximation of the social sciences and its methodologies allows us a different mode of observing the context and, thus, a different mode to analyse the problems, find solutions and generate knowledge that answers questions that have not yet been asked by the market or users.

Likewise, the enterprises must assume methodologies that permit a more systemic view of themselves, such as management tools that permit anticipating and searching for signs that indicate new opportunities for the market, thus allowing for envisioning future scenarios, rather than continuing to accept the ways things are done. The speed and unpredictability of environmental changes demand an innovative attitude, as well as methodologies that not only deal with rational data and approximations, but which also take into account behaviour, experience and intuition.

## **Symbiosis of design and strategy**

In the new knowledge society, the design manager, who is responsible for the development of new products and services, must transform his or her activities into knowledge-intensive and the generation new ideas from and for the future. Structured methodologies that allow for determining how to manage and channel knowledge are necessary. Knowledge, explicit and tacit, and containing both objective and subjective data, resides within the process of design as a strategic structure.

The new professionals have to base their activities on predictions and assumptions, and not only on facts (Rowe, 1998). They have to position themselves as the main and empathetic interpreter of what the end consumer will need, with a focus on the human being, thereby showing the will and capacity to understand and interpret the signs that are transmitted by the end consumer (Brown, 2009). These activities must be performed concurrently with bearing in mind the technical feasibility and commercial viability of the organizations.

This approach will require methodologies that permit working intuitively, relying on experience and qualitative data of human behaviour, wishes, emotions, etc. Within the new context, “the design does not give shape to objects” (Adams, 2010); it turns into a special form of relating to and acting in the world (Buchanan, 1992; Rylander, 2009), and above all, in the building of the future world.

These statements transfer the activity of developing products and services to the centre of an enterprise’s strategic formulation, with the design management being primarily strategic.

The development of products and services is a continuous and constant process of effective and informed decision-making, that is to say, the determination of a strategy: “The conscientious selection of a line of action out of available possibilities, having in mind the disposition of limited resources, and with the motivation to achieve some desired result”. (Claver et al. 1994. p.191) In fact, decisions about new products affect every single area of decision-making. Thus, product decisions should be closely coordinated with all of the other business activities.

The widespread opinion, mostly of business analysts and consultants (Hamel & Prahalad, 1994; Gabiña, 1995), as well as a significant number of publications (Michalko, 1991; Fobes, 1993; Collins & Porras, 1994; Higgins, 1994; Nadler & Hibino, 1994) link management to creativity and innovation, striving to establish a close connection between the decision-making process and other open and creative management processes, and based on a high level of knowledge of the present reality but with a look towards the future. Thus, the strictness of decision-making does not necessarily include the adoption of anti-progressive or conservative positions. On the contrary, in this context of uncertainty the conventional analyses that are nourished by exclusive data from the past are not sufficient; instead, it demands having new tools at one’s disposal, which explore and illuminate the possible future developments of complex issues the enterprises are involved in. The design linked to the strategy is the fundamental axis of the

development of products and services which, in the current environment, shall be closely linked to the knowledge of technologies, organizations, the social-cultural environment, etc., and, obviously, to the processes of effective decision-making through the analysis of the possibilities of the future.

The design is understood as that which realizes the plan: “A look that aims at something...A will that contemplates the attainment of the end proposed” (Zimmermann, 1998, pp.160–161). Finizio, on the other hand, points to a closer relationship between the design and the innovation processes, by saying that “the real reason of being from the design lies in the integration of the product strategy with the enterprises’ culture, in other words the design management.” Design and enterprise must go together, and in order to understand where, they must prefigure possible scenarios, even preparing for the impossible, even for exceptional events (Finizio, 2002).

The analysis strengthens the existence of a clear analogy between strategy and design, considering that they are operating in a similar way when they intervene in order to solve a problem of quite a complex situation. Both have the need to provide all the information concerning the nature of the problem which is to be solved, permitting them to plan and arrange a project.

On the other hand, the development of products and services, as an essential element of business dynamics, is a consequence of the strategic action. Making business decisions on products and services, determines the actual strategy of the organization; likewise, the generation and management of information, which is to be converted into knowledge, efficiently guides the decision-making process with reference to the products and services.

In more concrete terms, the development of the products is an interminable and cyclical activity within the business dynamics; therefore, innovation, the creation of values and knowledge management can only be considered as processes requiring continuity.

A new approach for the generation of product ideas will be to mark and envision future scenarios, in which the products will be re-enrolled, including the reality of the future market, the technological tendencies, and the needs of the potential and future consumer. In other words, define the aim to be achieved and establish the steps that are required in order to achieve it; and describe the products that give rise to this scenario and

satisfy all the factors that configure the environment in which the aim is to be achieved.

This new approach has to be based on future studies, and more precisely, on foresight as a discipline that can provide answers within the new context in which organizations are operating.

## **Foresight as a discipline**

During the twentieth century, future studies (Masini, 1993) were developed and structured. In Europe, interest in future studies evolved later than in the United States (US). The country that excelled in this discipline was France with, among others, Bertrand de Jouvenel, author of “L’Art de la Conjeture”; Gaston Berger, inventor and proponent of the term foresight; and Pierre Massé, who introduced foresight to territorial planning. More recent are the works realized by Michel Godet, as well as the outreach work carried out by the magazine *Futuribles*.

Foresight is particularly useful to strengthen knowledge for scientific-technical development, as well as for social and business needs. In fact, it is not surprising to realize how in past years foresight has been used for trend analysis at a global level, as well as in public politics at the national and local levels, apart from exercises of a sectorial or private nature for business management.

Are innumerable foresight exercises performed in different areas (Textor, 1983; Dator, 2002, Nordman, A. 2004, Inayatullah, S. 2005, Stevenson, 2004), it should be noted the Halal study that predicts breakthroughs that span the spectrum of science and technology. The results come from a great project foresight and projections carried out over the last decade at the George Washington University and TechCast LLC Company. The result is probably the best set of data for foresight that has ever compiled. The trends obtained describe how the technology is ready to transform lives throughout the next 20-30 years. (Halal, 2012).

The results of foresight are recognised as making valuable contributions to the establishment of priorities in public or private initiatives, in the designing of future visions, in the formation of networks, and in the spread of education and knowledge among the main actors, particularly the decision-makers.

The main focus is how social conditions influence the images of the future, and the way that images of the future, along with the values and

beliefs, influence the decisions that lead us to act, and therefore help configure our own future that is coming (Bell, 2005).

Table 1 Contributions of foresight/prospective to the new context:

Society – Enterprise Environment	Prospective/Foresight
Complexity – complex systems	Systemic
Globality relations Globality markets CONVERGENCE Globality strategies	Holistic / Global
Quick and unpredictable changes	Dynamic
Need collective intelligence	Encourages participation
Participatory decision-making	Search consensus
Knowledge / human capital	Optimal learning process

Foresight provides a number of elements that are quite valuable within changing environments and environments of great uncertainty such as, for example, today's environment. It engages creative and intuitive thinking, but it also takes into account the factors that can affect the results and the attitudes of the persons involved, such as social, economic, political and environmental factors. It provides a vision for the future, which is very useful for the making of decisions (Bell, 1996, p. 43) and for competitive positioning. It also suggests the continuous process of learning, something essential for the knowledge society (May, 1997, pp. 229–241).

Foresight looks for progressive knowledge (Manermaa, 1996), dedicated towards the non-deterministic, fortuitous and probabilistic anticipation. "There is not only one future, but there are various, at least the likely, possible, preferable and plausible ones" (Masini, 1993, pp.8–9). Foresight anticipation implies the action (Godet, 1993, p.187), meaning to raise possibilities in order to act from the present, with the intention of optimizing the results. As a discipline, foresight is characterized by:

- Vocation for totality: economic, social, political and technological factors are not studied in isolation but from an overall view;
- Systemic: it examines the existing relationships or ones that may exist between the elements;
- Dynamic: it examines the developments of the object in connection with the forces that are produced, and it is destined towards the action;

- It is receptive to changes that may be produced, and because of its structuralist characteristics, it considers the search for possible futures;
- Its objective is based on explaining the future by combining the three sets of factors that shape it: history, knowledge of facts and experiences; unpredictable events; and our intentions, will and actions of moving into the ostensible future;
- One of the key factors is the collective character of the foresight exercises, fostering its mobilizing effect and its metadisciplinary character;
- Foresight does not deliver conclusive results; in fact, the process is of higher importance – metadisciplinary, collective, open, flexible, etc. – which is the result of the exercise;
- Foresight examines the variables and its development in the future. One of its strengths is the consideration of both qualitative and quantitative variables and, thus, it looks at objective and subjective values; and
- Its main goal is the reduction of uncertainty, the illumination of the present action, and that the mechanisms leading to an acceptable future are convenient and desired.

Some authors (Dimma, 1985; Godet, 1993; Bas, 1999) identify foresight as a proactive approach towards the future, an approach with determination. However, it is, at the same time, a science as soon as it uses a systematic work system, verifiable and sound, that cannot and must not speculate as to what exactly might be happening in the future.

Foresight should assist the decision-makers to distinguish the different options of the future, brought to light by the available data, without venturing about what exactly might happen. The future does not exist, it is being construct. Thus, foresight, being anticipation and reflection, is intended to search for new strategies; within the contexts of business and design management, it can be a useful tool, as it provides and structures knowledge and analyses and organizes the information in order to build the future. In other words, it uses information in order to propose trends of future change and envisions what might happen.

“Foresight is a strategy” (Gabiña, 1995, p. 16). In this respect, foresight must contribute to the strategy: the capacities to innovate, create and respond; the strategy, in turn, must transform those capacities, integrating and expanding them, generating the adaptation by which the foresight receives feedback. Action without anticipation is very likely to be false; in



the same way, anticipation that is not directed towards action does not make any sense.

Frame the key issues affecting the organization, scan the environment to see how they can finish desirable trends and anticipate possible outcomes, and all this is part of the strategic foresight. The incorporation of this discipline to the organizational culture can help advance clearly, creativity and confidence (Bishop & Hines, 2012)

The outlined features of this quite new and unknown discipline permit the verification of its suitability for the given context and for the specific activity of developing products and services, as a key objective of business strategy and management.

## **Anticipatory methodologies for the design management**

As our world becomes increasingly more complex and interdependent, change is becoming more and more non-linear, discontinuous and unpredictable. Accordingly, the future is less and less like the past and not what it was expected to be: the future is no continuation of the past, because the future will be different (Handy, 2000). Therefore, it is necessary to stop thinking what we will do by analysing what we have done (Senge, 2000).

The prevailing complexity makes it necessary for us to anticipate changes and put forward a new way of thinking and a new vision of our reality. This would clear up our current attitude and, thus, allow for acquiring vision foresight in order to act in the present (Godet, 1980; Cornish, 2004).

The new challenge for the upcoming years will be to anticipate the new demands of today's lifestyle, producing scenarios. (Morace, 2003)

If we accept that uncertainty is penetrating the determination of business strategies, mainly those regarding the development of products and services, we need to be able to unravel this uncertainty with the aim of assuming less risky decisions. In addition, the situation must be in direct relation with the claim to analyse and examine the future.

In order to react properly and manage the current complexities of the market, it is necessary to understand some profound and outstanding phenomena of the cultural and social context. On the other hand, it is also necessary to have the flexibility of sufficient analysis in order to provide descriptions and interpretations that help the enterprises and professionals

to imagine their specific conceptual positioning and the positioning of the market in a global context.

The traditional management techniques hardly deliver any answers to the questions concerning the uncertain future, because there are no statistics on what is new and unknown. At the same time, the majority of management techniques suffer from non-quantifiable parameters that are indispensable within this new environment, since it is not possible to pretend to systematize and control the knowledge through Cartesian models that do not include cognitive criteria of the experience and of humans.

The proposal generated through this research is to explore the possibilities of methodologies that provide optimal settings for the current context, and differentiated from the traditional management methodologies. The fundamental differences are specified in using both quantitative and qualitative data, including intuition and experience; explore alternatives not linked to the know. At the same time require to transform the way of thinking and acting, linking strategy to the medium/long term and leaving the common short-term dynamics.

Foresight methods integrate the rational aspects of organizations, as well as the emotional ones and those linked to behaviour. It is a management tool that efficiently supports informed decision-making to clear up uncertainty in environments where complex decisions have to be made.

Enterprises are having difficulties envisioning the future, as their objectives are based on results, with a short-term horizon. Their vision is based on the western belief that time is linear and the future is nothing more than an empty space that can be occupied by the present and, over time, becomes fuller with technology and consumer goods. "Every organizations must prepare for the abandonment of everything it does" (Drucker, 1973). This situation enforces a need for a change of mentality, valid models and tools for the management and collective reflection that allow for facing the new challenges of a different world.

In today's context, a methodology to prepare, understand, structure and establish a hierarchy of information and knowledge is fundamental. Foresight offers a wide range of methodologies and tools which should be incorporated in design management:

- Anticipatory, proactive, mobilizing and creative;
- Few resources needed;

- Consider the business system as an interconnection of relations: systemic and dynamic;
- Allow for obtaining and working with the information with the objective of making decisions for the development of strategies;
- Systemic and controlled method that considers intuition and experience;
- Permit a process of communication in groups, synchronous and anonymous;
- Provoke a continuous process of feedback on information, in a way that it will be converted to a process that improves learning and generates knowledge.

These characteristics are relevant for two of the foresight methods that are highly elaborated and effective in business environments: the Delphi method and the method of scenarios.

The Delphi method is the most applied qualitative method in anticipation and probably the best way to manage obtaining information on the expectations of the future (Linstone & Turoff, 1975; Sackman, 1975; Turoff, 1975; Helmer & Rescher, 1976; Malla & Zamora, 1978; Ranch, 1979; Helmer, 1994; Passig, 1999). Nevertheless, the method can be considered to be incomplete considering that the foresight anticipated in business environments should always be linked to strategic action. This method is structured through a basic functioning scheme; consequently, it can adapt the necessities, possibilities and objectives of the studies.

The basic characteristics that configure it are:

- Structure of group communication at a distance, through the process of feedback of the information;
- Its objective is to obtain information, consensual or not;
- Quantitative – qualitative method;
- Use of experts;
- Directed and coordinated process;
- Central and characteristic feature: anonymity.

The method of scenarios (Wiener & Kanh, 1967; Martino, 1972; Coates, 1985; Godet, 1991; Millet & Honton, 1991; Schwartz, 1991; Clemons, 1995) is considered the primary method of foresight, to the extent of mingling the terms 'scenario' and 'foresight'. The majority of the authors consider this method as the reflection of foresight, the best way to give an idea of the future, and the most complete and versatile one.

Figure 2 What are scenarios

Scenarios are:	Scenarios are not:
Hypothesis	Predictions
Alternative developments	Scans of past trends
Shared representation of possible future obtained in a workgroup	Official Forecasts developed by internal or external experts
Tools to challenge corporate assumptions	Tools to strengthen corporate assumptions
Combination of intuition and rational analysis	Embodiment of intuitive visions or development of rational models
Focused Description in multiple environments on future business	Wide view of possible future microenvironments
Divergent stories for a dissension	Converging stories to achieve consensus
Holistic thinking process that integrates several scientific academies	Outcome of a dominant scientific academy
Tools to transform an organization reactive to proactive	Tools to strengthen reactive behaviors

In fact, it is a model created for supporting decision making when dealing with changing and uncertain contexts, and it is widely applied in the business world. Simplifying the argumentation, the most important values that configure this method are:

- Conceptual and hypothetical vision of possible futures, considering the objective and subjective probability of occurrence;
- Hypothetic sequences of events in the long-term view, centred on causal processes and decision points;
- Alternative and divergent developments, combining intuition and rational analysis; and
- The end of the construction of scenarios is the development of a strategy.

Figure 3 What can achieve a scenario.

Scenario can...	Scenario can't...
Acknowledge uncertainty and illuminate the critical points	Hide uncertainty or ambiguity
Develop possible future scenarios, recognizing that all are not equally likely	Develop a single likely or average response prediction
Develop a set of strategies and indicators of future strategies more critical	Develop a single strategy
Recognize discontinuities about the future	Get Data not available or make decisions based on irrelevant data

Both methods consider the process of decision making appropriate to the strategy of developing products and services, and the design management of the enterprise, not only as tools that permit a more efficient process, but in essence a shift in the thinking and acting of the decision-makers during the process.

This methodological approach is not proposing to incorporate the Delphi method or scenarios method to design management without prior adaptation. In fact there are many variables and both methods depending on the type of dynamics to perform. (Linstone & Turoff, 1975; Sackman, 1975; Press, 1978; Ranch, 1979; Poolpatarachewin, 1980; Harkins et al. 1983; Wack, 1985; Millet, & Honton, 1991; Schwartz, 1991; Helmer, 1994; Clemons, 1995; Gabiña, 1995; Schoemaker, 1995; Perrottet, 1996; Passig, 1999; Fernández Güell, 2004; Inayatullah, 2012).

## **Conclusion**

The new social paradigm penetrates all areas of action, especially the business organizations and their models of management. The approach raises the necessity for new methods of management, abstracted from the social sciences that may give effective answers to the enterprises and, consequently, to the consumers.

Design management should be positioned in the centre of strategic action within the enterprises, since the development of new products and services is a continuous and cyclic process of making strategic decisions, which configure the positioning of the organizations.

Prospective methodologies are formulated, the Delphi method and the method of scenarios, which can be linked in a complementary manner. The fundamental value of these methodologies is their capacity to analyse the future and the scenarios in which the new products and services will be involved, while at the same time transform the attitude, dynamics and thinking of the decision makers.

The proposal raises the analysis of the values of the above methodologies for adaptation and structuring to the specific requirements of design management, the approach want to value the essence that defines these methods and especially profound change in attitude, approach and way of thinking that must take design managers, and business managers as a whole.

Finally, design management requires a complete overhaul; this approximation formulates the possibilities that might derive from the use of

methodologies that provide values, which are necessary in the current context.

This research is aimed to initiate the process, which should conclude with the formulation of specific methodologies for design management.

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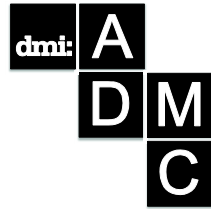
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# Innovation Consensus: Collective decision making support system for innovation management

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*CID, for Cells of Innovation Development, is an online system created to facilitate the participation of professionals in the decision making processes of innovation development. The system has been designed, implemented and tested with 6 cases, involving different kind of companies in the region of Barcelona. The innovation model and its online tool version have been proposed and created, to handle a Real Time Delphi participation of designers, experts and managers in the evaluation and discussion of all the relevant topics of an innovation project oriented towards the creation of a new product and/or service. The first part of the paper is devoted to expose the theoretical backgrounds that define the interdisciplinary research field of this work. In the second part of the paper Innovation Consensus Model is presented and the functionalities and characteristics of the CID online tool explained. In the last part the results of the experience are summarised. The final conclusion is that it's relevant and very useful to get professionals efficiently and effectively involved and participating in the processes of decision making in innovation project management. The online strategy proposed in this work is feasible and accepted by participants who have expressed high levels of satisfaction.*

**Keywords:** Innovation, Innovation Management, Participation, Collaboration, Real Time Delphi and Collective Intelligence.

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## Introduction

### *Collective Intelligence*

Collective intelligence may be defined as the ability of a group of individuals that collaborate and share efforts in order to collectively perform intellectual tasks. According to Pierre Lévy (1999), collective intelligence is a form of universally distributed intelligence that may be constantly enhanced, coordinated in real time, and resulting in the effective mobilization of skills. The current emergence of collective intelligence in professional environments is based on the possibilities of combining expert knowledge and experience applying ICT enhanced ways of processing information.

Although the idea of collective intelligence is not new, its tools and models to facilitate participation are growing thanks to the resources provided by a networked society and a continuous enrichment and enhancement of human interaction. There is nowadays extensive evidence that outcomes collectively produced by sets of connected people may be as important as knowledge produced within formal organizations: open source software, social networks or Wikipedia are just some of the most know cases, and this is just the beginning.

The Collective IQ, term proposed by Engelbart (1995), refers to the measure of a group's collective capacity, and it should be, in the near future, a key determinant of how effectively a particular challenge can be understood and effectively addressed by an organization. One of the most important advantages of collective intelligence is the impact of collective learning by employing best practices and tools to facilitate the expression of collective capabilities. All this happens in a fertile dynamic knowledge ecosystem that evolves into better and better tools and practices. And, as Engelbart states (1992), further facilitates this evolution.

### *Online collective intelligence*

Anyone can witness that the online-bound humankind is already a reality, and besides the former and casual social networks, more specific and formal networks with professional focus are arising, facilitating collective intelligence in many forms. Collective work strategies, based on face to face meetings, have limitations in terms of time, costs and amount of people that may be involved with it. So, traditional participative processes are not appropriated if the number of participants is high, resources limited and time is short.

New and more efficient ICT's, particularly the internet, overcome many of the constraints related to the space-time and costs contingencies. Online technology allows to articulate mechanisms that facilitate the participation of large groups of people, be them professionals involved in the creation of products or services in a company or even customers.

The design and development of online collective intelligence solutions are evolutionary, and ground founded, with a lot of trial and error in the process of combining knowledge, design, technology, management and social interaction. Social network proliferation and its use in professional or academic environments have increased the culture of participating and feeling of belonging.

### *Innovation management through collective intelligence*

As Buchanan (2010) points out, innovation projects are multifactorial and cannot be solved from a single discipline approach. The higher the diversity of people that contributes to the solutions and the larger the participation outreach, the most likely we will get a good result, as evidenced by the many initiatives in the field of collective intelligence. Contributions of Surowiecki (2005) and Bonabeau (2009) are particularly remarkable.

Discrete design practices and disciplines, that play a major role in innovation, may be reformulated from the perspective of collective intelligence, converting them into "hypercommunicative technosocial networks" (Hight & Perry, 2006). Collective intelligence pushes design, as well as research groups, to learn from the new models of distributed exchange and production based in sharing knowledge through technically enhanced networks.

Collective intelligence practices, based in participation, collaboration and learning, stand for transparency during the development of a project, therefore the involvement of designers and other professionals or even customers in decision making really takes into account the capillarity of knowledge and relevant data for innovation projects. Figure 1 is a conceptualisation of Innovation Consensus, understood as a continuous cycle that flows through participation, collaboration, learning and decision making.

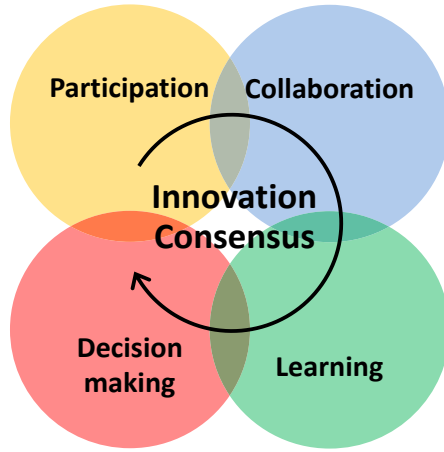
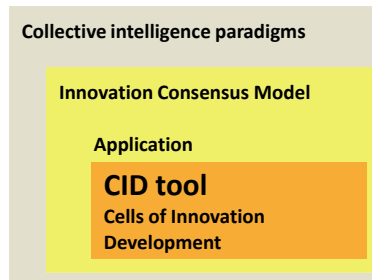


Figure 1. Collective intelligence conceptual framework

### *Objective and method of this research*

The central objective of this research was the creation, development and test of a first prototype of a tool inspired in the concepts exposed above, applying action research methodology (Kock 2011). The exploratory-descriptive research done is intended at providing a new approach to collaborative innovation through the use internet technology. The central idea is that collaborative innovation will be enhanced gradually with the application of ICT tools.

The paper expose the Innovation Consensus model based in the principles of collective intelligence, and present a practical application of it, the “Cells of Innovation Development” (CID). So, once introduced the emerging trend of participation and the connection with online resources for sharing any kind of information, next sections will present a general model of Innovation Consensus and will describe CID, a particular Innovation Consensus tool consisting in an online system created to facilitate the participation of professionals and users in the decision making processes required in innovation projects. Figure 2 is a sketch of the structure of the paper.



*Figure 2. Structure of the paper*

## **The Innovation Consensus Method**

### *Real Time Delphi*

Innovation Consensus is defined as a participative method inspired in a Delphi consultation that allow a group of participants to agree, validate or assess diverse aspects of an innovation project. Therefore it facilitates the transition from a model of a particular innovation construct proposed by a limited number of people to an agreed one, by a larger group of people. This process may be done real time or asynchronously as well as it can be organized in face to face meetings or virtually.

Based on Innovation Consensus, the CID model, which will be explained in the next section, is a Real Time Delphi system for the participation of designers, experts, managers and users, in the evaluation and discussion of all the relevant topics of an innovation project oriented towards the creation of a new product and/or service. As exposed by Monguet, Ferruzca, Gutiérrez et al. (2010) in “Vector Consensus: Decision Making for Collaborative Innovation Communities” provision of results to participants based on real-time calculation encourages the involvement of users in the consensus process. The innovation Consensus Model follows three main steps synthesised in figure 3:

- First a general innovation model is structured by a set of drivers<sup>56</sup>, where each driver is defined by a question that represents a

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<sup>56</sup> We use the term driver referring to the attribute, ítem, element or component that is used to define the model.

- particular aspect related with a product/service or its process of design or development.
- Secondly, participants express quantitative preferences or opinions about those drivers. The questions are answered using scales with semantic differentials. The drivers are evaluated answering what are called participative questions, with the purpose of establishing its level of performance, difficulties or any other parameter. What does a participative question mean? The term participative refers to the fact that once answered, participants are allowed to see the aggregated votes of other participants and eventually change their votes.
- Finally in the third step an agreed model, defined through the evaluated drivers, is obtained and shared among all participants. The final model may be considered a quantitative-qualitative assessment of the different attributes of the innovation project.

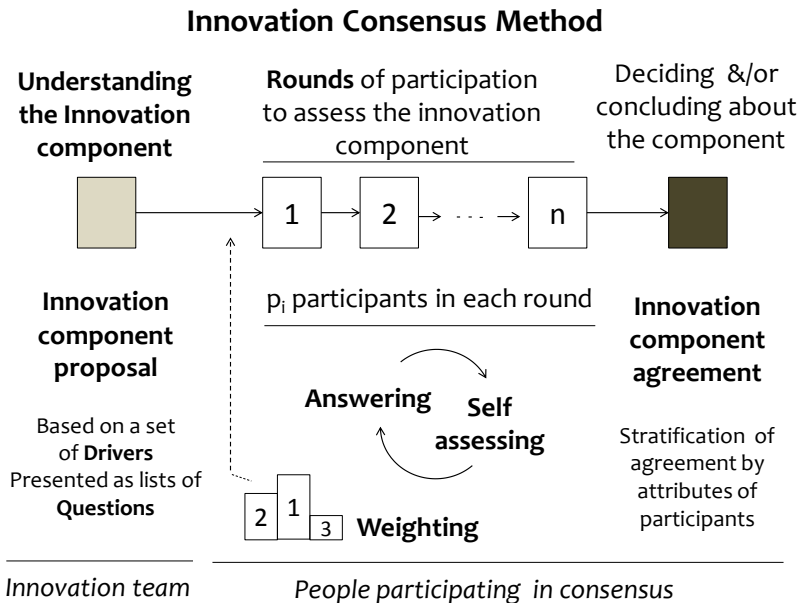
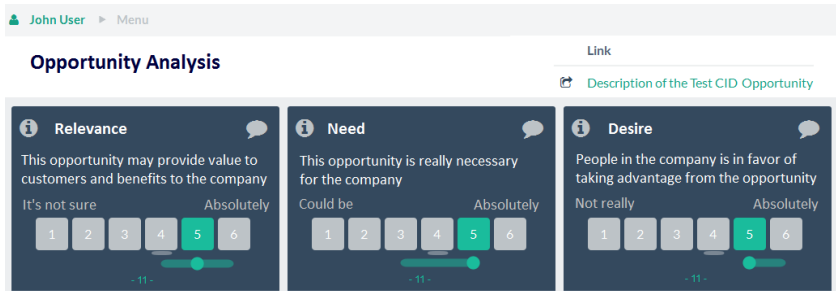


Figure 3. General view of the Innovation Consensus Method



### **Components and process**

Once understood the model to be discussed and agreed, participants start the process of responding to the questions for each driver. As soon as a participant answer a question, an instant representation of all participants aggregated results is exhibited next to the answer. This way, the participant may ponder the answer against the crowd through centrality (mean or median) and dispersion scores (standard deviation or interquartil range) and decide whether or not to change opinion (Figure 4). As it is allowed to change answers to facilitate agreement, a degree of consensus should eventually be calculated, indicating which components of the model have gained a strong consensus and where weak agreement has been found. The model may be presented and displayed in a number of consecutive rounds, having each round a specific intention and an optional timing. Prior to the participation of the main group in each part of the consensus, it is necessary to get answers from a minor group, so the early participants may already compare with some previous respondents.



*Figure 4. Three participative questions of the Opportunity analysis. Blue coloured square is the last answer and the grey line under the number is the first answer given blindly. The blue point is the median and the blue line is the interquartil rank*

Participants as well as drivers are classified in specific categories. Then, participants according to their category may be associated to a specific expertise and their votes for each driver weighted correspondingly depending on the category in which the driver has been also classified.

In Table 1 the main components of the Innovation Consensus method are summarised.

*Table 1. Components of Innovation Consensus*

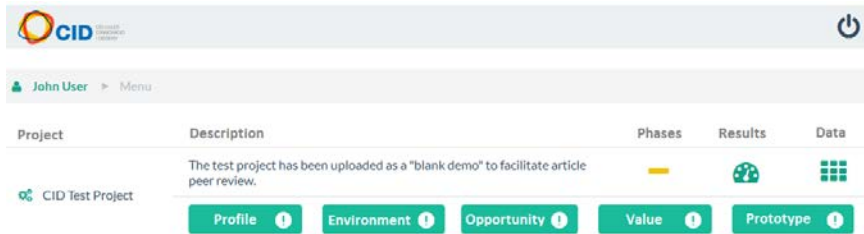
Innovation project	The object to be assessed looking for consensus or agreement.
Set of drivers	The items presenting the different aspects that define the innovation project.
Question	The question or questions that expresses a driver
Answer	Possible answers for the questions.
Scales	Structured answers based on semantic differential scales (1 to 6) where edges define the meaning range (e.g. completely disagree to completely agree).
Rounds	Groups of drivers, distribution of time and management of participants.
Feedback	For each driver, participants are allowed to give insights, comments and opinions.
Participants	All different professionals involved in all the rounds of consensus.
Research team	Team that have designed and built the model that represents the innovation project.
Weighting categories	Classification of drivers and participants in categories in order to weight votes.
Results generation	Presentation of consensus results to the participants.

## Cells of Innovation Development

### *Drivers of the process of innovation*

The CID system is a particular and first application of the Innovation Consensus Model and consists into a tool that provides a general checklist of the elements that may be considered from the detection of an opportunity till the assessment of a prototype of the resulting product and/or service.

The CID tool is based on 96 independent drivers and 24 dependent drivers that are obtained as a combination of the previous 96. The process to select the independent drivers has been based on a systematic review of the innovation processes in literature.



*Figure 5. Steps of the innovation project as they appear in the management interface for each one of the projects loaded in CID*

The CID tool divides the innovation process into four main steps as it's shown in figure 5:

- Environment: Any innovative project is carried out in a certain environment, which facilitates or hinders innovation.
- Opportunity: In the process of a project that aims to create a successful new product or service, it is necessary objectively evaluate the potential of the opportunity.
- Value: The expression of value of product or service may be divided in two steps, the concept and formal value proposition.
- Prototype: If the proposal is feasible from all points of view, then it can be created a prototype, which may be submitted to potential customers and users.

This cyclic process can be done n times, depending on the type of product or service to create.

Table 2 lists the 96 independent drivers separated in those 4 steps (rounds) considered in the process of innovation:

*Table 2. Independent variables of the CID checklist tool*

Environment	Opportunity	Value	Prototype
12 drivers of Culture of innovation	12 drivers of Importance of opportunity	12 drivers of Concept assessment	12 drivers of Prototyping assessment
- Initiative promotion - Risk management - Proactive attitude	- Relevance - Need - Desire - Deepening - Specification - Diversity	- Objectives clarity - Customers participation - Company identification	- Price - Quality - Distribution & sales - Novelty - Utility

<ul style="list-style-type: none"> <li>- Autonomy of people</li> <li>- Experimentation</li> <li>- Error tolerance</li> <li>- Inspiration</li> <li>- Model of innovation</li> <li>- Support to innovation</li> <li>- Innovation community</li> <li>- Teamwork</li> <li>- Values</li> </ul>	<ul style="list-style-type: none"> <li>- Cost</li> <li>- Technical barriers</li> <li>- Cultural barriers</li> <li>- Risk of yes</li> <li>- Risk of not</li> <li>- Alignment</li> </ul>	<ul style="list-style-type: none"> <li>- Customer relationship</li> <li>- Customer communication</li> <li>- Prices policy</li> <li>- Balanced teamwork</li> <li>- Heterogeneous teamwork</li> <li>- Motivated teamwork</li> <li>- Commercial alliances</li> <li>- Technology alliances</li> <li>- Research alliances</li> </ul>	<ul style="list-style-type: none"> <li>- Warranties</li> <li>- Aesthetics</li> <li>- Usability</li> <li>- Brand</li> <li>- Deadlines</li> <li>- After-sales service</li> <li>- Sustainability</li> </ul>
<p>12 drivers of <i>Management of innovation</i></p>	<p>12 drivers of <i>Capacity to manage the opportunity</i></p>	<p>12 drivers of <i>Proposal assessment</i></p>	<p>12 drivers of <i>Prototyping improvement potential</i></p>
<ul style="list-style-type: none"> <li>- Idea generation</li> <li>- Idea selection</li> <li>- Application of ideas</li> <li>- Expertise</li> <li>- Company ecosystem</li> <li>- Time and money</li> <li>- Method of innovation</li> <li>- Strategy</li> <li>- Learning</li> <li>- Customer orientation</li> <li>- Selling agility</li> <li>- Benchmarking</li> </ul>	<ul style="list-style-type: none"> <li>- Sector</li> <li>- Trends</li> <li>- Model adequacy</li> <li>- Property compromise</li> <li>- Managers compromise</li> <li>- Staff compromise</li> <li>- Knowledge</li> <li>- Expertise</li> <li>- Technology adequacy</li> <li>- Segmentation</li> <li>- Specific customers</li> <li>- Competitors behaviour</li> </ul>	<ul style="list-style-type: none"> <li>- Integration</li> <li>- Requirements users</li> <li>- Co-creation</li> <li>- Project management</li> <li>- Sustainability</li> <li>- Legal Framework</li> <li>- Trials</li> <li>- Inclusion</li> <li>- User environment</li> <li>- Forecasts</li> <li>- Sellers</li> <li>- Resources</li> </ul>	<p>The same list used in the Prototyping assessment</p>

The table 3 presents the 24 dependent drivers obtained as a combination of the previous 96 drivers. For each one of the 4 steps of the innovation process there are:

- 2 drivers that are obtained as a linear aggregation of two groups of the 12 drivers already listed in the table 3 for each step.
- 8<sup>57</sup> more drivers that are based in an algorithm using the 24 drivers of the corresponding round or step.

*Table 3. The dependent drivers for each step of the innovation project*

Environment	Opportunity	Value	Prototype
Culture of innovation	Importance of opportunity	Concept	Prototype evaluation
- Entrepreneurship - Creativity - Leadership - Collaboration	- Opportunity value - Identification - Viability - Risk	- Concept model - Business scenario - Team - Alliances	- Commercial - Product service - Design - Logistics
Management of innovation	Capacity to manage the opportunity	Proposal	Room for improvement
- Ideation - Resources - Process - Marketing	- Vision - Commitment - Know-how - Market access	- Design - Development - Tests - Sales	- Commercial - Product service - Design - Logistics

### *Process of participation*

It may be defined in brief that the checklist of drivers presented above is used as a set of indicators to consensus the perception of performance level in the consecutive steps of an innovation project. The drivers, embedded in the online asynchronous opinion sharing system, allow the group of professionals to agree, validate or assess the innovation project, and as it has been explained, to do that, participants express their quantitative-qualitative opinions about the different attributes affecting the goodness of ideas, resources, limitations and/or results obtained. Therefore this is the

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<sup>57</sup> In the case of the prototype the 4 dependent drivers are repeated.

way CID facilitates and carries out people involvement in the assessment of the innovation project. Following the checklist presented, participants begin with the evaluation of the environment and the opportunity of a product and/or service. First, a limited number of people share their opinions about the attributes affecting the goodness of ideas and concepts, but as the project advances, formalising the value and proposing some kind of prototype, it is expected to increase the number of people involved in the project assessment.

In Table 4, following the general Innovation Consensus presented in the previous sections, are summarized the main components of CID.

Table 4. CID components

Component	Definition	CID
Model	The construct, knowledge, decisions etc., which is object of consensus or agreement.	The innovation process, formed by four groups of indicators representing: <ul style="list-style-type: none"> <li>• Environment of innovation</li> <li>• Opportunity for innovation</li> <li>• Value</li> <li>• Prototype</li> </ul>
Set of drivers	The items displaying the model.	96 Independent drivers: <ul style="list-style-type: none"> <li>- Encouragement of Initiative,</li> <li>- Management of risk, etc.</li> </ul> 24 Dependent drivers: <ul style="list-style-type: none"> <li>- Entrepreneurship</li> <li>- Creativity, etc.</li> </ul>
Question	Driver related question.	One question per independent driver, referring to the level of the driver. For the driver "Encouragement of Initiative" the question is: "Organisation values imagination and encourages people to propose and lead new projects?"
Answer	Possible answers for the questions.	A scale from 1 to 6 with specific semantic differentials for each extreme of the question. For the driver "Encouragement of Initiative" the semantic scales are: <ul style="list-style-type: none"> <li>- From time to time (minimal of 1)</li> <li>- Always (maximum of 6)</li> </ul>
Rounds	Groups of drivers, distribution of time	Four rounds that are managed by an administrator according to the interest of

	and management of participants.	each project.
Feedback	Communication facilities.	For each indicator (driver) participants are allowed to give insights, comments and written opinions.
Participants	All different professionals involved.	Groups of people invited to take part in the consensus process has not a limit except the logics of each particular innovation project.
Research staff	People that has designed and build the model.	A core group of 3 researchers and a group of 12 professionals have completed the first trial and validated the model with the online consensus system.
Weighting categories	Classification of drivers and participants in categories in order to review votes.	The indicators (drivers) and the participants are classified in three categories: Design, Management and Technology. The option selected the first weights 5, the second one weights 4 and the last one weights 3.
Results generation	Presentation of results to the participants.	The results of the participative process have two levels: - A final list with 24 indicators that aggregates the 96 independent drivers. - The stratification of answers for each group of users with the consensus for each one of the 96 independent drivers.

There are different ways and tools that are possible under the general model of Innovation Consensus, and during the design of the CID tool some decisions were taken to define it. Table 5, summarizes the criteria applied in the design of the CID solution, and it allows to imagine other possible applications based in the Innovation Consensus Model.

*Table 5. Criteria and decisions taken during the design of CID*

Drivers	The number of drivers and how to order and present them is the most significant aspect of the tool design. The accuracy of the model increases with the number of drivers, but it does so the complexity and the intensity of the participative process. The aggregation and classification of the drivers is a critical aspect in order to help participants to
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	understand the innovation model.
Questions	The question for each driver is different and adjusted to express with fidelity the meaning of the driver. Using the same questions for all the drivers would have made easier for the participants to answer, but changing the questions for each driver produces a much more precise opinion.
Participants	The selection and stratification of participants is directly related with their gradual involvement in the innovation process. If the number of participants is very high the value of the consensus increases but participation becomes more depersonalized, and the impact of each participant vote is diluted.
Rounds	The model of innovation is divided into 4 consecutive rounds, and the number of participants may be increased en each round. A major number of rounds would have allowed to define the process with more precision, but also would have made more complex the definition of the innovation product o service.

### *The web-based tool*

Nowadays internet capabilities allow creating, in a relatively feasible way, tools that are able to address the model exposed above. The following images in figures, 6, 7 and 8, together with figures 4 and 5 already presented, are a summary of the general functionalities of CID.

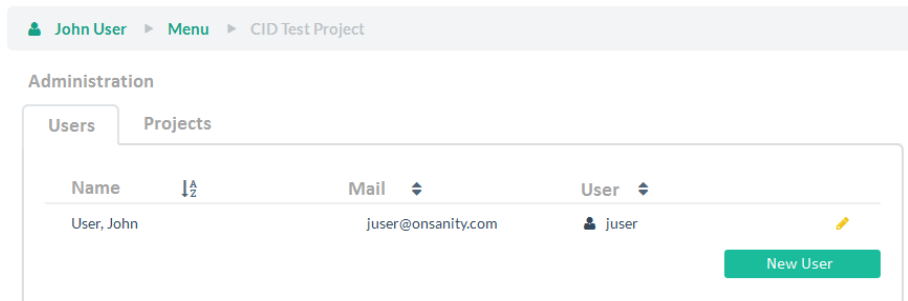


Figure 6. Main page of a user that has the privileges to open new projects and load new user.



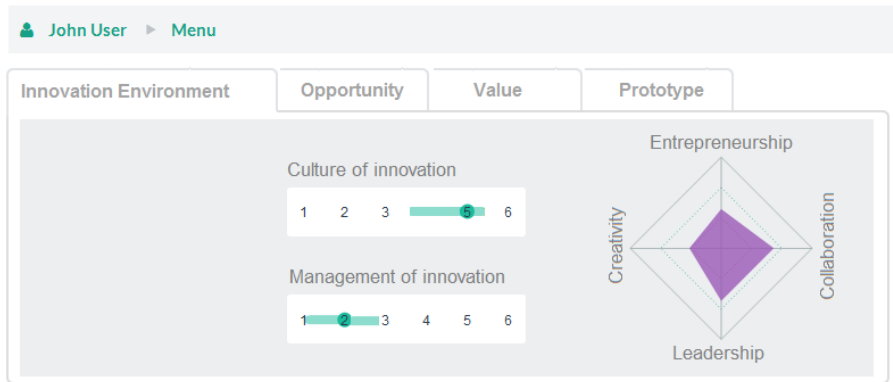


Figure 7. Visualisation of results of a project, showing the level of the 24 dependent variables. In this case, the culture of innovation has a high level of 5, but the management of innovation may be improved considerably. The team promoting this project has also a certain lack of entrepreneurship and of creativity.

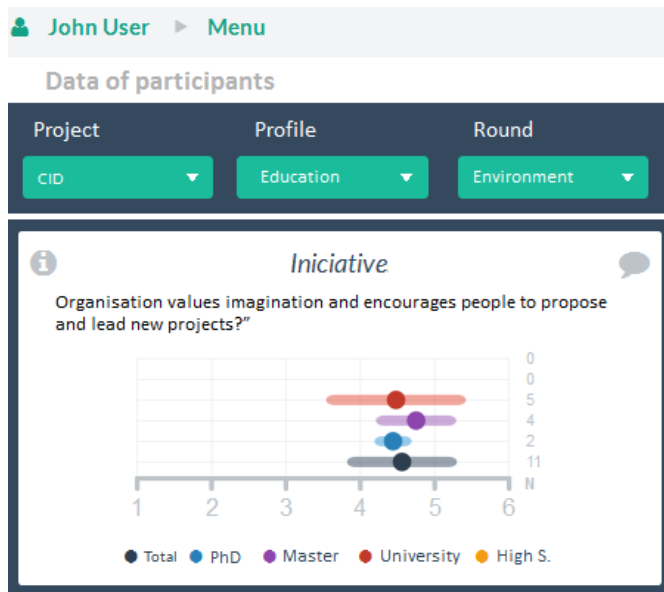


Figure 8. Presentation of data stratified by categories of users.

## Results

To test and assess the validity and adequacy of the CID tool for the purpose defined, the research has been done in two phases; the first one was conducted without any kind of digital tool, working with the participating companies involved in the development of innovation projects that extend over a year. The second phase was based in the use of a digital tool that facilitated to users the CID application.

The first phase allowed, thanks to different tests and experimentation done with the companies, the design of the tool that was used in the second phase. The test and assessment process described in this paper represents a first step in the research, and is devoted to see the usability of the tool and the self identification of participants with the outputs.

The research technique applied in the first phase of the test has been based on a focus group inspired method, with 15 participants, all of them CEO's and/or leading people from the companies. At the end of the debates with each one of the participating teams, three main questions were asked regarding:

- The level of identification with the drivers of the model according to products and/or services of the company.
- The perception of utility of the innovation consensus model in order to facilitate the assessment of the innovation projects.
- The usability and viability of the application based on the presentation of the first prototype of CID.

In all cases, the final consensus about CID was more or less the same and may be summarized as follows

- In general terms everybody felt quite comfortable with the list of drivers, both, dependent and independent. As a result of the focus group a new functionality was added to the system allowing personalizing the list of drivers to a sector, particularly relevant for the health sector where the terminology used in hospitals is different from the more commercial one used in companies.
- Few people found difficulties in the use of the application, and if so it was due to the fact that they were using not updated computers or smart phones.
- Everybody agreed about the intuition of utility of the profile of the innovation project although because of the novelty nobody knew exactly how and when to use those outcomes.

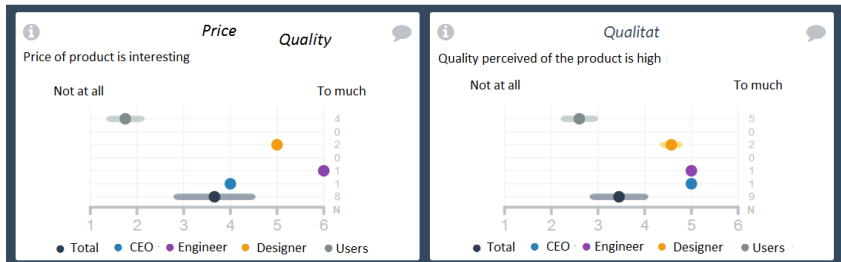
- There were no relevant differences between the opinions of different kind of users.

The CID system, in the second step of the research, has been applied with 6 different cases, and the results are synthesized in table 6. The users were proposed to go to the application <http://cid.healthconsensus.net> and do the whole job by themselves without any kind of instruction or advice. The group of applications has allowed testing and assessing the validity and adequacy of the prototype of the tool. Not all the participants completed all the rounds before the presentation of this paper due to the differences in rhythm in the respective innovation projects.

*Table 6. Companies participating in the validation of the prototype*

N	Sector	Rounds	Participants
1	Health	3	3, 14, 14, -
2	Car Ind.	2	6, 7, -, -
3	Alimentation Ind.	3	2, 5, 15, -
4	Audiovisual Ind.	4	2, 6, 12, 23
5	Distribution	3	3, 7, 12, -
6	R&d Pharma Ind.	4	3, 5, 12, 16

In the figure 9 it can be seen a nice example of the utility of the tool as significant differences between customers and professionals where clearly depicted.



*Figure 9. Presentation of data stratified by categories of users.*

## Conclusions

The objective of the work presented here is to share the advances in a research programme which intention is to provide tools and resources to help in the development of innovation projects. The main conclusions are:

- Experts, particularly design professionals, respond positively to the proposed model of participation based in the model of Innovation Consensus.
- The participation process is efficient and obtains high levels of satisfaction.
- Participants perceive they contribute with value as a result of their involvement in the participative process.

From this point, with a consistent model, it will be possible to continue with the development of new functionalities oriented to make recommendations to the companies according with their results.

The future research has two main directions. On one hand, the research may contribute to the development of the wide area of collective intelligence and the application of technological tools. Mobility, big data or social learning are some of the areas where the research will be extended.

The general goal of the research was to share the advances in a work which its explicit intention is to provide IT tools and resources to help in the development of a more participative innovation management.

There have been also discovered some weakness in the action-research design and development that provides very interesting elements to consider in the future versions of this prototype:

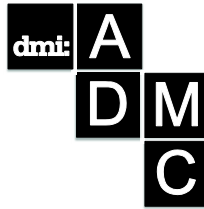
- There is a leak of culture in managing online asynchronous process that decreases the rate of response.
- There are difficulties managing the richness of multi-disciplinary and limitations when mixing very different profiles.

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## Knowledge integration of and by design

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*The capability to integrate across a range of specialized knowledge bases is a crucial contemporary source of competitive advantage, and the field of knowledge integration aims at structuring the issues. The purpose of this paper is to explore the possible uses, benefits, limitations and future directions of a formal knowledge integration perspective on design management. The paper develops the concepts of management thinking and design(erly) thinking, and questions the contention. With a knowledge perspective, design management may be seen as including the capability to integrate specialized, distributed and heterogeneous knowledge bases. Consequences regarding the characteristics of scope, flexibility and efficiency of knowledge integration indicate both greater difficulties and greater possibilities. Regarding the architecture of knowledge, the integration of design indicates a functional orientation and a limited role for design, while integration by design may indicate a strategic role. Also, whether integration of design or by design, the construction of common knowledge, bridging the specialized fields, seems a prerequisite for the effective knowledge integration of management thinking and design(erly) thinking*

**Keywords:** *management thinking, design(erly) thinking, knowledge integration, scope of integration, integration capabilities*

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## Design (management) as integration

The integration of the design function for the benefit of the overall performance of the organization is a crucial issue that has been awarded a considerable amount of attention (e.g. Cooper et al., 2011; Svengren, 1995; Buchanan; 1992, Johansson and Woodilla; 2008). Design is an integrative discipline and designers 'explore concrete integrations of knowledge' (Buchanan, 1992, p. 6). More recently Hobday et al. stated that design ought to be viewed as a 'knowledge creating, generation and integration activity' (2012, p. 18), not just as problem solving.

On a domain-independent level, design is the general human ability to improve existing conditions by creating the artificial (Simon, 1996). Design is a generative process (Hatchuel et al., 2010), the result of human interest, purpose and activity, and generally applicable. However, different domains may lead to different contents, which may in turn influence the design processes and the processes of integration. For our purposes here the perspective on design is inspired by John Heskett:

*The deliberate and reasoned shaping and making of our environment in ways that satisfy our needs and give meaning to our lives. (Heskett, 2002, p16)*

This definition gives prominence to the human actor and the human capacity to create a 'betterment of the human condition' through making tools of increasing complexity and abstraction. The crucial words being 'needs' and 'meaning' where the human being is seen not only as a (boundedly) rational seeker of utilities and satisfaction of material needs, but also as an aesthetic and social being seeking experiences of beauty and sublimity as well as symbolic values in a social context.

This duality is found in many works on design, albeit in different conceptual clothing, for example in Norman and Verganti's (2014) discussions on design and innovation in two dimensions: technology and meaning.

*Through capturing, recombining and integrating knowledge about socio-cultural models and product semantics in several different social and industry settings, designers help in creating breakthrough product meanings. (Verganti, 2003, p. 35)*

Design may consequently be seen as integrating across 'needs' and 'meanings', while design management is the managerial capability to make

use of design as a strategic resource, and consequential decisions and actions:

*Design management is the effective deployment by line managers of the design resources available to an organisation in the pursuance of its corporate objectives. It is therefore directly concerned with the organisational place of design, with the identification with specific design disciplines which are relevant to the resolution of key management issues, and with the training of managers to use design effectively. (Gorb, 1990, from Cooper, Junginger and Lockwood, 2011 p 14)*

First, design management contains the organizational need for and capability to integrate 'design' and 'management', but as design is inherently integrative, design management is effectively integrating the integrative. Second, issues pertaining to integration may be addressed with a knowledge perspective, as integration of knowledge bases.

The study of organizations as knowledge-based entities has some history and has become a significant stream in organizations research. Including Nonaka and Takeuchi's (1995) work on types, locations and transfer (or conversions) of knowledge, the perspective has branched into a wide number of management fields, including international management (Kogut and Zander, 1992) and theory of the firm (Kogut and Zander, 1996). A possible general position is that

*A firm is a repository of knowledge that consists of how information is coded and action coordinated. (Kogut and Zander, 1993, p. 626)*

One example of a subfield is that of knowledge management (KM) which from a design perspective has been argued to be a rather rationalistic, instrumental set of pragmatic methodologies (Rylander, 2009), opposed to a design process characterized by intuitive and holistic thinking.

Given our interest in the integration of design, we will turn our attention to the structured treatment of integration from a knowledge perspective found in the field of knowledge integration (KI). From the formative contributions of developing a knowledge based perspective on organizations, such as Kogut and Zander (1992), Nonaka and Takeuchi (1995), the field of knowledge integration (Grant 1996a, 1996b; Kogut and Zander, 1993) has found its own contours. The list of publications has been increasing (Tell, 2011), boundary conditions have been set, and communities



formed (Berggren et al., 2011). KI is in principle neutral in terms of domain, with the advantage of a structured set of propositions on types and characteristics of integration. By introducing KI into the design management discourse we seek to explore consequences for design management, with an ultimate interest in how the integration of design may contribute to the creation and sustainability of competitive advantage.

The defining premise of KI is that knowledge has become increasingly specialized, leading to dispersed and heterogeneous knowledge fields, which, in turn, lead to a need for integration. To that we might add that the objective is not learning in the form that levels differences and lets us all become privy to the other's knowledge, but integration of dispersed, heterogeneous and complementary knowledge bases into a greater whole that employs and leverages the diversity.

### *Purpose*

The purpose of this paper is to explore possible uses, benefits, limitations and possible future directions of a knowledge integration perspective on design management.

We approach the issues with a strategic management perspective. The present work is about the use of the particular design knowledge in an organized context, for the greater goal of the performance of that organization. The ultimate interest is how the knowledge integration of design contributes to the performance of the organization. With a resource based view (Penrose, 1959; Wernerfelt, 1984; Barney, 1991): to understand design as a strategic resource for the firm, and design integration as strategic capability. Our issue becomes the integration of 'management thinking' and 'design(ery) thinking' (Johansson et al., 2013), as specialized, heterogeneous but complementary knowledge bases.

### *Structure of the paper*

We posit a straight-forward formulation of our possibly wicked problem: there is the two knowledge bases of 'management thinking' and 'design(ery) thinking', a difference between the two, a possibly positive effect of combining them, and consequently an issue of integrating the two.

Our knowledge integration perspective will eventually, for the purpose of clarity, be rather 'Grantian', focusing on the seminal contributions by Robert Grant (1996a; 1996b). Grant's is the most prominent and used knowledge perspective within the field of strategy (Eisenhardt and Santos, 2002), and the most cited author on knowledge integration (Tell, 2011).

We will address the issues in the following manner. Our first set of issues concern the two knowledge bases. First, we will address the idea of management thinking, and second, design(erly) thinking, ending with a discussion outlining some consequences for the contention of the two concepts. Then, the field of knowledge integration (KI) will be introduced as a structured framework for integration, and our particular approach formulated. In order to make sense of the consequences of design management as knowledge integration we will first examine the integration of design in terms of the characteristics of knowledge integration – the scope, efficiency and flexibility of knowledge integration processes (Grant, 1996a), and second, we will examine the location of design in the hierarchy of capabilities (Grant, 1996a). We will end with general observations and implications.

## Two knowledge bases

### *Management thinking*

Management thinking has often been perceived and modelled as a purposeful, shareholder value based, instrumental problem solving activity, based on rationalistic argumentation with resource efficiency as guiding principle (e.g. Rylander, 2009). Taylor's (1911) scientific management has been identified as a possible core of management thinking (Johansson and Woodilla, 2008). The organization, its employees and activities are means for achieving ends, which are formulated in capital yield terms. It becomes a Tayloristic and Friedmanish stereotype of management thinking, possibly with a detached systems engineering-like perspective to the approach of organizing work, where subsequently hierarchy is a leading principle (Johansson and Woodilla, 2008). A teleological and instrumental view of activities finds all decisions an investment of financial capital and subject to being judged for their contribution to the organization's overall objective function, through techniques of investment analysis by net present value (NPV) and internal rate of return (IRR). The economic rationality is perfectly neutral in domain; whether production systems investments, marketing decision, recruitment decision or design expenses, the decision to go ahead is subject to the same format of calculation.

Like Peter Gorb (2001) observes, the management language remains in the numbers of the profit and loss statements and impact to the balance sheets. The management language treats decisions as investments and if there is a sense of functional beauty (Parsons and Carlson, 2008), it lies in

the level of the compound annual growth rate (CAGR), return on capital, and the ability to consistently increase shareholder value.

On the other hand, organization theory, and the part of strategic management that is not wholly formulated within (neo-classical) economics, has evolved considerably from the rationalistic and uni-dimensional perspective somewhat caricatured above. Already the Hawthorne studies introduced management action as symbolic, rationality in decision making became bounded (Simon, 1973), post-modern organization theory (Hassard and Parker, 1993) and the influential study on 'excellence' of Peters and Waterman (1982) helped spur an interest in organization culture studies and narratives. A series of works argue for an aesthetic organization theory (Gagliardi, 1996; Strati, 1999; Ramirez, 1991).

Indeed, a limitation observed in strategic management research is that focus has been on the material and the supply side, at the expense of the immaterial and the demand side:

*(a) extant research has focused on producer activities and on the cost side of the value-creation equation ... to the neglect of the role of consumer perceptions and practices; and (b) extant research has focused on the importance of technology in value creation to the neglect of cultural and symbolic resources (Dalpiaz et al., 2010, p.176).*

In other words, management thinking does have a pragmatic base in the language of numbers, a logic that is derived from a shareholder's perspective and represents a technical/ economic rationality. But strong contemporary voices develop and elucidate a socio/ cultural perspective on management work and theory.

Perhaps more intriguing yet, are formulations of the two as a duality of technical/ economic and socio/ cultural perspectives arguing for a paradoxical conceptualization. Most provocative and elegant is perhaps James March's statement that 'leadership is a matter of poetry and plumbing' (March and Weil, 2005). The plumbing being the technical, economic and pragmatic workings of the organization while the poetry contains the aesthetics of work and workplace and the social symbolic values of products, work and ideas.

Summing up; to pinpoint management thinking as an instrumental resource-efficiency discourse is possible and in some ways pragmatically correct, but overly simplistic in the light of advances in the field. Managerial

knowledge and practice does contain the paradoxical nature of a duality of a technical/ economic rationality and a socio/ cultural one.

### *Design(erly) thinking*

Whereas mainstream management thinking has been argued to be repressive of creative thinking (Johansson and Woodilla, 2008), design is denoted as part of the creative industries (EU commission report 2006), and creativity is one characteristic often recurring in discussing design(erly) thinking. The intuitive aspect of design work is another recurring characteristic. Designers are also empathic (Kelley and Littman, 2005; Brown, 2008), drawing their inspiration from a deep respect and understanding of the human condition. Designers are idealistic, foregoing the instrumental shareholder perspective for an all-embracing stakeholder view. Designers are artsy, bringing a disinterested aesthetic judgment to the work, thereby delivering experience and meaning to the beholder. All in all, designers are artsy, creative, empathic, inclusive, intuitive and even fun; in short, most of the qualities that management thinking is not. But then again, design in a managed context, e.g. as industrial design, is more complex.

Is design art? In a certainly entertaining but rather poignant remark, design has been seen as 'useful', and art as 'useless' (Sudjic, 2008). Professional industrial design is not arts in the disinterested, detached way of the romantics (Kant, 1790/2000), but guided by the objective function of the firm (Lovaas and Ghoshal, 2002).

Designerly thinking is what designers do and design thinking is that knowledge transferred to a managerial context (Johansson et al., 2013), and what may then be the core of that way of thinking? Design competence has been identified as the result of three interlinked characteristics: a holistic view, an ability to zoom between holistic to detail, and a capacity to structure and dissolve structures (Johansson, 1998). This leads to a formulation of design practice rather antithetical to hierarchy and functional boundaries (Johansson and Woodilla, 2008). Design competence is to zoom in and out of hierarchical layers, and to cross functional boundaries and borders of disciplines, in order to move from holistic to detail.

As developed earlier, design is a field that inherently incorporates a cross-speciality integrative aspect, stretching across the divide between the rational and the 'irrational' of the aesthetic and symbolic. The consequence here being that design(erly) thinking rests in a similar paradoxical state of affairs as management thinking; technical/ economic and socio/cultural.

Still, the idealistic legacy of certain waves of design is revered. Already William Morris for instance

*believed that beautiful design enriched the quality of life and that the designer had a moral responsibility in his or her work towards the greater good (McDermott, 1992).*

Echoes of this ideological, humanistic position have a long reverberation and examples highlight the balancing of a technological and economical logic with an (ideological) orientation. Design is not just an instrumental, industrial activity for the betterment of the industrial process and its performance, but an instrument for the betterment of the human condition, processed through industry as the mass production methods democratizes quality. Low cost and industrial processes are not only seen as means to create margins and capital turnover, but means to make good designs available for a greater number of people. Industrial techniques are means, not ends. The ideological stance is not necessarily outspoken or very marked in industrial design, which is, again, a professional and embedded deployment of design knowledge, but the questioning of rational, technological knowledge as panacea remains.

*Placing industrial design within art or technique, however, is an almost impossible task. Industrial design is a combination of both, and it is this combination that is the core of the profession. An industrial designer always takes the beauty of forms into consideration. But he or she never does so regardless of function and the production process, thereby distinguishing themselves clearly from "pure art" and artists. (Johansson et al, 2003, p, 2)*

From a knowledge perspective, designerly thinking is arguably more tacit than management thinking. From a practitioners perspective, Chris Bangle argues that 'artists really only learn to create winning designs by trying over and over again; their professional growth occurs almost invisibly..' (Bangle, 2001, p. 51), indicating the importance of experience based, tacit knowledge.

Summing up, design(erly) thinking is not an obvious counterpoint to management thinking, but may represent a complementary knowledge base, specialized and perhaps dispersed.

### *The contention*

Wherein lies the contention between management thinking and designerly thinking? Wherein lies the contention between management knowledge and designerly knowledge? Is it real, perceived or an illusion? With undeniable experiential legitimacy, Chris Bangle of BMW calls it the “inevitable conflict between corporate pragmatism and artistic passion” (Bangle, 2001, p, 47). Given the discussion above we should approach the contention with some caution.

*According to (Heidegger 1977/1953), modern technology essentially means an abstract, disenchanted, and decontextualized thinking of the world... (Johansson et al., 2003, p. 2)*

A view of a duality permits us to capture the complexity in the earlier debate and propositions for the difficulty of integration of design. If management thinking and design(erly) thinking can be approached through the same paradox, they should be approached as complementary rather than excluding. Depending on how big - or paradigmatic -the difference, the contention has been seen as a small ditch, a significant stream,

*... there's a huge river of misunderstanding between the design and the business world. (Peter Gorb, 2001, p. 2)*

or a wide chasm:

*The modern split between engineers and industrial designers or between art and business, therefore, appears not to be a small ditch simply to jump over. Rather, it seems to be of such a magnitude that it is doubtful whether it is even worth trying to overcome it.”(Johansson, Sköldberg and Svengren, 2003, p. 10)*

The potential and difficulties of design integration have been perceived in various ways. In some contributions the integration issues have been addressed as an organization structure issue, as an issue of roles, as issues pertaining to external or internal location of the design function, or as an issue of paradigmatic difference between the rationality of business and the wicked problems of the arts and design.

Summing up, we will approach the contention, and the integration issues from the following distinction. First, that design has a greater acceptance for, and methods for, embodied knowledge; or rather knowledge about embodied knowledge. Embodied knowledge is tacit, partly lodged in the

senses. Second, management thinking has a greater strive for, and methods for, explicit and objectified, 'reasoned', knowledge.

## **Knowledge integration; an integrative framework**

Contemporary competitive patterns are increasingly based on intangible resources (Teece 2011; Dalpiaz et al., 2010). Knowledge is a key intangible resource and a knowledge perspective on the firm has become an important perspective on how organizations work.

The contemporary need for depth of knowledge leads to increasing specialization and subsequently organizations need increasingly sophisticated means for integration. As knowledge is dispersed across individuals and collectives within (and outside) the firm, "the primary role of the firm is integration of knowledge" (Grant, 1996a, p. 377). Thus, knowledge integration has been defined as the combination of specialized but complementary knowledge bases in a goal-directed process aiming to achieve a significant outcome for the concerned organization(s) (Berggren et al., 2011b, p.7).

Knowledge integration is concerned with understanding and explaining processes of knowledge integration, and implications for the design of such processes. Tell (2011) identifies several streams of research, and more particularly one that seems of particular interest to us, concerned with the combination of specialized, dispersed but complementary knowledge. A generative perspective on knowledge creation link to innovation, and indicate that in innovative settings knowledge integration takes place despite knowledge-base dissimilarities (Lindkvist 2005). On the other hand results include that integration of specialized knowledge may not be easy (Dougherty 1992, Hoopes and Postrel 1999) or even possible if the common knowledge that may bridge between areas is lacking (Grant, 1996a; Postrel, 2002), or there may be a trade-off between exploiting familiar knowledge and exploring uncharted territory.

Knowledge integration may give us an interesting starting point for exploring the integration of design(erly) thinking and management thinking. Task, knowledge, and relational characteristics have an influence on KI (Tell, 2011). The knowledge characteristics identified are of a rather general character, i.e. internal vs. external, tacit vs. explicit, etc. This, just as the general definition by Berggren et al., does not discriminate between different knowledge bases relevant to the task at hand. KI is in that sense domain-independent.

Grant (1996a) grounds his discussion on knowledge integration on a basic distinction of knowledge as tacit and explicit (Nonaka et al., 2000), and focuses on the specialization needed on an individual level in order to acquire more – deeper – knowledge. On an individual basis he argues, for cognitive restrictive reasons, for a necessary trade-off between breadth and depth of knowledge. Hence, in order for the organization to create means for integration between individuals with specialized knowledge, Grant argues that explicit knowledge poses little problems because of its ease of communicability (p 379). The coded, stored and retrievable explicit knowledge may easily be accessed by other individuals, given that the language of the code is common to others. On the other hand, tacit knowledge presents more substantial issues, as tacit knowledge not necessarily can be converted to explicit without knowledge loss. Grant (1996a) identifies two major mechanisms for aiding this process: direction and routines.

It is reasonable to extend this discussion into the realm of social contexts. Groups of individuals form social communities where common experiential background, e.g. education and project collaboration, comes to form socially bound norms and expectations. Social norms of instrumentality, idealism, ‘artistry’ concerns the content of work, while norms of efficiency, linearity, goal-orientation and rationality influences the expectations on work process. Social communities define identities and peer-recognition.

In the following, we will focus on Robert Grant’s models (1996a, 1996b) on knowledge integration to explore some consequences of using KI as a vehicle to understand the integration of management thinking and design(ery) thinking. Specifically, Grant identifies three characteristics of knowledge integration of importance for competitive advantage, and presents an architecture of knowledge integration.

First, the **efficiency** of knowledge integration is judged by ‘the extent to which the capability accesses and utilizes the specialist knowledge held by individual organizational members’ (Grant, 1996a, p. 380) i.e., the efficiency is determined by the level of common knowledge and the frequency and variability of task performance. Second, the **scope** of knowledge integration is constituted by ‘..the breadth of specialized knowledge...’ (Grant, 1996a, p. 380), i.e., the scope is affected by complementarities and substitutability as well as causal ambiguity. Third, the **flexibility** of knowledge integration is ‘...the extent to which a capability can access additional knowledge and reconfigure existing knowledge’ (Grant, 1996a, p. 380), where flexibility lies



in the ability to encompass new knowledge or reconfigure existing repositories of knowledge.

Grant (1996a) introduces a perspective of knowledge as a '*hierarchy of integration*', from the specialized knowledge held by individual members of the organization, successively broadening the scope of fields of knowledge to be integrated until we reach the top of 'wide-ranging functional integration'.

To sum up, KI contains a developed discourse on how the integration of specialized, dispersed and heterogeneous fields of knowledge may be structured, conceptualized and approached, eventually evaluating the contribution to the competitive advantage of the organization.

## **Integrating the resources and capabilities of design(erly) thinking**

We will here first discuss some implications for integrating the *resource* of design. Second, we will discuss some implications for the *capability* of design management in order to integrate design. With an ultimate interest in how design may contribute to the creation and sustaining of competitive advantage, we will first use Grant's (1996a) conceptual structure regarding characteristics of knowledge integration processes – efficiency, scope and flexibility -linked to competitive advantage. We will begin with the scope of the fields of knowledge to integrate.

### **The scope of knowledge integration**

Design knowledge broadens the scope of what to integrate, in relation to integrating different traditionally technological knowledge bases. With design as incorporating a humanities dimension, and concerned with human interaction with artefacts in an aesthetic and symbolic way, design aims to integrate the material with the immaterial.

In the extreme of scope, this extent of this scope may represent the paradigmatic divide between technology and the humanities. Communication may be difficult across such divides. Individuals have been educated and trained in different traditions. In the polytechniques rationality prevails, and an undertext of rationality, progress and materiality emerges – in short a Newtonian based universe of modernity.

Design schools are located either within the polytechniques, or within beaux arts, which has spawned a considerable debate concerning the effects in terms of attitudes, values, work processes.

In the minimum of scope, design is added to fix the appeal of an item, perhaps as 'styling'. Perhaps with planned obsolescence built-in. At the least, design scope introduces a humanities element in how we perceive the properties of the artefact or process to be designed. The artefact or process is not just about material utility and problem solving, but *also and including* aesthetic experience and symbolic meaning creation.

Grant (1996) argues that increasing the span of knowledge to be integrated actually has the potential to be beneficial for the firm, on two accounts. First, up to a point of 'diminishing relevance', different types of knowledge may be seen as complementarities rather than as substitutes. Second, a greater scope of knowledge increases the possibilities of a greater causal ambiguity and thus increases the sustainability through sheltering the firm from imitation.

Design increases the scope of knowledge to be integrated and thus carries a promise or potential for increasing sustainability of competitive advantage – given that the two conditions can be met. If the aesthetic and symbolic considerations of design are seen as a poor complement it may stretch beyond the point of diminishing relevance in the eyes of other organizational actors. Given the tacit nature of much of design, it may certainly contribute to causal ambiguity and thus shelter competitive advantage from imitation, but the extreme of causal ambiguity is simply fuzziness and lack of causality.

### **The efficiency of knowledge integration**

The efficiency of knowledge integration depends in part on the ability to communicate across functional borderlines, regardless of whether the knowledge is explicit or tacit and thus if the integration mechanisms may be based on direction (explicit) or routine (tacit) (Grant 1996).

A prerequisite for communication across knowledge areas has been the level and quality of common knowledge, which rest on common language, commonality of vocabulary and conceptual knowledge. Can we expect the design professionals to speak the same language as technology or management specialists?

Shared behavioural norms are fundamental and *"the wider the scope of knowledge being integrated...the lower is the level of common knowledge"* (Grant, 1996, p. 380). Similarly concerned with managerial processes, but in another field, it has been proposed that the creation of a 'common space' was critical for the successful transfer of knowledge to international market entry in the form of green-field investment, in order to bridge between

nationalities (Hurt and Hurt, 2005). These propositions in turn have parallels to the common space of *ba*, conducive to knowledge conversion processes, proposed by Nonaka et al. (2000).

Design, in its introduction of aesthetics and symbolic value, risk being problematic on most of these accounts. It widens the scope of knowledge to be integrated; the intra-field languages, concepts and structures are likely to be different; behavioural norms risk being different and intra-field cultural values are likely to be different.

Further, the frequency and variability of task performance influences the efficiency of knowledge integration (Grant 1996). This would point to industrial design being successfully integrated in situations where design is part of the routines of a firm, rather than an exception.

Lastly, organizational structuring may facilitate the efficiency of KI. Interestingly, Grant (1996) uses the automobile industry, from Clark and Fujimoto (1991), to illustrate the possible benefits from sequencing, functional differentiation and product segmentation to overcome knowledge integration barriers, although without paying any special attention to design.

### **The flexibility of knowledge integration**

In a dynamic market setting, sources of competitive advantage have a best-before date, and the capability for continual renewal may maintain performance (Eisenhardt, 2002; Teece, 2007). First, a firm's ability to encompass additional fields of knowledge depends greatly on the ability to communicate (Grant 1996). The more tacit and historically and culturally embedded, the more difficult knowledge will be to transfer and to integrate. Socio-cultural patterns of meaning creation (Verganti, 2008) are certainly both path dependent and culturally embedded. Second, an ability to reconfigure existing knowledge through new patterns of integration is a potential capability for renewal.

All of the three characteristics of knowledge integration indicate some difficulties when we introduce the broader set knowledge of design. We posed question marks around the efficiency of integration, partially because of communication issues; the scope of what to integrate may move beyond the point of diminishing relevance; and flexibility of integration may be slow partially because of the tacit nature of design knowledge and practice. However, following the argumentation regarding scope by Grant (1996a), the broader scope of industrial design also carries the potential for creating

and sustaining competitive advantage. Great potential coupled with great difficulties.

*Design management capability: integration of and by design*

A specific issue of knowledge integration that is highlighted from a design perspective is whether design is being integrated as a function, or itself an agent of integration; in other words whether knowledge integration takes place *of* or *by* design.

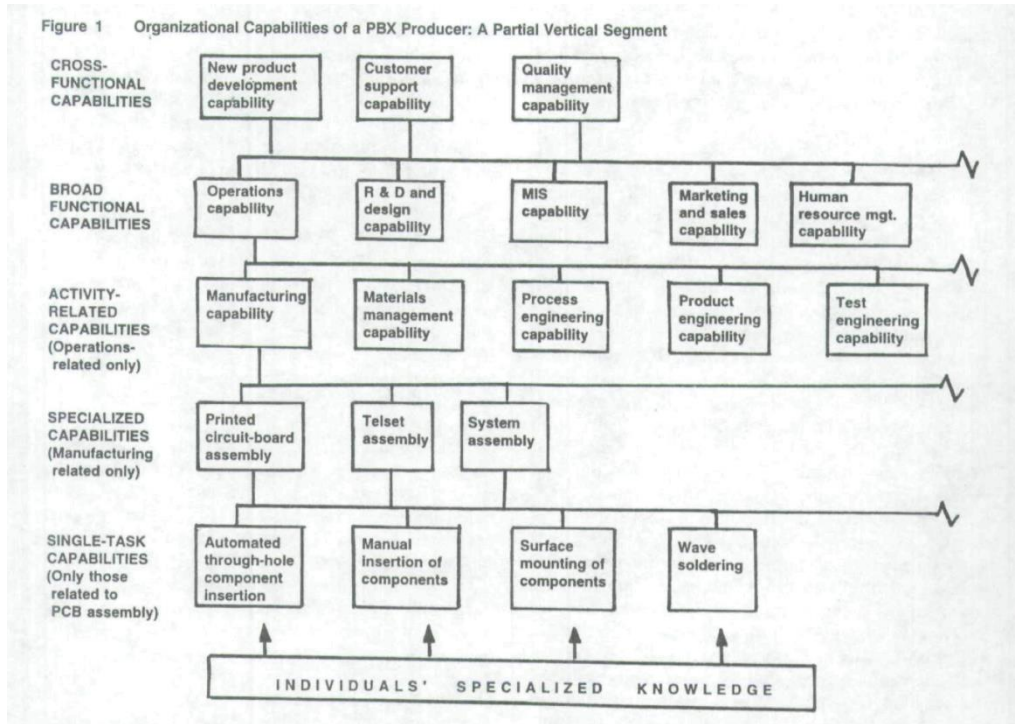


Figure 1. Organizational capabilities architecture (Grant, 1996a, p. 378)

Part of design management is the idea of design as integrated into the activities of the organization; **integration of design**. From a mainstream conception of the firm as a technical/economic optimization problem, design then needs to be *added* to the existing set of activities. Design is one activity along other activities, one department along other departments. How to structure, organize, place and integrate design with such a

perspective is a recurring theme in design research, for example in Lisbeth Svengren's discussion of functional integration (Svengren, 1995). With integration of design, at its most fundamental we are adding a field of knowledge to be integrated. The problem possibly being that we hereby attempt to achieve flexibility through encompassing new knowledge (Grant, 1996), something Grant sees as unlikely to be successful unless the new knowledge is explicit and communication can be found through direction. The integrating mechanism of flexibility would most likely occur through reconfiguration (Grant 1996). Hence we have a paradoxical situation that may be difficult to resolve, and possibly a line of explaining the many reported difficulties in finding success through incorporating industrial design.

The design function is placed along other functions and activities and becomes one knowledge area among other knowledge areas. It would represent an 'independent subsystem' (Simon, 1973; Grant, 1996), and design would have a 'horizontal' role. The focus would most likely be to employ and apply known knowledge. In principle, design(ery) thinking in this situation does not alter or has any effect on management thinking. The design resource is added to the existing resources of the firm.

If so we may arrive at an asymmetrical communication pattern (Johansson et al., 2003) where design need to legitimize itself vis-à-vis a possibly mainstream technical and economic interest and logic, leading to issues of relative importance of design compared to other functions such as technical development of supply chain management. An investment in design needs to be evaluated in the same manner as any investment. The role of design is functional rather than strategic.

A further step is to see design as an integrating activity, where design is the agent of change; **integration by design**. Design is the activity that links, or creates links between the activities of the firm. This perspective moves design more clearly into the realm of business strategy, as an overarching process logic that binds value creating and appropriating activities together. This seems to be a growing field of interest in design research, such as Svengren's (1995) conceptual integration. Design may, thus, be a higher order capability with a 'vertical' role and responsibility. As such design is a facilitator of knowledge integration processes, with responsibility for creating meaning and order throughout the process.

### *The technical envelope*

An empirical illustration of integration of or by design may be the attitude towards a technical level or envelope. While integration of design would most likely work within a set boundary of technology and apply that level of knowledge, it is easier to see integration by design as pushing that boundary, in order to meet the vision of the design, not accepting the given. Design here would be the leading activity, and any specific field of technological knowledge would represent a resource, or a subordinate capability, in the hierarchy (Grant, 1996a). Design would have a 'vertical' field of authority.

Throughout the history of Apple products there are numerous stories of when Steve Jobs refused to accept boundaries of existing technological fields of knowledge. When the iPhone was being developed, the front with one single glass surface was an integral part of the vision. The problem being that there was no glass material hard enough for the intended use, which risks stalling or stopping the entire project. True to his style, Steve Jobs phoned the CEO of Corning, flew over and convinced Corning to spend research time inventing the impossible. Within a month Corning had found an unused technology and the glass surface issue was solved. (Isaacson 2011)

Another approach is illustrated in the example from the Swedish glass works Orrefors (Andersson, 2002). Orrefors recruited its first designer (or artist as they were called back then) in 1916 and has ever since been a company which has relied heavily on its designers for the development of new products with commercial potential, combining an artistic content with cost-efficiency consideration (whether manufacturing is completely manual or mechanical or combinations thereof). An often referred to expression in the glass works when designers presented their sketches, sometimes drawing with chalk on the floor of the glassworks, was "it can't be done" ("de' gaur inte" in the local Swedish dialect) which was another way of saying "we have never done that". More or less everything in the company centred around the company's eight designers, recruited in order to be different from each other, expressing their individuality in their products, while working under the umbrella of the brand and its tradition. Combining commercial potential by pushing (technological) limits and stretching, but not breaking the tradition of the brand, was thus the essence of integrative design(ers) at Orrefors.

The organizational level of where to find 'integration agents' may, as the Apple and the Orrefors examples show, vary. Grant (1996a) writes however

that the hierarchy of integration is not to be confused with the administrative one of authority and control, and that the two hierarchies, in most organizations, do not correspond closely with each other.

## **Discussion**

By exploring design management with a perspective of knowledge integration, we have extended the scope of what knowledge to be integrated. We have identified a managerial issue that formally encompasses both the material and the immaterial (Hodder, 1991), the rational and the 'irrational', use value and user value, functional and symbolic value (Ravasi and Rindova, 2008); encompassing *the poetry and plumbing* of management (March and Weil, 2005). Some of the worlds most highly valued companies, such as Apple or BMW, are undoubtedly 'design-intensive' firms (Verganti, 2008), building their success on a combination of rational problem-solving and meaning creation, of technology and meaning creation into product epiphanies (Norman and Verganti, 2014). Whether this combinative capability (Kogut and Zander, 1992) is called industrial design, design thinking or design management or something else is in a way secondary. We have here sought to explore some consequences of introducing knowledge integration into the design management discourse, specifically what the consequences may be of knowledge integration *of or by design*.

The design knowledge represents at its most basic a distinct set of resources. The employment of these resources requires distinct operational capabilities, and the integration of which may require higher order capabilities. The 'designer' uses the input of the resources of knowledge content through the capability of process knowledge to 'design' things and processes as output.

With this perspective, design is inherently integrative, bridging the needs, desires and self-perceptions of the user, and the resources and capabilities of the firm. Design, in content and process, represents an identifiable and distinct resource and/ or capability for the firm. The placement of industrial design in a hierarchy of capabilities (Grant 1996a) is in fact a critical managerial issue, indicative of whether the integration is seen as integration of or by industrial design.

## Conclusions

First, from a knowledge perspective, design management may be reformulated: design management includes the capability to integrate specialized, distributed and heterogeneous knowledge bases.

Second, when studying integration of design through the lens of knowledge integration what stands out is the increased scope of what to integrate. In order for the design process to provide improvement of the existing situation the process needs to bridge needs as well as meaning.

Third, all of the three characteristics of knowledge integration (Grant 1996a) – scope, efficiency and flexibility - indicate some difficulties; regarding the efficiency of integration, partially because of communication issues; the scope of what to integrate may move beyond the point of diminishing relevance; and flexibility of integration may be slow partially because of the tacit nature of design knowledge and practice. However, following the argumentation regarding scope by Grant, the broader scope of industrial design also carries the potential for creating and sustaining competitive advantage. Great potential coupled with great difficulties.

Fourth, the location of design in Grant's hierarchy of capabilities may help identify critical managerial issues, indicative of whether the integration is seen as integration OF or BY industrial design. Integration OF design indicates that design (with its distinct capabilities) is placed alongside other functions of the firm, and thus could be described as extending the horizontal dimension of organizational capabilities (Grant 1996). This calls for efficient integrative capabilities at a higher level; integration is not intrinsic to the design field itself. Integration BY design, on the other hand, refers to the vertical dimension in a hierarchy of capabilities (Grants, 1996a). Design (thinking) – spanning the economic/technological and the socio-cultural – permeates the organization and thus becomes, or constitutes, an integrative capability in itself, wherever its agent(s) reside. If knowledge integration takes place BY design, then design is an integrative agent and design becomes part of strategic management.

Finally, the knowledge integration 'method' of integration of specialized, dispersed and heterogeneous resources is not to create uniform knowledge as such, but via a 'common knowledge' (Grant, 1996) permit the leverage of the various knowledge bases. That common knowledge provides a language that permits the knowledge integration to outshine the sum of the parts. Similarly, a 'common space' (see Hurt and Hurt, 2005) is a ground for empathy, respect and trust. The common ground of knowledge integration,



the 'ba' (Nonaka et al., 2000), may be crucial and conducive to the knowledge integration process.

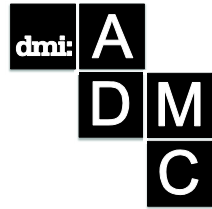
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## What are you Managing in Design? Creativity or Innovation or Both?

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*Managing design has become an important ingredient of successful business management and to the success of the business itself, especially when a business is dependent on products and/or services that reaches consumers and the wider public. Design and designers are associated with creativity, while management and business are associated with innovation. While creativity is defined as the process that results in ideas that are novel, innovation is defined as the process that creates value to both the business and the consumer.*

*If you are to manage the design process in an organization, are you managing creativity? Or innovation? Or both? Research and writing on the subject reveals that creativity and innovation are used interchangeably without understanding the underlying differences between the two. This paper starts by outlining the difference between creativity and innovation, in reference to design management, and goes on to establish the difference between artistic and idea creativity in order to effectively bring about innovation within a group or organization. This paper also introduces the need for design managers to differentiate the culture of creativity and culture of innovation in order to bring value through innovation.*

**Keywords:** *Creativity, Innovation, design management, culture of creativity, culture of innovation*

## Introduction

Design as a profession is ninety-five years old from the founding of Bauhaus in Germany, or eighty-five years old from the start of the Raymond Lowey's industrial design practice in USA. These two starting points are important from the author's perspective since they represent two distinctly different approaches to how design is managed. Bauhaus was founded by Walter Gropius core with a radical concept at its core: to reimagine the material world to reflect the unity of all the arts. Proclamation of the Bauhaus of 1919 described a utopian craft guild combining architecture, sculpture, and painting into a single creative expression which combined fine art with design education to turn out artisans and designers capable of creating useful and beautiful objects appropriate to this new system of living. ([http://www.metmuseum.org/toah/hd/bauh/hd\\_bauh.htm](http://www.metmuseum.org/toah/hd/bauh/hd_bauh.htm)). Gropius's dream of unifying arts through crafts was not financially feasible, especially with the start of mass production of products in the western world. This meant a refocus from a utopian ideals to 'art for the industry' stressing the importance of designing for mass production.

Raymond Lowey, on the other hand discovered 'streamlining' which he called 'beauty through function and simplification'. In his book *Industrial Design* (Lowey, 1979) Lowey states that, 'success finally came when we were able to convince some creative men that good appearance was a salable commodity, that it often cut costs, enhanced a product's prestige, raised corporate profits, benefited the customer and increased employment'.

In the first instance itself one notices two different value propositions brought about by the two influential founders of industrial design. This seem to have been picked up as a dichotomy ever since, leaving the door wide open for misrepresentation of design and design management in many ways till today.

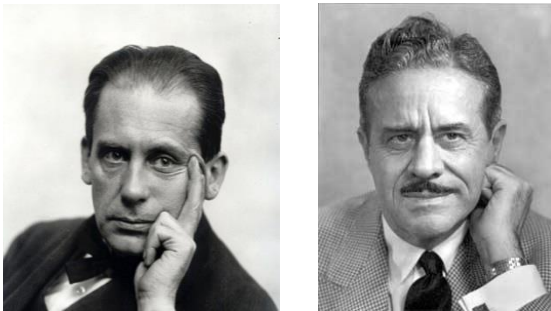


Figure 1 Influential founders of industrial design

Source: <http://www.walter-gropius.com> and <http://raymondloewy.com>

Bauhaus' approach of 'art for the industry' set the tone for an intellectual approach to design which was adopted by the next famous Hochschule for Gestaltung in Ulm, a 'teaching and research institution to foster the humanistic education ideal and link creative activity to everyday life ([http://www.designhistory.org/Bauhaus\\_pages/BauhausWomen.html](http://www.designhistory.org/Bauhaus_pages/BauhausWomen.html)). Lowey's philosophy of 'never leave well enough alone' (Lowey, 1951) set the tone for a more commercial approach to design, where design was associated with appearance as a saleable commodity meant to bring 'satisfaction' to the consumer and profit to the manufacturer.

Intertwined between these two strands of design approaches are important threads such as creativity, design process, innovation, design management, etc., which are important in making design outcomes that are uniquely different and successful in their own way.

Many variants have been derived from these two founding approaches to design, many a time marrying the two approaches in different proportions to concoct new design 'cocktails' that are interesting to consume for the consumers/users and the clients/company alike. During the period that design was evolving, from roughly the end of World War I right till today, creativity and innovation was studied and researched upon by academicians and practitioners from wide variety of areas other than design. Creativity was studied predominantly by psychologists such as Robert J Sternberg (1989), Teresa Amabile (1996, 1998), Mihaly Csikszentmihalyi (1997) and Marc Runco (2007) amongst others and also by medical doctors such as Edward deBono (1970) and journalists such as Arthur Koestler (1989). Innovation, on the other hand, has become the domain of business management with eminent personalities such as Larry Keeley (2013), C.K.Prahalad (Prahalad and Krishnan, 2008) and major management schools such as Harvard Business School, Wharton School, Stephen M Ross School of Business, Stanford Graduate School of Business and Cambridge Judge Business School and many innumerable academicians, professionals and personalities contributing to the vast source of knowledge available on innovation.

While designers and design schools from around the world, through their practice and teaching, stake claim to creativity and, to an extent, innovation, the main theoretical framework for both creativity and innovation seem to come from fields outside of design.

With this in mind, this paper puts forth several ideas about the role of creativity and innovation in design and the role of design management in

harnessing these two for end results that bring value to the various stakeholders such as the client/company and the users.

### *Understanding Creativity and Innovation*

In his foreword to the book 'Exploring Creativity', Howard S. Becker (Moeran and Christensen, 2013) states that, 'the crucial thing to understand is that innovation and creativity are not *things* but rather *process*'. They don't happen all at once, as the result of the coming together of an appropriate mix of the right ingredients in the right proportions: so much careful selection of properly trained personnel, so much managerial input, so much in the way of resources of money and time, etc. (Moeran and Christensen, 2013). If both are processes, it is then easy to argue that creativity and innovations are the same and this assumption causes confusion when both are interchangeably used. In order to effectively manage design, it is important to distinguish clearly between creativity and innovation. While it is acknowledged that creativity is a necessary, and probably the most important, element in innovation, in many ways experts see innovation as a management function whilst creativity is seen as a 'creative' function itself (Keely, 2013 and DeBes & Kotler, 2012). This would lead to a conclusion that creativity need not be managed and that design management is meant to manage innovation as a function. Isaksen & Akkermans (2011) in an article titled *Creative Climate: A Leadership Lever for Innovation* state that 'Although creativity and innovation are distinct constructs, there is an emerging consensus that creativity has to do with the generating and communicating of meaningful new ideas and connections, and innovation has more to do with the use and implementation of them'. With specific reference to design, in its various forms from graphic design to industrial design, interior design, interaction design, service design and so on, the role of creativity and innovation need to be defined in the backdrop of acknowledged definitions of design and design management

### *Definition of design from ICSID*

The International Council of Societies of Industrial Design (ICSID) defines design as 'a creative activity whose aim is to establish the multi-faceted qualities of objects, processes, services and their systems in whole life cycles. Therefore, design is the central factor of innovative humanisation of technologies and the crucial factor of cultural and economic exchange'. A designer according to ICSID then 'refers to an individual who practices an



intellectual profession, and not simply a trade or a service for enterprises'.  
<http://www.icsid.org/about/about/articles31.htm>.

It is clear from this definition that:

1. Design is a *creative* activity
2. Design is the central factor in the *innovative* humanisation of technologies
3. Design is an *intellectual* profession (italics by the author)

One can derive from the ICSID definition that design management involves management of an intellectual activity involving creativity and innovation, which also means managing people who are creative, innovative and are intellectual. The question of 'are all designers intellectuals?' is a difficult one to answer, with the question falling squarely on the definition of design itself. In the experience of the author, while design does not fall into the category of genius, designers, by their very nature, put a lot of thinking into various aspects of what they are designing, for whom and where the design will be used, etc., thus applying what many have defined as 'design thinking' along with their visual thinking and hand skill capabilities. Hence design management involves managing an intellectual process as well.

### *Definition of design management from DMI*

The Design Management Institute (DMI) definition of design management as '(it) encompasses the ongoing processes, business decisions, and strategies that enable innovation and create effectively-designed products, services, communications, environments, and brands that enhance our quality of life and provide organizational success. On a deeper level, design management seeks to link design, innovation, technology, management and customers to provide competitive advantage across the triple bottom line: economic, social/cultural, and environmental factors.

[https://www.dmi.org/dmi/html/aboutdmi/design\\_management.htm](https://www.dmi.org/dmi/html/aboutdmi/design_management.htm)

This definition of design management sees the appearance of design and innovation with creativity getting a fleeting mention as 'create effectively-designed...'. DMI's definition of design management sets about a beginning, i.e., to enable innovation and an end result, which is to provide competitive advantage at three levels: economic, social/cultural and environmental factors. By this one can infer that greater the (impact of) innovation through design greater the competitive advantage. What is not mentioned in many of the studies on design management is the expectations on the outcome

that brings about the competitive advantage. These expectations are set about by the upper management of organisations or by the principals/founders of enterprises/companies.

*Elements of design management*

The relationship between design management, innovation and creativity may be better understood if one works backwards from the definitions of design management and design.

- a) **Expectations** of outcome(s) to bring about competitive advantage
- b) **Competitive advantage** is directly related to successful innovation
- c) (Design) **innovations** occur through ideas brought about by successful design
- d) Successful **design** is the result of application of creativity and intellect
- e) **Creativity** and **intellect** are traits of effective designers (human traits)

What then are we managing in design management? Figure 2 shows the various elements involved in design management.



Figure 2 Elements of design management

While it is apparent from Figure 2 that a design manager is expected to manage the designer at one end and expectations (and the management) at the other, he or she is expected to be equally adept at managing the other elements in between as well. Of these elements in the middle, creativity and innovation are the most often quoted in the annals of business management as to the success of an organisation. Questions have been raised by pundits of management such as Theodore Levitt as to the validity to the claim that creativity is important to business success. In an article titled 'Creativity is not Enough' in the Harvard Business Review on The Innovation Enterprise Levitt declares (Harvard Business Review, 2003), 'Creativity is not the miraculous road to business growth and affluence that is so abundantly claimed these days' and goes on to say that managers, '... confuse creativity in the abstract with practical innovation...' While one could agree with Levitt's statement that many confuse creativity with innovation, the author believes that misplaced expectations on creativity and inability understand

the context at which creativity becomes useful is to blame for these statements and beliefs. Creativity and the act of 'creation' has been surrounded by myths that have been spun by different sources as David Burkus points out in his book titled 'The Myths of Creativity' (Burkus, 2014). What is creativity and how can design managers manage it successfully then?

### *Creativity*

Sathikh (2010) in a paper titled 'Cultivating Innovation' defines creativity as:

*the result of a playfully exploratory process by a person who is open, curious and imaginative in a conducive environment whose result is novel.*

In this definition, four definitive things are involved; **process, person, environment and result**. The common question that arises from this definition is, 'considering that the end point of design management is to achieve the level of expectations (Figure 2), is novelty sufficient to attain the competitive advantage required?' First level answers to this question may be answered by a more recent definition of creativity by Burkus (2014), where he defines creativity as:

'the process of developing ideas that are both novel and useful'

Burkus also states that 'the novel (in his definition) is easily recognized, but the useful is just as important'. Getting back to Levitt's article (Harvard Business Review, 2003) where he states that, '(too often)... creativity means having great original ideas... the ideas are often judged more by their novelty than by their potential usefulness, either to consumer or to the company'. This seems to be the first principle in design management:

**Principle 1:** At the creative stage, manage design by identifying ideas that have potential usefulness.

Understanding the first principle allows one to move on to addressing any lingering doubt on the role of creativity in bringing about innovation. Going back to Sathikh's definition, creativity is also the process rather than the result itself. By this definition the works of an artist like Pablo Picasso (Fig 3a) and a scientific discovery such as the DNA structure by James Watson et al (Fig 3b) can be termed as creative.

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In the same vein Dyson's bladeless fan (Fig 3c) is also creative. If all three were creative because they have gone through a creative process and the results are novel, wouldn't this be confusing to the pundits of business management?



Figure 3a Pablo Picasso's Mediterranean Landscape. Source: [http://uploads3.wikipaintings.org/images/pablo\\_picasso/mediterranean-landscape-1952.jpg](http://uploads3.wikipaintings.org/images/pablo_picasso/mediterranean-landscape-1952.jpg)

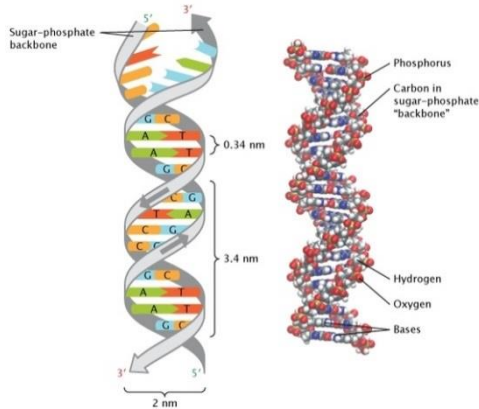
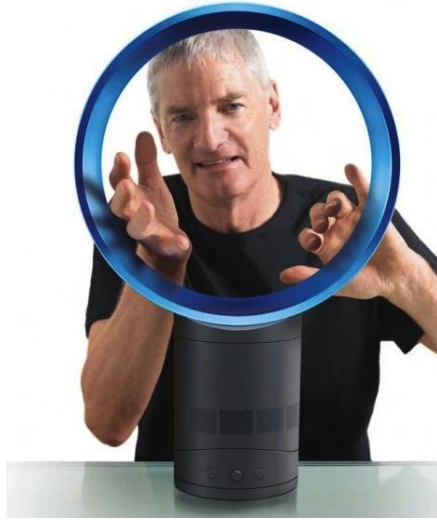


Figure 3b Structure of DNA by James Watson et al. Source: <http://www.nature.com/scitable/topicpage/discovery-of-dna-structure-and-function-watson-397>



*Figure 3c Bladeless fan by Dyson*

*Source: <http://www.redbrick.me/2009/10/dysons-bladeless-fan/>*

The pundits can obviously see that Picasso's artwork fetches a one-time value and the structure of DNA is useful to mankind in many ways including for bio-medical and bio-chemical industries as a business. However, it is Dyson's bladeless fans that will most probably catch their attention for the reason that, a creative idea has been taken through a design process into an innovation that has unique selling proposition which can bring profit for the company and benefit for the consumer. In other words, it is important to understand that creativity is not universal and not all results of creativity are equivalent. In support of this Bruton (2011) states that, 'As usual one of the big problems facing creativity is the inability of language to distinguish between artistic creativity and idea creativity'. According to Bruton, both types create something new which has value, but in different manner altogether. The value in artistic creativity can be said to be the creation itself, while the value in idea creativity will be its usefulness as a starting point of innovation. This would lead to the second principle of design management:

**Principle 2:** As design manager, clearly differentiate artistic creativity from idea creativity

*From creativity to innovation; by design*

Following the elements of design management depicted in Figure 2, the outcome of creativity is turned into innovation to gain competitive advantage and there is design in between the both. What then is the role of design in bringing out innovation? The most appropriate definition of design that connects creativity and innovation is found in the website <http://dancingwater.eu/2009/27-design-definitions/> and is attributed to A.M.Boutin and Liz Davis:

Design is not an art or a science, a socio-cultural phenomenon or a business tool. It is an innovative process, which uses information and expertise from all these sectors. It uses creativity first to analyse and synthesise the interactions between them and, secondly to offer appropriate and innovative responses (forms) which, in application, should go beyond the sum of each sector's vision and capacity and yet remain recognisable and pertinent to them all.

By this definition, design by itself is an innovative process and uses creativity to analyse and synthesise the interaction between art, science, socio-cultural phenomenon and business, thus allowing for the blending of artistic and idea creativity and moves towards an appropriate and innovative response that go beyond the sum of each. In other words, design is a process that helps bring about competitive advantage. The third principle of design management can be derived from this:

**Principle 3:** Manage creativity in a manner that leads to appropriate responses or forms (of solutions) that are innovative.

Appropriate responses or forms of solutions that are 'innovative' bring the discussion to innovation per se. Innovation seems to mean different things to different people. The author's choice of definition is from Barnett (1953) in his book titled 'Innovation: The Basis for Cultural Change' where he defines innovation as:

'any thought, behavior or thing that is new because it is qualitatively different from existing forms'.

The inclusion of 'thoughts' in Barnett's definition point clearly to innovation's association with creativity that could be realized in a meaningful way and 'qualitatively different' that points to competitive advantage in its realisation. Barnett's definition also encompasses innovation beyond tangible products to service innovation and others such as intellectual property as early as 1953. Qualitatively different innovation does not appear all of a sudden in any system or company unless creativity is synthesized properly which brings the attention back to managing design leading to the fourth principle in design management:

**Principle 4:** Manage creativity, not innovation, through design and set about means to bring about qualitative difference of the outcome through innovation.

While it could be argued that, in design, one cannot be differentiated from the other, it is important that design managers understand this difference so that they can present and promote the right type of creativity at the right time. A common mistake in design management could be to highlight the aesthetic idea for a design concept when explanation on the functional idea of the design is required at that point in time and vice versa.

### *Innovation as qualitative difference*

Renowned management consultants Arthur D. Little, in an article titled *Innovation: measuring it to manage it* in their in-house magazine Prism, states, 'Unlike many other core business processes such as manufacturing and logistics, the output of the innovation process, with creativity at its source, is rather unpredictable – and should be, up to a point. That may be where many executives give up: if the output is unpredictable or, even more so, if you want it to be unpredictable, why bother to measure it, even assuming you could? And since we are unable to capture innovation in plain indicators and targets, these executives may further argue, 'we had better leave innovation management in the hands of R&D specialists' (Kolk et al, 2012).

The first thing to note is that the output of innovation is unpredictable and especially so in design, which is heavily centred on creativity. Secondly, innovation cannot be captured in plain indicators and targets. A look at a cross section of articles and published research on measuring innovation always talk about measuring the effect of innovation, either as measures of sales volume, market share, revenue and profit or by the number of patents

and citations that innovations attract. A sample of such approach can be found in the *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data* (Oslo Manual, 2005), *Measuring Innovation and Intangibles: A Business Perspective* from the Science & Technology Policy Institute (Stone et al, 2008) and others. The most complex way of ascertaining the value of innovation is from an article published by BearingPoint Management and Technology Consultant (BearingPoint, 2011) titled *Measuring Innovation: Sustaining competitive advantage by turning ideas into value*, where they talk about 'Innovation Value Stream Analysis' as seen in Fig. 4:

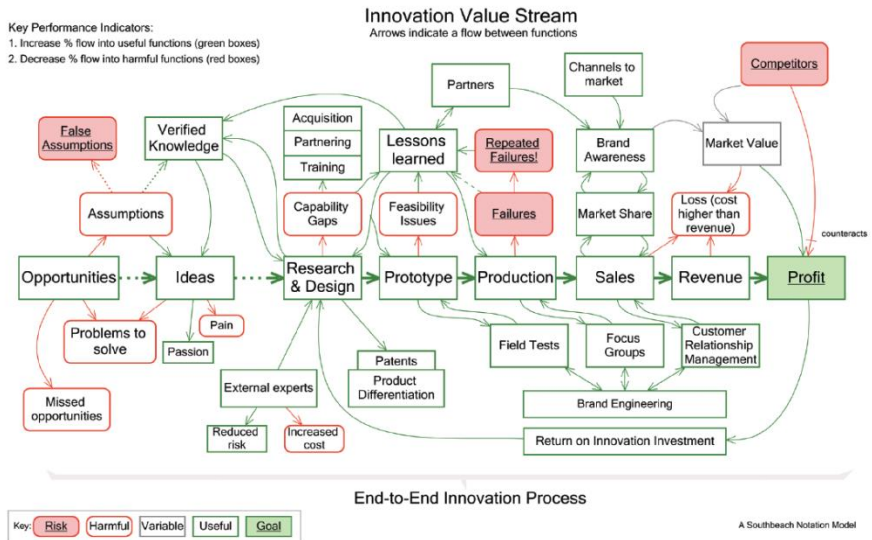


Figure 4 Innovation value stream analysis. Source: (BearingPoint, 2011)

Figure 4 clearly indicates that innovation in design cannot be measured in the manner shown in the diagram nor in ways outlined by the various literatures on measurement of innovation, discussed in this paper. The main reason for the difficulty in measuring (design) innovation for qualitative difference is in the multifaceted nature of design which can result in multitude incarnation of the original intention / expectations whose success cannot be guaranteed. A good example is the design of the first Sony Walkman (Figure 5), which has become a legend of design innovation. At the same time the low cost TATA Nano designed by the design team at TATA Motors in India (Figure 6), which was hailed for design innovation has



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not done well since its release in 2008, though the design itself cannot be faulted for the failure as innovation.



*Figure 5 Sony Walkman (1979). Source: <http://imgarcade.com/1/sony-walkman-1979/>*



*Figure 6 TATA Nano (2008)  
Source: <http://www.dezeen.com/2009/03/25/tata-nano-by-tata->*

Both these products had their expectation defined at the very top, Akio Morita, the CEO of Sony and Ratan Tata, the CEO of TATA Motors, who were both hands-on working together with their design teams. Success and failures of notable innovations brings about the fifth principle:

**Principle 5:** Determine what could be the qualitative difference of the creative outcome (innovation) and be prepared to return to design to invoke further creativity.

### *Defining qualitative difference*

From a design perspective, innovation can be said to have succeeded if it brings new value proposition to the stakeholders, the organization, the promoters (distributors) and the users/consumers. In the world of business management attempts to determine value propositions of innovation is through:

1. Measure of the number of patents taken up by the organization.
2. Market penetration and market share of the product/service and the organization
3. Revenue and profit

These are measurements that are only possible *after* the product or services has been released to the market, which means that the design team needs to wait till work has been done in developing, producing and selling the product or service and the sales/financial report start coming back in, indicating the success of innovation. Design as a process that turns (design) creativity into innovation requires much more dynamic and 'real time' measurement in order to correct any perceived deviation during the design stage itself.

Real time prediction of successful innovation is the toughest task of a design manager. Many a corporation easily fall back on surveys, showing design concepts and real or virtual mock-ups to 'target' consumer in order to determine a democratically selected concept to move forward. While this could be successful in certain areas of design such as fashion, gift items, jewelry and other personal/private products, it could be disaster for products and services that need heavy investments upfront such as tooling and infrastructure building. Examples of such products are cars, household products, IT products, etc.

Jacobs (2007) while discussing radical innovation comes to a conclusion that innovation needs both interpretative and analytical approach, which calls for different kinds of people. It is at this point that a design manager has to comeback to the people he/she is managing to determine what would make the outcome of their work 'qualitatively different'. While managing the creative process is about identifying potential useful ideas (Principle 1), managing innovation requires the ability to identify the value

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that the final design or solution(s) will bring. In other words there seems to be a difference between the culture of creativity and the culture of innovation itself that the design manager has to deal with.

**Principle 6:** Identify the differences between creative culture and innovation culture in order to nurture talents who can bring about qualitative difference.

Principles 1 to 5 seems to have a linear flow to the management of design while principle 6, seems to shift the attention back to creativity again, this time on creative culture. Many of the works by Amabile (1996), Csikszentmihalyi (1997) and others lead to a set of characteristics of creative culture as shown in Table 1.

*Table 1 Characteristics of creative culture*

No	Characteristics	Remark
1	Curiosity / playful	Person
2	Childlike approach	Person
3	Breadth /Disparate ideas	Ideation
4	Multitude of Ideas (Creative Darwinism)	Ideation
5	Experimentation and risk taking	Attitude, policy
6	Ambiguity and propensity of failure	Attitude, policy
7	Humour, eccentricity, horseplay	Attitude, policy
8	Individual freedom (autonomy)	Attitude, Policy
9	Complete freedom on space and work area	Policy
10	Limited respect for management	Attitude
11	Loose sense of time, deadlines and time management	Attitude, Policy

Similarly works done by Morris (2011), Berkun (2010), Keeley (2013) and others lead to a set of characteristics of innovation culture as shown in Table 2.

Table 2 *Characteristics of innovation culture*

No	Characteristics	Remark
1	Carry out mid-course corrections	Work dynamics
2	Preference for group anatomy and control	Group dynamics
3	Low level of associative barrier (both physical and psychological)	Work dynamics
4	Able to breakdown extrinsic motivation into chunks of intrinsic motivation	Work dynamics
5	Comprise of whole brained team with varied perspectives/expertise	Team Building, policy
6	Well defined roles for each person in the team	Group Dynamics, policy
7	Room for team play as well as solo play	Policy
8	Provision for 'encouraging' supervision	Policy
9	Organizational belief and support (in the innovative work)	Policy
10	Humour / jovial environment	Continued from creative culture
11	Means to manage creative abrasion	Leadership, Policy
12	Allow for ambiguity without losing sight of the goal.	Policy
13	Comprise of team that focuses on ideas rather than career	Team selection

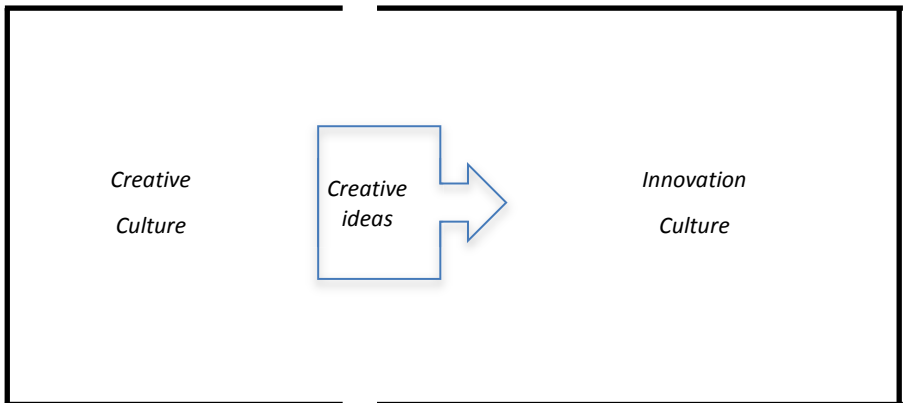
From Table 1 and 2 it is easy to identify four key highlights that need to be noted by design management:

1. Creative culture is interested in creating ideas while Innovation culture is interested in realizing those ideas that have value propositions

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2. Creative culture is a loose composition while innovation culture thrives on a controlled system with certain level of autonomy and freedom
3. Creative culture needs to be nurtured while innovation needs to be cultivated
4. Creative culture requires a 'shepherd' leader with high level of tolerance for personal quirkiness, methods, housekeeping and time management while innovation culture requires a 'captain' who will steer the team towards a defined goal in terms of budget, time and results, with a high level of tolerance for experimentation, iterations, inter-personnel relations.

In other words, design management, in effect, is managing two cultures, carefully passing viable ideas from one culture to the other as shown in Figure 7.



*Figure 7 Managing culture not design*

Dominance of one culture over the other, according to the author, may ascribe to the type of direction that the design will take. A design management team that emphasizes more on creative culture alone maybe subscribing to the school of 'style with function' descended from Raymond Lowey and a team that lays more emphasis on innovation culture may be subscribing to the Bauhaus school of 'form through functional analysis'. This brings the discussions to the starting point of this paper!

## *Summary*

This paper started with the two founding philosophies of modern industrial design originating from Raymond Lowey and Walter Gropius in early 20<sup>th</sup> century. It went on to define design and design management and discovered that design lies between creativity and innovation. Creativity was then defined and during that process, two types of creativity, artistic and idea creativity were discovered. The paper then moved on to define innovation and came to a realisation that successful innovation need to be qualitatively different in order to bring about a value proposition, which signals successful innovation. Finding ways to identify and document qualitative differentiation proved to be difficult and it leads the search to having people in the team who are discerning and can identify qualitative difference. This meant that in a design team that there are two types (predominantly) of people within a design team that is innovative. Two types mean two cultures, which have two distinct characteristics. The role of the design manager (management) is to manage the journey of a potential idea from one culture to another seeing the idea 'grows' into innovation. This discovery also leads to appreciation of the cultural differences in the works of style centric designers and the user and analysis centric designers, thus identifying them with the ethos of Raymond Lowey and Walter Gropius respectively.

In addition to what is mentioned above, six principles for design management were discovered along the way:

**Principle 1:** *At the creative stage, manage design by identifying ideas that have potential usefulness.*

**Principle 2:** *As design manager, clearly differentiate artistic creativity from idea creativity*

**Principle 3:** *Manage creativity in a manner that leads to appropriate responses or forms (of solutions) that are innovative.*

**Principle 4:** *Manage creativity, not innovation, through design and set about means to bring about qualitative difference of the outcome through innovation.*

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**Principle 5:** *Determine what could be the qualitative difference of the creative outcome (innovation) and be prepared to return to design to invoke further creativity.*

**Principle 6:** *Identify the differences between creative culture and innovation culture in order to nurture talents who can bring about qualitative difference.*

### **Conclusion**

The premises of this paper, was to examine what design managers manage; creativity, innovation or both. The full circle of event during this study has lead to four distinct outcomes. Firstly, a detailed study of design and design management has lead to the discovery six principles that are essential for a design manager or management to know, irrespective of the type of design that is being managed. Secondly, innovation, especially with reference to design, is difficult to measure during the design stage and only qualitative differences could be identified during the process. Thirdly, identification of qualitative differences that brings about innovation is still a domain of people or human beings. Finally, people in design teams form distinct cultures, where creative culture and innovation culture are different. The eventual success of design management, ultimately, depends on effectively managing these two cultures.

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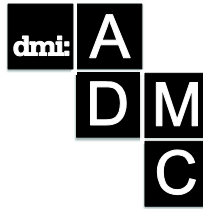
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## Darwinian Design in an Era of Disruption

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*This paper takes a previous era of disruption as the background for a discussion of the Design Methods Movement (DMM) of the 1960-70s. It shows how the founders of the DMM attempted to produce a more 'scientific' view of design but were forced to either modify their approach or just give up. It is claimed that their concept of 'scientific' was that of physics and that the physics world-view is not appropriate for complex systems. There is a need to change from a rational, scientific (ie physics) type of view to one best described as 'biological' or Darwinian, making use of memetics. This leads to the suggestion that in the present era of disruption, design management should consider adopting a 'biological' view of design.*

**Keywords:** Darwinian design; Design Methods Movement; memetics; 50-year cycles.

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## **Introduction**

The paper is in five parts:

1. A general discussion of eras of disruption, including a mention of 50 year waves in the economy.
2. The DMM and how it changed. The writings of Christopher Alexander, Bruce Archer, John Chris Jones and Horst Rittel are discussed, showing how they eventually realised that their task had become much more complex than they had anticipated.
3. A biological, Darwinian view of design. The world outside physics is extremely complex and biology has methods for coping with complexity.
4. Examples of the successful use of varieties competing within a selection system are given to demonstrate how a Darwinian approach to design management has been used.
5. Conclusions for design management.

The theme that connects the five parts is that a physics approach cannot predict the future of a complex system. Patterns detected in the past may continue into the future but in eras of disruption those patterns may change. When the future is unpredictable, the best approach is to learn from biology, the science of complexity.

## **Eras of Disruption**

There have been several eras of disruption in the past and although history does not repeat itself, there may be some merit in looking at the past. Two kinds of disruption are noticeable, one being the impact of new technologies creating what economist, Joseph Schumpeter, called 'waves of creative disruption' and the other being eras of depression that have seemed to punctuate the eras of new technology. There is some evidence that these eras occurred at intervals of approximately 50 years with periods of prosperity interspersed with depressions. The depression and financial crisis around 1930 reminded some people that this had happened before with 'The Great Depression' of the 1890s.

In the Soviet Union, the economist N. Kondratiev claimed that the 1930s depression was not the downfall of capitalism, hoped for by Marxists. It was the latest manifestation of a cyclical process happening roughly every 50 years, interspersed by phases of recovery, prosperity, decline and then another depression. This made him very unpopular with the authorities.

However, his idea of cycles reached the West where Joseph Schumpeter, added 'gales of creative destruction' to the Western economics literature.

Some 50 years later, there was another depression and Kondratiev cycles were studied again. The German economist, Gerhard Mensch (1979) claimed that previous depressions had been ended by the benefits of major technological innovations. The English economist, Chris Freeman (1983), added some detail to the picture claiming that new product innovations were followed by a period of cost saving in production methods until innovation ran out of steam and along came another depression.

The effect of such cycles on design has been revealed by a study of adverts (Langrish, 1982). It was claimed that in phases of recovery and prosperity, there is an atmosphere - a zeitgeist - of optimism, accompanied by a belief that science is making things better. However in the decline and depression phases, optimism is replaced by pessimism and a loss of faith in science. This is reflected in the designs of the different phases as shown by both words and pictures used in adverts. In optimistic phases, there is a frequent use of words such as new, latest, scientific and so on but in pessimistic phases, words such as traditional, reliable, original, established etc. are more frequent. This also applies to images in adverts. As an example, bread was advertised before 1913 as 'untouched by human hand', accompanied by a picture of 'our latest patented machinery'. This was in a phase of optimism following recovery from the depression of the 1890s. In contrast, modern bread adverts tend to suggest that the bread is made in a farmhouse kitchen.

Following recovery from the 1930s and the war, the Festival of Britain in 1951 was a celebration of optimism and belief in scientific progress. Designers from the Royal College of Art went next door to Imperial College and came back with electron microscope images that were turned into designs for wallpaper, curtains and other fabrics. The red spheres connected by black rods, as used in atomic models, cropped up as legs for paper holders and clothes-hooks. Science was seen as producing antibiotics, synthetic fibers, thermoplastics, TV, computers etc. leading to a healthier and more colourful way of life. It is not surprising then that this period produced attempts at making design more 'scientific' as described in the next section.

The 1952 festival was in sharp contrast to London's millennium exhibition, 50 years later, which was not a celebration of progress and suggested that the supposed 50-year cycle has stopped repeating itself.

Optimism and belief in scientific progress now seem to be dim memories of a past era.

In the USA, belief in progress began to be threatened in the 1960s. Mathew Wisnioski (2012) dates the start of this change as 1964 – two years after the publication of Rachel Carson’s *Silent Spring* and the year in which Ellul’s *The Technological Society* appeared in English translation. Wisnioski sees these two events as representing two strands of growing concern, pollution as a side effect and the system itself. This system was the government-funded aerospace industry that employed the majority of America’s growing number of engineers and neglected traditional manufacturing.

Public attitudes towards science changed from seeing it as the bringer of progress to a suspicion of its harmful effects. Similar changes took place amongst people trying to make design more scientific - the Design Methods Movement.

## **The Design Methods Movement (DMM)**

The DMM started in a period of optimism when science was considered a ‘good thing’. It is usually associated with the names of Christopher Alexander, Bruce Archer, John Chris Jones and Horst Rittel.

It was not a ‘movement’ with a set of shared aims and methods other than an attempt to take some of the mystery out of intuitive or sub-conscious decision making in areas such as industrial design, architecture and town planning. It hoped to achieve this by using ‘scientific’ techniques, such as operations research, developed in the war. In different ways, they saw design as a process of problem solving that should be made more scientific. Rittel preferred to describe his approach as DTM - Design Theory and Methodology.

Christopher Alexander was born in Austria but studied both maths and architecture in England at the University of Cambridge. He then went to Harvard where he obtained a doctorate in architecture. After winning a prize for his paper “A city is not a tree” he published *Notes on the Synthesis of Form* (1964). This starts with the words, “These notes are about the process of design: the process of inventing things which display new physical order, organization, form, in response to function.” Having degrees in both maths and architecture, Alexander was able to produce an approach, based partly on set theory, that broke down design problems into subsystems, allowing for an incremental approach.

Hors Rittel had begun to develop his ideas in Germany where he was Professor of Design Methodology at the Hochschule für Gestaltung in Ulm. In 1963, both Rittel and Alexander were recruited to Berkeley by William Wurster, Dean of the College of Environmental Design, encompassing architecture, and city and regional planning, where Rittel became Professor of the Science of Design. He attempted to describe the process of design in terms of successive phases that he described as being like box-cars. His first in the line was 'understand the problem'.

Bruce Archer was an engineer who became head of design research at London's Royal College of Art (RCA). With Jones and others, he started the Design Research Society which grew out of a symposium held in 1962 at Imperial College (next door to the RCA)

J C Jones published a book, *Design Methods* (1970) that was purchased by many students in art and design colleges where they had discovered that no one would tell them how to design. He then became the first Professor of Design at the new Open University.

When the phase of prosperity, associated with belief in scientific progress, was replaced by doubts about progress, all four modified their approaches. In the new preface to a 1971 edition of *Notes on the Synthesis of Form*, Alexander repudiated the DMM -

*since the book was published, a whole academic field has grown up around the idea of 'design methods' - and I have been hailed as one of the leading exponents of these so-called design methods. I am very sorry this has happened and want to state publically that I reject the whole idea of design methods as a subject of study, since I think it is absurd to separate the study of designing from the practice of design.*

John Chris Jones went further. Having started out by trying to persuade engineers to use ergonomics, he felt he could no longer be Professor of Design and he resigned his position to go and write poetry and other forms of imaginative writing.

Rittel (1972) still attempted to use a systems approach in design but he realised the need for something new and came up with his "Some Principals of the Systems Approach of the Second Generation". This came after he had enunciated his ideas about 'wicked problems', problems that were so complex that they resisted a simple first generation systems treatment. He divided problems into 'tame' and 'wicked' with tame problems capable of being tackled by a 'box-car' line of phases, starting with 'understand the problem'. Rittel (1972) claimed that wicked problems can't start with

understanding because you only understand a wicked problem when you have solved it.

The DMM, in keeping with the zeitgeist of the 1950s and early 60s had attempted to make the process of designing more scientific. By 'scientific', they meant 'like physics'. They did not need to state that they were thinking like physicists; their paradigm of science was physics but a classical physics type world-view (abbreviated to P view) is not appropriate for complex problems such as Rittel's 'wicked' problems. (If you can not understand a wicked problem, you can not imitate a physics type solution) The P view of design is similar to what Papanek (1988) called the rational approach. Attempting to develop "rules, taxonomies, classifications and procedural design systems". He criticised this approach, "such a method leads to reductionism and frequently results in sterility and the sort of high-tech functionalism that disregards human psychic needs at the expense of clarity". The failure of the P view meant that the DMM had to either give up the attempt or modify their P view into something else.

What they did not do was realise that physics is not the only science. Biology is also a science with a different way of looking at the world (abbreviated to the B view).

These two world-views, P and B, differ in many respects. P has forces; B has interactions. P is best for simple systems. Rittel's wicked problems are problems of complexity and biology is the science that has learned how to cope with complexity.

The difference between the two views, P and B, can be illustrated by the different approaches used in the education of engineers and designers. Conventional engineering textbooks have 'problems' requiring the insertion of numbers into equations. Such problems have single correct answers and thinking in terms of such 'problems' leads to the entrenchment of a P view. In contrast, English industrial design students within former art colleges, now parts of larger establishments, have a completely different approach. They have few, if any, textbooks; their problems are presented as projects where every student may come up with a different solution and there are no 'right' answers but many poor ones.

P looks for causes having effects such that when the circumstances are repeated, the same result will be obtained independently of time or place. A carbon atom is seen as being the same as any other carbon atom, light years away or millions of years in the future. This means that the P view is not historical. The solution to an algebraic equation is always the same. In contrast, the B view sees that no two entities are identical with the results

that the future is uncertain and any account of living entities has to take into account their evolutionary past. The solution to a design problem here and now is unlikely to be satisfactory in the future.

As stated by the evolutionary biologist, Ernst Mayr, (1976)

*The goal of the physicist is to establish general laws and to reduce all phenomenon to a minimum number of such laws. General laws, however, play a much smaller role in biology. Just about everything in biology is unique: every animal and plant community, fauna or flora, species or individual. The strategy of research in biology must for this reason be quite different from the strategy of the physicist.*

The idea that a B view could help in making design more scientific almost occurred to two of the above four founders of the DMM. In the 2<sup>nd</sup> edition (1992) of Design Methods which has much additional material, Chris Jones claimed that the breakthrough in design came with the invention of the pencil because this allowed designers to try out many more ideas and discard the bad ones much more quickly. Having a variety of ideas and discarding the bad ones can be seen as a version of survival of the fittest (and extinction of the less fit) but Jones was looking for something that was not 'science' - either B or P. Many years later, he wrote, Jones (2000).

*I'd like to correct a misconception: when in the 1970s I criticised and appeared to leave design research it was not because design methods had become rigid tools that inhibited the imaginative skills of individual designers - it was because I was angry, and still am, at the 'inhumanity' of abstract design language and theories that are not alive to all of us as people, or to actual experience - and which threaten to reduce the reality of life to something less than human.*

Alexander was also clearly aware that design could be described in terms that are clearly consistent with a B view (gradual change within a tradition, leading to adaptation) but he classed such an approach to design as 'unselfconscious design' in contrast to his hoped for 'self-conscious design'. In self conscious culture - "form making is taught academically according to explicit rules". Presumably one aim of design research is to discover these 'rules' so that they can be taught. His mind was so wedded to a P view that even within unselfconscious design, he clearly rejected a Darwinian approach. In *Notes*, Chapter 3 (p 30 - 31), "The Source of Good Fit", he described the Mousgoum hut, built by African tribesmen in the northern



sector of French Cameroon, where everyone built their own hut using knowhow passed on from family and neighbours (including knowledge of mistakes). These huts fit with other huts, reflecting a social order and producing what he calls 'coherence'.

He used 'unselfconscious' to describe the process that produced this fit and claimed that unselfconscious culture passes on by imitation and correction leading to coherence. This may seem to resemble a B view but Alexander rejected what he called 'the myth of architectural Darwinism'. (He also rejected 'the myth of the primitive genius'). In place of Darwinism, Alexander suggested an old idea - "a homeostatic (self-organising) process that consistently produces well-fitting forms, even in the face of change." His source for this idea of a self-organising adaptive system was the American physiologist, W B Cannon. (1932)

Whilst the founders of the DMM modified their aims, the idea of making design more like physics is still very popular. Rittell's 'box cars' have become boxes connected by arrows - going in all directions - to produce those diagrams that litter many of the pages of the management literature.

Alexander's homeostatic alternative to 'architectural Darwinism' has become the search for some kind of order in complexity. A popular account of this search has been given by Stuart Kauffman (1995) who claims

*Maybe principles deeper than DNA and gearboxes underlie biological and technological evolution, principles about the kinds of complex things that can be assembled by a search process and principles about the autocatalytic creation of niches that invite the innovations which in turn create yet further niches."*

Kaufman refers to 'order for free' and suggests that 'Man is expected in the universe', as suggested in his title, *At Home in the Universe*. To me, the principles that are deeper than DNA and gear boxes are the principals of a general theory of Darwinian change in which biology is a special case along with language, gear boxes and many other products of human activity. The attempt to make the study of complex adaptive systems into something like physics will fare no better than the early attempts of the DMM. Complex systems need a B view, as suggested by Charles Darwin (1859).

## **Darwin on Complexity**

Charles Darwin was very aware of biological complexity. In his 1859 *Origin of Species* he referred to

*the infinite complexity of the relations of all organic beings to each other and to their conditions of existence, causing an infinite diversity in structure, constitution and habits.*

When this diversity is subject to competition within a selection system, the result is what Darwin (1859) called, “descent with modification under the influence of natural selection”. (He did NOT use the word ‘evolution’).

*if variations useful to any organic being do occur, assuredly individuals thus characterised will have the best chance of being preserved in the struggle for life and they will tend to produce offspring similarly characterised.” (p 99 1<sup>st</sup> ed.)*

Complex systems have some stability - otherwise they would not be ‘systems’. They also change over time and Charles Darwin had a special insight into the nature of change in biology.

*If it could be demonstrated that any complex organ existed which could not possibly have been formed by numerous successive, slight modifications my theory would absolutely break down. (6<sup>th</sup> edition p137).*

You can’t be much clearer than that. For ‘complex organ’ substitute ‘complex system’ or ‘radical innovation’ and it becomes obvious that Darwinians cannot accept the division of technological change into ‘incremental and radical innovation’, the title of a recent paper by Norman and Verganti (2014).

From a Darwinian perspective, all change in a complex adaptive system has to be incremental. The concept of descent with modification did not originate with Darwin; the descent of modern languages from a few classical languages was studied in the 18<sup>th</sup> century, leading to the idea of a common ancestor in a hypothetical Indo-European language. Also, it was known to animal breeders and horticulturalists centuries before Darwin’s birth and his *Origin* starts with a discussion of pigeon breeding that he called artificial selection. Darwin’s achievement was to provide a mechanism - selection between competing varieties, followed by many more rounds of competition leading to the appearance of design in nature. The same mechanism can be applied outside biology - not by crude analogy but by recognition that this is how complex adaptive systems have to change.

*A neo-Darwinian general theory of change.*

Two additions to Darwin's ideas have been made to produce a modern neo-Darwinian evolutionary biology and a third is needed for a general theory of change in complex systems. First we have to add symbiosis. Darwin's 'tree of life' has branches representing descent from a common ancestor. A single species slowly becomes changed over time and if part of the species becomes separated from the main body, then over time the separate group can become its own new species. Lynn Margulis (1998) has shown that new forms of life can come into being by a combination of existing forms. This is not branching; this is symbiosis of two different life forms to produce a new form. The concept of a species as an isolated breeding group is not required for asexual reproduction. Life evolved on earth for about a billion years before sex arrived. This means that technological change can be discussed without the need for a 'species'. Much innovation stems from symbiosis, the joining of one part of technology with some other part, described by philosopher Daniel Dennett (1995) as 'designed elsewhere' meaning that two separate streams of design can be joined together.

The second component of neo-Darwinian theory is genetics. Darwin knew that descent required a something that was passed on but genes were not discovered until after his death. He did suggest that things called gemules were passed on but this idea turned out to be erroneous. Darwin occasionally used the word 'genetic' but this was in its original sense of an adjective derived from genesis, meaning passed on at birth or innate but with no knowledge of just what was being passed on.

A neo-Darwinian general theory for use outside biology needs to specify the nature of 'passing on'. Technology does not have genes but it does have what Richard Dawkins calls imperfect replicators. Replicators are passed on. They are 'imperfect' in the sense of being subject to change, producing 'descent with modification'. Dawkins (1976) provided a name for the imperfect replicator in cultural evolution, his word, 'meme' (pronounced to rhyme with cream) has now entered the Oxford English Dictionary (OED) and given birth to memetics, the study of memes.

At first, it seemed that memetics would provide an interesting way of studying technological change but this did not happen. A new electronic journal, *The Journal of Memetics*, eventually ceased publication and interest declined. The main reason for this lack of growth was the adoption of a P view by people attempting to apply memetics. Like the founders of the DMM, they did not realise that change in complex systems needs a B view.

They saw memes as units with one method of transmission, imitation. They tended to see a simple cause and effect with memes producing ‘infection’ of our brains until resistance was acquired. Typical of this approach was Susan Blackmore’s (1999) *The Meme Machine* in which imitation is stressed even though the author is unable to define the term other than saying ‘the meaning of the word meme is that which is imitated’ The OED definition also reflects this P approach, “meme: An element of a culture that may be considered to be passed on by non-genetic means, esp. imitation.” Blackmore includes scientific theories as an example of memes but how do you ‘imitate’ a theory of gravity? She describes humans as ‘copying machinery’ for memes and claims ‘there is an evolutionary arms race between us and the memes that we find ourselves copying’. This concept is an example of what philosopher Daniel Dennett (1995) has called ‘memes versus us’, a concept that Dennett demolishes, pointing out that the nature of ‘us’ has itself been formed by memes.

In contrast, a B view of memetics looks for different kinds of memes that are not ‘units’; they are patterns having different methods of transmission and having different kinds of results. Such a B view has been described elsewhere, (Langrish 1999), involving memes as patterns of thought and three kinds of memes, recipemes (how to do things), selectemes (what sort of things you want to do, notions of ‘betterness’ and desirability) and explanemes that explain how recipes produce their results, ranging from scientific theories to ancient myths and needing a language for their reproduction. Newton’s law of gravity is an explaneme. It is passed on using maths and words. It is not imitated. Further discussion of the role of explanemes is outside the scope of this present paper but see Langrish 1999.

Dawkins has now accepted the idea of memes as patterns. In a revised edition of *The Selfish Gene* (1989) he states,

*If memes in brains are analogous to genes they must be self-replicating brain structures, actual patterns of neuronal wiring-up that reconstitute themselves in one brain after another. I had always felt uneasy spelling this out aloud, because we know far less about brains than about genes, and are therefore necessarily vague about what such a brain structure might actually be. So I was relieved to receive recently a very interesting paper by Juan Delius of the University of Konstanz ... publishing a detailed picture of what the neuronal hardware of a meme might look like. (1989 p 323.)*

Although, Dawkins has now recognized the importance of patterns, he is still inclined to think in terms of units. Memetic patterns are not 'hardware'; they are temporary circuits formed by interactions between neurons.

Human brains have a remarkable mechanism for responding to the masses of incoming sensory data that they perceive. When faced with another human being, the brain turns incoming data into a 'pattern'. Attempts to develop computer systems capable of recognizing people have not been able to match the human ability to recognize familiar people through a glimpse of part of their face, the way they walk, the sound of their voices etc.

When a brain recognizes the pattern of something in its environment, it triggers a response from selecteme circuits that can signal danger, desirability, 'could be useful' etc. These in turn trigger recipeme circuits that initiate action. If a potential prey recognizes the pattern of a predator, it flees. If it senses a source of food, it turns towards it. This combined action of selectemes and recipemes can be called 'purposive pattern recognition' or PPR for short. The recognition of patterns can convey what to do next; it is purposive and PPR can be used to describe how experienced designers make decisions as discussed below.

One major criticism of memetics was made by Jack Cohen, the biologist and science writer. He said to me, "Memes, OK but what can you do with them? What use are they?" To answer that question, two examples are given below, one is an account of research into how designers make visual choices and the other shows how company strategy can be biological rather than attempting to imitate physics.

## **4. Examples**

### **Visual choice: a study of how designers make decisions.**

The individual designer is more than just a maker of accidents. Changes in recipemes are not just random mutations; they have intentionality, situated as selecteme circuits in the brain. But the intentions have to fit into the changing complexity of everything else. Today's sensible decision can be tomorrow's disaster but designers have to make a living by making decisions.

Maria Abu-Risha (1999) observed and talked to designers at work, asking them question like 'why did you choose this particular picture to go on the cover of the brochure?' The answers were of the form, 'Well, it felt right' or 'its intuitive' or "I just knew". At the same time, the designers

were very well informed about their clients' preferences, the state of the market, what other designers were producing and so on. These ideas are not worked out like a physics equation; they form a 'pattern' in the mind, what Maria Abu-Risha called a 'pattern of need'. This can be seen as a pattern of selectemes. (Langrish, J. & Abu-Risha, M. 2008)

At the same time, decision makers have other ideas, concerning things that are possible, ideas about how to do things - recipemes. These form a pattern of possibilities, compared with the pattern of need until there is a 'click' - a fit between the selectemes and the recipemes. We called this 'click' Purposive Pattern Recognition, PPR. It is purposive because once the 'click' has been obtained, the decision maker knows what to do next.

The interviews with designers were recorded and transcribed. Typical answers to questions about visual sources and methods of selection included:

- It's all quite intuitive really. It's difficult to describe. You're thinking about the brief and about a particular design.
- Instinct; you know when something is the right sort. There is no formula to it and they will always be very different.
- Don't know; it's not specifically scientific. It's purely intuitive. You just have your own ideas that you think are right. I don't think I ever get scientific about it. It is just that.

The research included some mini case studies with opportunities for discussion. One respondent said,

*talking to the record market. Talking to the client. And we know a lot of music business. If you were talking to a packaging designer he would know about food and he would know supermarket shelves. We know music; we know what looks good. We know what audiences expect. So we get all our information. It is intuitive and its knowledge that we hold already. ... There was no research commissioned. It was entirely intuitive.*

The most frequently used word was 'intuitive' followed by instinct, innate and subconscious.

Neuroscience has shown that brains can make decisions before the conscious mind is aware of what is happening in the brain. Chris Frith (2007) puts it this way,

*“We think we are making a choice when, in fact, our brain has already made the choice. Our experience of making a choice at that moment is therefore an illusion.” (p 67).*

This statement seems to match the experience of practicing designers. However, It does not stop there with one decision. In a Darwinian system, there is further selection and iteration leading to changes in the design.

Some responses from the designers in the study were,

*You might choose more than one. It is a matter of trial and elimination. You might pick a particular one and dismiss the others because it matches the brief. It becomes objective too because you have a team of creative people and then you have a marketing team and they agree which one fits the brief better.*

- Quite often, design is as much discarding as it is coming up with new ideas.
- To me, the important thing about being a designer is to evolve, to test and retest. The minute you stop searching you die.

These quotations illustrate how design is much more than getting THE idea. Sometimes, modification takes place within an environment of competition. Different recipes can compete in an environment of selectemes within one head or between different people. Ideas (ie memes) interact, compete, change and perhaps ‘evolve’. Design evolution has been the subject of a previous paper (Langrish, 2004)

### **Darwinian New Product Strategy**

The previous section showed how memetics can illuminate the design process. This section provides some examples of how companies can use a Darwinian strategy.

In the second half of the 19<sup>th</sup> century, the German synthetic dyes industry realised that the new techniques of synthetic chemistry provided the opportunity to make thousands of brand new chemicals that were different from the existing dyes extracted from material known for

hundreds of years. Their problem was that science could not predict which of these new substances would have the properties required of a dye - colour, light and wash fastness, ease of use, low cost etc. So they hit on a highly organized system of trial and rejection. Teams of synthetic chemists recruited from German universities were set to work making new compounds. These were numbered and passed on to another department, the Dyehouse, where they were subjected to a series of tests. The production of new dyes was institutionalized in the research department and dyes were housed in the Dyehouse.

At first, it was possible to find new dyes that were better in some respect than natural dyes but after that, any new dye had to have some advantage over the existing synthetic dyes. By the end of the century, it was estimated that some 10,000 new compounds had to be prepared to obtain one new commercially successful dye but the profits from that one could pay the costs of producing all the others. In many areas of investment, this is known as the portfolio strategy; when you cannot predict the future, then don't put all your eggs in one basket. It can also be described as a Darwinian strategy. Have as many varieties as possible and then subject them to competition within a selection system, followed by improvements and further rounds of selection. The Dyestuffs industry gave birth to the pharmaceutical industry, still using the Darwinian technique of making lots of compounds and subjecting them to rigorous testing with the hope that one will generate large profits, a process that becomes more difficult with time.

There are many examples of the use of a Darwinian strategy in new product policy. Two more examples will suffice, IKEA and Waddingtons. IKEA was founded by Ingvar Kamprad, who stayed in charge until he was 87 in 2013 to be replaced by his youngest son Mathias. IKEA has around 12,000 products sold world-wide through its 300 plus stores and its website. Its new products are controlled from Sweden where IKEA selects from products that are offered to it. A small number of offerings are purchased along with all future rights to develop the concept. The potential new products are altered in house by IKEA's designers and turned into a form that fits the IKEA systems of manufacture, distribution, sale and style. They are then subjected to further selection with the final choice, until recently, resting with Kamprad himself. The original supplier does not know that their design has been used until it appears in a store - or not.

Between 1922 and 1994, when it was bought by Hasbro, Waddingtons was a successful UK publisher of card and board games. Originally a printing company that specialized in playing cards, its acquisition of the Monopoly



board game in 1934 helped it to become what was perhaps Europe's leading game manufacturer, producing a stream of successful board games including Cluedo, Custer's Last Stand, Formula 1, Buccaneer, and Totopoly. These games emerged from a Darwinian process. Waddington's were bombarded with ideas for new games from enthusiasts who thought they had developed a brilliant new game. A very small number of these game concepts were selected for further consideration by experienced staff who modified them to fit their own selectemes. Most ideas were still rejected but a few survived to move into the next phase of box design, production method and so on, resulting in nearly one new game per year in time for Christmas. (Ibrahim 1997)

When there is no P type way of predicting market success for a new product, then a Darwinian approach can be successful. Modified recipemes compete in a selecteme environment within the brain of one person, within an organization or in the wider market - but there is no guarantee of success. In the examples given above, large numbers of recipemes were involved. Success was down to having a good selecteme system. This means that creativity is not the most important aspect of innovation; getting the best selectemes is the way to success. However, there is no P route to finding the selectemes; they also undergo Darwinian change.

## **Implications for design management**

The best strategy for an uncertain future is a Darwinian one with a variety of solutions to design problems being tested, followed by iteration - that is further varieties of promising solutions being selected, tested and developed.

In the past, waves of new technology have arrived to end eras of negative disruption. Hopefully, the arrival of some new technology will help solve the present disruption. It might be helpful to have someone in an organization responsible for keeping a lookout on the technological horizon. New materials such as graphene might offer opportunities. We now have a new version of genetic engineering - synthetic biology - and The J Craig Venter Institute is collaborating with the oil and pharmaceutical industries to create microorganisms that will produce new fuels, drugs and vaccines. The possibility of collaboration between scientists and designers has been explored (Ginsberg et al. 2014)

A Darwinian view suggests that selectemes are more important than new recipemes. There are always many new recipemes available. Most

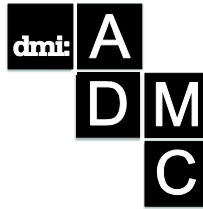
patents are never used. Good designers are alert to the arrival of new selectemes such as sustainability. This has implications for the education of designers. Creativity, of course, will always be important but young designers need to be exposed to concepts of what makes one design better than other ie thinking about selectemes and how they change could be more important than developing new recipemes.

People will continue to try and imitate physics to strive for success in the future but this can not work because we have no way of knowing what we should be striving for - that does not stop us trying of course - you can not win a lottery if you do not enter but just for the record, I have never purchased a ticket in the UK's National Lottery.

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# Community Based Business Design Model

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*This working paper introduces development of a business design model for a design-oriented community. The model combines the design expertise of small companies and societies, and transforms the ideas into a concept of unique customer experiences in a profitable way. This paper gives an answer to the following question: what constitutes a community based business design modelling? This is mainly a deductive case study. Data are gathered in workshops and semi-structured interviews. Preliminary findings indicate that the current business design model needs to be modified to be functional for a community consisting of mainly small companies and societies. The goal of this paper is to propose a community based business design model that could be used for any project organized in a collaborative mode by small organizations. The research sheds light to the potential of a design-oriented community, and points out possibilities for further research.*

**Keywords:** business design model, community, design management

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## **Introduction**

When an innovative project starts, the normal scenario is that people from cross-functional teams of a company are combined to create a new, awesome solution faster and cheaper than ever before, but what happens when a network of cross-functional and skilful people from several companies and societies aggregate their forces to reach a common target? This paper provides insights into a process of creating a common business design model and a collaboration management blue print for mainly small companies and societies located in a design-oriented Fiskars village in Southern Finland. The rationale behind business design model is the need to increase the amount of visitors in the village which has a 365 years old history of attracting craftsmen, designers and artists into the region. The starting point for the collaboration is a common value base and a positive drive to increase the revenue of the companies and societies in the village, and contribute to the well-being of the region. A universal threat of commoditization, shrink of margins on standardized standalone products, and a notion that good enough products and services gain popularity over premium quality customized products and services is also a threat in Fiskars village, but could it be turned into a sustainable opportunity for a community through collaboration and agreed target setting?

Design can be seen as a creative management process that integrates organization processes such as idea management, innovation management, and research and development management (Borja de Mozota, 2003). It also modifies the traditional structure of process management in a company (ibid.), or a company network. Importance of great designs has been recognized long time ago, but Roger Martin (2004, 2009) pointed out its relevance by introducing design thinking as a method for companies to create a competitive advantage. The goal of the thinking is to create value for all stakeholders, including human users, the environment and the company (Johansson, 2010). Design thinking uses designers' sensibility and methods to match people's needs in a feasible way by taking into account the capabilities of company business strategies to convert the solution into customer value and market opportunity (Brown, 2008). Heather Fraser (2009) presented a business design model based on similar methods and mind-sets as in design thinking. The business design model maximizes the impact of corporate outcome with the help of creative thinking, the second nature of good designers. In this paper, Fraser's business design model is used in a design-oriented community consisting of mainly small companies, societies and experts instead of a big corporation. The purpose of this study

is twofold; first to enhance Fraser's business design model by piloting it in a multi-party network, and second to point out emerging topics for further research within a design-oriented community. Research has been done in design-inspired innovation (e.g. Verganti, 2006, 2008, 2011; Berends et al., 2011), and in customer involvement in product or service development (e.g. Mugge et al., 2009, Franke et al., 2010; Möller et al., 2008) but not much is known about the potential, strengths and benefits when a business design model is created and implemented for a design oriented community by the members of the community.

Design is defined in this paper as 'the optimum solution to the sum of the true needs of a particular set of circumstances' (Matchett, 1968). Design orientation is defined in this paper as a characteristic reflected in an organization culture that distinguishes it from the other, non-design-oriented organizations, and reinforces the capabilities of design-oriented organizations to generate competitive advantage from the other organizations by a design-oriented behaviour (Calabretta et al, 2008).

### *Business Design*

As consumerism becomes more compassionate and societal transformation entails new challenges to designers on a daily basis, swift responsiveness and future foresight are required in thinking and practice (Hands, 2009). Design can maximize the impact on corporate outcomes by being a path to understand stakeholder needs, a tool to visualize new solutions, and a process of translating innovative ideas into effective strategies (Fraser, 2009). The importance of design mix, i.e. blend of performance, quality, durability, appearance and cost, was acknowledged already in 1984 (Kotler and Roth, 1984). Design thinking is a human-centred, prototype-driven process that explores new ideas which can be applied in various ways, e.g. to operations, products, services, strategies and management (Serrat, 2010). Business design is a symbiotic model that delivers both market and experience value. Fraser's business design model (2006, 2007, 2009) is presented in Figure 1.

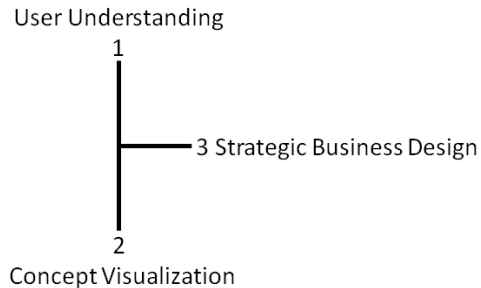


Figure 1. Three gears of design. Source: Heather Fraser, *Turning Design Thinking into Design Doing*, *Rotman Magazine*, Spring/summer 2006, pp. 24 – 28.

The model is an iterative process based on the needs of a user or ultimate customer target (Fraser, 2007). User understanding in *gear 1* means reframing the business through the eyes of a user or a critical stakeholder. The activities aim to look beyond the obvious solutions with an empathetic approach taking into account circumstances, needs and feelings of a user. It is vital to think beyond obvious and be willing to take risks to invent a radically new solution or unmet needs. Reframing of a challenge and defining of innovation criteria can open up new opportunities for value creation. *Gear 2* is about the visualization of a concept. Ideation process, the following prototyping and user evaluation by cross-functional teams are iterative activities. The purpose is to see the concept through each individual's base of functional expertise and experience, and define a user-driven solution. In *gear 3* the strategic concepts are iteratively aligned with the future realities. This can require reprioritization of activities, new definitions for strategic, operational and economical relationships, and determination of the net impact of the new model. The deliverables of the third phase are a business design model, and identification and design of interrelated activities. The end result of the whole process is a net commercial gain and a sustainable competitive advantage.

A designers' mind-set is an essential part when creating a business design model. Open-minded collaboration, abductive thinking with 'leaps of faith' and an ability to explore new solutions with persistency are needed when modelling a new business design.

## Research methodology

Two different research approaches are used in the study: deductive thinking is applied to modify Fraser's business design model to fit for communities (2006, 2007, 2009). Abductive thinking is applied when conducting the workshops with an ultimate goal of increasing the amount of visitors, and revenue of the companies and societies in Fiskars village. Action research was chosen to be the way to gather information in the workshops in a democratic way (Stringer, 2007). Action research included the use of design thinking and general project management to reach a conclusion within the set timeframes. The use of several methodologies fit with the abductive, yet exploratory nature of the research and enables gaining of insights in the case (Eisenhardt, 1989; Yin 2009). Author of this article is one of the managers of the development work and a facilitator of the workshops and meetings.

### *Research Methods*

Multiple data collection methods such as conduction of workshops, meetings and interviews, open discussions before the sessions, analysis of taken field notes, and review of web sites and brochures of companies and societies of the village strengthen grounding of theory by triangulation of evidence (Eisenhardt, 1989). Eight workshops, each lasting two hours, were conducted, and the number of workshop participants varied between seven and eleven. Majority of the participants had some level of design education, and all of them had been exposed to design and design processes at their work. A divergent approach was used in the three first workshops to collect ideas, visions, strengths, opportunities and needs related to the development of Fiskars village. A more convergent approach was used in the rest of the workshops to integrate and refine the thoughts into a concrete step by step plan for the future. However, creative and fruitful ideation and discussion continued throughout the workshops. Analysis of the process, discussions and outcome of each workshop was done right after the session as well as the preparation work for the next one. The workshops were effective; a common vision for the year 2020, a list of values, strengths and factors that can support the increase of visitors and revenue in the village, the first version of a common business design model, and a blue print for managing common projects and events in the village were the deliverables.

Nine semi-structured interviews were conducted to investigate participants' perception of the workshops and the collaboration between the companies and societies in the village. Interviews were transcribed word



by word for further analysis. Each interviewee had a chance to read this paper in order to verify the facts and rightness of the text.

### *Selection of Companies, Societies and Experts*

Fiskars village is an interesting subject for a case study thanks to its long tradition of manufacturing, craftsmanship, art and design which would have died without persistent pursuit for development, sustainability and self-sufficiency (Fiskars, history of the village, 2014; Fiskars' village society, 2014). Design is a legacy in the village so design thinking is a natural way of working in the local companies and societies. A purposeful sampling with representatives from all relevant parties of Fiskars village is the selection criteria for the organizations of study; all companies, societies and experts participating in the study are tightly linked with the village. The other factors considered in the selection are: 1) ability to use design thinking in daily operations since it is the basic process used in business design (Fraser, 2006), 2) demonstrated ability to collaborate with other companies and people in the village since a collaboration friendly climate speeds up decision-making, produces more creative ideas, and results in less error-prone solutions (Swink, 2000), 3) participants' constructive and positive attitude towards development of an own company or a society and the whole village since people are more creative and experimental in a positive atmosphere (Cameron, 2008).

## **Preliminary analysis**

Data collected during workshops, meetings and discussions is rich in detail, and the work is still on-going. Below presented analysis are based on the outcomes of the workshops and the discussions of the interviews.

### *Business Design Model*

Design thinking and business skills were converging in the workshops through creative thinking, practical examples and experience. To understand the current status and the ambitions of the participants, three questions were tackled in the first three workshops:

- 1. How is Fiskars village in 2020?
- 2. What knowledge, skills, experiences and passions would I like to share in Fiskars village?
- 3. What would I like to get from Fiskars village?

A need for a common business design model emerged already in the second workshop, but the decision to start with concrete activities was made in the third workshop in order to promote the uniqueness, strengths and potential opportunities of the village without forgetting the common vision. A business canvas of Osterwalder and Pigneur (2009) was used as a tool to map value propositions, customer segments, channels, customer relationships, revenue streams, key resources, key activities, key partners and cost structure of a concept, Christmas 2014, that was chosen to be the pilot for the model. A story line, a preliminary blue print of the collaboration management and a high level project plan were developed while filling in the business model canvas. Christmas event was a logical and timely choice for the model since majority of the companies, societies and people living the village are working in the event, either for profit - or non-profit -making purposes.

Based on the experiences of organizing Christmas events in the earlier years, the engagement of people to the common storyline and finding the common look and feel for the event were seen as the most difficult yet the most important activities. Recruitment of an additional person, a Christmas event coordinator, was also seen as a key enabler for a successful event. Discussion about the funding and further collaboration between companies and societies is currently on-going.

The workshops were facilitated by two researchers who were seen as a neutral yet trustworthy and down-to-earth party. The atmosphere of the workshops was creative and open. Discussions were dynamic, and the participants perceived the way of thinking refreshing and welcome as one of the interviewees stated:

*We had to think about matters we do not normally think even though the topics that came up are all so true.*

Population of Osterwalder and Pigneur's business model canvas (2009) could be seen as a collective sense making activity (Stigliani and Ravasi 2012); workshop participants interpreted their own company data focusing mainly on prospective Christmas 2014 event. Fine-tuning of the business model canvas continued in each workshop as all finished business model topics were reviewed briefly in the beginning of the new session. Strategic discussions, including the strengthening of village brand, are on-going. Piloting of the new business model will be start in December 2014. The model and the supporting plans will be updated and fine-tuned after the pilot.

The overall focus of the workshops was to create a roadmap and define the first activities of the development venture to improve the financial status of the companies and societies, hence create an offering that attracts visitors to Fiskars village throughout the year, and increase the quality of life for the people living in the village. The following approaches, which are in line with and complement Fraser's business design model (2006) emerged in the workshops and interviews.

### *Different perspectives to user understanding*

As the storyline for Christmas 2014 event iteratively progressed, it became evident that the customers ask for a holistic experience when visiting Fiskars village; as one of the owners of a small company stated:

*When a customer comes here, she does not think of which companies' shop floor she is standing on but she is experiencing Fiskars village.*

Creation, integration and management of products and services as a consistent customer experience labelled by the village brand is challenging. One of the insights of the interviews was that the designers have different design approaches which can be combined when creating a new product or service. Expert designers are solution-focused (Cross, 2004) and open for new ideas, so the approaches are not in conflict with each other although the designers can work for the same company, the same designer can even vary between approaches depending on the situation. The different design – driven practices companies and societies of the village have, are presented below.

### **User-centred design**

User –centred design implies that product and service development starts from a profound understanding of the user needs. (e.g. Norman and Draper, 1986; Veryzer and Borja de Mozota, 2005; Redström, 2006). 'Good design touches your heart, and when it touches your heart, design and desire become one' (Waters, 2008). Judgment of values in design is difficult (Lawson, 2005), a feature of a product or service might be a 'must have' to somebody whereas another person could not care less of the same feature. One of the interviewees, managing director of a furniture company, described their user –centred design approach as a dialogue and a long lasting project where the development is done with the customer using concrete samples of the furniture, and iteratively ending up with a right set of furniture for example for a hotel.

### **Design-driven innovation**

Design –driven innovation is a radical innovation of products' meanings and languages for customers (Verganti, 2008). Companies, designers and end –users are immersed in fast changing markets and sociocultural context which shape their understanding of the meanings (Gero and Kannengiesse, 2004). Companies and their customers actually face a diffusion of meanings and creation of a common symbolic content in products, services and their combinations can be challenging. So the customers do not always know what they want. Design –driven companies have a capability to propose innovations that redefine product's meaning for a customer (Verganti, 2008).

Companies in Fiskars are actively looking for new ideas, resources and opportunities. An unpredictable interaction can happen for example in an international exhibition and trigger a start for a new development project. A master goldsmith, who uses 3D modelling in his work, summarised his approach to design in a following way:

*I combine high end craftsmanship, design and high tech, and make things nobody else has been able to make before.*

### **Functional and symbolic designs**

Functional design contributes to survival and growth of the company (Borja de Mozota, 1998, 2003). The purpose of functional design is to build a competitive advantage by focusing on the impact of design on the company and its coordination methods, i.e. the relations in the value chain (ibid). Symbolic design gives a deeper meaning to an artefact; it is more than a function or beauty (Verganti, 2008). Symbolic design, guided by aesthetic and emotional values, appears to be more chaotic since it is created and developed by creative and passionate people like artists and designers.

People perceive aesthetics and symbolic meanings of the artefacts differently, but an understanding of unarticulated customer needs is behind many successful products and services such as iPods, navigators and search engines in the Internet. Fiskars village had a burning need for Christmas lights in December 2013. The need was satisfied quite fast functionally by setting up a chain of lights besides the main road of the village. However, after a while the people agreed that the lights did not fit in with the 'design language' of the village, the lights resembled tooth brushes. Another example, an ice cream kiosk was also discussed in the workshops. The kiosk was installed in the open market place of the village and the need to get ice

cream was satisfied. However, the kiosk reminded of a refrigerator, and a requirement for a more aesthetic solutions emerged.

Several interviewees confirmed that it is not profitable to participate in a competition, especially if there are several parties involved in creating the artefact; the expenses and the time spend agreeing on how an artefact should look like and be presented cannot be justified in monetary terms. But the companies and artists still do it, since being visible in certain contexts is important; it strengthens the virtue of the companies and gives meaning to the work.

### *Collaboration and physical closeness*

Chesbrough's (2003) notion 'Not all the smart people work for us' describes the situation many companies face today. Companies collaborate because they lack internal resources, knowledge and skills that another company can provide. Collaboration is feasible for the companies since they do not have to take additional risks by for example investing in resources that are not their core business (Powell et al., 1996).

Many studies have proven that closeness of functional areas, or other companies responsible of a function, is essential in successful businesses (e.g. Liker et al., 1999; Bruce and Morris, 1998). Accessibility of buildings and the host of common areas facilitate cross-fertilized innovation (e.g. Dougherty, 1990; Donnellon, 1993; Calabretta et al., 2008). Physical proximity enables the use of non-verbal aspects in collaboration and the ability to point to, and act upon, artefacts in a shared context (Sirkin, 2011). Proximity can also increase familiarity with business processes and cultures, it enable face-to-face interaction, and contributes to building trust (Calabretta et al., 2008). There is an increasing need for design expertise in a range of different sources due to complexity of products, use of technology in the design process, availability of design expertise in service organizations and companies' tendency to utilize a network of suppliers to carry out value-added functions (Bruce and Morris, 1998).

When companies and societies of Fiskars village need another company to perform an activity they cannot do themselves, the primary source for a collaboration partner is the village. The companies contact stakeholders and companies outside of the village only if appropriate resources or tools are not available locally at the needed time. The demand for a consistent customer experience requires small companies to work closely together since none of them can fulfil the requirements alone. Common goals have

impacted the local way of thinking as a craftsman having worked in the village for 23 years stated:

*Collaboration... for me it is such a dim area that I cannot even say what collaboration is and what is some other type of work.*

Working culture, reliability of the local companies and experts, and the high quality of work are unwritten but very clear rules of the community. The collaboration in Fiskars village starts usually with a spontaneous yet creative discussion. The dialogue is conducted often in an informal place like an aisle of a grocery store or by the main road that runs across the village. When parties have a common goal but different needs, skills and tools, the synergy is noticed quite easily. There would probably be even more collaboration between different parties if the people knew what the others were capable of doing at certain time span, and which tools and a work space they had to reach the common target. A need for 'a dynamic knowledge bank' was identified both in the workshops and interviews.

### *Values of the Community*

Communities can usually be characterized by a common connection between all members, e.g. geographically, or they can share a common interest or occupation (e.g. McAlexander et al., 2002). There are three core components that define a community; consciousness of kind (e.g. Weber, 1978), shared rituals and traditions (e.g. Douglas and Ishwerwood 1980), and the sense of moral responsibility (e.g. Muniz and O'Guinn, 2001). Exchange has always been part of the community (e.g. Chen and O'Mahony, 2009). Calabretta et al. (2008) talks about a clan culture which emphasises shared values and goals, cohesion, participativeness and teamwork.

A person who has never visited the village has difficulties understanding the strong values that act as a powerful glue between companies, societies and inhabitants of Fiskars village. Design-oriented companies, artisans, artists and designers have been attracted to Fiskars village for years, and it is important that the products and services offered in the village are locally made. The values are very personal since people not only work but also live in the village. Building of 'we-ness' emerged in the workshops for example as a need to create a strong Fiskars village brand. 'Locally made' is a value that clearly points out the appreciation for local manufacturing as well as for high quality and trust of the local craftsmanship. Companies selling goods or services not originating from the village are not fully recognized as being part of the community.

Certain events, like art exhibitions (Summer exhibition of Fiskars village, 2014), organized every summer, are already traditional happenings, and there are plenty of visitors in the village at those times. The aim is to create a similar tradition of the Christmas 2014 event. Many people in the village have years of experience organizing successful events but the experience seems to be tacit knowledge. How well can a common story line of Christmas 2014 event with the governance model be developed and documented so that it would generate a methodology and mode of operation while also capturing the silent wisdom of the local people?

Moral responsibility to help others and work together is so natural way of life in the village that the natives do not even notice it. Bee, a communal work, is also a common way to help the neighbours.

*There are often times so many bees on-going that we do not have any people left to do anything else.*

The development work has often a monetary aspect; hence the conflict of interests, for example functional versus symbolic design, becomes more significant. If quantitative and qualitative factors are evaluated in the same cost-analysis activity, all factors are measured using only one dimension of the problem (Lawson, 2005) which is quite often the monetary. Monetary value is not the only driving force of the activities in Fiskars village. For example, a comment stated in one of the workshops describes the difficulty of prizing own work as a craftsman:

*It is difficult to put a price tag to my own work since I cannot afford to buy my own products.*

Creativity, entrepreneurship and interdisciplinary higher education pass the short term monetary values especially when pursuing for a better life and business development in the village. The vision of Fiskars village is to offer world class education in craftsmanship, design and art, and the business design model created in the workshops is one of the steps to reach the target.

## **Preliminary findings**

Fraser (2009) points out that the ambition of business design is to make a meaningful impact in the customer's life both functionally and emotionally. Creative design solutions tend to arise especially when there is

a conflict between designer's own commitment and high-level problem goals, i.e. symbolic design, and the criteria for an acceptable solution set by the customer or other requirements, i.e. more functional design (Cross, 2004).

Characteristics of people who participate in a design process as well as the conditions and context where the process is conducted impact the end result. Iterative nature of the model is very important in the community based model. A community of independent yet open and constructive – minded resources functions in a different way from a corporation so the business design model would need some modifications. Based on the preliminary analysis, a modified model is proposed for communities (figure 2).

### *Holistic user understanding*

Understanding of a user or a critical stakeholder means different attributes to different companies depending on their core businesses; a café owner sees a customer with different eyes from a goldsmith so a holistic user understanding is needed in a community context. As customers do not always know what they want, companies can make proposals to them. Seeing beyond the obvious indicates that the holistic user understanding has to go beyond physical and material artefacts to a more abstract level, a world containing people's mind-sets (Love, 2000), knowing what customers want before they realize it themselves.

### *Collaboration*

Building upon several perspectives of the user understanding, the concept has also many aspects and its visualization needs close collaboration of all relevant parties. It is noteworthy that the collaboration practices can vary between parties more than in a corporate context that has defined processes as well as communication and governance models in place so the collaboration is an essential factor in business design model. Collaboration is easier and more effective if the parties are located in the same region since physical presence is essential when creative and agile work is done with timely results.

### *Values*

Values are the foundation for the collaboration. Certain values, such as trust, act as glue between the parties, especially when there are risks related to schedule, money or quality involved in the collaboration. There is



a positive correlation between trust and cooperation (e.g. Glaeser et al., 2000; Gächter et al. 2004).

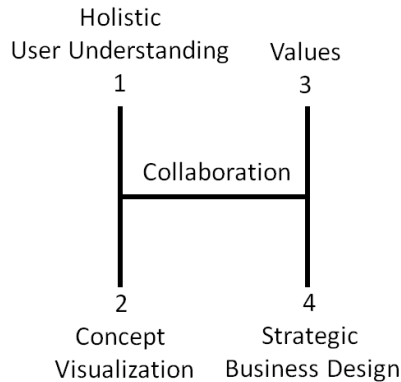


Figure 2. Community based business design model, modified from business design model created by Heather Fraser. Source: Fraser, H. *Turning Design Thinking into Design Doing*, Rotman Magazine, Spring/summer 2006, pp. 24 – 28.

## Discussion

A pragmatic approach was taken when conducting the workshops; the same group of people participated in the workshop throughout the development process although there is a potential error since the divergent and convergent phases of the workshops require different types of behaviour and skills (Berendset al., 2010; Cross, 2000; Van de Ven, 1999). The aim of the workshops was not to substantiate a preconceived position (Yin, 2009) since the outcome of the workshops was not known in the beginning so the study is not biased from that perspective.

Value is regarded as a characteristic of how users perceive a product with its features (Childs, 2006) or a service with its functionalities. When the driving force for work lays in the common values, e.g. appreciation of sustainable design, the values impact also the acquisition of needed resources, and the values should be reflected in the nature of the end result. Quality, by contrast, is a characteristic of the product or service itself (ibid.). Therefore is not enough to offer a high quality product or service to a customer. To ensure an unforgettable experience, companies need to create a positive memory trail for a customer and also make sure it does not fade away easily. Environmental conditions moderate communities' abilities to

pursue a differentiated strategy (Chen and O'Mahony, 2009), so what is the value of design in Fiskars village as it is imprinted in its people, buildings, ambiance, products and services? Honest euro for an honest per day work, 'a perfect customer experience' or something else?

Cross-functional work can also be paradoxical in a design-oriented community despite common values and together agreed targets. The preliminary results indicate that there are constant 'battles' between e.g. good enough and high quality designs as well as symbolic and functional design. But maybe the best solutions breed in paradoxes; a creative person recognises an opportunity, seizes it, captures its economic value and makes it a successful product or service (Jevnaker, 2005).

## Conclusion

Good design, successful new products and services do not just happen by chance or by simply investing in design but it is a result of a managed process (Mascarenhas, 2004; Chiva and Alegre, 2009). Decision making routines of design collaboration should keep everyone and everything integrated, and tools enrich dynamic, continuous, iterative and informative design processes that ensure integrity of both informational and physical fluxes (Borja de Mozota, 2003).

The preliminary results indicate that it is not enough that each small company and society has a good understanding of the customer needs, if they want to offer competitive products and services to their customers. Instead, a network of small organizations can create an advantage by proactive and collaborative approach that creates together agreed products, services and experiences that are more attractive than any of the small companies could offer alone. A holistic understanding of user needs and desires from multiple perspectives, active collaboration of all involved parties and respect of common values should be added to Fraser's business design model (2006) when it is applied by communities consisting of many small organizations. By effective collaboration and values, such as trust, a community can introduce new products and services to the customers who did not even know such offerings existed, and that way create a new business opportunity.

Although small companies need to focus on short-term results due to resource constraints (Bradford and Childe, 2002), a network of small companies can still concentrate on their core businesses and aim for long-term goals if there is a synergy between the companies, and the

collaboration is managed appropriately. A well-functioning network or a community is 'a system' that allows people to be creative but at the same time respect the values and strategic norms of the network. Collaboration is dependent on people, their personalities, knowledge, skills and interests. The collaboration has to be managed in a way that does not hinder the core activities and businesses of small companies and societies. Values act as 'glue' in a community; they bond the community members together, create a common working culture and promote well-being. Unless the importance of design and its impact to business performance are understood well and stated e.g. in the company strategy, the feasible collaboration of designers, companies and societies could be lost as the involved people change. The greatest ideas can be initiated anywhere, whether the people meet in a store aisle or in an evening party. An essential factor is the physical presence and spontaneity of the creative people.

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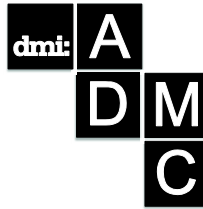
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# Designers and Environmentally Sustainable Design in a Business Network: a case study on the development of a passenger ship

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*Designers are often seen to hold a central role in improving the environmental impact of products in literature on sustainable design. Yet, there is limited research on the practical possibilities for designers to cater to such a role. The role of designers is particularly poorly understood in the context of product development where activities, actors and resources are distributed across multiple companies and suppliers in a network. In this paper, we address this gap in research through a case study on the work of designers in a networked development project for a passenger ship where significant environmental improvements were made. The results of the study problematize the role of designers in environmentally sustainable design. Designers addressed sustainability in the early phases of the project. However, from the perspective of design, the work in the early phases came to have limited influence on how the environmental improvements of the ship were realised in the later phases of the project. Based on our results, we discuss what impact designers potentially can have on sustainability improvements in networked development projects.*

**Keywords:** *Environmentally sustainable design; business networks; collaborative product development*

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## **Introduction**

The work of designers – whether they are industrial, interior or product designers – is seen as central in determining the environmental sustainability of products and systems in literature on sustainable design (Lewis, Gertsakis, Grant, Morelli, & Sweatman, 2001; Papanek, 1985; Shedroff, 2009; Vezzoli & Manzini, 2008a). Given their propensity for strategic and holistic design thinking (see Cross, 2011; Brown, 2008), designers are recommended to utilise systemic approaches to environmentally sustainable design, such as product-service systems (Manzini & Vezzoli, 2003; Mont, 2002) and whole systems design (Blizzard & Klotz, 2012; Charnley, Lemon, & Evans, 2011).

Yet, research on the practical possibilities for designers to cater to such a role in environmentally sustainable design is limited. Understanding about the possibilities is particularly limited in contemporary product development where activities, actors and resources are distributed across a network of companies and suppliers. So far, literature on environmentally sustainable design has mainly addressed product development from an integrative manufacturing perspective where the majority of activities, actors and resources are managed within a single company (Charter, 2001). Historically, design management has also been much concerned with integration of designers from the perspective of a single organisation (e.g. Cooper and Press, 1995; Bethge and Faust, 2011). In networked development projects, companies are disintegrated, bringing complementary competences and resources to the development process and collaborate to produce a complete offering (Ford, Gadde, Håkansson, & Snehota, 2011; Möller, Rajala, & Svahn, 2004). Hence, networked product development creates new managerial challenges. A critical task for design managers is to consider how designers can be utilised within the wider network of activities, actors and resources.

In this paper, we study the work of designers in a networked development project for a passenger ship in which significant environmental improvements were achieved. Previous studies have addressed the management of designers in collaborative product development on a team level (e.g. Berends, Reymen, Stultiëns, & Peutz, 2011; Cross, 2008; Von Stamm, 1998), the role of designers in environmentally sustainable design (e.g. Lofthouse, 2004) and the development of sustainable products in business networks (e.g. Baraldi, Gregori, & Perna, 2011; Håkansson &

Waluszewski, 2002). However, to the best of our knowledge, studies on environmentally sustainable design in business networks are scarce with no prior study addressing the work of designers and their management in a networked development process.

Based on interviews with designers, managers and coordinators involved in the project, we explore how the designers were viewed to have contributed to the environmental improvements of the ship. Our study focuses on the work of designers developing the interfaces between the ship and its passengers, i.e. industrial and interior designers (referred to as 'architects' in shipbuilding). Ships are complex large made-to-order products that require input from and coordination of many different professionals during development and manufacturing (Stoyell, Kane, Norman, & Ritchey, 2001). Our contribution lies in illustrating how the work of the designers connected to the wider project targets in developing a more environmentally sustainable ship. In particular, we shed light on the challenges that business networks can pose for design management and management of environmentally sustainable design.

## **Designing environmentally sustainable products in business networks**

In their most basic form, guidelines for environmentally sustainable design typically advise designers to adopt a lifecycle perspective during product development. Designers are recommended to utilise environmentally benign materials and production processes, ensure that product usage and disposal are handled properly from an environmental perspective and so forth (see e.g. Brezet & Hemel, 1997; Lewis et al., 2001; Vezzoli & Manzini, 2008a). Additionally, given the complex nature of sustainability, designers are recommended to take a systemic and solution-oriented view on design (Blizzard & Klotz, 2012; Vezzoli & Manzini, 2008b). In order to satisfy the fundamental needs of customers, designers should extend their focus beyond products to services and product-service systems (Brezet & Hemel, 1997; Vezzoli & Manzini, 2008b). A systemic view on sustainability is also often coupled with the ideal that designers should 'design on a clean sheet' (Blizzard & Klotz, 2012, p. 470) to achieve greater sustainability improvements.

Regardless if their application is for products, services or systems guidelines of environmentally sustainable design frequently share two underlying principles. First, environmental impact of products and systems

should be addressed in the earliest phases of development. Ideally, designers should place emphasis on environmental sustainability already during planning and concept design when the exact scope of a development project still is open for elaboration (Deutz, McGuire, & Neighbour, 2013; ISO, 2011; Lewis et al., 2001; Sherwin & Bhamra, 2000). Second, design and the work of individual designers should ideally have a central role in determining what resources (e.g. materials, processes, services) are used during development and manufacturing (Lewis et al., 2001; Tischner, 2001). As Lewis et al. (2001, p. 15) suggest, 'it is ultimately the designer who creates the interface between the consumer and the technology underlying the shell or surface of a manufactured product'. Thompson and Sherwin (2001, p. 350) assign such a bridging role to industrial designers in particular because of their position 'between producers and the market'. Similarly, Vezzoli and Manzini (2008a, p. x) suggest that in addition to improving sustainability of products, industrial design should focus on production system improvements. Together, these two principles emphasise the centrality of designers in determining the environmental sustainability of products and systems because of their location in the junction between ideas and manufacturing in the early phase of product development.

From a network perspective, environmentally sustainable design holds direct implications for companies. In business networks, companies focus on their core competences and collaborate with other companies in producing products and services (Ford et al., 2011; Möller et al., 2004). As companies interact with each other, they create interfaces and connections between their own resources and the resources of others (e.g. a shipbuilder needs to interact with engine suppliers, creating a resource interface between the companies). In doing so, guidelines for environmentally sustainable design outline recommendations for how resource interfaces should be established and managed in a network. For example, following business network logic, a decision to improve the sustainability of a product could result in everything from alterations in relationships with existing suppliers to switching suppliers to switching entire business models.

Studies on business networks show that making such alterations can be complicated for managers. Companies in a network collaborate and complement each other in terms of resources. However, they can rarely fully align their interests and actions in developing new products and service because past investments and existing resource combinations typically affect interests and actions (Håkansson & Waluszewski, 2002). An individual

company can therefore seldom (if ever) fully control the network that it operates within. That is, the network both prevents and enables operations of individual actors within it (Håkansson & Ford, 2002). Moreover, the interests and goals of individual actors may change and become conflicting over the course of development projects (Baraldi et al., 2011). The interests and goals of individual actors may also influence other actors in the network even when direct connections between them do not exist (Ford et al., 2011). For example, Håkansson and Waluszewski (2002) found that paper producers ignored IKEA's demands for a more sustainable paper quality for their catalogue because they were more aligned towards serving publishing houses. When IKEA finally managed to get a more sustainable paper quality 'the end product was one that differed considerably to what had initially been visualised, and was produced in a different production facility using different production technology' (Håkansson & Waluszewski, 2002, p. 3).

To conclude, business network literature suggests that the early phase of development may not be as open for designers as typically treated in literature on environmentally sustainable design. New development projects are located in a historical continuum of investments and resource developments within a network of interactions, interfaces and interdependent relationships. This continuum can be difficult to break away from. Design managers need to therefore grasp how network dynamics influence environmentally sustainable design if they want to induce alterations to the process. In this paper, we study how existing resource combinations influenced sustainable design in a business network.

## Method

To understand how a business network potentially affects sustainable design, we conducted a case study on the development of a passenger ship in which ambitious improvements in environmental sustainability were made. Case studies are relevant for studying 'dynamics present within single settings' (Eisenhardt, 1989, p. 534) and in addressing questions of *how* or *why* a certain phenomenon occurred (Yin, 2009). For business network studies, case study methods are commonly recommended because they grant a structure for dealing with the inherent dynamics of a network as a research setting (Easton, 1995; Halinen & Törnroos, 2005). Given the networked nature of shipbuilding and the environmental targets in the project, the studied case well represents the theoretical background of our

study by providing an example of sustainable design in a business network (on theoretical sampling, see Silverman, 2010).

Business networks are seldom clearly visible constructs to outsiders. Therefore, the theoretical foundation and empirical findings of the study were developed iteratively during the research process (as recommended by Dubois & Gadde, 2002; 2014). In case boundary setting and sampling, we utilised a dyad-network perspective (Halinen & Törnroos, 1998), i.e. we focus on the relationship between the shipyard and the shipping company that ordered the new ship. We also accounted for the network surrounding this core dyad through inclusion of suppliers and external design consultants working in the project.

It is often difficult to define who belongs to a network from the outside. Therefore, we located interviewees through chain-referral/snowball sampling, starting from the contacts the first author had with industrial designers working in the shipyard. We also located interviewees based on media reports and other publically available materials to avoid personal bias common to snowball sampling (Heckathorn, 1997). The final sample extended beyond the personal networks of the initial interviewees. Our sample is comprehensive in terms of design, covering the main designers from the organizations working with design of the different areas of the ship (i.e. the main exterior, interior and cabin designers have been interviewed).

The interviews were semi-structured and revolved around the involvement and work of the interviewees in the project (i.e. their tasks, collaboration and influence of environmental objectives). Free speech was encouraged in the interviews to benefit from the increased accuracy typically associated with free reporting in retrospective reports (Miller, Cardinal, & Glick, 1997).

The interviewees were in different phases of the project at the time of interviews. Some had already finished working with the project while others were in the middle of it. We asked the interviewees to bring documents made during the process to the interview in order to enhance recall. This was deemed particularly important with interviewees who had already finished their work in the project. This practice also enabled us to access documents otherwise unavailable to us such as internal presentations made in the process, schedules and meeting minutes. We complemented the interview data with secondary data about the project including professional press coverage, available interviews and official documents.

The final main dataset of our case study are interviews with 23 designers, managers and coordinators involved in the project. We see designers as individuals actively creating new design proposals for how the ship would look and feel to passengers. Managers are seen as being more concerned with leadership and control tasks in the project. Coordinators are seen as individuals who aligned different tasks and activities but with no clear leadership or design duties. Instead, they supported designers, managers and other developers in their work. Managers and coordinators were interviewed to gain a more comprehensive view and contextualise the work of designers in the study. Follow-up interviews with five interviewees were also conducted to add depth to the analysis, resulting in a total of 28 interviews in the main dataset.

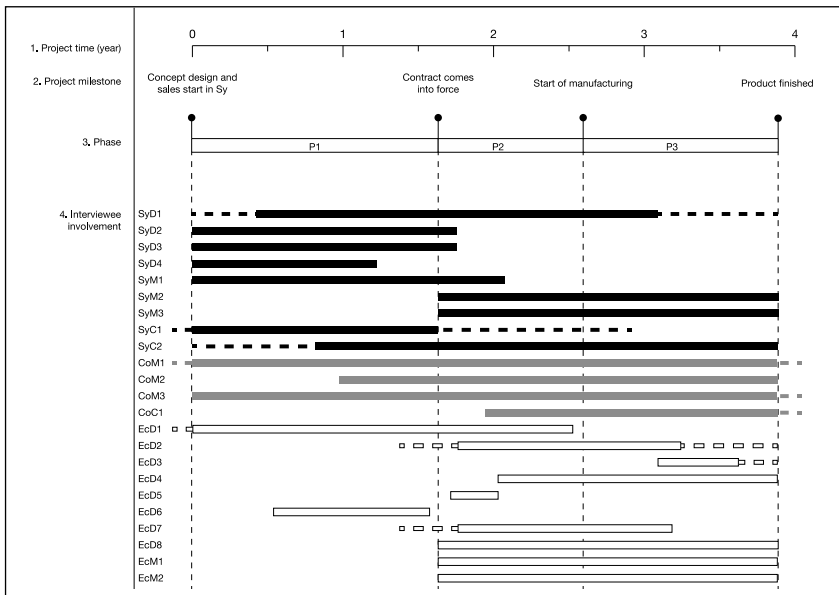
### *Data analysis*

The interviews were recorded and transcribed for analysis. As a first step in the analysis, we used temporal bracketing and visual mapping (see Bizzi & Langley, 2012) for creating an overview of the data. Figure 1 displays a project overview with the main phases of the project, network location of each interviewee and when they were involved in the project.

As shown in Figure 1, the interviewees were involved in various phases of the project. Designers were involved in the project throughout its duration. Although individual designers rarely worked on the project from start to finish our data gave us an overview on the work of industrial and interior designers in all phases of the project. We defined three network locations based on where the interviewees worked in the project. The locations in the project were based on our dyad-network perspective, resulting in three locations: the shipyard, the client organization and external consultants. We also defined three temporal brackets based on important project milestones and common shipbuilding procedure. The first phase was *pre-contractual sales* (P1), covering the period before the project contract was signed between the client organization and the shipyard. The second phase was *development* (P2), covering the period after the contract to the start of manufacturing. The third phase was *manufacturing* (P3), covering the start of manufacturing until the final delivery of the ship to the client (for more information on shipbuilding processes, see e.g. Gale, 2003).

To map the role the designers had played in the project, we analysed how the designers described their contribution in advancing environmental sustainability of the ship and how they considered that the overall goals to improve sustainability in the project had influenced their work. Interviews

with managers and coordinators were used to contextualise the descriptions of the designers. Overall, we coded the interviews for instances where environmental improvements were discussed and analysed how the designers, managers and coordinators reflected on their contribution to those improvements. Temporal bracketing enabled us to investigate what kinds of contributions the designers made and how the network operated in different phases of the project.



*Figure 23. Temporal bracketing and visual mapping of the interview data. Interviewees are identified with first two letters indicating network position (Sy=Shipyard, Co=Client organisation, Ec=External consultant). Third letter indicates role (D=designer, M=manager, C=coordinator). Numbers are used to differentiate between interviewees belonging to same professional groups in the same location.*

### **General case context**

The studied development project was initiated to replace an older vessel of the client organisation. The process from sales negotiations to delivery lasted a few months short of four years. In P1 design work for the whole ship was performed predominantly in-house in the shipyard. Other

companies in the network also performed design work in P1 but typically only for the purposes of generic R&D and marketing of their own services. In P2, designers outside the shipyard formally entered the project. Their contributions were mainly in interior and cabin design, the exterior design being handled by the shipyard. In P3, designers entering the project were contracted to work on small subdivisions and tasks within the ship.

The interviewed designers had training and/or experience in industrial design or interior design. All but one designer had formal design education, with one designer having learned through apprenticeship. The interviewees seldom had clear-cut professional profiles, e.g. the cabin designer had some education in industrial design but had worked predominantly as an interior designer. The common denominator between the designers was that they worked with the 'architectural design' of the exterior, interior and cabins.

The design work was managed mainly by the client organisation. No single manager was responsible for the design of the entire ship. For example, exterior designers developed their work predominantly with the project manager (CoM1) while interior designers were more involved with the architectural (CoM2) and product (CoM3) managers. Moreover, the designers were given much freedom in order to renew the overall cruise experience. No explicit design guidelines were employed in the project and the architectural manager in the project (CoM2) described his role as monitoring the interests of the client company. The distributed nature of design management was also reflected in the remarks made by the designers. Design management in the process was frequently described as a joint activity between the designers and the client organisation (whose wishes often came to the designers through managers of their own organisation).

The main sustainability improvements in the project stemmed from energy-efficiency improvements and the use of liquefied natural gas (LNG) as fuel. Two drivers behind these improvements can be identified. First, incentives for improving sustainability have recently been developed at state and EU-level. This means that companies can receive environmental aid for solutions going beyond existing regulation. Such aid has been targeted particularly towards energy-use and energy-efficiency (see European Commission, 2008). Such aid was successfully applied for in the studied case. Second, tightening environmental regulation in shipping is increasingly reflected in marine fuel prices and has resulted in the introduction of new emission control areas. Consequently, alternative fuel sources are attractive for shipping companies and an important research



and development area for shipbuilders and their contractors. The studied ship operates within an emission control area in Northern Europe and regulation was reflected in the client organisation as a desire to find alternative fuel solutions. Regulation has warranted attention also from the shipyard in question in recent years. Thus, both a general interest (and push) towards environmental sustainability in the shipping industry and a need to comply with regulation in a given area drove in many ways the environmental improvements in the project.

## **Results**

A general concern for sustainability was present in the work of most designers. Especially in the first phase of the project (P1), many holistic concepts highlighting environmental sustainability were developed and put forward by the designers working at the shipyard and elsewhere in the network. For example, a designer working in the shipyard (SyD2) suggested a new operational concept that would decrease environmental impact through slower operation speed. Similarly, a design office (represented in the sample by EcD6) with a long-lasting relationship with the client put forward concepts strongly driven environmental sustainability, particularly energy-efficiency.

However, from the contract onwards (P2 and P3), the designers' contribution to the environmental improvements became less defined. When directly asked, most designers also responded that the environmental targets in the project had weak or no formal influence on their work; this despite the fact that a strong focus on sustainability was present on a general level in the project. For example, the main cabin designer (EcD5) mentioned that '[sustainability] had no influence in it [cabin design]. I did not even – of course I knew how the ship is going to work and that it uses LNG but it did not cause anything that would have been reflected here [to cabin design]'. The main exterior designer (SyD1) stated that '[the sustainability focus of the project] did not really, in terms of the environment, bring anything to the design, so that we would have somehow emphasized environmental friendliness in it'. That said, a number of designers saw environmental sustainability as important in their work. For example, a designer (EcD3) working with a part in the interior in P3 stated that 'I have to say that it [environmental sustainability] has not played a big part. [...] But of course, I personally prefer to choose that kind of materials [that are sustainable]'

The results above are not specifically problematic from the perspective of environmentally sustainable design. Despite a lack of formalized demand and design management towards environmental sustainability, the designers still often took an active (self-initiated) stance in improving sustainability. However, the problem emerges when we turn focus to the influence the designers considered to have induced through their work. We distinguish two challenges the designers faced in trying to improve the environmental credentials of the ship which are of direct relevance to design managers in managing sustainable design in a network.

### *Designing new resource combinations in shipbuilding*

The first challenge pertains to the practical possibilities of designers to design new resource combinations during the shipbuilding process. Passenger ships need to fulfil many different functions and tasks, ranging from mobility to food provision to waste management to collision safety. This makes ships complex products to develop. How this complexity was managed came to represent a strong challenge for designers to induce and effect on the environmental improvements in the case of study, and for ship design in general.

The work of the designers in the project often revolved around designing new concepts and ideas for the ship to be. In environmentally sustainable design, as noted earlier, starting design on a clean sheet is a desirable condition in the early phase of product development. However, starting a ship project from scratch is seldom practically and financially feasible. As noted by Gale (2003), completely new designs are slow, difficult and risky to develop and are therefore rarely pursued. Instead, new ships are often designed based on a 'reference ship' that eases in determining the overall technical characteristics (e.g. volume, stability etc....) and in estimating a more accurate price and quality level for a new ship. Moreover, given the tight regulation ships need to follow (e.g. fire safety), a reference ship provides a concrete example where such regulation has been successfully taken into account. From a business network perspective, a reference ship can be seen to function as a concrete representation of feasible resource combinations in a network.

The importance of the reference ship, and the resource combinations inherent within it, was a salient topic of discussion during interviews. As a designer (SyD1) in the shipyard pointed out, 'it [the reference ship] speeds up and makes the start of design easier. It is intellectual capital that is hard to avoid using because that is where our knowhow and our shipbuilding are

based on'. Thus, the design work for the new ship was largely orientated towards re-designing the reference ship. For example, when the contract was made, the volume, price and quality level of the interior of the ship were defined but the final style and material choices were still left open.

The past resource combinations in the network restricted the possibilities of the designers to have an impact on the environmental improvements of the ship. Notably, the influence of the early phase design concepts was rarely definitive. Many designers acknowledged this in the interviews. For example, a designer from the shipyard (SyD4) described his own role as 'throwing in' ideas of more sustainable technologies in the early phase. However, he also noted that it is typically a long way for such 'suggestions' to become realised. Similarly, in discussing their solar powered ship concept, a designer consulting in the project (EcD1) mentioned that, 'I'm not an expert in this fuel or anything so I wouldn't be able to make that judgment whether that's good or bad, but what I do think is, that it is important that you can push technology'. So, while the design concepts utilising solar power designed by external consultants (represented in the sample by EcD1) were used in reporting about the future visions of the client organisation, they were not developed further as the technical assessments showed poor energy yield in the operating area of the ship.

In the later phases of the project (P2 onwards), regulation, price concerns and influence of past resource combinations made improving the environmental performance of the ship increasingly difficult from the perspective of the interviewed designers. A designer working (EcD4) with parts of the cabin stated that '...I'd like to say yes, it's all environmentally friendly, but unfortunately given, given the, [...] certification and this sorts of, legal entitlements of those fabrics it's difficult to come up with nice entirely eco-friendly product'. Or, as stated by the main exterior designer (SyD1) in reflecting on his work with material selection, 'I don't make any decisions regarding material choices and such, in our organisation'. Challenges caused by past resource combinations were also visible in introducing LED-lighting as the lighting specifications in the ship contract were largely based on the reference ship. As described by interior designers (EcD2, EcD 7), using LED-lighting in the interior required extensive development to arrive at the right price and technical quality to meet specifications. In the end, LED lighting was used in the ship but it required additional work from the designers who had to make two different lighting

designs, ensure more budgeting for lights and customise the light fixtures to survive the vibration present on ships.

### *Role and position of designers in the network*

The second challenge concerns the role and organisational positioning of the designers in the network. This challenge stemmed largely from the complexity of ships as a product and the need for different expert knowledge and skills during development and manufacturing.

The new ideas and concepts that the designers developed for the ship were commonly communicated visually. This core competence of designers has earlier been framed as expertise in 'the science of appearance' (see Dreyfuss, 2003[1955], p. 65). The framing of their competence (contribution) implied that designers were frequently asked to design how things should look while simultaneously having limited possibilities to control the realisation of their ideas. For example, as noted earlier, material selection was seldom completely determined by designers. Consequently, the designers' work only partly determined how the ship was realised.

The limited possibility for designers to manage the realisation of their ideas was further substantiated by the use of separate companies and actors for engineering and building different parts of the ship. For example, the main exterior designer (SyD1) worked with an engineer who translated his work to the structural ship model. Through multiple iterations, they ensured that both the structural strength and appearance of the ship were properly addressed. Yet, technical feasibility (e.g. structural strength) overruled design appearance as a criterion in decision-making. Similarly, an interior design company designed the public spaces of the interior but the areas were engineered and built by multiple turnkey delivery companies. The turnkey delivery companies were experts in technical realisation and they often worked under tight budget and weight constraints. The dynamics of this division of labour was well reflected in comments by a manager in the turnkey cabin manufacturer (EcM2): 'well we have it purely so that, you could say that we have the technical design. The architect [designer] gives the, the principal ideas how the appearance and things are, and then our planners just put it into a technical format'. He also noted that this typically meant that the final design seldom corresponded exactly to what the designers had put forward. Thus, architectural design in the process was indicative – but not definitive – of what the outcome would be like.

That said, from the perspective of environmentally sustainable design, the turnkey managers were often pressed with the environmental concerns

in the project. A turnkey manager (EcM1) stated that the environmental targets in the projects did influence them and mentioned that '[in the nightclub] we changed the wood material on the dance floor to get grown wood to it'. Accordingly, with the responsibility to ensure material suitability for the ship they were also in a stronger position to influence the environmental improvements of the ship.

## Conclusions

How does one manage sustainable design in a business network? In our study, design management was distributed over multiple actors and companies. The complexity of the ship dictated the use of a reference ship to make the general development task feasible. The reference ship served as an important *example of resource combinations that fulfilled regulations and would be possible to realise in the network*. The complexity of the product also required specialists for designing, engineering and manufacturing of which designers were an important part. As a result, while designers actively advanced environmentally sustainable design in the project, they rarely had a direct possibility to impact the final solutions embedded in the ship. Overall, the way design and environmentally sustainable design was managed in project poses new questions for sustainable design.

It would be easy to criticize the management of design in improving the environmental performance of the ship. However, it should be remembered that the ship has been awarded for its overall design and environmental improvements. During the interviews, many of the designers also expressed pride in their work and did not necessarily consider the handling of environmentally sustainable design as problematic in the project. To this end, our case provides an interesting example from the reality of managing environmentally sustainable design and the work of designers as a part of a larger system. Moreover, following Brunsson (1989), ideas and actions often become acted upon separately when organisations are faced with conflicting demands. Our results suggest that connecting design concepts with realised solutions is not always straightforward, i.e. that ideas would determine actions. Environmental sustainability often requires changing existing ways of producing. However, in shipbuilding existing means of production and ways of operating are often economically rational ones and also more acceptable in terms of regulation. Thus, environmental sustainability (or any significant change) and feasibility can become seen as

conflicting demands in shipbuilding and they are more easily handled when they are attended to separately. Design managers need to therefore be aware of the conflicts that suggested new resource combinations may raise during development. Finally, while much literature in sustainable design highlights the importance of holistic design approaches and multidisciplinary collaboration as key success factors in developing more sustainable products, the responsibilities and roles of individual professions are rarely discussed in great detail (for notable exceptions, see Lofthouse, 2004; 2006). Based on our results, we note that a grand strategy of sustainable design does perhaps not make up for a lack in clear and actionable coordination of individual professions.

### *Limitations and further research*

Managing and performing environmentally sustainable design in business networks have only invited limited research interest. Hence, there are several research opportunities in expanding on the limitations of our study. First, shipbuilding represents a typical context for large made-to-order product commonly developed in a business network. The studied project offers a compelling and theoretically representative case to examine environmentally sustainable design in a business network. Future research could fruitfully explore different development contexts and product types to build more comprehensive understanding of design and design management in networked development projects, independent of the specifics of shipbuilding.

Second, the focus of our study was on the work of designers within a single project. This makes conclusive inferences regarding the entire development project and the work of designers in general hard to make. However, as pointed out by Bizzi and Langley (2012), such limitations are difficult to overcome within single studies in business networks and would require a more programmatic stance on research. More holistic studies of networked product development could yield more explanations to the success factors of environmentally sustainable design in business networks. Thus, future research could approach studies of product development in business networks from complementary angles to cover a broader spectrum of phenomena.

### ***Implications for the management of environmentally sustainable design***

Much literature on environmentally sustainable design advocates that designers should systemically attend to sustainability in the early phase of design and development. Such advice roughly follows the general discourse on design management by viewing design as a central integrative function in product development (e.g. Beardsley, 1994; Borja de Mozota, 2003), by highlighting the strategic potential of design (e.g. Ravasi and Lojcono, 2005; Stevens and Moultrie, 2011) and highlighting the importance of a holistic stance when designing (e.g. Cross, 2011; Cooper, Junginger, & Lockwood, 2009). In exploring a new domain for design management, our case study points to specific challenges in managing environmentally sustainable design in collaborative settings such as a business network. In particular, our results suggest that the early phases of design and development may not always be as decisive in terms of environmental performance as commonly suggested or that designers can begin to design from a clean sheet. A business network structure calls for a focused role for design. Thus, design managers wishing to improve the environmental credentials of products would need to pay specific attention to the particular roles that different professionals – from industrial designers to engineers – can play in business networks and collaborative product development.

Additionally, design managers operating in business networks need to traverse organisational and temporal boundaries in order to attain a comprehensive picture of how different companies and individuals within them complement each other. Traversing organizational and temporal boundaries can stretch beyond individual product development projects. For example, replacing a material with a more sustainable one might require extensive work with suppliers and may be hard to change retrospectively. As different solutions become codified in network connections, design managers are therefore advised to stretch their perspective on the impact of environmentally sustainable design both temporally and contextually.

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## Design interventions in small- and medium-sized companies: Initial findings from a case study

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*The business significance of design has made academics, industry professionals, and policy-makers to all urge companies to use design more strategically. Still, it remains a well-known fact that design is far from universally utilized by companies with a marginalized role for design perhaps most strongly articulated for small- and medium-sized companies. Introducing designers (or design students) to development processes has been a common practice for promoting design in the Nordic countries. Subsidizing the involvement of designers in development processes has also been a common practice to support the integration of design in Nordic companies. In this paper, we refer to the early-stage involvement of designers in such practices as design interventions. We also present preliminary findings from a case study on design interventions and their capacity to cater for an increased usage of design in small- and medium-sized in companies from the Ostrobothnia region in Finland. In presenting preliminary findings from our study, we describe how design interventions benefited four companies in acquiring a greater understanding about design. Analyzing a broader set of design interventions, we also discuss how basic project characteristics potentially impact the success of design interventions. In particular, based on the remarks of managers and designers, we note the presence of good communication and a reflective development process in the studied projects.*

**Keywords:** *Design intervention; design understanding; design integration; industry adoption of design*

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## **Introduction**

The business significance of design has made academics, industry professionals, and policy-makers to all urge companies to use design more strategically (see e.g. Cox, 2005; Nordic Innovation Centre, 2004; Thompson and Koskinen, 2012). In tandem, numerous research studies and industry reports have addressed design in product development and company renewal (for some recent examples see Johansson and Svengren-Holm, 1998). Historical studies on design have also long addressed the work of designers in industry; pointing to a broader and potentially more strategic role for designers in companies today (Valtonen, 2007).

Still, it remains a well-known fact that design is far from universally utilized by companies. A recent industry report by the Finnish Association of Designers Ornamo suggests that only 30% of all Finnish companies use design for product development, visual design or brand development (Ornamo, 2013). While not always unveiling as grim results, a marginalized role for design is also noted elsewhere. For example, while a recent industry report suggest that more than 75% of Swedish companies utilize design, only 30% of the sampled companies reported that they recognize design as strategic (SVID, 2008). Based on a study of companies in UK, Livesey and Moultrie (2009) concluded that the average spending on design was £260K a year. However, they (p. 18) noted a significant skew in their sample “with just over 15% of companies reporting no design spend and 37% of respondents indicating a spend of between zero and £10K.” Moreover, only 19% of the investments in design were non-technical in nature; raising questions about what constitutes dedicated investments in design in comparison to general investments in R&D.

A marginalized role for design is perhaps most strongly present for small- and medium-sized companies where resources are scarce and managers may only hold a limited understanding about design and the work practices of designers (Bruce et al., 1999; Walsh and Roy, 1985; SVID, 2008). In the earlier mentioned report by Ornamo, only 20% of the small- and medium-sized companies in Finland indicated that they use design. Small- and medium-sized companies are often seen to lack long-term strategies and, accordingly, only turning to design in a crisis situation (Cawood, 1997). In general, they are often also described to lack skills to work effectively with creative professionals such as designers (Cox, 2005) with external support systems to cater for the deficiencies often are scarce (Nordic Innovation Centre, 2004).

Introducing designers (or design students) to development processes has been a common practice for promoting design in the Nordic countries. Subsidizing the involvement of designers in development processes has also been a common practice to support the integration of design in Nordic companies. In this paper, we refer to the early-stage involvement of designers in such practices as *design interventions*. We also present preliminary findings from a case study on design interventions and their capacity to cater for an increased usage of design in small- and medium-sized companies from the Ostrobothnia region in Finland. The growth and development of small- and medium-sized companies is often recognized as critical for the competitiveness of national industries (Ministry of Employment and the Economy 2014). Small- and medium-sized companies are often also seen to be in a prime position to benefit from design in developing their business activities (Cawood, 1997; Dong-Sung, 2004). Professional design organizations often present that the use of design does not only produce products of higher quality and better functionality but also increase margins and raise profits (see e.g. Ornamo, 2013). Further, by acquiring a deeper understanding about the potential of design in an industry, companies are seen granted a possibility to act as a design leader in the market and to be as successful as, or even more successful than, the market leader (Zec and Jacob, 2010). Given this, it is not surprising that many nations have implemented development programs for the promotion of design to local industry and (financially) support small- and medium-sized companies in contracting designers (Raulik-Murphy, 2010).

The benefits of participating in a design intervention are frequently articulated in terms of providing companies a cost-effective way to learn more about design and the strategic benefits it can bring to an organization. However, despite their commonness in Finland and elsewhere, academic scrutiny of the impact of design interventions is scarce with only an emerging body of empirical studies addressing what capacity they fulfill for companies (for a noteworthy example, see Matthews and Bucolo, 2011). The lack of research in the area is not surprising given the fact that formal impact evaluations of design policies and their associated development activities often are lacking (Moultrie and Livesey, 2009; Raulik-Murphy, 2010). In presenting preliminary findings from our study, we describe how design interventions benefited four companies in acquiring a greater understanding about design. In targeting immediate development needs in industry, the scope of design interventions is often tightly coupled with the specific needs of individual companies. As a result, the overall scope of

design interventions is not always easily articulated from the outset. The preliminary results of our study suggest that design interventions can benefit companies in a multitude of ways but that not all companies acquire a greater understanding about design following an intervention. Analyzing a broader set of design interventions, we also discuss how basic project characteristics potentially impact the success of design interventions. In particular, based on the remarks of managers and designers, we note the presence of good (open) communication and a reflective development process in the studied projects.

## **Design interventions for knowledge formation in industry**

The basic reasoning for participating in a design intervention, as noted earlier, is often described in facilitating a cost-effective way to learn more about design and the strategic benefits it can bring to a company. Policy reports from South Korea (Dong-Sung, 2004) and Welsh (Cawood, 1997) also suggest that companies can benefit from working with designers in a multitude of ways. Recent research also suggests that the work of designers may also be perceived differently depending on who is asked in a company (Valencia, Person and Snelders, 2013). Accordingly, the impact of design interventions is likely to be contextual; depending both on the development context at hand and the experiences and expectations of the professionals participating in an intervention.

From a policy perspective, design interventions represent an opportunity to promote design and to support its immediate use in industry through education and business development (for a more in-depth discussion on the scope of national design policies, see Raulik-Murphy, 2010). In brief, design interventions are about equipping companies with the knowledge and competence needed to start using design in their development activities by exposing them to the work practices of designers. With a focus on integrating design in development processes, design management sits naturally with policy discussions on design and in articulating the added value of design interventions.

To contract an external design is often presented as the easiest way for companies to acquire knowledge about design. The main benefit of this approach, as outlined by Zec and Jacob (2010), is that design knowledge can be acquired quickly through a direct encounter with a professional.

However, as also noted by the same authors, learning about design through external collaboration is risky. An immediate risk is that a company will not actually learn from the collaboration and the new knowledge remains outside the organization; failing to provide a deeper understanding about the “language of design” (ibid, 116).

What is captured by the language of design and/or what knowledge companies could acquire through a focus on design and design management is not always clear. Important reasons for this are (1) the broad scope of design and (2) the evolving nature of design management. For example, following a general expansion of the design management concept to more actively also embrace a discussion on the components of design thinking, Cooper et al. (2009) note that the current state of design management research and practice spans three different development contexts. The first development context is *manufacturing* where “design management concerns itself with management issues that directly relate to the product development process.” (ibid, p. 53) The value of design is framed in terms of improved competitiveness in the market with design management scholars frequently asking questions about how to assess the added value of design. The second development context is *marketing and branding* where design management concern itself with questions about “the perception and experience of a product by the people defined as the target group.” (ibid, p. 54). An emphasis is often placed on the tangibility of products and services according to Cooper et al. (2009). Questions about visual identity building and how to communicate a (coherent) message to the market (see e.g. Svengren, 1997) seem also to be of interest. The third development context is *organization and society* where “design management is changing its course from one of designing as managing to one of managing as designing.” (Cooper et al. 2009, p. 54). In this context, design is recognized outside product/service development. Design thinking begins to be “practice independent of the product” and further design activities are used to characterise the problem and to address new problems (ibid, 54). In other words, a new understanding of design is formulating where managers do not only accept the use of design but further begin to take a more active part in design and development processes. Design begins to be a major force in the organization (Dumas & Mintzberg, 1989).

Overall, Cooper et al. (2009) argue that a greater focus on design thinking and “thinking about design” has resurfaced discussions on the importance of a systemic view on design (in contrast to traditionally “thinking of design” in individual products). Moreover, in “thinking through



design”, design is no longer only concerned with products (and services) but the general business system; how business itself is conducted. Thus, while design management traditionally may have concentrated on product design and incremental improvements, Cooper et al. (2009) argue that a focus on design thinking underscore a more radical shift in the way organizations do business and benefit from design. A broader role for design seems also to be advocated in many policy documents for design (or reports advocating such policies) where design is not only seen to befit the development of individual products but the general process by which companies organize their business activities (see e.g. Nordic Innovation Centre, 2004; Ministry of Employment and the Economy 2014).

## **Method**

In exploring the impact of design interventions in small- and medium-sized companies, we are currently running a case study in collaboration with Design Centre MUOVA, Vaasa, Finland. The broader objective of our study is to explore and understand the basic premises by which MUOVA impact companies through their activities.

MUOVA is a research and product development centre which works in close collaboration with industry by offering design, research and training services to companies. MUOVA was founded by University of Art and Design Helsinki (now Aalto University School of Arts, Design and Architecture) in 1988. Today, MUOVA is organized as a joint research and development platform between Aalto University, University of Vaasa and Vaasa University of Applied Sciences.

For the scope of our case study, we are studying the impact of 12 design interventions at companies in the Finnish Ostrobothnia region. The interventions are design and development project where designers from MUOVA have participated in or lead the process. The projects were executed between 2005 and 2012 and selected in collaboration with MUOVA to be representative of industrial design. The scope of the projects covers activities in product developments, service design and image building. The companies in our sample are mainly from engineer-driven industries in metal, technology, plastic and textile.

A qualitative and interpretative approach guides our inquiry in locating attributes and themes on our phenomena of interest (Alkula et al. 2002). The specific question we ask ourselves in analysing the work of MUOVA for

this paper is: *how did the design intervention – executed by an external designer(s) – impact the understanding (knowledge) of design within the company?*

The primary data for our study are (1) interviews with company representative on the managerial level, (2) interviews with the designers from MUOVA participating in the projects as well as (2) briefs from the projects provided to us in writing or described to us verbally.

## **Case background: Design interventions and their motivations**

The initial starting point for the projects and the reasons for contracting designers differed across the studied interventions. In most cases, there was a tactical interest in design and effort to develop a new (incremental) product (or service). Following our initial sampling, there were also a couple of projects in which the initial starting point for design and development was more strategic and exploratory in nature. For these projects, the decision to contract a designer was typically coupled with a clear development brief for design.

From a management perspective, the underlying reasons to contact MUOVA and to contract professional designers for the projects were predominantly described as financial. By using designers in the projects, the companies had hoped to increase profits, to increase sales, to make the product more saleable (attractive), to find new business opportunities and/or to enter new markets. Moreover, the interviewed company representatives frequently described that improving their company's image had been an important reason to contract designers. Curiosity and a general need for new ideas were also mentioned as a reason for involving designers in the projects.

From a policy perspective, the initial interests in design seemed to have been based on an understanding that design is important in competition and for differentiation. Through the use of design, it was described possible to differentiate a (new) product from those of competing companies. Further, professional designers were described to bring new knowledge and/or expertise to a company or a development process. The knowledge contribution of designers was described to entail everything from aesthetics to ergonomics to material selection to manufacturing. A number of the interviewees also commented that the designers had brought in valuable (new) information about customers during the development process.

## **Results**

In most cases, the studied projects were described as highly successful by the interviewed managers and designers. Most projects had not only produced the expected outcomes, they had exceeded the company's expectations. From the perspective of MUOVA, the projects were also described as successful in terms of, in many cases, introduced the companies to the value of a use-centred approach to design. From the studied projects, only one was described as unsuccessful. (MUOVA had been contracted to design a service concept for a manufacturing company. A service concept had been designed incorporating the all necessary elements needed to start offering the service to clients. The company had been enthusiastic about the results, the collaboration with the designers and the project in general. Yet, the concept had not been implemented and the project had accordingly not reached its full potential.)

Two-thirds of the companies indicated that they had not worked with design or designers prior to the intervention. Still, despite the positive comments about the use of design in the project, only four of the interviewees stated that the interventions had changed their understanding about design. In fact, most of the interviewees commented that there had been no major changes in their understanding of design. Some of the interviewees commented that while their company did not have much direct experience with design at the time of the project they personally had understood the importance of design because of their education or work history. Other interviewees noted that, while their company had not had any direct experience from working with designers, the company had worked as subcontractor in project involving designers.

Below, we describe the involvement of MUOVA in the four development projects for which the managerial level of the companies stated a change in their understanding about design. For the sake of brevity, we focus ourselves on the role of design in the project and how the contribution of design was articulated in each project.

### *Project 1: Going from resistance to acceptance*

The first development project took place in a medium-sized manufacturing company (170 employees) in the metal industry, manufacturing the products of other companies.

The company had not had any previous design experience before contacting MUOVA. In fact, there had even been a strong resistance inside

the company towards using professional designers. The company representative also described how he initially had been strongly against the idea of using designers. Nonetheless, based on the initial experiences with MUOVA, the acceptances towards designers had improved within the company. As example, following the initial project with MUOVA, the company had hired a design student for a three month internship to further explore value of in their industry.

The initial initiative to contract MUOVA had come from the board of the company who had recognized a general need to develop the image of the company. As a first step, MUOVA had been contracted to develop a brochure. However, as the company representative noted, the project evolved to cover a broader discussion on mission and vision of the company: “what we are and what we can offer to the clients”. Following these developments, MUOVA designers did to wide stakeholder interviews, competitor analysis and general image building to clarify the overall (marketing) message of the company. The resulting image was also translated to graphic design materials in accordance with the original intentions.

With a growing acceptance towards design in the company, the project was in many ways recognized as successful. The company representative also described how the general development process initiated by the project had continued; the project about a “four page brochure” had turned into four years project in image building.

In reflecting back on the use (and adoption) of design within the company, the company representative noted that designers seemed to approach things differently. The design student had for instance displayed a totally different way of approaching and communicating with clients; an approach that seemed to produce more relevant (solution-focused) information than the information produced by regular (marketing) staff of the company. The company representative also noted that the work of designers typically also trespass boundaries by seeing (approaching) things differently. As concluded during the interview: “designer’s approach is so different that it can open gates which otherwise stay closed” Learning from the work practices of designers, he also recognized that they had in part changed their internal processes.

### *Project 2: Testing the skills of designers*

The second development project took place in a micro-sized company, producing sensor technology for control hydraulics. The company had not

worked with designers prior to the intervention. However, the owner of the company commented that he had heard about MOUVA and had followed them closely for several years before contacting them. He also described that the company had been well-prepared for the project by having a good general understanding about the capabilities and skills of designers.

The scope of the project was described in terms of improving upon an early-stage technical prototype. The company had been founded in the beginning of the 1990s. However, it had been inactive for several years at the end of the 1990s and the beginnings of the 2000s. Accordingly, the company had only been re-activated a few years prior to the project.

The design task included improving upon the appearance and ergonomics of the new product, drawing 3D models for manufacturing, locating a suitable material and manufacturing technique as well as determining a suitable place for production. The decision to involve designers in the project seemed in many ways to have been driven by the curiosity of the owner. The prototype already contained the principle technical solution for the new product at the outset of the project, which was recognized to have set a clear frame of reference for design. The brief was also noted to have been clear and tightly formulated. As described by the company representative, the product's technical solution was innovative and unique. It had therefore been seen as important that the design of the new product should be unique as well.

Both MUOVA and the company representative described the collaboration as pleasant and successful. The company representative described how they had held several meetings during the development process. The purpose of these meetings had been to collaboratively generate ideas and to settle on shapes and material options. The designers developed these ideas further into product options (concepts) that were presented and discussed in the following meeting.

In reflecting back on this process, the company representative noted had brought valuable information to the development process: "Designers are good at providing new information". The information had not only concerned the overall shape of the new product or its functioning (ergonomics) but also addressed its realisation. For example, when a suitable form for the new product had been determined, the designers had introduced the idea of using 3D printing for prototyping and testing; a development opportunity prior untested by the company.

From a business perspective, the project was recognized as success within the company. The company representative estimated that they had got what they had ordered. The market response to the product had been positive. From the perspective of design, the ergonomics of the product was especially seen as insuperable which was described to provide a clear point of differentiation from the competition. In addition, a well functioning design in terms functionality and ergonomics was seen to have added brand recognition to the company. The company representative pointed out that he was proud when presenting the product to clients: "The designed product sells itself." He also noted that design had helped them in establishing a solid market position for the product. To this end, he further noted that the use of design in the project had boosted a general growth tendency within the company.

### *Project 3: Strengthening the brand*

The third project took place in small-sized manufacturing company (20 employees) in the textile industry. The majority (70%) of the company's business comes from business gifts with the remaining business situated in home textiles. Prior the project, the company had worked with freelance (textile) designers for over 30 years for product development. The first designer had entered the company as a summer intern who had continued to work with the company as a freelancer afterwards. On a general note, the company representative explained that it was a prerequisite that external designers understood the technical limitations of production in developing designs for the company.

For the project with MUOVA, the company had wanted to develop their packaging. The basic objectives for the project were that the new package should help the company differentiate its product from the competition and help them to express the company's (current/updated) image. The company had heard about MUOVA through other companies and had been compelled to contact the company based on their positive reputation.

Upon entering the project, the designers from MUOVA soon reinterpreted the original project objectives, changing the project from packaging design to image building. In the process, a researcher from MUOVA was also brought in to the development process to do interviews with retailers, business clients and consumers. Based on the information from the interviews, a package design concept was developed which later was finalized by other graphic design studios.

The project was in many ways described as successful, not only in terms of having produced a well-functioning packaging concept but also more generally by strengthening the brand activities of the company and its products. In particular, the company representative vividly described how the project had even come to change general branding strategy of the company. In short, the analysis of the company's current operations had lead to the realisation that the company would need for co-branding the products in the business gift sector in order to develop brand equity. Prior to the project, the company had only displayed the logo of its clients on the products. Following the project, the idea was now that the company would also add its own logo in order to create wider recognition for their products among future clients. Following a revised strategy for branding and image building, the company had also decided to formalize the internal team that had worked on the project and make branding and image building a continuous process inside the company.

#### *Project 4: Altering the focus of development*

The fourth project took place in a small-sized manufacturing company (50 employees) producing packaging and manufacturing lines for the food industry. The company had earlier worked with a designer. However, the collaboration had in many ways been unsuccessful and it had taken a couple of years before the company had decided to work with a designer once more and contacted MUOVA for the project.

The decision to contract a designer for the project was strategic, originating from the board of the company. The precursor for the decision was the remarks of a client, who had taught that company's products looked "ugly". There were also some functional problems with the current products that the company believed would be possible to solve through further development. The board of the company had therefore decided to initiate a development project and use design to develop the appearance of their machines "which only engineers could love".

The designers at MUOVA described how they responded to the challenge through user observations and stakeholder interviews, trying to pinpoint problems in ergonomics and function. They then created concepts, and used user and stakeholder feedback for concept refinements. The first concepts were futuristic looking machines (in line with company's wishes and expectations), which were refined and simplified as the development process evolved.

While the initial focus had been on the appearance of the company's products, the involvement of design in the development process was in many ways recognized to have pushed for more radical changes in the company. At the time of the project, the company designed and manufactured individual machines (solutions) for their clients. However, based on their user observations and stakeholder interviews, MUOVA presented modular concepts which enabled the product to partly be built beforehand and later customized onsite at the client. To this end, in reflecting back on the development process, the designers described how they came in some ways to envision a new future for the company in designing new solution for the company.

The overall results of the project were described as successful. Following the intervention, the company has also begun selling several machines using a modular design. As a result, the intervention both met and exceeded the initial expectations of the company. The company also decided to contract designers for the next development project. The company representative also noted design had transformed the overall development and sales process within the company. Prior to the intervention, the development process had been linear; engineering plan, technical drawings, manufacturing and finally sales introduction to the client. However, the work practices of the designers in the project had inspired the company to listen more carefully to the wishes of their clients. The company representative also described how the development process had become more interactive as the focus had changed from the functions of their machine to the wishes of their clients. To this end, he in many ways recognized the main value of using professional designers in their ability to bring user-centered knowledge to a company. They were also described to have offered new ways of thinking in development processes; placing greater emphasis on interaction and continuous development.

## **Success in design interventions**

With only four company representatives stating a change in their understanding about design, it is hard to draw broader conclusions about the potential reasons for the added learning process in these interventions. The situation is further complicated by the fact that the scope and contribution of the studied project varied. Many of the projects also changed and/or were altered during the development process in order to profit to unforeseen development opportunities.



In general, from a policy perspective, the studied companies did not only articulate the value of design in the end result but also from the general process of designing. To this end, most design interventions were predominantly seen to have brought *knowledge about* rather than practical *skills in* designing. There was also a risk noted in that this new knowledge would be dependent on individual people (e.g. designers) and accordingly not enter a company after a project. As noted in one interview: “the know-how doesn’t transfer, while at the end we have the product but not the knowledge how it was designed and made and why so.”

While it is hard to draw broader conclusions about the reasons for the added learning process in some of the project, it is possible to distinguish re-occurring themes in what the managers described as characteristic for successful involvements of design and designers. In particular, across all project, the company representative typically place great emphasis on good (open) communication and a reflective process for development. In short, open communication and a reflective process was seen to establish trust and to generate agreement on goals and objectives, which was recognized as important in collaborating with designers.

Remarks about open communication and a reflective process were often coupled remarks about finding the “right people” or designers for a project. Several company representatives noted that the attitude of the individual designer could in many ways predetermine the outcome of a project. Similar, a number of representative noted that the basic motivation to use design should be a strategic decision by senior management in order to establish necessary commitment within the organization.

## **Discussion**

Design interventions are a common way to introduce design and the work practices of designers to small- and medium-sized companies. Yet, the scope of design interventions and what impact they may have on the participating companies is not always clear. In this paper, design in the studied projects is perhaps best understood as a tool for collaborative sense-making (Mozota, 2003) where an intervention at best brought an alternative (design) understanding of the development context within a company and/or industry.

Following Cooper et al. (2009), design interventions can target everything from manufacturing to market and branding to organizational

development. The preliminary results of our study suggest that interventions may have an impact one or two of these development contexts or overlap all three; especially when facilitating a holistic learning process within a company.

The results of our study also point to a multidimensional value of the interventions. As Mozota (2003, p. 140) points out, an excellent product often only represent a partial result of a design process. “[H]ow to do the job better, faster, more effectively” and how to integrate this knowledge within an organization is typically of equal value. In harnessing this extended value, the preliminary results of our study suggest that open communication and a reflective stance for development form important factors for success.

Intentionally or unintentionally, the studied companies were through the interventions frequently granted an opportunity to think “outside the box” with respect to their current practices and, in some cases, to engage with a deeper learning process on the possibilities to use design within their industry. To this end, the value of an intervention should not only be assessed in terms of its final (tangible) outcome but also in terms of the new knowledge that a company may have acquired about its industry and the possibilities to use design within it. In a smaller number of cases, the design interventions in our study came to facilitate a holistic learning process through which a company came to look a new on their mission and vision, values and business actions in the process of learning more about design.

The scope of this learning process constitutes an important area for further research in understanding the potential value and effectiveness of design interventions. Future studies could fruitfully try to more accurately capture a company’s understanding of design before, after and during an intervention. As an initial study, our findings are unfortunately limited by the quality of retrospective accounts of managers and designers. Yet, as preliminary findings from an ongoing study, they suggest a development potential in design interventions which warrant further attention. We therefore end this paper with a hope that our study will not only add to past studies on design but also may stimulate some new ones.

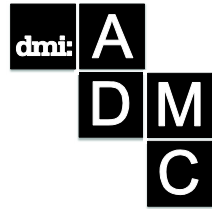
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## Different Models of Design Management – three examples from the Swedish furniture industry

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*The role of design in business has shifted dramatically over the past few years. The responsibilities of designers are increasing, as they become interpreters of the market changes and very often the driving force behind innovation. The management of design has never played such an important role as it does today, yet it still provides serious challenges for many organizations. This article is based on the results from the exploratory research that has been conducted among design-oriented companies from the furniture industry in Sweden and Poland. This project was qualitative study aimed to compare managers' attitudes towards design; to look into existing processes in companies connected with design and to explore the different roles that designers play in organizations. 24 in-depth interviews were conducted among two groups of respondents: managers and designers. The purpose of this article is to present three different case studies from the Swedish furniture industry. Cases selected for this article are companies that use design strategically, yet, in very different ways. Company names are omitted for confidentiality reasons, but the in-depth description of attitudes towards design, strategies and practices in the design management area are provided. In the description of cases, interesting quotes from interviews are also included. Cases are built around one main strategic objective that was the most important in each company: Case 1 – design for finding new opportunities; Case 2 – design for building strong brand and Case 3 – design for challenging status quo.*

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## **Changing role of design**

The role of design has shifted considerably over the past few years. Design is now being recognized as a key business asset that can add significant value to business performance (Press & Cooper, 2003; Kristensen & Gronhaug, 2007; Brown, 2009). Traditionally, design was perceived mainly as visual appearance, aesthetics, external form of a product. In recent years, however, we can observe increased interest in design in a much broader sense - as a tool to support the creation of innovation, building strong brand, or even the strategy throughout the organization (Martin, 2009; Verganti, 2006, 2009). That led to growing attention in design management as an important business specialization, because, as Bruce and Bessant (2002) put it: 'Good design does not happen by accident, but rather as the result of a managed process'. At the same time, very few business professionals – or design professionals, know how to develop a design-minded organization (Lockwood, 2009). Borja de Mozota (2003) stresses that design is based on exploration and risk-taking, whilst management is founded on control and predictability, thus design management can present significant challenge to many organizations.

The Design Ladder (Ramlau & Melander, 2004; Nielsen, 2004) developed a framework to assess the degree of design activity implemented by businesses. The ladder categorises the design activities into four different levels. The levels are as follows:

- Non-design. In these businesses, design is a negligible part of the business, and is usually performed by other professionals than the designer.
- Design as styling. In these companies design is perceived solely as relating to the physical form of a product. Design activities may or may not be carried out by professional designers.
- Design as process. Design is not an end result, but rather a method of work adopted in the new product development process.
- Design as strategy. Design is of such critical importance that designer works with the company's management towards a holistic approach of doing business. (Ramlau & Melander, 2004; Nielsen, 2004; Frössén & Nielsén, 2008).

The growing interest in design among businesses means also changes in the roles and responsibilities of designers (Borja de Mozota, 2006). More and more authors opt for transfer certain competencies related to

management and marketing to designers (Von Stamm, 2003; Leonard & Rayport, 1997). In this area complementary to The Design Ladder tool is a work of Perks, Cooper & Jones who identified three roles that designers can play in manufacturing companies in the area of new product development (2005). Those three roles correspond with the steps of The Design Ladder presented above. These are defined as follows:

- Design functional actions (which corresponds with 'design as styling');
- Integration actions (which corresponds with 'design as process');
- NPD process leadership actions (which corresponds with 'design as strategy').

In the first case, when the design is considered as a specialized function, we have the traditional role of the designer, who is contracted to develop the physical form of the product. The role of the designer is mainly limited to issues related to the aesthetics of the product and the scope of his duties is associated with the artistic skills - sketching, modelling, visualization.

In the second case, when the design is treated as an integration, there is a full integration of the designer in the process of new product development - from idea generation phase to commercialization. The designer's role is expanding, as he becomes a member of the project team. In this area, the traditional role of the designer is extended to the issues related to the integration of various resources of the new product development process.

In the third case, the designer takes over the leadership of the new product development process. Designer's role is to actively participate in the process, but also to initiate and coordinate innovation process.

To have that theoretical knowledge in mind, it seemed interesting to ask how companies manage the design processes, how they develop cooperation with designers and what level of design maturity they present? To partly answer those questions, research project was developed.

Objective of this study was to empirically explore the nature of the current role of design within design-oriented companies ('design leaders') from Sweden and Poland (Starostka, 2012). This project was qualitative research aimed to compare managers' attitudes towards design; to look into existing processes in companies connected with design issues and to explore the different roles that designers play in organizations.

We've decided to narrow our study only to 'design leaders' in order to identify and compare best practices in both countries. In the process of



selecting companies, the following criteria have been taken into account: number of design awards ('Red Dot Design Award', 'The Design S' in Sweden and 'Dobry Wzór' in Poland), industry publications, consultations with design specialists and designers, companies' web-pages.

In this research 24 in-depth interviews were conducted among two groups of respondents: managers and designers. Interviews were carried out over a period of six months (from January to July 2010). Interviews were guided by a semi-structured questionnaire, ranged from one to two hours, were taped and transcribed. The broad themes of the questionnaire encompassed the following: company and respondent characteristics, attitudes towards design, design management, processes and strategies connected with design, the role of designer in a company and design-marketing interplay.

In this article we present partial results of this research. During this study many interesting strategies connected with design were identified, three of which we present in this article (there were in total 10 companies analysed in each country). As this article is limited in space, we present cases selected from the Swedish part of the research, as they presented more mature approach to design management. Company names are omitted for confidentiality reasons.

## **Design management practices**

### *Case study 1: Design for finding new opportunities*

This company was established in early 80' and emerged as one of Scandinavia's leading manufacturers of contemporary outdoor products. Company is managed by two owners, one of which is design manager – a woman who is a good in both sides of design management – she understands business, but at the same time she works very well with designers. As she admits:

*Design management? That is very good that you have theoretical background, but you have to understand it that this is not only about products, but about the whole appearance as well, how you communicate with people, it's about graphics, it's about everything. It's an idea how you want the company to be, not only to look like, but also to be.*

One of the most interesting aspects of this company is very unique structure. This company is quite small, as current employment is around 9 employees. As a furniture producer this firm does not have an internal production at all. They rely on very close cooperation with external manufacturing companies that provide technology and production:

*We don't have our own production, but we have very, very talented companies that we work with. With some of them we work with for a long, long time, but some of them are quite new to us as well. (...) That is one of the strengths of our company, that we had this type of organization from the beginning.*

This company acts like a broker between designers/architects and production companies, and a crucial part is networking with different specialists:

*You have to remember about personal contact, networking – that has always been important for us. To meet people it's really important I think. Especially when creating new thing it's crucial to meet with people.*

From one side they develop very close cooperation with production companies, from the other with designers and architects. That flexible model helps to find and fulfil new market opportunities. As design manager reflects, thanks to that strategy they have the opportunity to be open for new technologies, new methods of work and new production techniques. But what's even more important, they are not limited to one type of production technique, one type of material or process:

*I think that this is the best way to work, because if you have your own production you focus so much on it, you focus on the production, focus on the machines, and if you have the technology to bend, you're only thinking about bending things. And then you developing something with bending tool...*

This strategy also gives them the opportunity to continuously explore different market niches and new market opportunities. As one interviewee was reflecting:

*Another advantage is that you don't have to focus on the same market, for example now we develop bicycle shelters. So we don't*

*Different models of design management - three examples from the Swedish furniture industry*

*have to stay on the same way of thinking, but more thinking about the trends that are on the market. And you have to be aware of what is happening all the time (...). They are building now infrastructure with the train stations. And there is also market place for us!*

Although this company has no production in-house, they have developed very wide portfolio of designers they work with. It was also very unusual compared to the competition, as one manager reflected:

*And if you compare my company to others, that can look so strange that we have been working with so many designers, because they [competitors - JS] were working with one or two, or three maybe, and they didn't change their policy during 80' and 90' (...). I don't think that was so good for them, actually. Now I think they changed and started to work with broader group of designers and with designers from other countries as well to broaden the design.*

This unique approach gave them strong position on the market. In the opinion of design manager main source of competitive advantage is very high number of new products and very short cycles of developing them. Main source of competitive advantage is flexibility – the company is continuously looking for new product ideas. They have developed three main ways of the design process: (1) cooperation with architects on new products dedicated for different buildings; (2) product propositions send by designers and (3) 'traditional' design process initiated by the design brief:

*During the year, we have constantly new products on the run. Initiatives for those products come from different ways. One way is when an architect is working on a project and have a special product need – so if they have an idea about those products, we build this product together. And that is what we do a lot of times. (...) The second way is that we have this ongoing relation with the designers that we work with and (...) sometimes there is 1, or 2 or 3 that I work with at the same time. And they have lot of ideas what they want to do. The third way is when we feel that we lack product in a specific area. I give them [designers - JS] a brief and tell them that actually I want this type of product.*

To sum up, the design management model in this case study is built around the concept of broker/networker. This company cooperates only with external specialists – production companies and designers. Main two advantages are: flexibility and very fast process of new product development, as a reaction of identified market opportunity or market need.

Requirements when developing this model: close cooperation with wide network of (1) production companies, that can produce even very limited lines of product effectively, (2) designers, and (3) architects that very often are also furniture designers, and, at the same time, buyers of the final designs.

### *Case study 2: Design for building strong brand*

The second company was founded in early 1990' by two owners, one of which has been design manager since the beginning. Current employment is around 50 employees. Company has been growing rapidly to now become a leader in contract furniture market, with export to more than 50 countries. In this company design was used as a tool of building a strong brand. As manager reflects:

*I think good design is reflecting certain brand name. And if the product fits well into the brand and feels very new and fresh, you're successful designer. If it feels like a fantastic product but it doesn't speak with the brand it's not a very good project.*

This manager also acknowledges that external designers have to reflect each brand they cooperate with differently, which can raise specific challenges:

*To be external designer is one of the hardest profession, because you need to understand so many different things in different companies. You cannot simply go with your old language, you need to reflect the company you work for.*

In the design process, crucial part is to have good communication between designers and the company management ('sharing the same dream' as one interviewee said). Design manager was stressing that product development is very hard, as good communication with designer is crucial, but, at the same time, can be very challenging:

*Different models of design management - three examples from the Swedish furniture industry*

*Without sharing the same dream it's really hard to be successful. You cannot buy understanding. It's not that easy that any company can call anyone to get the fantastic product – you need the dialog in the company that connects to the external designer. Or if you work with your own designers, they need to have really sharp communication with the board, because design is about strategic questions. And in a lot of companies, they are not connected: design team is going in that direction and the board is not even interested in the field, they care only for money.*

As design manager was emphasizing, to use design as a tool for strong brand, you have to develop internal capabilities to manage the design process and the relationships with different designers. This company cooperates with external designers only – in company portfolio they have very well-known designers, but also very young, not very recognized ones. As design manager reflects, it's sometimes very hard to cooperate with those 'iconic' designers, as they are very often focused more on building their own brands, than on a company they work for:

*We have those icon-stars designers (...) and they act the same, no matter for what company they work for – they are their own brand marketers. And the real product design is a concern of different brands you work with.(...) And that is a problem for us sometimes – that we really like the person, we like what they do, but they misunderstand the situation and they try to sell their own brand. And that's not really how product design should be managed.*

Respondents were perceiving the role of design as brand-building in different international markets. When trying to establish a brand in foreign country, the most successful way is to start a cooperation with designer from abroad. As an illustration interviewee showed an example of a project developed by French designer, that was initiated with a goal to gain recognition in France. In this international context, local designers are very effective way to have access to local culture and increase local publicity.

In this company, similarly to the first example, ideas for new products also come from three different sources:

*We work in three different ways when it comes to design process. One is when people send us material, that wants to work with us, every month is about 500 proposals, and one proposal is like 9, 10, 15*

*different products, it takes two days to just look through that products. (...) I'm really rarely happy with things I find in this box, but very often you see a girls that is making a bowl in silver in a very special way, and you have that in mind, and you start to speak, you meet at the fair, and then you start to, not teach, but inform what your dream is, and if your dreams go together, you usually end up with a good product. The second step is when designers you've already worked with, you send them very specific brief in the area that the designer works with and you continue to work in that direction. Third way is that we make a lot of special projects: for hotels, offices, resorts, spas, whatever. And sometimes you see that this type of language for this specific project actually fits in the big market, so why don't we take it into standard product?*

Except the position of design manager this company developed very close cooperation with one designer, who is a part of "Design Advisory Board". They meet regularly with him (every two, three months), consulting current trends, product portfolio and market niches. This designer acts more like a brand consultant, less like traditional designer. As one design specialist was reflecting:

*They have XY who is a designer for them, but he is also the unofficial art director of the company...he leads them, advises them, looks at the ideas of others.*

To sum up, in this company design is a way to build the strong brand, with international recognition. Responsibility for design is in hands of design manager, who cooperates with external designers only. Crucial is to have the right dialog with people and to share the same idea about the product language, that will be reflecting company brand name and brand values.

### *Case study 3: Design for challenging status quo*

The third company was founded in 1970, it's a small family-owned business. Design in this case is also perceived as a strategic tool, however in a very unique way – as "applied art". Company is oscillating at the borderline of art and design. According to this philosophy "*good design is a step forward, breaking the stereotypes and asking questions about the essence of the product*", as one manager said.

As a result of that strategy every product in this company portfolio is very unique and exceptional. Products are very strong in visual appearance,

and some of them are produced and sold in limited editions, more like art pieces, less like utilitarian products:

*We make a lot of items in limited editions, not to rise the market price, but we are truly avant-garde design company. Our aim is to take a new step when we produce, to add something new, new form, new material, not just like another table in another colour. As you can see our collection is a lot of contradictions - every item is there because it strong themselves.*

In this model designers are perceived as artists, company try not to limit their artistic creativity. According to this philosophy the best products are born when designer gets an inspiration from within. When working with designers, company managers give them a lot of freedom, as one interviewee admits:

*We are not a name buyers (...). We never ask a designer to do something for us. They come to us when they have it, that's when the best things come. If you ask them order to make a table, you limit them, then they don't see something else. Because all the creative activities have a background that starts within the arts. And art is, by definition, boundary less. So when you start something, then you can narrow it down, but the start have to be free. So designer come to us, we like the project, and then we start cooperation.*

Good product design was identified with visual quality, understood as 'long-term validity'. One manager explained this concept in following words:

*The most important aspect is the visual quality. You can always repair, or repaint the chair, or whatever, but you cannot ever repair the bad form, bad design. So the most important instrument in design is the eye. (...) Market research? We ask our stomachs.*

Some designers really appreciated this philosophy as trying to develop 'something new and interesting', but not really as standard product design:

*They are going closer to borderline: design as art. (...) it's more like turning things upside down, asking questions. (...) I think they are really important that they try - sometimes they make good results, sometimes not. I appreciate them that they dare, (...) that they show that this is possible to do different things and survive. I don't know*

*how they are doing economically, but at least they survived for so many years doing those brave things.*

To sum up, design in this company is about applied art. Products are produced in limited editions, are very unique and very often sold more like artistic pieces than utilitarian products.

## Summary

This paper presents the design management models in three organizations. Each of them treats design as a tool to build their competitive advantage, but each uses a design in a very unique way.

In the case number 1 – design for finding opportunities – the most important aspect was flexibility and openness for new market opportunities. In case number 2 – design was used as a tool for building strong brand with international recognition. In case number 3 – design was perceived as art, a tool for challenging status quo, asking questions about the essence of the product.

Despite the differences presented above, we can find some common features in all those organisations, three of which appear to be the most important:

- A clear philosophy and the role of design in the company;
- Design at the strategic level (each company have a design manager);
- Cooperation with external designers only.

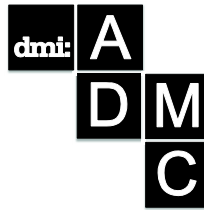
This research was exploratory in nature, and identifies some potential directions for further research. It seems interesting to conduct more in-depth analysis of the models of design management in various companies. It could be very valuable to study the effects and results of each of those different strategies. This study was limited to the furniture industry, so research among companies from other industries could provide interesting results for cross-industry analysis.

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## Live Prototyping in Microbrands

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*This paper will examine the increasing prevalence and importance of "in-market" or "live" prototyping in hardware product development. Over the past several decades, product development cycles have shortened radically. The author will argue that we have arrived at a situation in which there is no longer a cycle, as such, at all, but rather a condition of "continuous release," analogous to conditions found in open-source software development. Software development methodologies have been applied by Steve Blank and others to the launch of new ventures, and the paper will trace a further adaptation to physical products, especially for obtaining and managing "upstream" user feedback. Hong Kong Polytechnic's Roger Ball has coined the term "microbranding" to describe product-based business ventures predicated on small-scale manufacturing, internet-based marketing and sales, and third-party contract logistics. The paper will document the use of in-market prototyping in a microbranding context as a powerful new tool for product development. Several graduate industrial design thesis research projects will be presented which make the case that this practice has already become normalized among younger designers. The paper will also review adoption of these methodologies by innovation consultancies and corporations, and the barriers they've encountered due to branding concerns and corporate culture.*

**Keywords:** *Microbranding; in-market; live prototyping; prototyping; agile; industrial design; open-source; crowdsourcing; lean startup*

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## **Introduction**

Product development is generally understood as a cyclic process, composed of sequential stages. Within each stage, there are subprocesses which are themselves cyclical and iterative (Thota/Munir, p.55-56). Developing new products, at least when done well, requires substantial iteration, and iteration requires time.

The history of product innovation is the history of tension between time-heavy iterative design processes and the need to compress the design cycle to reach market. It's a well-tested axiom in industrial design and allied fields that there's always pressure to shorten the product-development cycle, in order to achieve greater market agility and ability to respond to competitors, changing externalities and user needs. This has driven much of the evolution of the process in recent decades, including concurrent engineering and growth in the use of cross-functional teams (Cagan and Vogel, P. 4). This time pressure squeezes all phases of the process, but industrial design is disproportionately affected, leaving less time for the vital "front-end" activities of user-based research and insight that make valuable innovation possible and make product development worth doing in the first place. (Cagan and Vogel, P. 130).

While a shorter development cycle offers many benefits (better responsiveness to changing user needs, for one), industrial designers have tended to see themselves as victims in this compressive process, primarily because, at least initially, the downstream parts of the process benefited disproportionately from time-saving and productivity enhancing technologies such as rapid prototyping and computer-aided design. The value-generating activities at the front end of an industrial design process, in contrast, rely on interpersonal activities that are very difficult to time-compress, such as observational research, iterative prototyping and interviews.

Now, however, the situation has changed again. This change can be understood as a convergence of trends, one that redefines how the product development process is understood, and how designers participate in the process. Agile and open-source development methodologies originating in software contexts migrated to business management, and then on to hardware development. These same methods gave rise to an ecology of social-media tools, which allow unprecedented disintermediation of the relationship between product designer, user and customer. Now, a generation of product designers fluent and comfortable with these tools has

taken them up as a matter of course, prompting a sea change in the rapidity and nature of the design process.

## Software and ID Converge

"Live" prototyping was pioneered in the software industry, due to certain then-unique qualities of software development.

Traditional "waterfall" software development processes were based on hardware engineering development processes, many of which were predicated on the idea of high-stakes and high-investment, with great downside potential in any failure. (Benington, p.350-361)

Eventually, software coders realized that, in programming, these strictures did not obtain. Software was easy to test, inexpensive to revise, cheap to launch and trivial to distribute. Beginning in the 1970s, responding to insupportable pressures on their own design processes in a notoriously time-pressured industry, software coders and managers began to challenge the formal, siloed, highly managed strictures of traditional software development, replacing it with a process that was productive and disciplined, but based on quick iteration, prototyping, testing with real product users, open collaboration, and shared intellectual property. The new processes created in this effort, generally grouped under the category "agile development methodologies," got results. They weren't just efficient- the resulting software was better, less buggy, and more responsive to customer needs, as well (Blank, HBR). These principles were codified in 2001 with the release of the Agile Software Development Manifesto (Beck et al.).

In 2005, the technologist and published Tim O'Reilly described the effect of agile development processes on the maturing ecosystem of the World Wide Web, a development he called "Web 2.0":

*Users must be treated as co-developers, in a reflection of open source development practices (even if the software in question is unlikely to be released under an open source license.) The open source dictum, 'release early and release often', in fact has morphed into an even more radical position, 'the perpetual beta', in which the product is developed in the open, with new features slipstreamed in on a monthly, weekly, or even daily basis. It's no accident that services such as Gmail, Google Maps, Flickr, del.icio.us, and the like may be expected to bear a 'Beta' logo for years at a time. (O'Reilly, p. 4)*

At the same time as Silicon Valley software companies were busily adopting "agile" methodologies, venture capital investment was becoming increasingly focused on software, because the potential returns were huge, while the investment was low. This infused the app-development community with cash, but influence also moved in the other direction, allowing software-development ideas to diffuse into the wider world of entrepreneurship and new business ventures, through influential figures with feet in both worlds, such as Steve Blank. (Steveblank.com)

## **Forgoing the Big Launch**

Design, of course, had been using similar methodologies for decades—but there was a reason why product design hadn't immediately followed software design methods past the "front end" of the process: Agile development was about "continuous release": Successively larger groups of real users and potential customers used the programs, and contributed feedback on how they could be improved. The process relied on the easy, cheap replicability of software products. Physical products, however, needed to be "launched" in order to reach the market. Under the mass-media conditions that obtained in the late twentieth century, a launch was a big deal, involving major investments in staff, marketing, packaging, tooling, manufacturing and distribution. A launch had to go right the first time; "failing early and often" was not an option.

As Roger Ball recounts in his book *Design Direct*, the tyranny of the launch started to fade in the first decade of the 21st century. It happened in the same way Hemingway described bankruptcy: "Two ways. First gradually. Then suddenly." New technologies arrived. Widely available CAD/CAM and 3D printing, third-party logistics, and fast global manufacturing with low order quantities became widespread. These combined synergistically with internet-enabled commerce platforms like Etsy and Kickstarter, which allowed small-scale product rollouts without recourse to banks or dilution of equity through venture investment. Finally, social media arrived on the scene, allowing potential users to communicate directly with designers to connect with, affect and even propose new products before they hit the shelves. These changes have happened so fast that many in the design and product development communities are still operating according to the previous paradigms, because their business models haven't yet been affected or disrupted by new ways of operating.

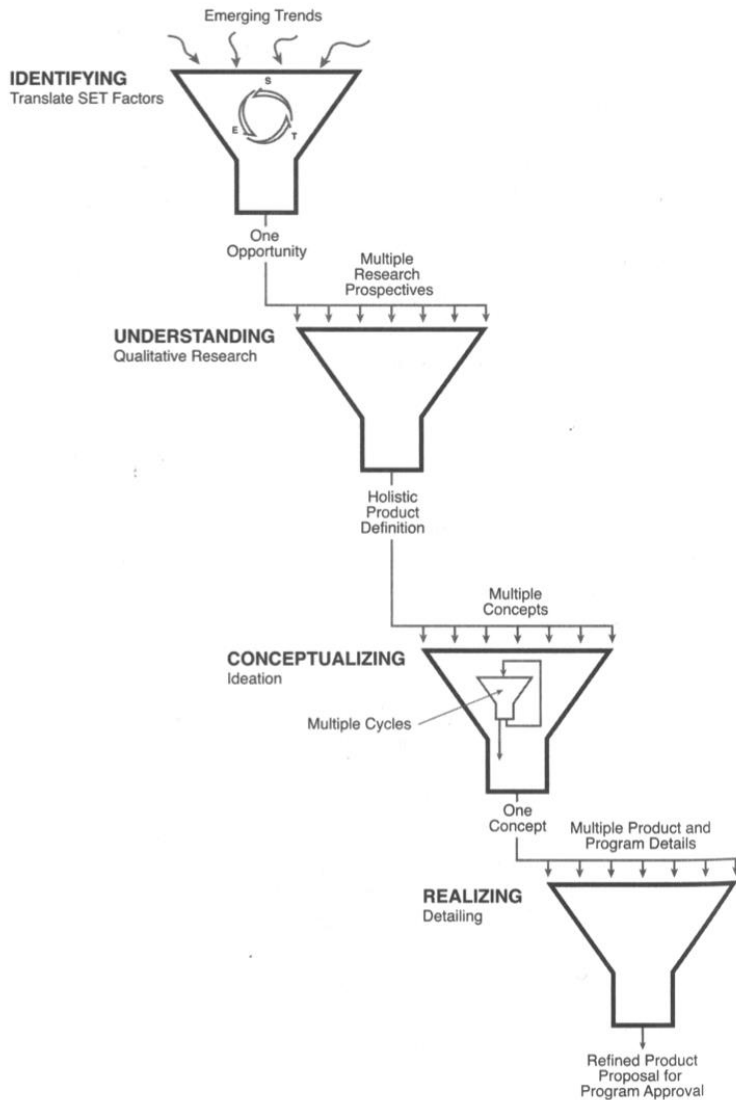


Figure 1 Traditional "waterfall" product development, with sequential research and development. The entire process takes place before the public sees the product.

As Ball relates in his book (p. 32), it took a while for professional designers to notice these snowballing changes and to understand their relevance to the process with which they were engaged. Because design education tends to take its cues from cutting-edge practices in industry, it could be expected that it would take even longer for these new methods for product development, which have come to be bundled under the name "in-market prototyping", to be integrated into design curricula. Recent observations, however, indicate that this "industry-first" model may be changing, replaced by one in which grass-roots communities of designers and product users propose innovations first, and challenge large-scale industry to catch up.

## **Product 2.0**

Today's product design students are "digital natives." Their generation never knew a time without the Internet, and they grew up with, and in many cases embedded in, social media. In place of the mass culture driving the twentieth century, they can be deeply involved in niche cultures, while still retaining wide understanding. As this paper will demonstrate, in many cases this generation is now driving design's move toward "learning by launching", because it seems natural and obvious to them, rather than because it's been overtly demonstrated or imposed. Their success, in turn, is quickly moving in-market prototyping into industry, through the back door.

### **Students: Alec**

Alec is a 26-year-old design student and randonneur. Randonneuring, for those not familiar with the sport, is self-sufficient, long-distance team bicycling. The sport has a strong culture that sees itself as based in camaraderie, rather than competition. ([rusa.org](http://rusa.org)) After working at bicycle-accessory companies for a few years, Alec went to ID graduate school to launch a career in product design. His instructors noticed a pattern: Along with whatever medical, housewares or consumer-electronics product he was working on as an academic project, he was always developing a bicycle product as well. Mudflaps, cargo racks, brake bosses, light mounts, entire brazed-steel bike frames: It was all being designed, manufactured in small runs or fabricated on a custom basis, sold, and continually redesigned. One man was making many extremely sophisticated decisions, seemingly on his own. In fact, however, a few well placed questions revealed that, in the close-knit randonneuring community, Alec was the center of a thriving

virtual product-development community that had grown organically. He had no need for observational research or focus groups, because people were continually coming to him on Twitter to propose new ideas or issues, which were then vetted and discussed by an experienced group of riders. Once something looked compelling enough to be a product, Alec quickly built a prototype, then put together buying groups and orders for the finished work. Foamcore prototypes went out to enthusiasts and clients for sizing and evaluation; these trials were discussed as though they were entertainment events. Those who bought from Alec gave him feedback, in public; others commented on proposed revisions before buying in themselves.

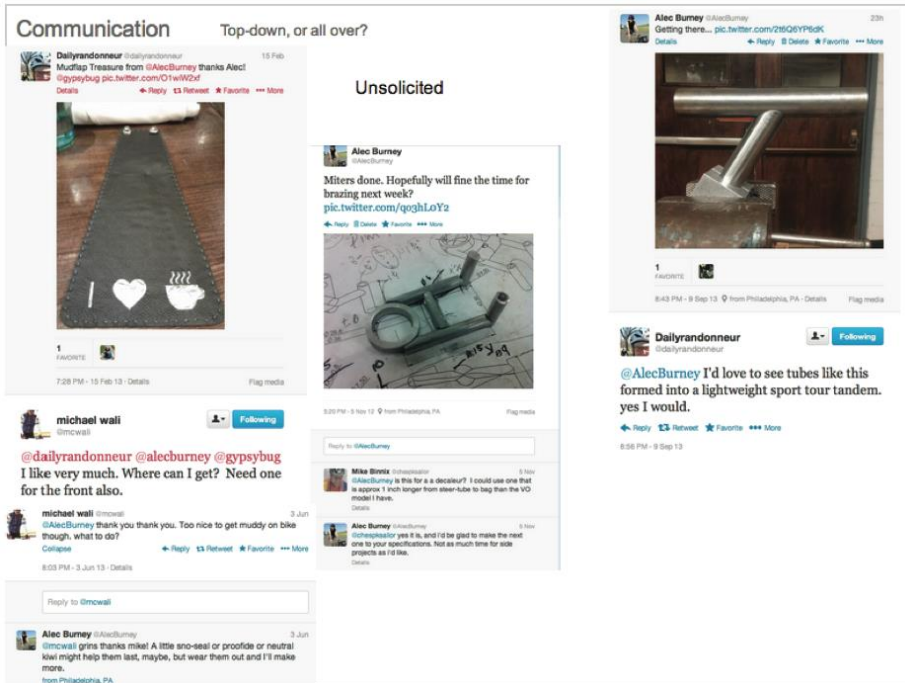


Figure 2 – Alec uses Twitter as a venue for product development.

In its emphasis on soliciting product ideas online, it was much like the Web 2.0-based product development firm Quirky, but with more specialist expertise and less expensive infrastructure and overhead.

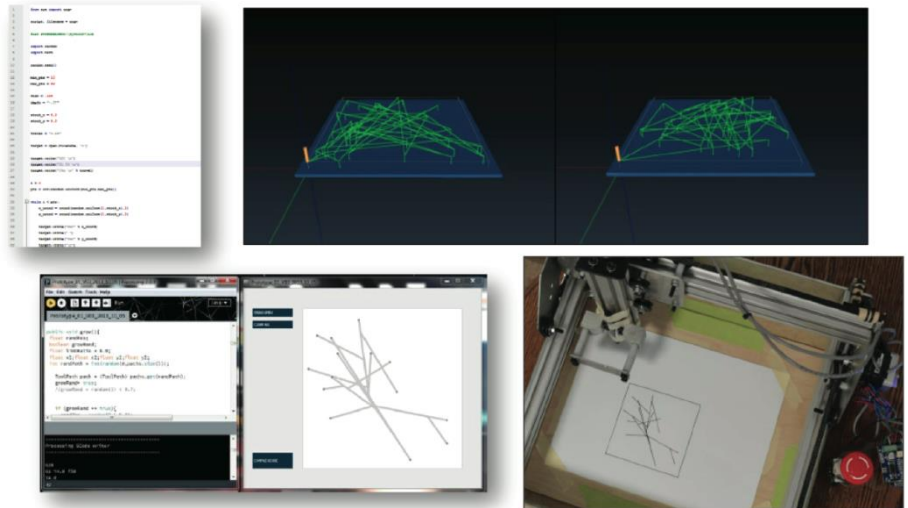
In conversations with instructors, Alec commented how, in contrast, it seemed that his academic design work was being done in an informational



vacuum. He and the faculty became aware of what a powerful tool he had, and made plans to exploit it for Alec's graduate thesis project. Currently, Alec is using several bicycling communities to help him design a new dynamo-powered bicycle lighting system. His online group has let him find insights he never would have as an individual designer, weighing in on everything from the need for a customizable metal case, to the length of time needed for capacitor backup power at stoplights, to specific parts specifications for the LED driver circuitry.

### Student Thesis: Seth

Seth is 25. He has an undergraduate degree in mechanical engineering, and previously worked for Rivian, a US startup automobile company. His time there convinced him that the designers were having all the fun, which prompted his return to school. For some time, he's been interested in open-source, community-moderated hardware tools for making things- efforts like Shapeoko (<http://www.shapeoko.com>) and the Prusa/RepRap fused-deposition printer ([http://reprap.org/wiki/Prusa\\_i3](http://reprap.org/wiki/Prusa_i3)).



**Figure 3** – Seth sold products based on parametric software customization.

For his graduate thesis project, Seth became interested in exploring the idea of customization and customer participation in the design of products. As a means of finding out what it was that product users really valued when offered the opportunity to customize or alter the design of products they

bought, Seth began conventionally, by gathering existing examples of such systems and evaluating them. He went on, however, by developing small customized products which he could make on his own using CNC machining, and sell through an Etsy storefront.

This experience let him understand the crucial balance between the high level of flexibility he needed to build into his system for product creation, and the simplicity of concept and interaction the system needed to maintain in order to be comprehensible and compelling. As he's continued to develop his project, he's received continuous feedback through comments on his posted design experiments on his blog.

The final project is a web-based system for "growing" furniture in software, then allowing users to purchase finished designs and have them delivered, either fully assembled or as kits. In addition to making use of in market prototyping and public feedback on the design progress, the design software itself makes use of many open source components by others, which have themselves been improved through Seth's participation in their development and implementation.

### **Corporate Design: Aakriti**

Aakriti is an intern designer at a major US-based appliance manufacturer (She's asked that the name not be shared due to issues of confidentiality and company policy). She and her fellow young designers are accustomed to a culture of sharing and quick feedback. In frequent conversations with the author via Skype, she reported that these younger designers often feel frustrated by the lack of immediacy, transparency, and credibility in the feedback that they receive from others within the corporate hierarchy on designs in progress. How did Marketing know customers were "interested in a cylinder" when buying a clothes washer? Had they actually talked to customers, or were they extrapolating, or simply extemporizing?

Skepticism of corporate priorities, opinions, and design direction has been characteristic of industrial designers as long as there have been corporate design departments, but Aakriti and her peers seem to represent something new in corporate product development- they feel empowered to challenge the corporate conventional wisdom, because they know they have independent sources of credible information.

When tasked with developing a line of small housewares products to accompany a group of kitchen appliances, they proposed to validate and qualify customer interest in the collection by attempting to crowd-fund them as a project on Kickstarter. Interestingly, the corporate hierarchy was

not reflexively dismissive of the idea; instead, the primary objection was worry that a bad design- signaled by a potentially unfunded Kickstarter campaign- could be seen by the public as a failure and attributed to the appliance brand. However, the corporation had also heard that its competitors were using similar strategies to gain design and market insight, and didn't want to miss out. At the internship's end, the company was looking at various ways to achieve "plausible deniability" and still pursue "live" prototyping. They were considering various ways to crowdsource feedback on products, while being able to disavow corporate association with those products if necessary, by allowing the products to be presented as the work of individuals rather than as corporate product.

Needless to say, the prospect of competitive pressures forcing corporations to release products in "continuous beta," potentially through front organizations or internet "sockpuppets," has interesting and challenging implications for intellectual property, as well as for consumer rights.

#### **Design Consultancy: IDEO**

The corporation above is not alone in beginning to embrace the practice of "live prototyping"; according to Anthony D'Avella, a business designer for the generalist consultancy IDEO, live and in-market prototyping enabled by social media is revolutionizing the work of product-development consultancies as well. As David Aycan and Paolo Lorenzoni, formerly with IDEO, put it:

*Live prototyping replaces techniques like surveys, bases testing, and focus groups. It involves releasing still-rough concepts into the context where consumers would eventually encounter them during the course of their daily routines—for example, on a store shelf, at a hotel check-in counter, or in an app store—with all the associated distractions and competing choices. Like all good market research, live prototyping is ideally both qualitative and quantitative in nature. .... Ultimately, by testing more ideas in market, with lower investment, and only piloting the most promising ideas, a company can radically improve its return on invested capital for new products and experiences. (Aycan/Lorenzoni)*

#### **Design Consultancy: Pensa**

In a recent talk to a group of industrial designers, Mark Prommel, design director of the Brooklyn industrial-design firm Pensa, related recent work

that he and the firm had done to develop a solar-powered public charging station for mobile devices. Somewhat serendipitously, the project became a testbed for the firm to explore the benefits offered by live prototyping.

Initially, the firm developed internal concepts- without a client- which they posted on social media for immediate public feedback. After making changes, the notoriety they'd gained with this experiment led to a partnership with a community organization to build a few simple prototypes, which were placed on the streets for use. These were successful enough that they led to a contract with AT&T, a major US mobile communication provider. The solar-products company Goal Zero came on as a partner to manufacture the charging stations and deploy them at scale on the streets of New York City, all in less than six months from the initial idea. According to Prommel, a key development strategy was the simultaneous rollout of the hashtags #StreetCharge and #ATTStreetCharge on Instagram and Twitter, which have allowed Pensa to follow reaction to the new system in real-time, in the form of text comments on the system's effectiveness, and visual reactions to the design of the objects themselves. This feedback is currently driving further refinement of the system.

Pensa was impressed enough by the potential of the design strategies that they'd discovered accidentally and exploited in developing Street Charge that they have now begun to develop products with live prototyping in view from the beginning, although Prommel notes that it's necessary to approach many aspects of business, and especially intellectual property, in a fundamentally different and more "open" way.

"D.I.Wire" is a computer-controlled shop appliance that bends metal wire to produce precise 2D and 3D shapes. Initially, the Pensa staff developed a prototype, which they uploaded as a freely-available set of instructions and bill of materials to Instructables, a popular site for "maker" hobbyists, their intended audience. The result was an interesting failure. For every thousand hobbyists who said they wanted the machine and would buy one, only one was actually willing or able to build the machine. D.I.Wire had shown itself to be a bad hobby project- but, ironically, had simultaneously proven itself a good potential product, due to its complexity- a natural barrier to potential duplication. The designers at Pensa worked up a "consumer-friendly" version of the device and posted it to Kickstarter, where it quickly raised almost twice its \$100,000 US funding goal. The first machines will ship in August, at a price of \$3800.

## Conclusion

As the foregoing examples show, in-market/live prototyping would seem to have much to offer design processes, both in terms of efficiency, and in terms of getting better insights into the value gained by users from designs and design revisions. Experience with graduate student design projects shows that projects that incorporate in-market prototyping and concurrent feedback processes are both better informed about the impact of design decisions, and more able to iterate and adapt to unanticipated user needs.

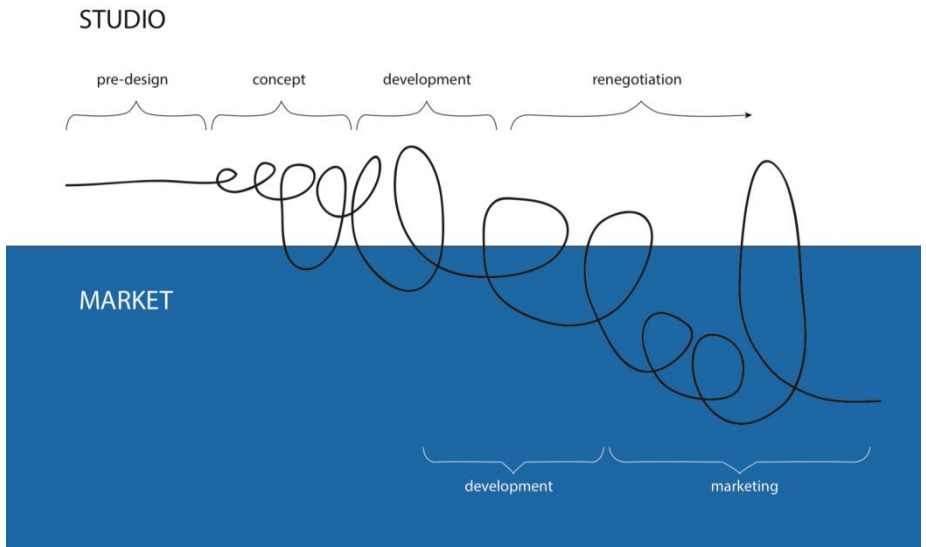


Figure 4 – Near-future product development paradigm, incorporating "live" and "in-market" development.

In fact, in several cases, the student designers and users have begun to participate in processes of co-creation (Zwass) in which they are directing and editing a design effort in which they also participate, rather than being the sole "authors" of the design. While an older generation of designers, more accustomed to the idea of the designer as sole creator, may need to console themselves with the better user feedback they gain from this process, designers of the millennial "digital native" generation seem already

to be quite comfortable with co-creation and believe it to be a self-evident strategy in a connected society.

It remains to be seen how long it will take major corporations and other drivers of professional design activity to adopt these practices, but, as Aakriti's example reveals, corporate use of in-market prototyping may begin- in fact, may already be happening – as a surreptitious effort, because of concerns about loss of control, about its effect on branding, or its potential disruption of existing organizational structures. As social media and the idea of continuous feedback from a customer/user base become more familiar concepts to corporate product managers, however, one can imagine a time in the near future when these processes will be widely accepted, and in fact, expected as a baseline business practice by customers.

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# Design Thinking and Corporate Entrepreneurship: an exploratory study

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*This study explores the connection between design thinking and corporate entrepreneurship. As suggested by earlier pioneering studies, the potential of design thinking for recognising entrepreneurial opportunities is researched. In addition, the levers and challenges of design thinking are subject to this study to find other links between design thinking and corporate entrepreneurship. We conducted expert interviews with eleven interviewees in ten organisations. The study revealed a variety of approaches that have been structured. Design thinking is utilised to improve new product and service development. The study revealed ambiguous results whether design thinking leads to new entrepreneurial opportunities. Understanding the user can be one element leading towards opportunities, however, the organisation needs to be capable to act on them. In addition, design thinking is often linked to corporate entrepreneurship in other ways, namely the partnering with start-ups and championing a project. These findings open important avenues for further research on the connection between design thinking and corporate entrepreneurship, namely in respect of strategic renewal as well as the collaboration with start-ups.*

**Keywords:** design thinking; entrepreneurial opportunities; corporate entrepreneurship

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## Introduction

Users become more demanding and this requires companies 'to put user needs at the core of their innovation strategies' (De Moor et al., 2010, p. 52). Gruner & Homburg (2000) further argue that involvement potentially increases new product success as it contributes to the desirability of the products-to-be (Brown, 2009). A systematic approach to involve users is needed to get clear insights into user needs (De Moor et al., 2010; Veryzer & Borja de Mozota, 2005).

Increasingly, both service companies as well as manufacturing companies strive to become more user oriented. Concepts such as design thinking, subject to discussion in academia since a relatively long time starting with Simon's (1969) pioneering work 'The Sciences of the Artificial' and explicitly mentioned by Rowe in his book titled 'Design Thinking' (1987) gain momentum in the management discourse (Johansson-Sköldberg, Woodilla, & Çetinkaya, 2013), reflecting the growing interest of companies to adopt user-centred strategies. However, this transformation is not trivial for organisations. The notion of user-centricity is opposed to a tradition of technology-centricity (De Moor et al., 2010) and there remains tension between a technology-driven and user-centred approach (Veryzer & Borja de Mozota, 2005). User involvement through design is still a niche topic and the understanding is still limited (Veryzer & Borja de Mozota, 2005).

New impulses from outside, e.g. from user involvement, often trigger change inside the corporation, such as in corporate entrepreneurship, where the impetus to engage in entrepreneurial activities often originates outside the organisation (Kuratko, Hornsby, & Goldsby, 2004). While pioneering works have been discussing design thinking in the light of entrepreneurship (Grand, 2010; S. L. Nielsen, Lassen, Nielsen, & Mikkelsen, 2012), Erichsen & Christensen (2013) note in their design management literature survey of the years 2000 to 2010 that entrepreneurship is seldom mentioned in the context of design management and therefore can hardly be labelled influential. Matthews (2009) however suggests that future studies will examine the relationship between design thinking and entrepreneurship in more detail. While Grand (2010) is arguing that design practices may improve entrepreneurial strategising, Nielsen et al. (2012) argue that design thinking may help to create or discover entrepreneurial opportunities. But how is design thinking connected to entrepreneurship within existing corporations?

More specifically, we address the following research questions:

- [RQ 1] What is the potential of design thinking for recognising entrepreneurial opportunities?
- [RQ 2] How is design thinking connected to corporate entrepreneurship?

In this paper, we are exploring the research question through a series of eleven expert interviews in manufacturing as well as service companies. The concept of entrepreneurial opportunities is taken as a starting point for the inquiry about design thinking and corporate entrepreneurship.

In the next paragraph, design thinking and entrepreneurial opportunity are defined, followed by a description of our approach and research methodology. After that, the findings of the interviews are presented, followed by a discussion about design thinking and corporate entrepreneurship.

## Definitions

### *Design Thinking*

Johansson et al. (2013) distinguish between ‘designerly thinking’ highlighting the academic research in the design discourse and ‘design thinking’ where ‘design practice and competence are used beyond the design context’ (Johansson et al. 2013, p.123), labelled as the managerial discourse. In the managerial discourse, design thinking is associated with innovation (Hassi & Laakso, 2011). In their review of the managerial discourse, Hassi & Laakso (ibid) describe design thinking as a combination of practices, thinking styles and mentality components. From a practitioners’ perspective, Lockwood (2009, p. 30) describes design thinking as ‘primarily an innovation process – part of the fuzzy front end, and a great method with which to discover unmet needs and to create new product concepts’. Design management is currently undergoing changes from managing the design of products towards managing the design of innovation (Cooper, Junginger, & Lockwood, 2009). From the perspective of researching the connection between design thinking and corporate entrepreneurship, the term design thinking is used in this study to describe design practices, in particular user involvement practices used beyond the design context, following Johansson et al. (2013) as well as Hassi & Laakso (2011).

### *Entrepreneurial Opportunity*

An entrepreneurial opportunity is in this paper defined as 'perceived means of generating economic value [...] that previously has not been exploited and is not currently being exploited by others' (Baron, 2006, p. 107). Entrepreneurial opportunities are either discovered or created (Kirzner, 1973; Schumpeter, 1934).

Ardichvili & Cardozo (2000) found that entrepreneurial opportunities are discovered through recognition rather than purposeful search. Future customers may have difficulties articulating their needs (Hippel, 1994). Ardichvili et al. (2003, p. 108) state that 'Even if prospective customers cannot [articulate their needs], they may still be able to recognize the value to them in something new when they are presented with it and have its operation and benefits explained. Opportunities seen from the perspective of prospective customers represent value sought'.

### *Corporate Entrepreneurship*

The terms corporate entrepreneurship and intrapreneurship can be used interchangeably (McFadzean et al. 2005) and describe entrepreneurship within existing organisations (Antoncic & Hisrich, 2003). This definition indicates that only the context of entrepreneurship changes (Kuratko, Morris, & Covin, 2011) and findings from entrepreneurship may be transferable to corporate entrepreneurship. Guth & Ginsberg (1990) distinguish between innovation / venturing and strategic renewal of established corporations. In this study, we utilise the term corporate entrepreneurship following Antoncic & Hisrich (2003), Kuratko et al. (2011) and Guth & Ginsberg (1990), researching corporate entrepreneurship from an innovation, venturing and strategic renewal perspective.

## **Research Methodology**

To explore the research questions, we conducted a series of eleven expert interviews within ten corporations in Switzerland and Germany. The corporations the experts are situated in are in the service industries (banking, ICT and insurance) as well as manufacturing (chemicals and pharmaceuticals), employing between 5.000 and 120.000 employees.

Table 1 Context and details of the experts interviewed

Company	Position	Industry	Category (k employees)	Length (in minutes)	
A	Senior Manager	Design	Telecommunication	20-50	54
B	Junior Manager	IT	Chemicals	20-50	51
B	Senior Manager	Purchasing	Chemicals	20-50	60
C	Senior Manager	IT	Banking	20-50	71
D	Senior Manager	Purchasing	Banking	<20	83
E	Senior Manager	IT	Banking	50-100	62
F	Senior Manager	IT	Insurance	>100	42
G	Senior Manager	IT	Chemicals	20-50	75
H	Senior Manager	Design	Banking	50-100	64
I	Senior Manager	IT	IT	50-100	53
J	Senior Manager	Marketing	Pharmaceuticals	20-50	46

The interviews were conducted in a semi-structured fashion by two researchers. Semi-structured interviews are useful when broad issues are understood by the researchers, but the range of reactions is not entirely known (Maguire, 2001). To avoid a bias due to poor recall, the interviews were recorded and transcribed. Each interview lasted between 42 and 83 minutes with an average of 60 minutes. Key informants were chosen to be interviewed. Following Morse (1994) in Merkens (2007), key informants have the knowledge and experience about the phenomenon in question, the ability to reflect as well as the ability to express their knowledge. Thus, interviewees were selected that applied design thinking for innovation purposes and had a position related to the innovation process in their respective organisation. The choice of industries was arbitrary, suggesting that there may be no industry dependency.

Following the approach of Seidel & Back (2011) in their exploratory study, the transcriptions were coded based on the research questions, identifying levers of design thinking, challenges as well as design thinking and opportunities. After the initial coding, clusters were built according to emerging themes. The clusters were subsequently coded according to their connection to corporate entrepreneurship. These clusters formed the foundation for the empirical findings as well as discussion.

## Empirical findings

### *Design thinking and entrepreneurial opportunities*

In terms of entrepreneurial opportunities, the findings are ambiguous. On the one hand, experts argued that design thinking brings new opportunities because of doing things fast and more user-centric. Other experts raised concerns that there is not one particular approach to identify profitable opportunities that fit to the organisation's capabilities and culture. Particularly in the light of user involvement, it was highlighted that it is 'always the job of the company to say this is what we are going to do'. Another concern raised is that design thinking works in theory, but is not implemented properly in the expert's company, although the subject has been discussed internally, only limited actions followed.

During the interviews, it was highlighted that outside pressure gives the impetus to start seeking new opportunities. However, not only pressure was mentioned, but also that creative sparks come from outside, for example from start-ups, while the innovation is done inside. To pursue an opportunity, it was mentioned frequently that a champion is needed, mostly coming from the middle or lower level of the organisation.

In general, all interviewees mentioned that new opportunities emerge through having an outside view. It was mentioned that design thinking leads to new opportunities because it 'radically starts with the person that is targeted by a new product or service'. This leads to understanding of user trends as well as to understand weak aspects of the own products that may be improved – both factors have been acknowledged by the experts to lead to new opportunities. Besides these factors, unmet needs of customers have been mentioned. One expert emphasised that design is needed to rethink completely, why the company is in the business, which is related to the core business of the organisation rather than the periphery. To be more user-centred requires deep changes in the organisation to lead to new opportunities according to one expert. One expert highlighted the importance to identify potential users that do not use the products or services currently through design-thinking which may lead to new opportunities. New opportunities mentioned are also on the emotional side, to create products and services that people acknowledge as emotionally appealing.

It was highlighted by an expert coming from biotechnology that the base for new opportunities always is formed by new technologies – the technology was mentioned as enabler. However, by combining new

technology with different customer profiles, new opportunities may emerge. Further, the importance of customer and user knowledge was highlighted in respect to making the right decisions during new product and service development. Interestingly, one expert mentioned that sales adopted a design-thinking approach to get better requirements from users to identify new opportunities, but also to demonstrate the value the customer has to the organisation and thus drive sales. In one case, the expert even mentioned that the customer pays for user-involvement, as it improves the work of the own employees if the product that is bought from the organisation is better usable.

Two statements are perceived crucial in terms of opportunities: ‘I think if you listen very carefully [...] there always are opportunities to uncover hidden gems’, emphasising the importance to involve users. The second statement ‘It sounds simple. It’s a simple statement but it’s hard to live up to that ambition’ reflects that the opportunities that may emerge from design-thinking and user involvement are not fully exploited yet.

*Levers and challenges of design thinking and the connection to corporate entrepreneurship*

To explore other connections between design thinking and corporate entrepreneurship, a set of questions have been asked to reveal levers and challenges of design thinking. Subsequently, the results of this exploratory approach are discussed in the light of corporate entrepreneurship.

Table 2 Approaches of user involvement through design thinking

Structured process		Non-structured approach		
Start-ups	University collaboration	Mixed teams	Internal Consultants	Training and support of employees
Bottom-up		Top-down		
Imposed during organisational change		Triggered organisational change		

**Structured process versus a non-structured approach**

All experts interviewed are part of large organisations. A serious challenge for the experts is that in a large company it is difficult to identify other people who are applying design thinking. Moreover, following a non-structured approach, a challenge addressed is also that design thinking is

highly dependent on individuals. Thus, individual interest decides whether design thinking is performed or not.

User involvement as a key activity of design thinking leads to specific challenges. Access to users demands also demands for a structured approach as the amount of interactions with users is limited and may become a burden if accessed too often. One expert mentioned that 'you cannot disturb your clients every five days and ask them for feedback', highlighting the problem. There is the possibility to get feedback from internal users and front-line employees, but with the challenge that this feedback may be biased because the employees are belonging to the same organisation and thus may have an internal view. Furthermore, the concept of key account managers is a challenge, because if the key account managers are the only persons allowed to talk to users, it is a challenge to access users for innovation. As the users are mostly situated within a customer organisation, it is difficult to access users instead of the persons in charge of purchasing. This demands for a structured approach in which the access to the user is defined as well as made sure that users are not accessed so often that it becomes a burden for them.

Often it was mentioned, that in the fuzzy front-end, a non-structured approach is favoured, but after the implementation decision a structured process is followed that needs to fulfil regulatory requirements. Multiple experts mentioned that they are following a scalable approach that fits the time available, thus applying elements of design thinking in projects either in a more superficial manner through a day-long workshop or throughout the complete innovation project. Others are working with a defined time, for example two weeks. Further, the interviewees pointed out that it is important not to use the first solution that comes to mind but to slow down to understand the cause of the problem, while the development of a suitable solution is accelerated.

Several experts emphasised that new business development activities are aiming on the mid-/ long-term future, while producing costs immediately. Thus, to measure new business development by means of margin and turnover generated in the short term was seen as a challenge. The management perception that the process from an idea towards an innovation takes too long was perceived as a challenge, as it takes time to do the 'homework' and shortcuts 'backfire'. Expert opinions concerning the development process of innovative ideas were ambiguous: while on the one hand experts argued that the same process and philosophy applied to

regular projects does not work for innovation projects, others argued that the same careful approach is needed for innovation.

### **Design thinking through external collaboration versus internal employees**

An approach frequently mentioned is the link towards start-ups and outsiders of the company. Difficulties to reach users due to company policy as well as regulatory restrictions were expected by the interviewees to be overcome through working with start-ups, as large companies cannot work at the fringe of the legal frame, while one expert noted that small companies may be able to. It was highlighted to establish relationships with start-ups in the early phase to achieve innovation. Small companies that are subcontracted in-house are perceived to be fast and resource-efficient. None of the interviewees mentioned investment into start-ups as a key approach, but rather to offer an infrastructure where start-ups can work such as an open space.

It was further mentioned that design thinking is done with outside entities such as in collaboration with universities. Interdisciplinary teams of students were used as it creates an informal setup to reach out to users. Also mixed teams between internal employees and subcontractors were mentioned.

Another approach is to have internal consultants that are financed by the business units and take responsibility in innovation projects to sustainably integrate a user-centred point of view. As the units commit to finance the consultant, it is made sure that the user centricity is taken into account. As the consultant is an expert, there is not a standard process to be followed but methods can be used tailored to the project.

Interviewees mentioned also to coach and train teams about design thinking methods such as observations in context and early prototyping. Employees with innovative ideas are trained in design thinking to understand user problems in the early phase.

### **Bottom-up versus top-down approach**

Most of the experts mentioned that they follow a viral approach to implement design thinking in the organisation. The viral approach is based on showing the results to evoke the feeling to participate in similar activities. This includes having public project presentations as well as events to let people experience the methodology as one expert mentioned 'you need to experience design thinking to understand it'. It is crucial to convince



individuals that are in key positions to spread the approach within the organisation. Furthermore, the positive effect of internal consultants that are actively involved in projects and bring in a user-centric perspective was mentioned. The viral approach is supported by having open spaces where interested persons can participate as well as by including various stakeholders in design thinking projects.

Top-management commitment is also important since activities that are regarded non-core by the management are in danger to be stopped. One expert mentioned that a training initiative aiming to teach design thinking failed in the organisation, because the framework conditions prevented the employees to apply the methodology in their daily work. Another example mentioned by another expert is that innovation traditionally was only accepted if it came from top management. Further, user needs are not yet included widely in new product and service development in the experts' organisations. The traditional approach to develop a product or service centrally and push it to the market was widely reported but subject to change. Learning lunches, where an employee shares the insights from a project with fellow colleagues were mentioned to share best practices among the teams.

These aspects require a culture change that needs according to an interviewee top-level commitment. In one company, the slogan included to think like a user, however the expert working in this organisation pointed out that most people have never seen a user.

*One of our.. slogans is, think like the [user]. The problem there is, that.. you know, and especially (-- ) most people I know who've never been on a [user's site], they're a bit confused about which particular [user] to think like, so they think about whatever they fancy about how [the user's business] works and it works completely differently in different parts, absolutely completely differently.*

It takes time to build the confidence to talk to the users as well as to get people to leave their comfort zone. However, the danger of a top-level assignment to use design thinking was pointed out that middle management subsequently just take superficial measures such as buying furniture to show they are using design thinking, but without seriously adopting the approach.

### **Design thinking and organisational change**

The application of design thinking is often related to change in the organisation and cultural change towards a more user-centric organisation.

Design thinking is associated with mindset change, and some interviewees even emphasised that the mindset building is more important than innovation. Design thinking was either introduced during an organisational change or induced an organisational change to the organisations of the experts, for example from a product-offering to offering services. The focus is on the philosophy, mindset and culture related to design thinking. According to one interviewee, this mindset shift requires a top management mandate to acquire lighthouse projects to showcase the value of user involvement to the organisation. A key quote is 'you see design is nowadays a key critical success factor – without it does not work anymore'.

## Discussion

[RQ 1]            What is the potential of design thinking for recognising entrepreneurial opportunities?

Design thinking has the potential for new opportunities through an outside view, as it 'radically starts with the person that is targeted by a new product or service'. This quote by one of the experts emphasises that design thinking impacts on recognising new entrepreneurial opportunities in respect of new product and service development. Particularly user involvement through design thinking into new product development has been subject to discussion (Junginger, 2008; Veryzer & Borja de Mozota, 2005). Veryzer & Borja de Mozota (2005) argue that user involvement may affect the range of new product solutions and can aid in envisioning various possible design direction as well as lead to solutions that are more likely to be successful on the market and 'beyond the familiar range of likely solutions' (Veryzer & Borja de Mozota, 2005, p. 136).

Veryzer & Borja de Mozota (2005) discuss the impact of what they call user-oriented design, a "focus on deep understanding of the customer or user" (Veryzer & Borja de Mozota, 2005, p. 128) that provides an orientation based on what creates value to customers (Veryzer & Borja de Mozota, 2005). The potential of user involvement through design thinking is thus creating opportunities through envisioning solutions from the viewpoint of the user, leading to superior solutions from the user's point of view (Veryzer & Borja de Mozota, 2005). Nielsen et al. (2012) propose that concrete and intentional methods from the field of design can lead to entrepreneurial opportunities, not only through user involvement but also through design thinking as a problem-solving approach (Buchanan, 1992).

The interviewees partly agreed to the relevance of design thinking for opportunity creation or discovery. They agreed that a user-centric outside view may bring new opportunities, however it needs to be combined with a dedicated person inside the organisation that develops the product- / service-to-be further. This is in line with Burgelman's (1980) study of internal corporate venturing who highlights that a product champion is required for successful internal corporate venturing. Furthermore, design thinking alone was not perceived as a source for entrepreneurial opportunities, as technology was frequently mentioned as an enabler.

[RQ 2]            How is design thinking connected to corporate entrepreneurship?

Guth & Ginsberg (1990) describe two forms of corporate entrepreneurship: innovation / venturing as well as strategic renewal of the organisation. 'Strategic renewal involves the creation of new wealth through new combinations of resources. This includes actions such as refocusing a business competitively, making major changes in marketing or distribution, redirecting product development, and reshaping operations' (Guth & Ginsberg, 1990, p. 6). According to Guth & Ginsberg (1990, p. 6), 'all changes in firms' pattern of resource deployment stemming from the carrying out of new combinations should be considered in the domain of corporate entrepreneurship'. In our empirical findings, a connection between design thinking and organisational change has been reported. The change was often induced from outside as proposed by Kuratko, Hornsby, & Goldsby (2004) and typically related to the new product and service development process. According to Junginger (2008) product development is 'all about change' (Junginger, 2008, p. 26). NPD may be a vehicle for organisational change and user involvement may be a guiding principle by taking into account what creates value for customers.

Designers can assist organisations to change by bringing the user perspective to the organisation (Junginger, 2008). A viral approach adopted by the experts to change the organisation is in line with Junginger's (2008) argumentation that change starts from the fringe of the organisation. Matthews (2009) suggests that practices from the field of design may be useful to generate more entrepreneurial behaviours inside large organisations. User involvement may lead towards carrying out new combinations of resources and subsequently result in changes in resource development and thus may be considered in the domain of corporate

entrepreneurship - the organisational change towards more user-centricity may thus be an entrepreneurial endeavour. The change towards more user-centricity indicates a renewal of a key idea organisations are built and therefore may be seen as strategic renewal in the categorisation of Guth & Ginsberg (1990).

Another finding is to work with start-ups. While in the discussion of corporate venturing, external venturing is often seen as investing into start-ups (e.g. Miles & Covin, 2002), our findings suggest that financial motives are not crucial for the decision to work with start-ups. Roberts (1980) points out that besides investment, corporations may team up in new-style joint ventures, where the corporation provides access to capital and distribution channels, while the new start-up provides advanced technology and entrepreneurial commitment. While this approach involves a high commitment from both sides, Botkin & Matthews (1992) mention the entrepreneurial partnership, where the organisation collaborates with start-ups as one strategy of corporate entrepreneurship. According to Molina et al. (2009) and Antoncic & Hisrich (2003), learning may be an important goal when engaging in corporate entrepreneurship. Our findings suggest that the experts seek to learn from working with start-ups in a entrepreneurial partnership mode. Entrepreneurial strategy includes the entrepreneurial strategic vision that provides the value justification for engaging in corporate entrepreneurship (Ireland, Covin, & Kuratko, 2009). Setting these aims in the corporate entrepreneurship strategy influences the perceived strategy-outcome relationship, i.e. whether corporate entrepreneurship was perceived successful (Kuratko et al., 2004).

The interviewees emphasised that working together with start-ups is important to get impulses from outside that may be developed further. Moreover, start-ups are less regulated and thus may be able to bend the rules in terms of product development that may be beneficial to explore a concept. However, it was emphasised, that after the early phase, innovation projects need to go through the new product development process to comply with the regulatory environment. By supporting start-ups through knowledge and acting as a launching customer, the expert's organisations aim to learn. Also, start-ups were used for fast-track product development in IT applications. This may lead to new firm-specific capabilities that are hard to imitate (Backholm, 1999; Dierickx & Cool, 1989).

To summarise, design thinking may either use or lead organisational change towards a more user-centric organisation. Together with technological capabilities and product championing, design thinking may

help to create and / or discover entrepreneurial opportunities. The organisational change as one approach to strategic renewal implies a connection to corporate entrepreneurship, that can be further seen in the frequent collaboration with start-ups in product development activities.

## Conclusion

This study explores the connections between design thinking and corporate entrepreneurship through a series of eleven expert interviews in ten organisations. Our findings suggest that design thinking can contribute to recognise entrepreneurial opportunities through user-centricity, that can contribute to new products and new services. However, design thinking needs to be combined with product championing to utilise the user perspective as well as build on technological capabilities of the organisation.

Further, our exploratory inquiry into the experts' organisations has shown that design thinking and corporate entrepreneurship are connected through the concept of strategic renewal by bringing user-centricity into the new product and service development and thus use new product development as a vehicle for change, leading towards strategic renewal. In addition, design thinking was often associated with working with small start-ups with the objective to learn from them that may lead to new firm-specific capabilities that are hard to imitate. Partnering with start-ups is seen beneficial, as start-ups can follow unconventional practices on the fringe of legal boundaries in highly regulated environments as well as involve users unbureaucratically. Partnership with start-ups may lead to learning as well as impulses for new product and service development that may be developed either inside the corporation or as partnerships with start-ups.

This explorative study contributes to the field of design management by establishing first links between design thinking and entrepreneurship as well as organisational change. These initial results open up avenues for further research. Further research is needed to explore the connection of design thinking and corporate entrepreneurship in respect of strategic renewal as well as the collaboration with start-ups.

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**Section 4b: Design Management Future  
Perspectives**

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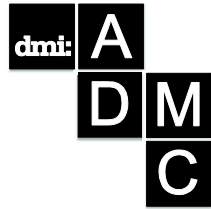
# Editorial: Design Management: Future Perspectives

Martyn EVANS and Leon CRUICKSHANK

The future of design management is elusive. And rightly so. Design is a constantly expanding beyond traditional disciplines, crossing boundaries moving and into new areas. At the same time design is managed at both macro (cities, systems) and micro scales (object and product), and anywhere in between. Whilst the breadth of influencing factors and design evidence to be considered and taken into account in design becomes deeper and richer, e.g. sustainability, ageing, health, wellbeing, etc. While some see design crossing boundaries and moving away from its traditional domains and becoming the driver for expansive organisational change; others seek to develop better understandings of how design can act as a driver of innovation and feed product development. The future of design management is interlinked with this revolutionary and evolutionary nature of design.

This track explores potential approaches for design management to deal with the dynamic contemporary business environment. It considers how to respond to increasing user demands, accommodate technology driven business models, and keep up with and serve constantly evolving markets – all while acknowledging the increasing collaborative democratisation of design. Drawing on contemporary design and management literature, future perspectives on design management are underpinned by empirical research that suggests how design management will adapt in relation to the changing nature of design.

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## Towards a dynamic mode of design management and beyond

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*In 1965, the need for design management as project management was voiced at a time when new forms of consumerism became affordable for the masses. However, in an environment of disruptive change, in which „age of less“ consumption is propagated, when digital technologies allow for new business models and distribution channels without intermediaries, design as a company resource can also become „sticky“. Today, firms have to continuously absorb new knowledge and quickly socialise it throughout the company. Design management may need to lead the way towards more dynamic ways of doing business. Furthermore, design management may have to venture strongly into the entrepreneurial side of business, recognizing, evaluating, and exploiting new business opportunities. This conceptual paper will look at three different modes of design management: simple design management or the management of design activities within organisations; integrated design management or the coordination of all relevant design activities within a firm across all company levels; and dynamic design management, which builds on the dynamic capability concept. In addition, this paper will raise the question of whether there should be a fourth mode, building on the basics of entrepreneurship, called “entrepreneurial design management”.*

**Keywords:** Simple, integrated, dynamic, entrepreneurial modes of design management, disruption

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## Introduction

Almost 50 years ago, Michael Farr (1965) coined the first definition of design management as „the function of defining a design problem, finding the most suitable designer, and making it possible for him to solve it on time and within a budget“ (p. 38). This rather pragmatic and simple statement of design management as design project management was written at a time when new forms of consumerism became affordable for the masses (Gorb, 1990). Further on in the text, Farr (1965) elaborates on companies needing design management to differentiate products and brands through more sophisticated value propositions. Since then, design management has become a tool to introduce design into the strategies, brands, identities, environments, and product/service development processes of companies, evolving into a fully integrated management „agenda“ responsible for the orchestration of experiences of their customers (Cooper & Press, 1995).

More recently, design and design management have been recognised as drivers of organisational change (Junginger, 2008, 2009)—for example, by building new organisational capabilities in NPD (Danneels, 2002). In the early 2000s, Design Thinking (Brown, 2008, 2009) entered the field of (design) management with a similar proposition, at a time when innovation was the new battle cry (Johansson-Sköldberg & Woodilla, 2011, 2013). By then, design management had definitely escaped Taylorist concepts of scientific management to become a resource in its own right in the Resource-Based-View sense of the word (Borja de Mozota, 2003, 2011).

However, in an environment of disruptive change, in which more than 50 years of consumerism are being questioned and the „age of less“ (Bosshard, 2011) is widely propagated, when digital technologies allow for distribution channels without intermediaries (Ball, 2012) and for new business models (Osterwalder & Pigneur, 2010), design as a resource can also become „sticky“ (Teece, Pisano, & Shuen, 1997), meaning that it is not offering a solution to imminent changes and threats from the environment. Today, companies have to develop the capability to continuously absorb new knowledge (Cohen & Levinthal, 1990; Zahra & George, 2002), to quickly socialise it throughout the firm, and to lead the way towards more dynamic ways of doing business.

This capability might include a repertoire of processes, tools, and mindsets to drive and support change as a core organisational capability. Furthermore, in the future, design management may have to venture more boldly than before into the entrepreneurial side of business, recognizing,

evaluating, and exploiting new business opportunities (Shane & Venkataraman, 2000) as well as effectuating them (Sarasvathy, 2008).

This conceptual paper will look at three different modes of design management that have developed over the years: simple design management or the management of design activities within organisations; integrated design management or the coordination of all relevant design activities within a firm across all company levels, functions, and touchpoints; and dynamic design management, which builds on the dynamic capability concept (Helfat et al., 2007; Zahra & George, 2002), aiming at strategic flexibility (as an internal result) as well as competitive advantage (as an external result).

In addition, this paper will raise the question of whether, in the face of disruption, there should be a fourth mode of design management, building on the basics of entrepreneurship—entrepreneurial design management (working title)—to accommodate the need to create fully ambidextrous or even new companies (Tushman & O’Reilly, 1996; Christensen, 1997). We will explore this fourth mode in more depth to understand how it fits with the three modes mentioned above. The paper will then discuss the strengths and weaknesses of the four modes in the face of disruption and concludes with an outlook on a future research direction.

## **(At least) the modes of design management**

On the journey from the lesser to greater significance of design as briefly outlined in the introduction, three modes of design management can be distinguished with regard to their strategic contribution and direction. Adapting Gorb and Dumas’ (1989) notion of silent design, even a (non-) mode can be identified, named silent design management or non-existing design management.<sup>58</sup> However, in this paper we will focus on those modes that are based on a minimal awareness of the usefulness of design and design management to achieve company goals. These modes have been extracted from a more extended review of the design management literature (Acklin, 2013a) but here, due to limited space, only the essential insights are summarised. These three modes are:

- simple design management

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<sup>58</sup> Companies using, or rather, not using this kind of design management are unaware that they are making strategic decisions in e.g. engineering design or marketing. Interestingly enough, design and design management have to accept that this process also “seems to work” (Gorb, 1990, p. 75).

- integrated design management
- dynamic design management.

### **Simple design management**

The first mode is called *simple or basic design management*. Companies adopting simple design management are interested in managing their processes more effectively and are mainly applying design (project) management to design projects as part of, for instance, new product development or corporate design activities. Representative theorists of this (early) concept of design management are Farr (1965) and, to some extent, Topalian (1979). The latter made the point that British manufacturers would be able to escape the mediocrity of their products if design projects and new product development were managed more effectively and efficiently.

In the sixties, marketing and branding had introduced a fundamental shift in the way a company presented itself and its products/services to its customers. To illustrate, Farr offered the example of a supplier of ironed shirts who was no longer selling a laundry service but pride in appearance (Farr, 1965). In addition, design had grown more specialised and the training of designers more diverse and profound, which made it a challenge for management to pick the right designer for the right job. Farr's (1965) rationale was already a move away from the concept of unity of all elements of visual appearance achieved by a single "enlightened" architect/designer as in companies such as AEG or Olivetti (Bürdeck, 2005) to responding to companies' more strategic preoccupations.

### **Integrated design management**

The second mode, *integrated design management*, coordinates and deploys design in all departments, functions, and processes necessary to create a coherent customer experience and company positioning. Cooper et al. (2009) characterise this mode of design management as follows:

*Design Management is the on-going management – and leadership – of design organisations, design processes, and designed outcomes (which include products, services, communications, environments and interactions). (p. 50)*



Towards a dynamic mode of design management and beyond

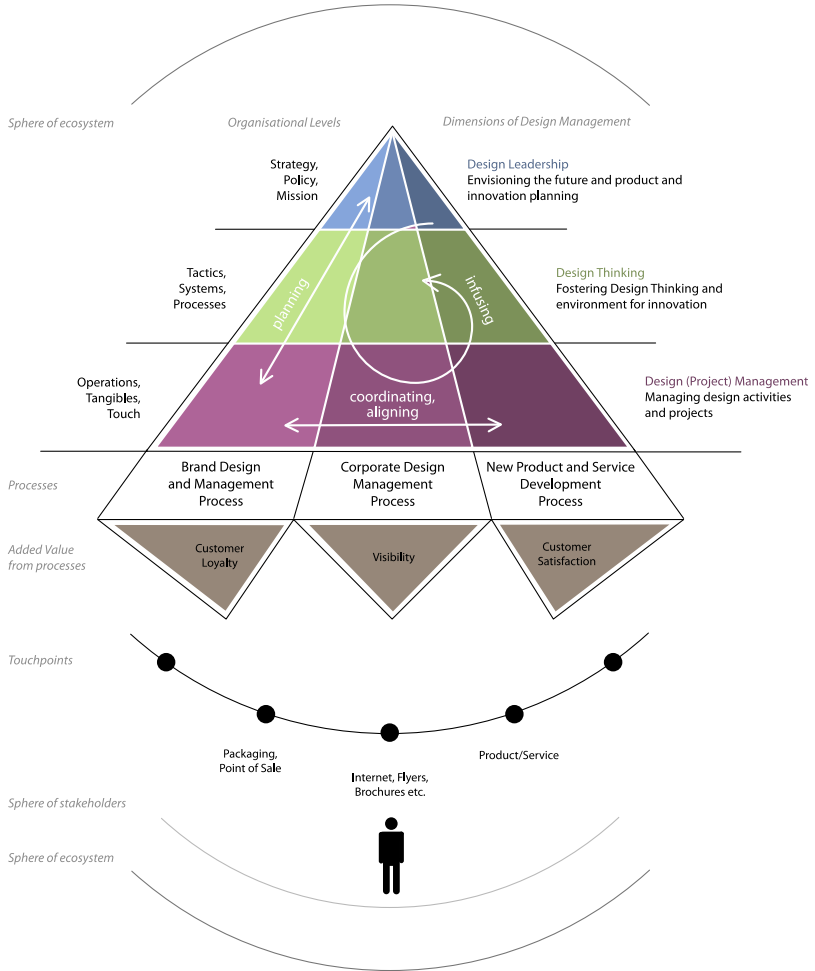


Figure 1: Integrated Design Management Model (Acklin, 2011)

This design management mode is called “integrated” because there is extensive alignment, communication, education, and even mediation to be done between conflicting forces before design can fully unfold its power as a value creator at each touchpoint of the company. This includes the integration of design at each organisational level, the presence of (visionary) design leadership (Turner & Topalian, 2002), and a design management

function at the operational level. It further entails the coordination of processes that include design in corporate design, brand design, new product development processes, and so on, together with the ongoing effort to align design outcomes at each touchpoint, and to infuse design thinking in the company (Dumas & Mintzberg, 1989). The visual representation of an integrated design management model (Acklin, 2011,<sup>59</sup> 2013) displayed below (Fig. 1) is itself an integration of the thoughts of several authors (Best, 2006; Turner & Topalian, 2002; Cooper & Press, 1995; Bruce & Bessant, 2002; Dumas & Mintzberg, 1989; Cooper, Junginger & Lockwood, 2009).

### **Dynamic design management**

Although design has been understood as a (core) competence of the firm (Borja de Mozota, 2011), design as a resource can also become „sticky“ (Teece, Pisano, & Shuen, 1997); „... at least in the short run, firms are to some degree stuck with what they have and may have to live with what they lack“ (p. 514).<sup>60</sup> Authors such as Christensen (1997) or Tushman and O’Reilly (1996) have observed that successful companies might even end up with an innovator’s dilemma of not wanting to risk their own core business through innovations of a more disruptive order emerging in the environment.<sup>61</sup>

These situations call for a third form of design management, the *dynamic design management* mode, in which companies absorb and exploit new knowledge and resources in order to avoid the “stickiness-trap”. Zahra and George (2002) proposed that the capability to continuously absorb new knowledge is “a dynamic capability pertaining to knowledge creation and utilization that enhances a firm’s ability to gain and sustain a competitive advantage” (p. 185). This absorption takes place in discrete steps of acquisition, assimilation, transformation, and exploitation (see Fig. 2).

Danneels (2002), who researched the product development processes of five companies through the lens of the dynamic capability concept, comes to this conclusion:

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<sup>59</sup> Published in the handbook of the BA Design Management, International course at Lucerne University of Applied Sciences and Art – Art & Design as a further development of the Lucerne Design Management Model (Acklin, 2009).

<sup>60</sup> We might be witnessing the beginning of this effect in the case of Apple, the powerhouse of design; at this point in time, other companies are offering more functionality along with an equivalent amount of design.

<sup>61</sup> One of the late casualties of the innovator’s dilemma is Kodak, which invented the digital photography but failed to exploit it.

*Towards a dynamic mode of design management and beyond*  
*My analysis of new products as interconnected through their reciprocal relationships with the firm's competences yields a view of firms as portfolios of competences, rather than of portfolio of products. (p. 23)*

So, *dynamic design management* is concerned with the development of (new) knowledge, (new) design competences, and capabilities rather than project management of design projects. A process of product development, innovation, or even marketing can become “an engine of renewal” (Bowen et al. 1994; cf. Danneels, 2002) building and expanding organisational competences over time. These processes might even trigger a change in an organisation’s market domain.

In a *dynamic mode*, design managers are able to decouple and recouple, or to reconfigure a company’s design resources to match dynamically changing environmental needs. They actively deploy design knowledge at specific pain points of the company instead of coordinating design as a company resource throughout each company touchpoint. By proactively “reshuffling” core competences, a company has a quicker and less risky way to grow and to renew itself. A dynamic mode of design management might be visualised as follows (Fig. 2).<sup>62</sup>

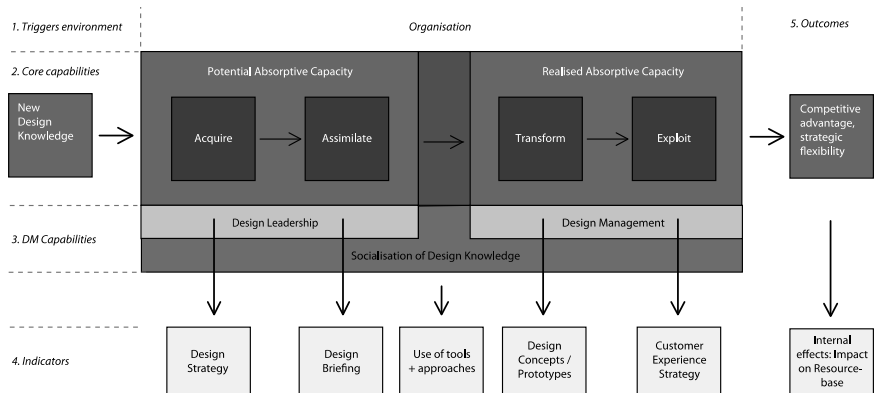


Figure 2: Design Management Absorption Model (Acklin, 2013b)

<sup>62</sup> The first author of this article has published several papers on the relationship between design absorption and the dynamic capability construct. Please refer to list of references (Acklin, 2011a,b, 2013a, b, c) for more information.

## Towards a fourth, entrepreneurial<sup>63</sup> mode

Schumpeter (1934, 1942) describes the process of *creative destruction* as the central fact of capitalism: “It is what capitalism consists in and what every capitalist concern has got to live in” (Schumpeter, 1942, p. 83). He singles out the entrepreneur as the one actor who captures value in changing environments by exploiting the following elements: new consumer goods, new methods of production or transportation, new markets, or new forms of industrial organisation. Since the nineties, Schumpeter has been received as one of the quintessential authors on innovation, but it is always entrepreneurship that he is talking about.

To date, the entrepreneurial dimension of design has often been subsumed in what designers do but has rarely been acknowledged as an inherent component of design. One reason for this phenomenon might be that designers’ perspective and approaches complement the entrepreneurial expertise of companies—without actively driving it—by creating new artefacts, services, and experiences. So the risk-taking is mostly on the entrepreneur’s side of the working relationship, even though designers often share the risk when they are paid through royalties on products sold.

In addition, designers’ entrepreneurial contribution to companies during the process of opportunity recognition, evaluation and exploitation (Shane & Venkataraman, 2000) is also poorly conceptualised within current entrepreneurship research and theory, as well as in design studies.

Here, we will propose a fourth mode—an entrepreneurial mode of design management—by exploring *the overlap* of entrepreneurship with design and design management. This is offered as a point of departure for a broader discussion that would have to follow. Design management has the capability to take on a more active role in companies in respect of entrepreneurial issues in companies as well in new venture creation.

### **Overlaps of design, design management and entrepreneurship**

As mentioned before, Schumpeter (1934) introduced the notion of creative destruction, in which different actors disrupt markets and introduce new combinations of, for instance, products or production methods. It

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<sup>63</sup> Through a policy Delphi, Gartner (1990) established that there is no singular definition of entrepreneurship, discovering “themes” of entrepreneurship such as the unique personality of the entrepreneur, innovation, organisation creation, value creation, company growth, individuals as owner-managers, and profit and non-profit contexts.

follows that the recognition of opportunities and the creation of new artefacts, which possibly alter prevailing market logics and might eventually lead to “better world”, lie at the heart of entrepreneurship (Schumpeter, 1934; Shane & Venkataraman, 2000). Dealing with uncertainty and being highly tolerant of ambiguity is another characteristic of entrepreneurs (e.g. Sexton & Bowman, 1985).

In all of these regards, entrepreneurial and design mindsets resemble each other, in their ambition to create something new and better or in their tolerance of uncertainty and ambiguity. Design even deliberately exposes itself to uncertainty by keeping processes of exploration fluid until the best solution (rather than just another solution) emerges (Boland Jr. & Collopy, 2004).

Furthermore, the discourses of design theory (Johansson et al., 2011) overlap at several points with entrepreneurial discourses—although not completely uncontested, as we will see. Among the concepts shared by design studies and entrepreneurial theory are Herbert Simon’s “science of the artificial” (Simon, H., 1969) and Donald Schön’s concept of “reflection-in-action” (Sarasvathy, 2008). As in a science of the artificial, entrepreneurial actions are directed towards what ought to be rather than towards what is. Venkataraman, Sarasvathy, Dew, and Forster (2012) are of the opinion that opportunities are enacted, imagined, or created. However, some scholars of entrepreneur research take on a positivist/realist stance, asserting that opportunities exist independent of the entrepreneur, and that it takes “alertness” to discover them as they represent market deficiencies (Kirzner, 1973). Needless to say, design and design management are more aligned with the first position, even though the discussion is redundant to some extent because alertness may also very well be a requirement for creation.

The overlap between design theory and Sarasvathy’s (2008) concept of “effectuation” is even more obvious: the iterative process of making things real and tangible is close to the process of effectuation—acting on opportunities and exploiting them step-by-step in a continuous process of learning and developing. However, the concept of “effectuation” is also challenged by the concept of “causation”, which implies that the way to success is the deployment of specific means and tools such as business and financial planning (Fueglistaller, Müller, Müller, & Vallery, 2012) after a business opportunity has been discovered (e.g. through “alertness”, Kirzner, 1973).

With these overlaps in mind, we will now compare in more detail the entrepreneurial process of opportunity recognition, evaluation, and

exploitation (Shane & Venkataraman, 2000) with design and design management approaches.

### **Opportunity recognition and creation**

A designer's ability to monitor the environment brings forth new entrepreneurial opportunities, creating new offerings as a result.<sup>64</sup> At an early stage of the design process, designers use various approaches that include intuition, investigation of user needs explored through empathy or experiential methods ("putting oneself in the shoes of the user"), ethnography, observation of trends, or following personal interests (Sanders, 2006) to discover opportunities for new offerings. Furthermore, the awareness of new materials and technologies from other contexts (Hargadon & Sutton, 1997) or the adaptation and combination of existing technology to create smart, user-friendly and attractive value propositions (Pannozzo, 2007) are typical design (entrepreneurial) activities at this stage.

Entrepreneurs are also alert to new information of relevance to the identification of opportunities (Kirzner, 1973; Kirzner, 1979). Some of their approaches focus on systematic search—the deliberate gathering of new information from the most promising information channels (Fiet, Piskounov, & Patel, 2005). Clearly, then, recognizing opportunities is not only about knowledge gathering and related behavior; it is also about the assimilation of new knowledge. Cognitive processes such as counterfactual thinking (Baron, 2000), connecting seemingly unrelated dots (e.g. Baron, 2006), or linking to prior knowledge and experience (Shane, 2000) and learning (Corbett, 2005) may all foster opportunity recognition. Entrepreneurs observe (potential) customers and their behavior, exchange information with other actors (idea networking), experiment physically and mentally, or question the status quo (Dyer et al., 2008), just as designers do.

### **Opportunity evaluation**

Entrepreneurs evaluate entrepreneurial opportunities by deploying a range of heuristics. For instance, they perceive whether their existing knowledge resources are appropriate for the opportunity (Haynie, Shepherd, & McMullen, 2009); they assess the opportunity in terms of risk (Keh, Foo, & Lim, 2002); they refer to their feelings and emotions about the opportunity (Foo, 2011); and they evaluate potential markets as well as potential financial gains (Ozgen & Baron, 2007). Furthermore, evaluation

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<sup>64</sup> See e.g. chapter on "Freitag Taschen" in Read, Sarasvathy, Dew, Wiltbank, & Ohlsson, 2011

processes may be nested in actions, social interactions, and retrospective sense-making of actions, especially when markets are newly created (Sarasvathy et al., 2003; Sarasvathy, 2001; Weick, 1995).

Design evaluates opportunities by „making“, or turning ideas into innovations (Cox, 2005) through a conscious decision-making process in which information (an idea) is transformed into an outcome that may be tangible or intangible (Von Stamm, 2008). In addition, experimentation, prototyping, and visualization are used to evaluate and test ideas, concepts, strategies, and so on. The evaluation of ideas in general, and of opportunities in particular, is an intertwined process of experimentation, visualization, and testing, during which diverse evaluation criteria are used. Venkataraman et al. (2012) state that „both processes of making and finding are intertwined in the practical reality of how opportunities come to be “ (p. 26), stressing Schön’s point that doing can lead to reflecting, leading to better doing, and so on.

### **Opportunity exploitation**

Opportunity exploitation often involves risk-taking, as financial means and individual efforts are invested and future outcomes (financial gain or loss) remain unclear at the outset. At this stage, entrepreneurs experiment both physically and mentally (Corbett, 2005; Dyer et al., 2008) and use trial and error to find solutions to problems (e.g. Deakins & Freel, 1998), and this “demands imagination, inspiration, and protracted endeavour” (Sarasvathy, 2001). This process is iterative in nature as, through actions, new opportunities emerge or other solutions appear and the ideal typical planned process may become obsolete (e.g. Sarasvathy, 2008).

As already noted, design processes are also iterative and integrative, mirroring the concepts of reflection-in-action (Schön, 1983) and effectuation (Sarasvathy, 2008). However, at this point of the entrepreneurial process, design management starts to take a strong lead. Beyond new product development, design and design management are “engines to commercialise” new offerings. For instance, the launch of new offerings might include feedback from customers or other stakeholders, leaving room for adaptation, or exploitation of new business opportunities might be accompanied by a careful orchestration of other company touchpoints (Cooper et al., 2009).

## Entrepreneurial design management

Based on the theory reviewed above, how can we now conceptualise design management as an entrepreneurial activity? The core elements of entrepreneurship consist of a *business opportunity* that is recognized or created, evaluated, and exploited; the *resources* necessary to act on the opportunity; and an *organisation* that fits the envisioned company future to its market environment (Fueglistaller, Müller, Müller, & Vallery, 2012).

Depending on the positions of design managers in a company, they will be able to influence most of the above-mentioned areas. If, for instance, the design manager is in charge of trend monitoring or product development, then opportunity recognition, evaluation, and exploitation might be precisely the core of his job description. They may also be in a tactical position to exert some influence on decision-making with respect to resource allocation and organisational change.

While all these considerations are already the “bread and butter” of a design management function, they may at times disappear into the background of daily operational pressures. To then ask very simple and focused questions may produce the frame of mind necessary to react to disruptive change.

Stevenson and Gumpert (1985) list the following questions as typical of the entrepreneurial approach:

- Where is the opportunity?
- How do I capitalize on it?
- What resources do I need?
- How do I gain control over it?
- What structure is best?

An opportunity to execute entrepreneurial design management might, of course, also present itself when design managers or leaders are involved in the founding of new ventures or spin-offs. However, the opportunity to create an organisation from scratch may also often mean limitations on such things as access to financial means, access to markets, the possibility of cooperating with partners, and so on. The following visualisation (Fig. 3) adapts the key elements of entrepreneurship (Fueglistaller, U., Müller, C., & Vallery, T., 2012) to represent an entrepreneurial mode of design management.



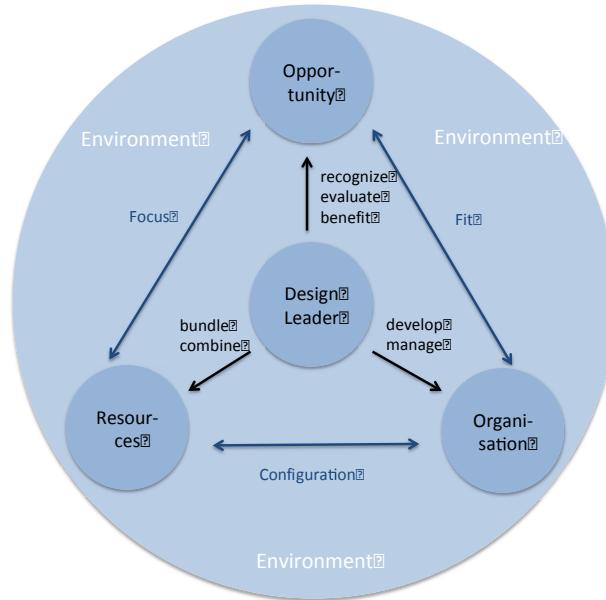


Figure 3: Adaptation of key elements of entrepreneurship (Fueglistaller, U., Müller, C. & Vollery, T., 2012)

## Discussion

Design management and its modes have changed over time. While a historical contextualisation would offer an interesting perspective on the modes, we argue that all of them (and probably more) coexist today, depending on the awareness, needs, and organisational capabilities of a firm. Categorizations change over time, depending on the moment we choose in the history of design management. In this paper, however, we have chosen to look backward and forward from a perspective of disruptive economic change, and this will also be the main focus of the discussion.

The following taxonomy of design management modes (Table 1) compares the four modes, using the categories of goals, mode/attitude, organisational processes in which design is involved, design capabilities, people, and contribution to corporate strategy.

Table 1: Taxonomy of design management modes

DM-Modes	Simple Mode (1)	Integrated Mode (2)	Dynamic Mode (3)	Entrepreneurial Mode (4)
Goals	Effective/efficient design (project) management	Orchestration of touchpoints across functions	Sustainable competitive advantage through mediating between inner and outer worlds	Exploiting new business opportunities
Mode / attitude	Selective design use	Integrated design	Transformation by design	Exploration and exploitation by design
Organizational processes	Single design projects connected to NPD, corporate and brand design activities, etc.	All processes contributing to the customer experience	Strategic management; innovation management; process design; change management	Strategic management, strategic level of design management
Design capabilities	Sourcing, briefing, designers; managing and evaluating design projects	Planning, coordinating, aligning, infusing design	Designing the capabilities of the firm; de-/re-linking; (re-)configuring resources	Creating, recognizing, evaluation, exploiting opportunities
People	Marketers, product and design managers	Design managers	Design leaders and managers, senior managers	Design leaders and managers
Contributions to corporate strategy	Improved products, appearances, etc.	Coherent positioning	Strategic flexibility and competitive advantage	New business segments, new business ventures (e.g. spin offs)

The comparison of the modes as summarized in Table 1 makes it apparent that modes 1 and 2 focus more directly on how to manage design inside the company. Although there is a movement from “efficiency and effectiveness” (mode 1) to a more infused state of design at all levels and in all aspects of a company in mode 2, both of them represent inside-out approaches. In its most elaborate form (mode 2), design management fosters and strengthens design as a company resource that makes itself felt at each touchpoint and in the overall positioning of a firm. In its worst form, mode 2 turns into the notorious “design police”, hunting down corporate identity trespassers.

Mode 3 takes an active step away from merely coordinating internal processes and resources towards the environment of a company. A dynamic mode of design management mediates between the inside and the outside systems of a firm by actively facilitating knowledge absorption and exploitation. Mode 3 ultimately aims at changing a company and at “unsticking” design where it may have become stuck or sticky as a resource. However, for companies trapped in the innovator’s dilemma (Christensen, 1997) that don’t want to endanger their core business by integrating new disruptive technology, the decoupling and recoupling of design resources may be too slow a way out of their current situation.

Mode 4 builds on mode 3 but represents a more radical departure from the inside-out approaches of mode 1 and 2. In an area of disruption, a swift response to environmental threats is called for. If executed in an existing company, mode 4 would adopt an external, market-oriented perspective as opposed to being an administrator of internal design resources. For instance, Steven & Grumpert (1985) make a distinction between the “promoter” and “trustee” types of manager; the former is active and alert, able to seize new opportunities and capitalize on them, while the latter fears change. However, disruption—which typically unfolds through new technologies or changes in consumer economics, social values, political actions, or regulatory standards (Stevenson & Grumpert, 1985)—affects different organisations in different ways. It follows that another option, as suggested by Christensen (1997), might be to activate even more basic entrepreneurial modes of management such as the exploitation of new technology by founding company spin-offs.

## **Conclusions**

This article has described three modes of design management and a fourth entrepreneurial mode, required in an area of disruption. While

modes 1 and 2 unfold their strengths in a stable economic situation, modes 3 and 4 are more suited to dealing with uncertainty, ambiguity, and disruption. In particular, mode 4—the entrepreneurial mode of design management, reinforcing well-known basics of entrepreneurship—builds on the capability to not only recognize but also to create new business opportunities. In this mode, design managers leverage entrepreneurial thinking throughout the company by exploiting opportunities, allocating necessary resources, and altering organisation and company culture where needed.

The entrepreneurial mode of design management also emphasises two dimensions essential for any creative enterprise: the dimension of design as a creator of new opportunities and the dimension of design management as a driver of the exploitation of these opportunities. These two dimensions can be applied with a view to new forms of creative entrepreneurship and intrapreneurship—to escape the inertia of established companies or to create a new form of “indie capitalism” (Nussbaum, 2013).<sup>65</sup> Today, there is in fact a visible trend towards more creative entrepreneurship (Giesa & Schiller Clausen, 2014).

For now, however, this paper can only speculate about this future mode of design management by observing trends. A future research direction would have to look for empirical evidence of this new mode of design management by studying design managers’ responses to disruptive change.

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<sup>65</sup> Nussbaum (2013) is talking about the emergence of an “indie capitalism”, questioning “big capitalism” (and the crises it produces) through local, sustainable, and human-centric business models.

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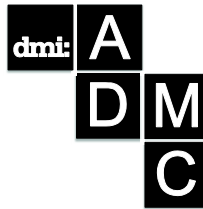
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# Design Thinking in Managing (and designing) for Organizational Change

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*Increasing interest in ‘design thinking’ in the fields of management and organization has resulted in a concern with using design-oriented approaches as means to support organizational change and innovation. To this end, conceptual ideas such as Boland and Collopy’s ‘managing as designing’ have aimed at exploring how ‘design thinking’ can inform managers and the work done in organizational contexts. However, these concepts tend to be discussed theoretically with little grounding in empirical studies of practice that might inform managing according to a ‘design thinking’ approach. In this paper we look at one attempt at facilitating organizational change through ‘design thinking’. The context is the design of a new building for the UTS Business School, Sydney by architect Frank Gehry. User participation was applied to engage stakeholders in ways that would produce valuable input for managers as well as architects. We consider how architectural design and organizational change are constructed and accomplished and to what extent the manager’s approach can be considered ‘design thinking’. Our findings suggest that while ‘design thinking’ may be one approach to managing complex change processes, a deeper engagement between designers, managers and users is needed.*

**Keywords:** *Design thinking, user participation, organizational change, management, architectural design*

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## **Introduction**

Burgeoning interest in design and ‘design thinking’ in the fields of management and organization has led to a focus on managerial applications of design thinking to bring about organizational change. This might seem sensible – after all, ‘design is concerned with change’ (Cooper & Junginger 2011, p. 38). Concepts like ‘managing as designing’ (Boland & Collopy, 2004) involve ideas that aim to unfold (or at least suggest) what ‘design thinking’ may mean for managers and how it can inspire and inform work being done in organizational contexts. Even though more recent management interest in ‘design thinking’ was initiated in the context of understanding and drawing upon how expert designers work (Boland & Collopy, 2004; Johansson-Sköldberg et al, 2013), there has been a propensity within certain management and organizational literatures to view ‘design thinking’ and its practice as emblematic for new ways of thinking in organizations. Like others, we see managerial applications of design thinking and design thinking embedded in design practice, as two distinct theoretical and analytical discourses (Cross, 2011; Johansson-Sköldberg et al 2013) that have different implications for practice. To date, however, the management and organization literatures have typically explored concepts such as ‘design thinking’ and ‘managing as designing’ as a theoretical approach or attitude. If such concepts are to be grounded in practice more empirical studies are needed to provide deeper insights into what it means to manage according to a ‘design thinking’ approach.

In this paper we offer preliminary results from an empirical study that provides insights into what it means to manage according to a ‘design thinking’ approach, why it is difficult and how it may be a fruitful path, nonetheless. The context for our research is the design of a new building for the UTS Business School, Sydney by architect Frank O. Gehry; a project in which the client anticipates that a new building of radical design will facilitate organizational change. User participation was applied as a way to engage stakeholders and key users in this process to produce valuable input for the managers as well as for the architect. Rather than seeing this as one context within which organizational and architectural design thinking take place, we see it as two separate design processes with distinct methodological differences, tensions and contradictions between the ways managers and designers work. We consider this as the management of a ‘double design process’ (Stang Våland & Georg, 2014) of organizational change and architectural design. The management of double design processes requires two contingent enactments, in which the architecture is

viewed as symbolic for the 'new' organization. Acceptance of a building design that is unconventional and radical is seen as analogous to the changes sought for the organization itself. In this way, agendas for both architectural design and organizational change are considered as entangled and interdependent (de Vaujany & Vaast, 2013). We illustrate a few of the features that characterised the user participation activities in the case, and discuss how the UTS Business School management worked with 'design thinking' in the initiation and accomplishment of this organizational change process.

## **Theoretical underpinnings: design in management and organization, user participation in design**

For more than half a century, design has played a role in organizational studies (Galbraith, 1973; Thompson, 1967). In much of this work, however, the understanding of design has largely reflected the organization's 'formal design' (Burton et al., 2006). Involving aspects that are often considered as the structural and strategic configuration of the organization, organization design is seen to make the organization capable of achieving its goals. While this approach has been widely recognised in structural contingency theory (Donaldson, 2001) another strand of research that further supplements the idea of design in organizational contexts was forming. If design was seen as a state of being in structural contingency theory, as a literal and static design, immovable, structural and determinate, the newer focus emphasised a verb rather than a noun: designing as a process rather than design as a thing in itself (Weick, 2001, 2003; Garud et al. 2008). While the first approach focuses on design as a structure, the latter attends to designing as emergent; a process that can be understood and facilitated but not controlled. Contributions within this research 'family' involve studies of, for example, organizational practice (Romme, 2003), management (Boland and Collopy, 2004; Boland et al., 2008; Yoo et al., 2006), organizational development and change (Bate et al., 2007), and change management (Bevan et al., 2007). One interest among some of these has been to learn about designing through studying the work and practices of expert designers (Mohrman, 2007; Michlewski, 2008). Another has been to make reference to 'design thinking', reflecting the view that a design oriented way of working can constitute a productive approach to the handling of uncertain organizational issues or the augmenting of organizational innovation (Kimbell, 2011).

It is not clear, however, what ‘design thinking’ means in managerial contexts. Johansson-Sköldberg et al (2011) provide a helpful overview to explain central differences between ‘designerly thinking’, referring to the theoretical conceptualizations by design scholars of the work done by expert designers and ‘design thinking’, referring to the ways in which for example, managers (or others without design training) can make use of a design approach in their work. Although the latter – first established as ‘design management’ in the 1970s was followed by design “as a strategic tool” conceptualized in the 1980s (Johansson-Sköldberg et al., 2011: 127) – it wasn’t until this century that ‘design thinking’ came into the management debate as a way of working with change and innovation inspired by expert designers.

One way of taking an approach based on ‘design thinking’ is to engage different actors in the design process, and to facilitate the ways in which inputs to the design solution can be produced (see for example contributions by Wagner, Suchman, or Jönsson in Boland & Collopy, 2004, who base their ideas on actor-network theory, also Latour, 2009). These actors can be either users who in some way have a stake in the building or various objects employed in the design process (Suchman, 2004). For the purpose of this paper we suggest this approach be labelled ‘organized user participation’ (Stang Våland 2010), focusing particularly on users and stakeholders. By ‘organized’ we mean activities that are purposefully planned and facilitated to engage stakeholders as part of the design process, and that stretch further than users are generally involved in through their everyday work encounters.

User participation has long been considered a way of structuring stakeholder interests in internal processes of organizational change and innovation (von Hippel, 2007), as well as in public service administration (Bryson et al., 2013). As a method, researchers of user participation draw on several methodological frameworks and practical techniques. Such frameworks include ethnography (Blomberg, 1993; Forsythe, 1999; Ivey and Sanders, 2006), participatory design (Greenbaum & Kyng, 1993; Schuler & Namioka, 1993), human computer interaction and Computer Supported Collaborative Work (Anderson, 1994; Dourish, 2006; Schmidt & Bannon, 2013), as well as user-driven innovation (von Hippel, 2007) and user-centred design (Dunne, 2011). In many design related areas knowledge about user behaviour has been considered central to the development and design of new products (Norman, 2002; Heskett, 2005). In the fields of architecture and building construction, however, research of user participation has

developed more slowly. Although there are exceptions, for example within healthcare (Luck, 2005; Eriksson et al., 2013), it is rare to find longitudinal empirical studies that have addressed architectural projects as sites in which to study user participation. However, as the general tendency to give users (clients, customers, citizens, stakeholders) a more central position and status in various types of developments increases, user participation is also finding its way into contemporary building projects (Stang Våland, 2010; Storvang, 2012). Our aim in this paper is to look into how user participation can be applied in managerial practices based on 'design thinking' and how the context of an architectural design process may support this goal.

In our study, the managerial aspiration was not only to accomplish the establishment of a new business school building, it was to also facilitate a process of organizational change in relation to what the future university might consist of (and look like). To support this ambition, issues such as work practices, cross-disciplinary collaborations, and the physical settings of workspaces that would support these practices played a prominent role in the user participation activities. User participation was seen to present opportunities for the designers (managers as designers and expert designers alike) to engage with staff in developing the double design agenda. To understand more about how participation can be employed in a management/design perspective, we suggest looking for inspiration in recent research studies that discuss resistance to change in organizational contexts (Ford et al., 2008; Courpasson et al. 2011; Downs, 2012). These contributions propose that resistance can be considered constructively – as a means to engender commitment to support change. Below we preliminarily introduce a few of these ideas, looking at how user participation was organized and facilitated in this case and considering how such contexts (of architectural design and organizational change) can provide a resource in similar projects in the future.

## Methodology

The research we report upon is part of a large longitudinal case study of the design and construction of a new building for the UTS Business School, Sydney. The context for the study is the social and material construction of a new building for postgraduate students and staff of the UTS Business School designed by architect, Frank O. Gehry. Undertaken by the first author, the study commenced in October 2011 and is due to be completed in the fall of 2014 when research into the post-occupancy stage of the new building will

commence. The organizational re-design of the Business School began with the appointment of a new dean in 2008 and the architectural design process with the initial appointment of the architect in late 2009.

In the course of the study, the first author has collected participant and non-participant observational, interview and documentary data including more than 40 semi-structured interviews (with representatives from the client organization, consultants, and architects) as well as observations of over two hundred hours of meetings between the university, the architects, consultants and staff. The data for this paper comprised eight semi-structured interviews, conducted jointly by the two authors (of which the first has a background in design while the second has a background in organization studies), as well as document analysis. Though small in number, the interviewees represent a cross sample of client representatives involved in the user participation phases, albeit with different roles in that process. They were chosen because they had been directly involved with the project: as executive managers, project managers, and staff representatives. Further criteria that influenced our selection of these key people included 1) that they had protracted and influential involvement in the early stages of the design commission of the project, and/or 2) that they were either responsible for implementing the changes proposed in the project or that they held status as long-term academics within the Business School. The interviews lasted between one to one-and-a-half hours and were recorded and professionally transcribed.

Our main interest in initiating and conducting these particular interviews was to explore how stakeholders and faculty were engaged in the architectural and organizational design processes. We wanted to find out how design and organizational ideas were generated in the project by the executive management, the architects and/or the involved users, as well as how these ideas were adopted or resisted by the organization as part of the participation activities. The project involved not only the development of a new building to accommodate the activities of the UTS Business School; it was also precipitated by a discussion about the identity and profile of the school's organization. Set off by discussions about 'what kind of building a business school needs in the twenty-first century and whether the refurbishment of [the current] building would meet those objectives' (interview with executive manager #1, 2014), the project involved both substantial organizational change initiatives as well as a complex building construction. The appointment of Frank O. Gehry, already the subject not only of design books but also, increasingly, of organizational and managerial

texts, was viewed by the Business School's management as an opportunity and a catalyst for changing the organization. Given the impetus of the project, the interviews covered the topics that we have canvassed in the literature review: first, the project's overall rhetorical aim of combining the creation of a new building with changing the organization; second, how the concept of 'design thinking' was translated into the respondent's understanding and impressions of the workshops that were held and the collaboration between architects and client organization; third, the respondent's sense of processual involvement in the project and their understandings of what resulted from that involvement.

Methodologically, our approach is based on thematic analysis (Braun and Clarke, 2006). In this approach, themes are selected (and the 'keyness' of themes decided, Braun and Clarke, 2006: 82) in relation to the overall research interest – in this case the potential reciprocity between an architectural design process and the re-design of the client organization, and the application of 'design thinking' as a managerial handle for these processes. As this was a concern we shared prior to the process of collecting the data, the analysis for this paper was driven both by a mutual theoretical interest as well as by the substance of the data. The interview transcriptions as well as the available documents regarding the user participation activities and the appointment of Gehry Partners, LLP as the design architects were first read by each researcher independently and organized into broad categories. Such as, the selection of participants, types of user activities, resistance to change, the understanding of 'design thinking', the architect's role, and the processes of translation and feedback between designers and users. These categories were then jointly re-evaluated by the authors and the data clustered into three key thematic areas of interest for analysis. We have titled these i) rhetorical moves (aimed at aligning views), ii) translation effects (through participatory engagement) and iii) processual iterative loops (emergent or missed opportunities). We now turn to analyse a few of the central events illustrative of each theme.

### *Rhetorical moves*

Three somewhat independent engagement processes were orchestrated by three different external consultancies on behalf of the Business School, each involving a number of staff in cross-disciplinary workshops. These exchanges (between staff, management and consultants) were all articulated as 'interactive'. Although some workshops seem to have been more interactive than others, according to our data, we considered them all



as examples of organized user participation and in that way as opportunities for management to structure dialogues with organizational members.

The first of these processes was facilitated in late 2008 and focused predominantly on an audit of the Business School's current workplace design and office environments. Concerning the school's future spatial organization, the consultants' final report concluded that:

*'[T]he kind of teaching rooms and the kind of office structures [in the current building] were not conducive to the kind of interactive environment that most organizations are looking for. [...] You can't have a proper integrated business school in a building which is completely fragmented and labyrinthine – which is this one' (interview with executive manager #1, 2014).*

Words such as 'labyrinthine' and 'fragmented' became key rhetorical terms in the argument to support the university's investment in a new building.

The second process took place in 2009 and focused primarily on the school's strategic development; how academic work might change in the future and what the implications these shifts would have on the organizational structure and on academics' work practices. This phase commenced with the entrance of a new dean. To this end, a series of workshops titled 'Strategic Conversations' were initiated with key staff across the school's different disciplines and became an organizing principle for the new dean – a way of initiating change. Rhetorically, terms such as 'cross-disciplinary collaboration', 'knowledge integration' and 'design thinking' were brought centre stage in these exchanges, aspiring to break with the 'traditional silos' that existed between disciplines and to discuss how the new building should accommodate this. Although there arose a number of disputes about the strategic aspirations of what to do and how to get there, these workshops 'ended up with "integrated" and "design thinking" [as key words]' and 'resulted in some commitments around the reorganization of the Business School' (interview with executive manager #1, 2014).

The third process involved the design of the new building by Frank O. Gehry and his firm Gehry Partners, LLP. Gehry's engagement in the project was a result of the Business School's strategy process, described just above. One of the partners of the consulting firm facilitating the 'Strategic Conversations', who was a long-time friend of Gehry's, introduced the architect to his potential client. Known for his architectural approach –

'designing from the inside out' (Rice, 2009) – and based on a kind of 'design thinking' discourse (Boland and Collopy, 2004: 5), the headlines from the strategic conversations were transformed into the architectural brief for Gehry Partners in designing the new building. In addition, the Business School management's idea of engaging staff in both defining as well as accomplishing the new vision for the school fitted well with Frank Gehry's approach: involving the client as 'partner' in the design process (Gehry, 2004: 19).

Thus 'design thinking' became a rhetorical device and a central cue for management; it was to be a 'partner' in actively engaging both the architects and the organization in a change process. One manager linked the notion of 'design thinking' to thinking about and planning the academic curriculum in a more cross-disciplinary manner, thereby introducing a distinctive shift in the way work in academic disciplines have traditionally been organized:

*In order to get breadth where we have introduced other ways of thinking into curriculum, this is going to be at the cost of depth in the individual subject. So a number of staff were quite concerned about the potential whittling down of what they would see as just how well trained individual students were being in a particular discipline area as a cost to getting them thinking across (interview with executive manager #2, 2014).*

The statement reflects a few of the potential implications that such an understanding of 'design thinking' might have on academic institutions in terms of organizing educational programs to form competent candidates and holding on to the classical way of working with research, thereby securing intellectual depth. The idea of introducing a more integrative approach into working with education and research reflects current societal tendencies but doesn't say much about what might constitute 'getting them thinking across'. Another executive manager related 'design thinking' more closely to his approach as a manager:

*[It is] a way of re-imagining the future: of thinking of management and strategy, not as a choice between a variety of previously determined options but the imagining of options that would not otherwise [have] occurred to us. Starting with a blank page as opposed to one full of these predetermined ideas [...]. Some of it gets a bit ethereal, some of the design thinking ideas, and it's very hard to*

*Design thinking in managing (and designing) for organizational change  
pin down and people have their own interpretations – but that's the  
way I see it (interview with executive manager #1, 2014).*

One might get the impression from this statement that this manager has made a close reading of Boland and Collopy's book on 'Managing as Designing' of which 'design thinking' is one of the central tenets. Taking his statement seriously we might return to our own definition of the concept from the introduction of this paper; that '[f]rom this viewpoint, management is as much about designing alternative courses of action as it is about deciding among known options and preset ideas'. Below we return to the idea of letting new alternatives emerge as the result of a user participation process. But first we provide a few more details to describe the interactions that took place in the process of designing the new UTS Business School building.

### *Translation effects*

Gehry Partners was engaged in many stakeholder workshops in which staff representatives from across the Business School were invited to discuss various aspects of the workplace design. These workshops were held every six weeks over a 12-month period during what is called the 'schematic design phase' of the Gehry Partner's design development process (Rice, 2009). In some workshops participants were organized around small tables where they discussed specific ideas in relation to the workspace layout – a dispute about open office versus private space is one central example. Other workshops were more like presentations in which 'Gehry Partners would come back and show something for comment' (interview with project manager #1, 2014). In any case, the exchanges between designers and users revolved around different types of spaces and engaged different types of staff, according to the content of the workshop. Executive directors, administrative staff, senior and junior faculty members, as well as the occasional student were involved, representing the building's most central stakeholders. According to the university's project manager these representatives were picked, in part by rank, in part by random selection, and in part in order to be constructive. She recalls:

*[The executive managers] probably chose people that would be quite constructive. [...] There are some people who have conflicting views on certain spaces but I think the workshops were chosen to be productive. There's no point having one person there who you know is going to hate something about it because it doesn't really help the*

*process and also you can't design by committee (interview with project manager #1, 2014).*

In this statement the project manager describes what she calls 'filters' in the selection process; in this case inviting certain people in order for the process to be 'productive'. These filters not only referred to the process of selecting participants but also to the ways in which stakeholder feedback was given to the Gehry Partners architects. Such 'processing', engaged in by the university project manager, also included obtaining clearance from the university executive management. The project manager recalls: 'I never sent anything to anybody apart from [the executive managers]. It was up to them to distribute that as they saw fit.' She emphasizes the project's political nature, being both more costly than usual and in the limelight of a famous architect, and on this basis being 'watched from all sides at all times'. In this way the project manager held a central role in the chain of communication between architect and client: handling and processing input from users and stakeholders, clearing these with management, and controlling and holding responsibility for communication to the architects.

To the users, involved in the user participation workshops, the concept of 'design thinking' and its role in the project was characterised as 'rhetoric' or simply as 'a linguistic device'. Although the staff we talked with clearly recognised the school's current building as one that maintained and reinforced traditional disciplinary silos, they also emphasised that the outcome of their engagement in the new architectural and organizational design seemed to run a preset course:

*I think the building was conceived as the test tube in which the incubus of change would ferment and happen. So there was.. I don't think all the design thinking stuff was manufactured after the [user participation activities]. I suspect that was [the deans] story which got him the job, and that [that] narrative was already unfolding. [...] He began materialising it though the strategic conversations (interview with staff member #1, 2014).*

By indicating that the result of the interactions between designers and staff formed a precondition, rather than an outcome, this statement punctures one of the core ideas that concepts like 'design thinking' or 'managing as designing' are based upon. In the discussion below, we look more closely into the managerial aspiration of involving users in the process

of organizational change and how this relationship between input and feedback can be handled.

### *Processual iterative loops*

In the project, 'design thinking' was seen as the managers' approach to facilitate the development of a building design that would enhance cross disciplinary work and integrated thinking. User participation was applied as means to support the emergence of a particular kind of design outcome: it was to be productive of alternative input and an opportunity to discuss and interpret management's vision of becoming a business school 'of the future'. As one executive manager points out:

*I didn't want to do it in the traditional way of having someone coming in and writing a report. We wanted to do something much more reflective, and much more engaged, and one that would bring light to the vision of everyone within the business school in a coherent way. (Interview with executive manager #1, 2014)*

While such statements reflect the idea of producing a shared vision (Senge, 1991), our data reports of a case highly political and expensive, and that attracted a lot of internal and external attention. In consequence, the level of control exercised over the project agenda, organizationally and architecturally, conflicted with the tenets of 'design thinking'. Although based on collaborative intentions, user workshops were not so much concerned with discussing future prospects for organizing academic work; rather, these workshops seemed concerned with translating a new rhetoric to the school and introducing staff to its new vocabulary. We might think of what happened as a number of translations: translating the organizational goals to the stakeholders in the user participation process, translating feedback from those stakeholders to the architects via executive 'filters', translating organizational goals into architectural outcomes. Through such translations the executive managers hoped that the anticipated organizational changes would take place. As one executive manager recalls:

*The journey was – we're moving towards a new building. We are going to change. These are the themes that we want. If these are the themes we want what might that look like in the context of space? (Interview with executive manager #2, 2014)*

Considering this statement, however, along the lines of actor-network theory (see for example Latour, 2005), the approach we see in the project does not reflect translation. If we recall this concept as a ‘displacement, drift, invention, mediation, the creation of a link that did not exist before and that to some degree modifies the original two’ (Latour, 1999: 179), the exchanges at hand seem too preoccupied with ideas already established. While many aspects of a design (organizationally as well as architecturally) go through a number of iterations in the course of their establishment, the overall design idea in this project seemed to have been formed by management prior to the interactions with users and to have been kept in shape throughout.

What does this tell us about how the ‘double design process’ between organizational change and architectural design was enacted in the project? As it occurred, these two processes did not take place synergistically: organizationally ideas were seen to fold faster than they did architecturally. While ideas for randomly assigning offices across discipline groups; having more open plan areas; breaking down traditional hierarchical office layouts; co-locating the dean with staff; creating centralized administrative hubs, and creating stronger more integrated research centres failed to materialize organizationally (in the user participation process), some of these ideas kept proceeding architecturally – through the predetermined ideas held by the managers. Only to collapse at the construction stage – when they had already been costed and the floor plans approved by the University executive management. One of the executive managers describes how the responses from participants brought about this situation:

*If I had to characterize it, I would say that one of the things which was most difficult in this was getting engagement. [...] To getting the conversations going and connecting to the ideas. (Interview with executive manager #2, 2014)*

Although those invited to the workshops largely accepted the invitation to participate in order to be involved in the thinking and planning for the new building, their ideas did not necessarily align with the ideas presented by management. These are ‘the ideas’ referred to in the above statement. What the executive manager seems to indicate is that the participants expressed resistance. Below, we provide a preliminary discussion of how such resistance might be considered fruitful in working with complex design processes – perhaps particularly in projects that claim to be based on ‘design thinking’.

## **Discussion**

Looking back at the case and the managerial aspiration of facilitating organizational change through a 'design thinking' approach, our analysis indicates that closer relationships between managers, users and designers are needed for such approaches to be useful. When the double design process of organizational change through architectural innovation is based on ideas that are defined prior to these encounters, as it seems to be in this case, the potential of user participation is likely to get lost in miscommunication and unproductive resistance.

While resistance is often portrayed in negative terms (Downs, 2012), recent studies have proposed alternative interpretations that suggest resistance can be a resource in complex processes of organizational change (Ford et al, 2008; Courpasson et al, 2011; Downs, 2012). Ford et al (2008) suggest that resistance is not only about those affected by the change: it is rather about the relationship between change agents (those who initiate and facilitate the change, in this case managers and architects) and change recipients (staff and other users of the Business School). While change agents often focus on the recipients (negative) reactions to the central ideas of proposed changes – for example, the failure to get staff 'connecting to the ideas' (cf. interview with executive manager #2), we need to better understand the role of the change agent. Rather than ignoring the impact change agents have on these processes we suggest focusing more attention on the exchanges between stakeholders, users, managers and architects – as opportunities not as staging posts. As a more designerly oriented approach, this might also counterbalance the traditional power dynamics, which in itself can be considered a way to support organizational change (Courpasson et al 2011).

Based on a 'design thinking' approach, a way forward might be to loosen up the established conceptions that surround such projects. If we consider resistance as a resource then the quality of the process more than the energy of the resistance itself needs to be considered (Ford et al 2008). This is not to suggest 'designing by committee' but that more attention be given to exploring the productive affordances of engaging with users if the two discourses of 'design thinking' are to be meaningfully synthesized in ways productive to both managers as designers and expert designers. As others have found, 'an idealized interdisciplinarity [is] more complicated than its proponents suggest' (Kimbell, 2011: 163).

Using architecture as a means to bring to life (pre-determined) managerial aims conflicts with the notion of using user participation to

discuss (and produce new ideas for) organizational change through engaging with architectural design processes. Our findings suggest it was the managers who defined the key themes for change that, in turn, became the central tools for user involvement in the architectural design process. More focus is needed on providing the opportunity for collective engagement in the initial stages of formulating the design and the organizational briefs than on establishing the legitimacy of what has already been decided.

It is the *organizing* of this double design process that makes up the change opportunity: it is to be found in the encounter between the strategic aspirations of managers (and the ideas they represent often formed by expectations beyond their control), the process frameworks of consultants (for example, architects and strategic advisors) and the ideas produced (through exchange by the affected users and stakeholders). The problem is not that the themes and headlines that often organize user participation may be (and are often) pre-determined, or that the input produced in these processes is not reflected in the subsequent building or organizational design. The problem is rather that the exchange situation is not handled as the opportunity it represents. We suggest that for 'design thinking' to be useful in management, managers need to make use of the opportunity for dialogue that user participation offers. It is in these opportunities for dialogue that alterations to and dislocation of pre-determined managerial (design) aspirations may occur.

## Conclusion

We consider architectural design processes as relevant sites to explore organizational change and resistance as a potential resource in all kinds of design processes. Instead of seeing resistance as counterproductive we see it holding a strong act of commitment that can help in establishing new stories for, and about, organisations in their ongoing adjustments. Considering change as a process not an event we suggest that organizational re-design requires more than the twin processes of managing as designing and architectural innovation to occur: it requires their synergistic intersection in the playing out of problems, issues and productive resistance. This does not make the idea of a 'double design process' less valuable. Rather, it suggests that new repertoires are needed if the opportunities of 'design thinking' as a managerial approach to organizational change are to be fully grasped – by managers, organizations and architects.



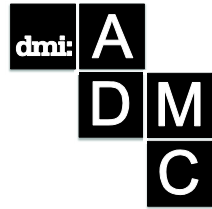
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## Design as Change – From Teleology to Guided Evolution?

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*Design is connected to change. Whether we start from Herbert Simons often cited 'the transformation of existing conditions into preferred ones' (1996, p. 111) or design as linked to innovation, design is a future oriented, change inducing activity. But how is design thinking (in a wide sense) different from traditional managerial thinking in terms of change? This paper explores and identifies change perspectives in design literature, very selectively represented by 'classic views', design thinking, and C-K theory. By using Van de Ven and Poole's (1995) four 'basic types of process theories that explain how and why change unfolds'; Life Cycle, Dialectics, Teleology, and Evolution, and Pettigrew's (1987) distinction between process and content of change, we find that design processes are commonly described as similar to an evolutionary process with gradual development (divergence), combined with some characteristics of teleology (convergence), that together constitute the motor(s) of the process. By using Heskett's (2002) distinction between 'utility' and 'significance' it is possible to further dissect design processes. Processes aiming for 'utility' eventually must converge into a solution, but is it necessarily the same for processes by which 'significance' is designed, created and maintained? Further, the uncontrollability and emergence aspects of evolutionary processes are interesting challenges from a managerial viewpoint. A generative way to frame design processes may be to see them as guided evolutionary processes (Lovas and Ghoshal, 2000). 'Guided' maintains manageability, while 'evolutionary' provides essential variety.*

**Keywords:** Change; process; content; guided evolution

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## Introduction

Design is connected to change. Whether taking departure from Herbert Simon's often cited "the changing of existing conditions into preferred ones" (Simon, 1996) or design as linked to innovation (Brown, 2008; Verganti, 2008; Norman and Verganti, 2014), or even Heskett's (2002) 'betterment of the human condition', design is a future oriented (Buchanan, 1992), change inducing activity.

The last decades or so 'design' has become an increasingly influential concept in the fields of management and strategy. Apart from the well-known 'Design thinking' (Brown, 2008; Martin, 2009), design-related approaches as management planning based on design science (Pries-Heje and Baskerville, 2010), strategic management as a design activity (Liedtka, 2000; Hatchuel et al., 2010), and design for strategic renewal (Ravasi and Lojaco, 2005) has been proposed, just to mention a few. Even if Liedtka and Parmar (2013) argues that 'design' often has been more of a metaphor than practice in the field of organization science, design definitely has had an increased impact in the fields of management in many ways, often in relation to change in one way or another.

But what can be said of design as change from some established management theory viewpoints? By what process(es) are the existing conditions transformed into the preferred ones, i.e. how is the change process conceptualized in design literature? How does the general concern of change in the design community relate to the advances in strategic and organizational change theories?

By using some widely accepted models and concepts from the organizational and strategic change literature the purpose of this paper is to explore and identify the change perspectives, explicit or implicit, in design, thus aiming to contribute to a more robust understanding of change in design and design management.

There are two starting points for this reflection, the first one contained in the notion of change in relation to design, the second in the nature of the thing designed. These will be introduced in the following section. Then, from the management and organizational change literature, a set of ideal types of change processes are presented and discussed. This is followed by a very selective review of process descriptions from design literature. In the final section the design processes are framed in terms of the ideal change types, and 'guided evolution' (Lovas and Ghoshal 2000) is proposed as a fruitful way to understand design in terms of change.

## **Design – process and content**

First, returning to Herbert Simon's seminal definition, where the full sentence reads: 'Everyone designs who devises courses of action aimed at changing existing situations into preferred ones.' (Simon 1996, p. 111), the concept of 'change' is inherent in the foci of attention for design activities and design research. However, in the ongoing, necessary and welcomed, debate to come to grips with the complexities of the design concept (Hatchuel, 2001; Hatchel and Weil, 2003; Borja de Mozota, 2008; Johansson, Woodilla and Çetinkaya, 2013), arising from the combination of the difficulties of definition *and* the potential importance of the concept, change has not received the attention it merits. Because important it arguably is. Simon's fundamental ambition is to distinguish natural science research from the 'sciences of the artificial'. Natural science research has the ambition to discover, understand and explain, and endeavours to develop and formulate knowledge. The sciences of the artificial, which includes fields as engineering, architecture, business, education, law, and medicine (Simon 1996, p. 111) has the ambition to improve conditions.

'Design' thus becomes the basic human capability to be studied. Design is the human ability to create the 'artificial', which Simon goes to great lengths to rescue from the demeaning connotations of the word and instead see in a neutral light as creation of artifacts; objects not of natural origin, but man-made.

'Change', thus may be approached in a very basic way. Simon can hardly be accused of being a very poetic writer but at one point he states one of his most important thoughts in a rather poetic language; that 'the peculiar properties of the artifact lie on the thin interface between the natural laws within it and the natural laws without.' (Simon 1996, p. 113). Creating the artificial is concerned with attaining goals by adapting the inner environment (of the artifact) to the outer. Change is the alteration of the existing solution, subject to conditions formulated in rules of the natural sciences, perhaps for most the Newtonian universe, by the purposeful problem solving capability and creativity of human beings. These conditions are both external and internal. Perhaps Simon's (1996) view should be seen as change as transformation of the knowledge gained by the natural sciences using the combinatory capability of human beings (Kogut and Zander, 1992) for purposes of improving the 'existing situation'. Change and design are inherently linked. Design is the intentful activity to improve existing situations, thus to induce change.

Second, Simon's argumentation rests on artifacts being subject to rules of science, the natural was without and the natural laws within. However, if the notion of artifacts is not restricted to physical objects (which is also done in constructive research, for example in Gagliardi's (1996) definition of artifacts), but include immaterial objects, and immaterial properties of objects, the reasoning might need to be broadened, with consequences for how to understand change. Borrowing some material from Karl Popper (1978) and his view on how to solve the mind-body problem, there are physical objects – of which natural and man-made, as well as 'cultural objects', such as theories. Man made things, by definition the result of a design process, may be material/physical or immaterial – or a combination of the two. As example of the latter a Ducati motorcycle is a physical object, to which the users – the 'subculture of consumption' (McCracken, 1986) - ascribe a significant amount of meaning. In the design field the argument is proposed for example by Norman and Verganti (2014), in their delineation of innovation in a two-dimensional space of technology and meaning. The issue here is the different ontologies and epistemologies of technology/ physical object and meaning/'cultural object'. Cultural objects are the socially constructed (Weick, 1979; 1995) and are changed through interventions in the social construction processes<sup>66</sup>.

There are however many different views on design, what it is and how it is done. A rather different approach to design from Simon's, at least at a first glance, is the one presented by John Heskett. In his book *Thoothpicks and Logos* Heskett argues that 'if considered seriously and used responsibly, design should be the crucial anvil on which the human environment, in all its detail, is shaped and constructed for the betterment and delight of all' (2002, p. 2).

Heskett makes clear that the world we inhabit to a large extent is an outcome of human design and that design is not determined by 'technological processes, social structures, or economic systems, or any objective source.' (2002, p. 8). Instead Heskett emphasizes human agency and the role of the human factor in design decisions. Heskett expands the view of design contributions by explicitly discussing artefacts as having both utility and significance as a way to clarify what objects' functions are. By 'utility' Heskett mean 'the quality of appropriateness in use' (p. 39) while

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<sup>66</sup> To which extent a theory, one example of a cultural object in Popper's (1978) deliberation, is the result of objective rationality or objectified through social construction has obviously been the scene of considerable discussion, not to be revisited here.



'significance' is about meaning and expression (p. 40). Heskett thus pays another kind of attention to the (end) user of objects and the individual as well as social aspects of using and owning objects. In addition to the practical and efficiency aspects, the social and the aesthetic, i.e. the users and the use of objects, are important to Heskett in a way that is not to be found in Simon.

Interestingly, Heskett also talks about an interface, which he describes as the interplay between users' needs and perceptions, and designers' intentions. It is at this interface that 'meaning and significance in design are created' (p. 54).

Even if different in many ways, the two authors reach a similar position that design is about the artificial (non-natural) and that design's impact is huge and thus its potential to, which is central to both Heskett and Simon, improve our world. That is, change it to the better.

But what is meant by change? What to change, i.e. the content of change, and how do design change, or by what process(es) does design change? Design may be seen as a somewhat elusive concept, and change is almost as hard to pin down. Change is, just as design, both a noun and a verb, and there is an obvious need to discuss and make clear(er) what we are referring to regarding change.

### *Process and content*

Van de Ven & Poole (2005) write on two approaches to the study of change in organizations – as observed difference in something over time, and as sequence of events – the two representing different epistemologies, methodological implications, etc. Leaving the methodological aspects out of account, Van de Ven and Poole indicate that change can be observed and studied both by comparing something in the present with how it was in the past, and by the way the events that brought the change about evolved. The first focuses on what has changed and in what way, while the second is concerned with the change process. The content and the process of change.

These are two of Pettigrew's (1987) three related elements in his model for studying (strategic) change in organisations. 'Broadly speaking, the 'what' of change is encapsulated under the label content, much of the 'why' of change is derived from an analysis of inner and outer context, and the 'how' of change can be understood from the analysis of process.' (Pettigrew, 1987, p. 657). Inner context refers to organizational structure, culture, etc., and outer context means the social, political, competitive, and economic environments. While Pettigrew is very careful to emphasize that not only

must the three be related to each other, it is also necessary to have a multi-level approach to change, here context is left out of the discussion. In any real world situation the context is of course highly relevant, but for present purposes the 'betterment ambition' of Heskett and Simon is a sufficient reason for 'why' change/design.

It is primarily the properties of the process that is at our forefront of attention, but a short word about the content may be useful. While Simon (1996) rests with improvement of the situation without largely qualifying the type or direction of the improvement, Heskett's definition of design introduces a qualification: 'The human capacity to shape and make our environment in ways without precedent in nature, to serve our needs and give meaning to our lives.' (Heskett, 2002, p. 7). Innovation (and design) may improve our situation in two fundamental directions: in material solutions oriented towards our needs, and in immaterial developments towards our quest for meaning.

Those could also be referred to as outputs of design, the two last 'designs' in Heskett's definition of design: 'Design is to design a design to produce a design'<sup>67</sup> (2002, p. 5). In Heskett's sentence design is both noun(s) and a verb.

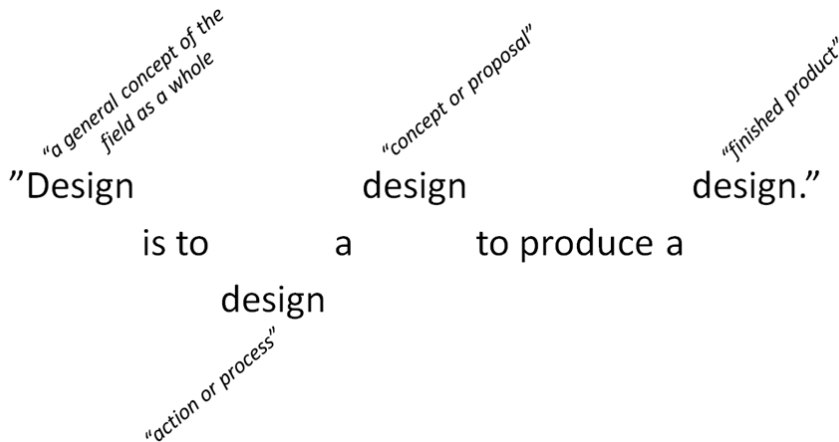


Figure 1 Heskett's definition of design taken apart.

<sup>67</sup> Heskett does not in any way mean that the "seemingly nonsensical sentence" (p. 3) is conclusive on the meanings of 'design'. See e.g. Ralph and Wand (2009) for an overview of design definitions.

Heskett's pun is a cryptic but insightful way to approach our topic. The first design is the topic, the last is the output. The two in the middle are, first, a process, and second, a content. Both of these can be seen as artifices, and thus designed. For the moment that aspect is left aside and instead focus is on the process aspect of change.

## **Types of change processes**

Change research and propositions has moved from a preoccupation with structure and corresponding change process as transportation, for example in the punctuated equilibrium view (Tushman, Newman and Romanelli, 1983), to recognizing change processes in their own right (Pettigrew, 1985; Pettigrew and Whipp, 1983), and eventually with continuous change (e.g. Brown and Eisenhardt, 1997) morphed into a highly generalized process perspective (e.g. Langlely, Smallman, Tsoukas and Van de Ven, 2013).

There is a respectable amount of research done on various aspects of change and there is a body of knowledge general enough to be applicable to the design management field. In addition to the already mentioned, for example how change processes can be understood in terms of 'sensemaking' and 'sensegiving' (Gioia and Chittipeddi, 1991), or how change does not has to be framed by Lewin's (1951) well-known 'unfreeze-change-refreeze' model, but instead can be an instance of 'freeze-rebalance-unfreeze' (Weick and Quinn, 1999), which e.g. carries different ideas of what intervention is about and consequently change agents' roles. Change, and the process perspective, is not a simplistic notion, and a limitation of perspectives is fruitful for some clarity of consequences and implications. The chosen point of departure avoids being simplistic and overly synthetic while organizing change in a common framework.

The here proposed starting point is a model of change suggesting four fundamental or ideal types of change processes; evolutionary, teleological, life cycle and dialectic, organized according to whether the change is a multi- or single entity issue and whether the change is prescribed or constructive. As this classification has its origins in management studies we see it as applicable to the design management discourse. For one, management includes 'organization design' and is certainly included in Simon's concept of sciences of the artificial. I.e., this perspective has its starting point in studies of change in and of the artificial, here organizations.

The model was developed by Van de Ven and Pole (1995) and its details has later been further refined in relation to strategic change (Garud and Van de Ven, 2002), and to innovation processes (Poole and Van de Ven, 2004).

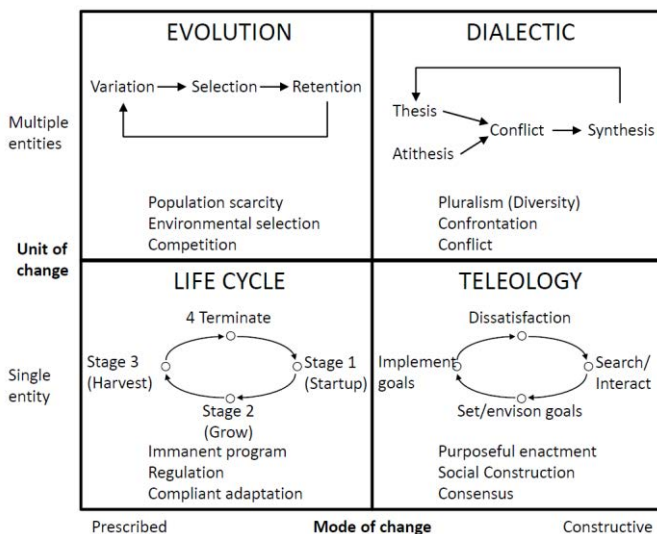


Figure 2 Process theories of organizational development and change [arrows does not indicate causation but likely sequences among events].  
 source: Van de Ven and Poole (1995, p. 530)

The model needs some clarifications both regarding the axes and the four ideal types.

*Constructive and prescribed change.* The x-axis in the model contains one of the fundamental delineations, arguing for two levels of agent involvement; first, that change may be constructive, meaning the result of the actions of an agent of change, for example the executive team of a corporation. Such is the case for the teleological and the dialectic modes of change. Second, that change may be prescribed, i.e. innate and built into the logic of the change process itself. Hence, there is really no room for an agent of change. That is the case for the life cycle and the evolutionary modes, which both are biological metaphors. The latter two can be expected to produce rather incremental changes, while constructive modes are more likely to generate unpredictable and discontinuous change.

The constructive argument finds the designer in the high seat, whether the object to be designed is a product, a process, a house or an organization. The constructive models are *change by design*, while the prescribed models

are *change without design*. Already at this level there are questions to be asked to the design discourse: To what extent is change amenable to design? Under what conditions?

*Multiple and single units of change.* This dimension refers to whether the change involves one or several entities. As the model is based on the organizational change literature, it is easy to assume that the lower half of the model is about intra-organizational matters and the upper about interorganizational affairs. It is though not that simple. A single entity may mean a number of individuals acting together towards a common goal, just as there may be dialectical tensions between individuals or groups within an organization. Which the relevant units are that in a specific case is thus not predetermined in any way, neither whether the entities are formal organizations or constellations within organizations.

*Teleology* is the goal-oriented model where a certain classic rationality is prevailing, despite the claims for social construction and consensus. Issues are derived from dissatisfaction, i.e. a problem identification. From there a cycle of 'analysis – formulation – implementation' leads to a resolution through change. The 'motor' of change is the goal-orientation and according to Van de Ven and Poole, it is the most common approach in the management literature. Teleology is a constructive mode of change as it does not seek to conform to the present order. It is the process that is characterized, not the preferred outcome which can be set in any way.

A teleological process would most likely be a managerially controlled, goal oriented process, where goal specificity is at the centre and where progress may be monitored in evaluating the steps in the process against the goals stated. But with an analytical perspective in the classic form of 'analysis – formulation – implementation' come the fallacies of planning (Mintzberg, 1994). While control is in the high seat, the degree or level of innovation might be on the side-lines.

*Evolution* is in a strict interpretation the contrary to teleology. It is a prescribed mode of change involving multiple entities. It leads off a classic Darwinian evolutionary model of 'variation – selection – retention'. The motor of change is the competition between multiple options, which surfaces in the selection process as the variants are field-tested. The key issue from a managerial – or design – perspective is the non-controllable aspect of evolution in its strict form. Blind variation is the driving force, which creates unexpected newness, and fundamental creation of something new. But as blind, this is outside of managerial space and control (Campbell, 1965). Evolution is fundamentally biological metaphor and the application of

biological metaphors on organizational 'life' and managerial action has been elegantly argued to be highly dubious (Penrose, 1952).

An evolutionary process would, in a strict sense, be uncontrollable from a managerial perspective, piecemeal and incremental, partial and local, iterative, gradual and slow – but potentially generating frame-breaking, unexpected change.

Regarding cultural objects, Weick's (1979) model of social construction and sense-making is fundamentally a Darwinistic evolutionary model, although the basic model now reads 'enactment – selection – retention'. In a social context, variation is the result not of random mutation of genetic material, but of the ingenuity, or non-ingenuity, of human agents in the generation of ideas. However, to serve as raw material for the selection stage of change processes, the ideas must be more than random remarks, they must be enacted in the social context. Variation may thus be planned and characteristics or traits can be acquired by learning and imitation within a generation. A Lamarckian view of evolution is therefore more reasonable in the fields of management and organization than a Darwinistic one.

In the *dialectic* change model, contention is the motor of change, as an antithesis challenges the thesis and the ensuing conflict, in the ideal situation, leads to a synthesis. It is also modelled as constructive mode of change as it, while emergent and uncertain, often generates 'novel forms that, in retrospect, often are discontinuous and unpredictable departures from the past' (Van de Ven and Poole, 1995, p.522). Struggle or conflict does however not have to induce change. As long as the forces balance each other, stability or status quo will prevail. It is when the antithesis is sufficiently strong to challenge the thesis a synthesis may be produced (Garud and Van de Ven, 2002). There are though reasons to be somewhat cautious regarding the outcome of conflicting, opposing forces. There is no guarantee that it will be a creative synthesis as one side may win and wipe the other away.

A related approach is the 'tension dialectic' where a never-ending series of tensions between the opposing sides of dualisms drives the process (Poole and Van de Ven, 2004).

*Life cycle.* While a common concept in business and organizational literature, for example in marketing as product life cycles or in strategy in industry life cycle stages (e.g. Porter, 1980), what does it mean in the design based change discussion? A too deterministic view where everything is predetermined, cf. the dangers with biological mentioned above, seems to be incompatible with the generative and creative aspects often associated

with design. It is though not the content that is predetermined, it is the path of development (or process pattern).

The life cycle concept implies that a) change is immanent, and b) that a changing entity follows a sequence of phases or stages that are conjunctive and cumulative (Van de Ven and Poole, 1995). The requirements that regulate the process may be natural, logical or institutional, where the latter is less deterministic than the former ones (Poole and Van de Ven, 2004).

Summing up, remembering Poole's and Van de Ven's words that '... theories of organizational change and innovation tend to be complex, often combining several different generative mechanisms' (2004, p. 375), the different ideal types and their characteristics are the analytical tools we are about to put to work. Table 1 summarizes the for our purposes most important characteristics of the different types of change.

*Table 1 The ideal types*

*Based on Van de Ven and Poole (1995, p. 514) and Poole and Van de Ven (2004, p. 377)*

Characteristic	Life-Cycle	Teleological	Dialectical	Evolutionary
Generative mechanism	regulated	planned	conflict/tension	competition
End-state defined at outset	yes	yes, by the goal	no, emerges from process	no, emerges from process
Process pattern	convergent	convergent	divergent	divergent

## **Processes of Design**

The purpose of this section is to introduce and discuss a few selectively chosen approaches to design and design related thinking, with the ultimate ambition to explore the usefulness of change theory for the design management discourse.

As mentioned in the introduction, we have over the last decades or so witnessed a 'design invasion' in the fields of strategy and management. As design is no stranger to strategy and management, 'organization design' has been a core theme in the literature for a long time (e.g. Lawrence and Lorsch, 1967; Thompson, 1967), it is reasonable to assume that the current 'invasion' is a call for something else than what used to be meant by

'design'. As design is about change, how can the different approaches be framed in terms of change?

### *Early views of design processes*

Almost 50 years ago Archer (1967) carefully listed the categories of requirements that normally has to be considered when designing artifacts – function, ergonomics, mechanism, structure, production, economics, brand presentation, aesthetics, and motivation – and then he wrote that 'The design act consists of a problem-solving activity which is goal-directed and is identical in kind with those problems familiar to management students and decision theorists' (1967, p. 49). He describes that there often is a complex of goals which make the process more complicated, but that the overarching aim is to work 'out the optimum value for all these variables so that the objectives are best achieved' (p. 50). Archer also describes what he calls the 'Classical design method'.

1. Collect information;
2. Analyse information;
3. Postulate a design idea;
4. Develop the design idea;
5. Construct mathematical, drawing or prototype models; and
6. Prepare working drawings and schedules.' (p. 50)

A straightforward, ordered view. In his conclusion Archer writes that design management is about giving the right instructions to the right man at the right time, and that decision making within the fields of design and management respectively, 'will have so much in common that the one will be no more than the extension of the other' (p. 51).

Archer's approach is reflecting the teleological change process almost in all aspects. A rationalized perspective on the managerial task, including the task of design management with linear and sequential phases or steps. A hierarchy of tasks in a pre-ordered sequence from issue identification, over analysis, to goals and planning and finally execution through implementation. In Van de Ven and Poole's (1995) terms, the motor of the process lies in the goal orientation and plan.

A few years later Jones (1970) reviewed a number of 'new design methods' and found that most of them 'were concerned with externalized thinking and therefore based on rational rather than on mystical assumptions' (p. 49). Jones proposed that the mystical was like a black box while the rational was more like a (transparent) glass box.



Jones in his investigation found that most design methods agreed upon three essential stages; Analysis or 'breaking the problem into pieces', Synthesis, or 'putting the pieces together in a new way', and finally Evaluation or 'testing to discover the consequences of putting the new arrangement into practice' (p. 63). He named the three stages divergence, transformation, and convergence.

*Divergence*: 'the act of extending the boundary of a design situation as to have a large enough, and fruitful enough, search space in which to search a solution.' (p. 64).

*Transformation*: 'the stage of pattern making, fun, high-level creativity, flashes of insight, changes of set, inspired guesswork; everything that makes designing a delight' (p. 66)

*Convergence*: 'reducing the secondary uncertainties progressively until only one of many possible designs is left as the final solution to be launched to the world' (p. 68).

Jones did not propose a three-phased linear view, instead the sequence could be retaken many times and not necessarily in a narrowing fashion. Jones's emphasis on a divergent analysis phase is interesting. He writes that it is the designers' aim is to increase their uncertainty (p. 64), an idea not commonly found in the management thinking at the time (or later).

### *Design thinking*

Design Thinking, both in itself and as a concept, has been widely used and discussed over the years and this is not the place to give a full view of what it is or can be. Instead the discussion is very selectively based on just a few authors' works; Brown (2008), Brown and Katz (2009; 2011), and Martin (2009; 2012), as examples of design related ideas that explicitly relate themselves to the fields of management and organization.

According to Brown, there have always been design thinkers around. It is thus not a novel phenomenon. Neither is design thinking just the same thing as a designer that thinks. This does not mean that design thinking is something completely different from design. A common feature is the centrality of the brief. The starting point which gives objectives, benchmarks, something from which to start. If good, it should both provide specificity and allow for unpredictability and serendipity in order to release imagination (Brown and Katz 2009, p. 23, p. 217).

Brown and Katz prefer to talk about the design process as a system of overlapping spaces rather than a series of steps or phases (2009, p.15 ff.). The first space is *inspiration*, the reason that motivates the search for a

solution, be it a problem or an opportunity; next space is *ideation*, where ideas are generated, tested and evaluated; the third space is *implementation* which is about taking the solution to the market, i.e turning it into an innovation. A project may iterate between the spaces in different ways.

From our perspective, a few aspects stand out in Brown's description of design thinking. One is the view of constraints, which should be not only willingly and enthusiastically accepted, but without which 'design cannot happen' (Brown and Katz 2009, p. 17). The key is to balance them in terms of three criteria; feasibility, viability, and desirability. Another one is how process is described. Even if Brown and Katz prefer to talk about spaces, there are of course activities and a time dimension. In one of the few illustrations in the book, there is a picture where a divergent phase precedes a convergent one (p. 67). That is though not the whole story.

*These are the seeds of design thinking – a continuous movement between divergent and convergent processes on the one hand, and between the analytical and synthetic, on the other. (Brown and Katz, 2009, p. 70)*

Divergent thinking is about multiplying options, 'Given the opportunity, every design team will diverge endlessly' (Brown and Katz 2009, p. 82), while convergent thinking is the opposite – to make choices and eliminate among competing options. Synthesis is 'a fundamentally creative act' (p. 70), which normally follows upon some kind of analytical work. The roles of analysis and synthesis for convergence are however not as explicitly discussed. Is convergence a simple testing and elimination exercise, or is there room for creativity and new insights as well? Even if not developed in detail, it is indicated that evaluation and selecting allows for collective compromising and creative contributions.

Design thinking pay a lot of attention to empathy, experimentation/ prototyping and fast feedback, and it is in all important aspects a collective process. Brown and Katz describe it as the opposite of groupthink. Regarding feedback, it may come in different forms and shapes but there is an emphasis on tangibility and generativeness, i.e. that prototypes and suchlikes stimulate further work and/or thought. Empathy, finally, described as the perhaps 'most important difference' between academic and design thinking, stand in short for standing in someone else's shoes (p.49). In our reading, the attention paid to empathy sort of indicate that the 'what' of design is more important than the 'how'.

Brown and Katz also discuss how companies have to balance their innovation efforts. They present four different combinations of combinations by combining existing and new users with existing and new offerings in a two-by-two matrix (p. 161). Incrementally improving existing offerings for existing customers is called 'managing'. Then there are two evolutionary combinations. New offerings for existing users is called 'extend', while existing offerings to new users is named 'adapt'. The last quadrant, new offerings for new users is referred to as 'create' and revolutionary. The matrix is a tool by which firms can map their innovative undertakings in order to balance them.

Martin (2009) is not quite as focused on the generation of the new as Brown and Katz are. Instead he emphasizes the company's need to balance exploration, searching for the new, with exploitation, making money in the shorter run. The process view he provides is called 'the knowledge funnel', which stretches from the relatively wide 'mystery' section, via the narrower 'heuristic', to the final, tight, well-defined 'algorithm'. Basically the funnel is a depiction of how a company can handle generation of novelty by embracing abductive thinking (mystery), developing and testing prototypes (heuristic), and turning selected options into regular operations (algorithm). Martin emphasizes abduction as a necessary element as only analysis, however important, will just reinforce what is already known (2012). Design thinking, according to Martin, is the productive combination of the two.

A funnel normally has no divergent section, but as abduction is about what might be, the not yet known, the really new, the funnel metaphor does not seem to illustrate all parts of the process..

### *C-K Theory*

Our last example from the world of design (science) is the highly abstract C-K theory (Hatchuel and Weil, 2003; Hatchuel, Weil, and Le Masson, 2013). C-K theory is claimed to be domain independent, i.e. that it can be used to depict and analyse all kinds of design processes, never mind what is being designed and connects in this respect to Simon's (1996) ambitions. But it also has highly practical applications in the KCP model processes (Elmqvist and Segrestin, 2009).

The basic idea of C-K theory is that it models design reasoning as interplay between two interdependent spaces; the K-space of knowledge, or what is known, and the C-space of concepts or undecidable propositions. The main purpose of design theory, of which C-K is an example, is to capture 'the type of reasoning (or model of thought) which is specific to design'

(Hatchuel et al., 2013, p. 148). The sole focus on knowledge and concepts makes C-K a rather different approach to design compared to the ones discussed above. There are though a few points where C-K in its abstractions helps making things somewhat clearer. One is that if there were no so called concepts, there would only be problem solving and optimizing but no design. Concepts thus represent the generative aspect of design.

In much design literature ‘the brief’ is mentioned only passingly, but it is always important. Its function is to orientate the efforts and to give instructions without telling where or how to go. In the wordings of C-K theory design requires ‘the introduction of new objects or propositions that were unknown at the beginning of the process’ (p. 151). This is where concepts and the C-space comes in. Concepts are propositions which are expansions in relation to what is previously known, and that are neither true nor false. By trying to add new properties from K-space to the proposed concepts, so called partitioning, C is expanded in testable ways (for example by prototyping). Partitionings a) revise definition of objects, and b) guide the expansion of knowledge in new directions that cannot be deduced from existing knowledge’ (Hatchuel et al. 2013, p. 154). Expanding partitions ‘capture what is usually called *imagination, inspiration, analogies, and metaphors.*’ (p. 154, italics in original). Based on outcomes and further partitioning, C’s expansion is divergent via ‘combinatorial expansion’ (Hatchuel and Weil, 2009). The point is that C-K theory makes explicit how design both is about the hitherto not known, and about previous knowledge, and that it has a rationality that differs from problem solving or learning.

*The rationality of design is richer and more general than other rationalities. It keeps the logic of intention but accepts the undecidability of its target, and it is adapted to the exploitation of the emergent. (Hatchuel et al. 2013, p. 162)*

A ‘logic of intention’ is not to be confused with an enacted goal in Van de Ven and Poole’s teleological model. That there is intention means that it is not evolutionary in a blind sense, while emergence still is clearly related to evolutionary reasoning.

### *Reflections*

In all, with caution for a non-exhaustive literature review, early conceptualizations of design processes seem to emphasize linear, sequential problem solving with the designer in control of the process; what in change

theory is called teleology. Later propositions from design thinking let intent be central, and yes, someone has to come up with the design brief. But, many propositions including the Jones (1970) stages show a less singularly goal-oriented, less programmatic approach. The process itself has value, the process is not in full pre-specified ('prescribed' in the language of Van de Ven and Poole's change theory), and the output is not fully contained in the parameters given as input. Clearly the designer's/manager's task is different, although not entirely clear how. From a change perspective other questions may be asked: what is the source of intent and should it be understood from a strict change theory? How may the issues and observations be conceptualized? In the next section one possible way forward is proposed and design content is brought back into the discussion.

## **Design as Change: From teleology to guided evolution?**

Returning to the approach presented by Archer (1967) it is almost identical to the one that many of the most common strategy textbooks have adopted, a logic of 'Analysis (step 1 and 2) – Formulation (step 3 and 4) – Implementation (step 5 and 6)'. Basically it is a rather rationalistic, problem-solving approach that in Van de Ven and Poole's terms is fairly close to teleology, similar to the one that came to dominate the field of strategy in early 70:ies and onwards. Archer's approach to design is thus not what has caused the design stir in strategy and management. But as shown in the brief view from Jones' (1970) review of then contemporary design methods, there were other views for the field of management to consider. Before coming back to this issue, let us first briefly revisit the four ideal types of change and how design processes seem to be reflected through this perspective.

*Life cycle.* As expected, not much. A deterministic view of design is an oxymoron. Different kinds of stage based approaches could be seen as some kind of institutionally defined way of working, but the point in life cycle based thinking that stages must follow in a certain order is not consistent with iterating design processes. On the contrary, whether stages or spaces, it is both allowed and often also necessary to move back and forth or to be at different places simultaneously.

*Dialectic.* The concept of synthesis is common, but not quite in the dialectical sense as an outcome of a conflict between thesis and antithesis. Considering the importance of challenging constraints, and that there may

be vested interests involved, conflict does not seem to be a prominent factor in design. Tension dialectic where there is less focus on conflict and instead dualism is interpreted as generative opposition that drive the process seem to be more promising if we are to understand the attractiveness of design to the field of management.

*Teleology.* A design process where the goal is set from the beginning is impossible. It must though not be forgotten that at some time processes have to converge towards a goal, however and whenever it has been defined, in order to actually realize and deliver. Does that make them teleological? Not in their totality, but convergence seem to be a necessary feature of design processes.

*Evolution.* The other, and more discussed feature of design processes, is divergence. Whether we look at Jones, Brown and Katz, or Hatchuel with colleagues, emphasis is on divergence or generation of variation, the first part in Van de Ven and Poole's evolutionary model. Variation in this context is far from blind, on the contrary. There are design briefs and intentions at the outset, not to be confused with a stated goal.

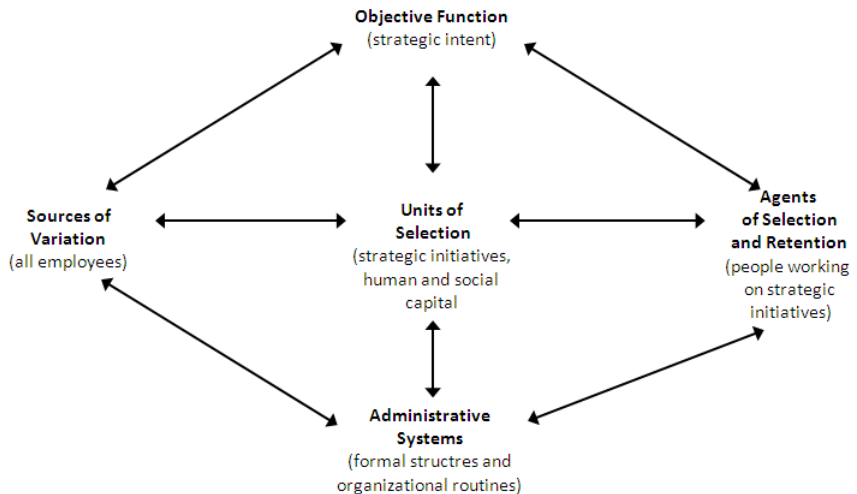
The emphasis on variation is though rather strange to a traditional managerial, teleological approach. Jones' view that the divergent analysis stage is about creating uncertainty is especially interesting. Normally uncertainty is something to be avoided or at least reduced in managerial contexts. An issue that is not sorted out is though what this divergence 'consists' of. Jones describes it as 'extending the boundaries of a design situation', Brown refers to generating options, and Hatchuel talks about expanding the space of concepts. Similar, but not identical. It is the expanded search space, the number of prospective solutions, and the concept space (and ultimately also the K space) that diverges. In design process(es) divergence is central, but in what dimension(s)?

We find a lot of intentions, but rather little of goals (until rather late in the process). Where does this leave us considering the ideal types of change? Design seems to combine the generative aspects of evolution, whatever we call its constituting elements, with a kind of convergence having similarities with the teleological approach. It thus transcends both of the fundamental delineations in Van de Ven and Poole's model as it combines 'diagonally'. According to Van de Ven and Poole (1995), Tushman and Romanelli's punctuated equilibrium model is an example of that very combination. This seems somewhat surprising, but there are significant distinctions to be noticed. In punctuated equilibrium the two motors are mutually exclusive and there is no interplay between them. Design

processes differ from this as there is iteration between the two and they are mutually informing each other. Also the temporal relationship between them is different from the punctuated case. Design process(es) may thus have the potential to add to a more general understanding of what drives change processes.

Does this mean that the part of design processes that differ from traditional managerial thinking is, like evolution, at least to a large extent, beyond (traditional) control? Yes, in a way we think it is. Actually, it is the very point. More variety is needed to be able to meet a world where needs are multiplying (c.f. Ashby, 1956).

With the perspective of managers being out of control, an interesting development, conceptually partially in parallel to Weick's (1979) sensemaking model, is the propositions for 'guided evolution' (Lovas and Ghoshal, 2000), that try to combine the possible advantages of serendipity and the organic change process that is Darwinian, but possibly without the time frames involved in the original modelling, or the potentially great loss of energy in the failed random mutations being field tested.



*Figure 3 The five elements of guided evolution.*  
source: Lovas and Ghoshal (2000 p. 876)

Guided evolution introduces a 'managed evolution' where a management function returns in the picture. Lovas and Ghoshal (2000) enter two factors, alongside a modification of variation, selection and

retention: the *objective function* (strategic intent) and *administrative systems* (formal structures and organizational routines). Guided evolution is in a way a contradiction in terms, but it also could be seen as a synthetic proposal retaining some, but not all, characteristics from teleology and evolution, while adding some. In relation to how design processes are conceptualised, Lovas and Ghoshal's model may help us see things in different ways. It has divergent and a convergent parts, albeit not quite in the same way as the ones described by Jones or Brown, and the organizational context is given a role not commonly found in the design texts.

### *Design content as duality and change processes*

We have so far discussed divergence, convergence, and their guidance. However, does all design processes converge? Let us reintroduce content in the form of Heskett's distinction between substance *and* significance into the discussion. For material and physical objects the answer to the convergence question is yes. But is it the same for immaterial aspects as meanings? Do meaning generation processes converge and do they subject to guiding in the same way as when we are referring to material objects?

If we take the Ducati motorcycle from the introduction as an example, it is an advanced object of technical utility that carries a lot of significance and meaning(s) to users and others. If meaning is as important as Norman and Verganti (2014) argues, where does it takes us in terms of convergence and guidance of design processes? This seems to be a not yet sufficiently addressed issue.

Are content and process two sides of the same coin that only in abstraction are separable? Motorcycle making and designs is both about technical problem-solving, aesthetic appearance to individuals, and social meaning construction.

As meanings can neither be optimized, nor can be constant, due to that they belong to 'an ever shifting sphere of knowledge, opinions, news and proposals' (Verganti and Öberg, 2013, p. 92), there certainly are process implications to be discussed from distinguishing the design(s) of 'utility' and 'significance'.



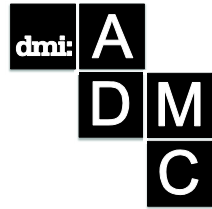
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## The Emergent Role of the Social Designer

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*This paper responds to the Academic Design Management Conference, Design Management Futures theme. It answers questions relating to the way in which we think about the future of Design Management, and the way in which Design Management may need to adapt to the changing nature of design and new management theories. This piece draws on the work of an interdisciplinary team of researchers from the fields of Engineering, Sociology and Graphic Design, and their experience in the areas of user-engagement, anti-oppressive education/pedagogy and inclusive design.*

*This position paper is a reflective piece that examines the value of designers, engineers and sociologists working together. It puts forward the question ‘What can designers and engineers learn from the emancipatory paradigm of the Social Scientist?’ Reflections from a UK-based team of undergraduate designers and engineers provide insight to their experience of engaging with the user through an inclusive design project. They cast light upon their experience of cross-faculty studies, interdisciplinary collaborations and both the challenges and benefits to working with different user groups. This paper concludes by examining the practical implications for Design Management, providing insights for Design Management education, research and practice.*

**Keywords:** *Design Management research, education and practice; inclusive design; social inclusion; interdisciplinary projects; Sociology; Engineering*

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## Introduction

Within the Design Management literature, a number of trends have been noted. For Weick, (1995), Design Management is about sense-making (Weick, 1995). It is also becoming more 'process-orientated' and 'socially responsible' (Borja de Mozota, 2011, p. 290). New management theories suggest that Design Management now requires a 'learning attitude' - seeking 'new knowledge and experiences' (Borja de Mozota, 2011), and a 'willingness to experiment' (Meyer, 2011, p. 198).

In education and in the workplace, however, designers and engineers are encouraged to specialize. Researchers such as Doblin (1987) argue that designers *should* be encouraged to specialize, and that different types of designer should be distinguished and recognized, in order to maintain and develop competence in a particular area (Doblin, 1987, p. 14). Moving into organizational life, however, Michlewski (2008) highlights that vocations become even more specialised, with occupations acting as different 'subcultures', with different 'knowledge-bases' and 'codes' (Michlewski 2008, pp. 374-5). As a result, different specialisms operate with different values and attitudes, ultimately creating a cultural divide.

One of the issues for Design Management, is that 'Design is a knowledge-based activity', through which artefacts are 'embedded knowledge' for designers (Borja de Mozota, 2011, p. 289). Furthermore, as articulated in Michlewski's (2008) study, 'Designers don't do it [create knowledge] through writing papers, they don't do it by looking up references. They do it by collecting stimuli and tuning their responses to them and striving to be original in important ways' (Michlewski, 2008, p. 384). A particular priority for Design Management, therefore, is to adapt to consider different ways of enabling design teams to acquire new knowledge. Knowledge in the area of inclusive design, according to Imrie (2002), comes in the form of 'encouraging designers to interact much more with disabled user groups' (Imrie, 2002, p. 3) and offering 'continuing professional development for practicing architects and designers' (Imrie, 2002, p. 3).

In order to acquire new knowledge and experiences, however, Design Management will need to be particularly responsive to, and synthesized with, changes within education. In 1959, British scientist and novelist C. P. Snow argued that the education system in England needed 're-thinking', and many argue that his message is still relevant today. Snow (1959) drew attention to what he referred to as a 'cultural divide' in Western intellectual circles, between the sciences and the humanities. In his lecture entitled *The Two Cultures*, he described this divide as a hindrance to the resolution of

many of the world's problems (Snow, 1959). He was critical of the way in which the humanities were favoured over scientific education and engineering. He was also critical of the way in which scientists failed to display understanding of 'social fact', and the way in which insight to productive industry, such as engineering, was overlooked (Snow, 1959).

Fifty-five years on, and arguably, there is still evidence of the divide between the *two cultures* in academia and in society today. Bazaglette (2014), *The Creative Industries Federation*, argues that 'Science, technology, engineering and maths are important but are underpowered without the arts' (Bazaglette, 2014). Moreover, at the *Munich Security Conference*, January 2014, Estonian president Toomas Hendrik Ilves emphasized the need for a more positive discourse across disciplines (Ilves, 2014). He attributed problems relating to freedom and security in cyberspace, for example, to 'the absence of dialogue between the scientific-technological and the humanist traditions' (Ilves, 2014). In the light of this discussion, the next section explores some of the issues that arise when contrasting disciplines connect through participatory research. The findings of which are of relevance to Design Management education, research and practice.

### *The Together through Play project*

Product Design and Engineering Level 4 undergraduate students at the University of Leeds provide lessons for Design Management by reflecting on their engagement in a participatory design project entitled *Together through Play* (TTP). This interdisciplinary project brought together an all-male team of Masters level students, consisting of two Engineering and three Product Design students. The team worked collaboratively with academic researchers on a piece of Action Research (Reason and Bradbury, 2001), which explores ways to facilitate meaningful play between disabled and non-disabled children. Through a process of co-operative inquiry (Druin, 1999), researchers sought to develop understanding of children's needs and aspirations for inclusive play. Co-operative inquiry uses the participatory process of developing and evaluating designs with children, as a basis for exploring their views.

Insights to their experiences cast light upon the prevalence of what Snow (1959) coined the '*Two cultures*' (Snow, 1959, p. 1). They noted various differences between the two disciplines of Engineering and Product Design, which they attributed to being 'taught differently' and possessing 'different skills'. Engineers were described by their counterparts as 'less creative', being more interested in 'exact numbers', and getting results 'right'. They

were also perceived to be more predictable, due to being 'taught the same stuff'. The product designers were seen as 'more creative', being particularly good at generating ideas, 'picking random stuff up', adapting, and adopting different approaches to a given task. It was agreed that between them, they had a different 'work ethic', with engineers taking a more 'structured', and 'analytical approach'.

The TTP students referred to their interdisciplinary collaboration as a challenging, yet positive experience. They noted that a combination of the two perspectives led the group to make 'better decisions'. Their initial assumptions about their counterparts were for some, dispelled, and for others, further amplified. The 'more intuitive' approach of the product designers was perceived to be both a hindrance and an asset by the engineers. Their intuition was associated with both 'creativity' and youth or 'immaturity'. Conversely, the product designers were switched off by the way in which the engineers tended to 'go through the motions'. More superficial assumptions were discarded as a result of the project. For example, assumptions based on physical appearance led one of the engineers to assume that the product designers were 'last minute guys', and that they were 'crazy' and 'immature'. He soon realized, however, that they had a 'diverse range of skills' to offer; that they were well-organised; and that they were capable of demonstrating good leadership skills.

The most significant divide lay in their attitudes towards the value of design and engineering and the contribution that product designers and engineers can make to the process of inclusive design. Opinion in this regard further intensified as a result of the project. One of the product designers was skeptical about the involvement of engineers, as he found them particularly difficult to work with. With regard to their studies, he felt that the assessment criteria for Engineering also lacked relevance, and that examiners favoured the engineering aspects of the designs over the more human-centred factors explored by the product designers.

In-depth focus group discussions and interviews with child participants generated some rich qualitative data for the undergraduate students. This data, however, was received with mixed response. The engineers found the qualitative data difficult to work with. They were overwhelmed by the depth of feedback received, and raised concerns about the time and opportunity available for such rich data to be processed. Despite supporting the idea of taking into account 'everyone's views', one student suggested limiting user feedback opportunities to short questionnaires, in order to generate more



'manageable' data: arguably, a move that would be detrimental to the richness of the in-depth qualitative data.

The product designers, on the other hand, felt confident working with qualitative data. They valued the feedback received, but described working with it more intuitively. One Product Design student argued 'feedback is ...your results ...If you're designing for like, people - it's not really like a sort of figures thing', whereas the engineers perceived the interview data to be 'wishy-washy'. Despite having reservations about the 'subjective' and 'wishy-washy' approach of the product designers, the Engineering students were inspired by their counterparts. They recognized the importance of bringing interdisciplinary teams together. One Engineering student argued 'This [project] *can't* be exact, but there's got to be some, like middle ground between the two - really intuitive and really exact'.

As the TTP project brought researchers from the fields of Design and Sociology together, the students benefited from the opportunity to learn about the social model of disability. According to Oliver (1990), the social model 'does not deny the problem of disability, but locates it squarely within society' (Oliver, 1990, p. 3). It does not attribute disability issues to 'individual limitations', but to 'society's failure to provide appropriate services and adequately ensure the needs of disabled people are fully taken into account in its social organisation' (Oliver, 1990, p. 3).

Despite being a well-known model in the area of Disability Studies, the TTP undergraduates assumed that designers from traditional disciplines would 'probably not' be aware of this perspective. Instead, in their view, designers are simply taught about 'the design of the object'. Some of the students linked their previous understanding of disability to the individual model, which, according to Oliver (1990), 'locates the "problem" of disability within the individual' (Oliver, 1990, p. 3). When introduced to the social model, however, there was a tendency for the students to simply *accept* this perspective.

It is worth noting at this stage that the students did not attend Sociology modules as part of their studies. They were simply signposted to useful sources of literature in the area of Disability Studies. As a result, their understanding of the politics surrounding disability, and the nature of impairment for disabled people, required further development. Some of the students focused on impairment throughout the project, assuming that disability and impairment meant the same thing - a view strongly contested in the area of Disability Studies.

When asked to share their views on the idea of integrating Disability Studies into Product Design, the TTP student team expressed concerns about time and motivation. In hindsight, they felt it would have been beneficial to engage with the Disability Studies literature *before* embarking on the design process. Rather than being compulsory, however, they suggested that Disability Studies should be optional, and dependent on the designer's choice of vocation. One student argued that Disability Studies is 'not for everyone', as 'a lot of designers would want to focus on aesthetics'. It was proposed that one module, however, may be potentially 'quite helpful', particularly for those 'looking for jobs' in the area of Inclusive Design.

One of the engineers, on the other hand, suggested that Inclusive Design or 'designing for disability' should be taught as a discipline in its own right, alongside Product Design. He did not, however, see the relevance of integrating the teaching of Inclusive Design with Engineering. He deemed the engineer's work as 'stand alone' or 'separate'. Further, 'there's enough to do, and you don't really want to bother with design inclusivity. It's more, later on, after it's, like, done'. He felt that engineers have 'enough on the plate already'. Alternatively, some of the product designers argued that just as sustainability had been emphasized in the past, and is now taught as a dedicated module on their course; so too should inclusive design.

The issue of specializing in their studies was a prominent one for the TTP students. One Engineering student expressed concerns about engaging in interdisciplinary projects in the future. He feared deviating from his subject specialism, and going too 'in-depth' into the issues surrounding inclusion. For him, 'if you go in-depth, then it's not really Product Design, is it?' The team's response to the topic of inclusion in general was, at times, subjective and the engineers perceived their involvement as an exception to their typically 'objective' approach.

One of the TTP students suggested that the teaching of Inclusive Design should be made more accessible to designers and engineers and that it should be responsive to different learning styles and needs. For example, it was argued that visual exemplars and Knowledge Sharing opportunities would reinforce the key messages about inclusive design. One of the product designers, however, felt that it might already be too late: that assumptions about disabled people may already be embedded into the psyche of design students. For him, assumptions should be targeted within education 'from an early age, and to make it something that can be discussed'.

The TTP team emphasised the need for a more humanistic approach to design education in the future. The project became meaningful for them, when they developed an emotional connection with the data. They were 'surprised' by the way in which children were 'left out' during play, and at the realization of 'how extreme that was'. One student noted that he found some of the children's experiences 'hard to have to read'. Another student explained that when child participants were given codes rather than names, the designers 'disconnected' from their feedback. It made it difficult for them to empathise with the user, and to identify or remember individual comments made. For them, pseudonyms may have worked better.

The TTP team recognized the benefits of engaging with the user. It gave them insight to children's experiences, their perspectives on play, and ideas for toys and games. Engaging in the process of co-design brought students' attention to the wider impact of, and social aspects to, inclusive design. Furthermore, the TTP students found it inadequate to second-guess the needs and aspirations of the user. They particularly disliked working with fictional personas, which they felt this led them to more narrow solutions. One student commented:

*I learnt that everyone who will have some interaction with the products needs to be involved in one way or another in the design process, regardless of whether it is the child, the parent or the teacher. They will all interact with the product in one way or another, thus their needs must be taken into account.*

One of the Product Design students felt that child-centred research is particularly undervalued within the academic environment. He explained that members of the wider student cohort dismissed the TTP project as a mere 'kiddies project' and that 'there is a stigma around this field that seems to warrant it less merit'. With regard to designing with and for children, he advised 'the first big step is to actually show designers why this type of design is important, and the benefits it can have to both the target users and the designers themselves'.

Within the TTP student team, there was mixed-opinion with regard to the value of user-centred research. Some students found feedback from the child participants amusing and dismissed some of their suggestions as comical. In other cases, personal preference or prior experience played a greater part in the decision-making process than the children's feedback. Some designs were also further developed if students could see the

'potential for development' or if they were perceived to be 'feasible'. Others were determined by the skill-base of the students.

Lessons were learnt about the balance of power between designer and user through the TTP project. The students perceived giving power *to* the user, through early prototyping and evaluation, to be one of the most positive outcomes of the project. By adopting more inclusive working practices in their teamwork, the TTP undergraduates, in turn, developed more inclusive solutions. For example, the students promoted equality by dividing tasks up into areas of interest or expertise, rather than taking ownership of a specific game. Their aim was to work together, towards a collective goal, rather than working competitively.

Having time and space for creativity was another positive outcome for the students. They tussled with the debates, and even talked *themselves* out of ideas that conflicted with the user-centred agenda of the project. When the students were given the opportunity to experiment (i.e. by working with new softwares), they also found that they came up with more inventive and innovative solutions. One setback for them was having limited access to new softwares. They found experimentation difficult initially, as they had little guidance on programs not included in the curriculum. When experimenting with new technologies in the future, they suggested that access to a basic level of training would be both beneficial to them, and necessary for innovation.

The TTP team found discourse across disciplines beneficial. On completion of the project, one student explained that he felt compelled to reconsider the roles and responsibilities of the engineer. Another felt he had become a more responsible designer, and that for him, TTP had become an important project. It is noteworthy that overall, the students expressed a lack of confidence in the power of inclusive design. Some of them assumed that inclusive toys simply would not have the same appeal as mainstream toys and games. The majority assumed that it would be *impossible* to design an inclusive product for disabled and non-disabled children to play with together. They had reservations about whether an inclusive product 'would work' and felt that inclusive design was an 'idealistic' goal.

Researchers from the field of Disability Studies would argue that rather than an ideal; inclusion is a fundamental right. Moreover, by placing an emphasis on the physical aspects of impairment in their design solutions, the TTP students may have overlooked the 'real issues in disability', which, from a sociological perspective, are 'oppression, discrimination, inequality and poverty' (Oliver, 1990, p. 2). In response to student reflections, the

following section discusses the merits of engaging with the emancipatory paradigm (one of several paradigms within the social sciences) for designers, and some of the associated mutual benefits for sociologists.

In addition to the literature on Design Management, which ‘Simply put...is the business side of design’ (DMI, 2014), literature from the areas of inclusive design and Disability Studies are used to inform discussion. Inclusive design relates to design practice. It is a ‘process-driven approach by designers and industry to ensure that products and services address the needs of the widest possible consumer base, regardless of age or ability’ (Coleman, 2010, p. 19). Disability Studies, on the other hand, relates to theory. It is an academic discipline that examines and theorizes about the social, political, cultural and economic factors that define disability. It is this synergy of both the practical and the theoretical approaches to social inclusion that this paper argues, are contributing to, and further emphasising, the emergent role of the Social Designer.

### *What can designers learn from the emancipatory paradigm of the Social Scientist?*

Borja de Mozota (2011) notes that through areas such as ‘eco design’, ‘inclusive design’ and ‘service design’, design disciplines have broadened to answer societal changes in relation to ‘sustainability, ethics and the digital economy’ (Borja de Mozota, 2011, p. 289). The TTP project emphasized the need for design disciplines to broaden further, to respond to issues of social inclusion. Borja de Mozota (2011) highlights that on a strategic level, new ‘meta-disciplines’ are important, as they act as a bridge between existing design disciplines, to develop a coherent strategy for the value chain of an organisation (Borja de Mozota, 2011, p. 289). As an extension to this argument, this section considers the merit of integrating Disability Studies and design, to form a new meta-discipline on the sociology of disability, within design-related fields. An emphasis on ‘Social Design’ may equip designers to respond and adapt to both the market-driven and political forces at play in the area of inclusive design.

Politics have become particularly prevalent in the area of inclusive design, due to the ‘rapid convergence between the market push of ageing populations’, ‘the consumer pull of equal rights legislation’, and ‘a vocal and demanding disability lobby’ (Coleman, 2010 p. 11). Where existing design-orientated research brings a wealth of knowledge on design for the market, Sociology provides insight to the politics. According to Oliver (1992), the ‘emancipatory paradigm’ of the Social Scientist, is about the ‘facilitating of a

politics of the possible by confronting social oppression at whatever levels it occurs' (Oliver, 1992, p. 110). When approaching issues of inclusive design, designers must, therefore, engage with matters of equality and participation. A degree of reflexivity is required. From a social sciences perspective, critical enquiry, praxis or emancipatory research involves a 'different view of knowledge (theory)' (Oliver, 1992). According to Lather (1987) it must

*...illuminate the lived experiences of progressive social groups; it must also be illuminated by their struggles. Theory adequate to the task of changing the world must be open-ended, nondogmatic, informing, and grounded in the circumstances of everyday life (Lather, 1987, p. 262).*

Inclusive design must, therefore be informed by peoples lived experiences. It must be honest and capture their struggles. At present, commercial opportunities are used to promote inclusive design to designers. However, they cloud issues of poverty. Designers are led to believe that inclusive design offers an incentive for older and disabled people to 'spend the now considerable wealth they control on the goods and services that deliver independence and quality of life' (Coleman, 2010, p.3). However, 'a substantially higher proportion of individuals who live in families with disabled members live in poverty, compared to individuals who live in families where no one is disabled' (Department for Work and Pensions, 2014). Sociological perspectives encourage designers to challenge assumptions about disabled people and other marginalised groups, and to address the politics of inequality, oppression and discrimination in their work. In this regard, Sociology can help to *stretch* design briefs.

Disability Studies provides insight to the experiences of critical users for designers in the area of inclusive design, with its roots in the growth of the Disabled People's Movement. It offers a wealth of literature on anti-discrimination legislation. At an organizational level, British firm, B&Q exemplifies the way in which anti-discrimination legislation can be used to inform the process of inclusive design, through its diversity initiative. B&Q took a 'proactive approach' in their aim 'to go beyond compliance with DDA and to make inclusive design a key business strategy and way of developing the B&Q brand' (Coleman, 2010, p. 5). Engaging with issues of Social Policy, can therefore, lead design-related disciplines to more inclusive practices.

In the area of participatory design, successful design-led organisations, such as IDEO, currently utilize sociologists, in conjunction with clients and

designers, at the 'observation' stage of the design process (Michlewski, 2008, p.381). This paper proposes, however, that a conversation with Sociology is useful *throughout* the design process, and particularly at brainstorming and refining stages. Oliver (1992) raises concerns about participatory research as 'all too often [it] leaves the relationship between the social and material relations of research production untheorised and untouched...Issues of politics and praxis need to be considered' (Oliver, 1992, p. 25).

Others challenge the rigour of a design approach. For example, with regard to design practice in the workplace, Doblin (1987) urges designers to 'grow up', and to 'forego their adolescent reliance on purely intuitive practices' (Doblin, 1987, p. 15). Sociology, therefore, may bring rigour to design, as it provides insight to the structures, methods, and objectives that Margolin and Margolin (2002) point out are currently missing in social design. Moreover, as highlighted by Doblin (1987), 'to avoid dealing with complexity, most designers drive tasks downscale by simplifying them' and ultimately, 'consumers get stuck with the results' (Doblin, 1987, p. 15).

By engaging in sociological discourse, designers are encouraged to consider different epistemologies, and to think differently about social problems, such as disability. Campbell (2008), for example, proposes alternative ways of thinking about difference, and more positive ways of looking at impairment. Through the Sociology of Impairment, he challenges contemporary representations of the medicalised body and seeks alternative perspectives (Campbell, 2008). 'Good Grips' designers, *Smart Design*, first introduced in 1990, attribute their success in the area of inclusive design to their emphasis on meeting user needs, rather than product functionality. Their philosophy is that 'physical design is dead', and that the design of experiences is now a priority (Coleman, 2010, p. 5).

Of mutual benefit to Sociology; designers have the ability to 'rapidly' transform a project from something that is very 'broad', and 'subjective' into something that is 'rational and tangible', something that is discussable and debatable' (Michlewski 2008, p. 380). Designers, therefore, have the potential to bring theoretical ideas to life. Such qualities equip the designer to play a key role in bringing about positive attitudinal change. According to Inns (cited in Borja de Mozota, 2011, p. 289), designers now act as 'negotiators of value, as facilitators of thinking, as visualisers of the intangible, as navigators of complexity and as mediators of stakeholders'. Moreover, designers have 'an important role to play in supporting change initiatives' (Michlewski 2008, p.381).

Design plays a significant role in many areas outside of the traditional creative sector. Hunter (2014), Chief Design Officer for the Design Council, reflects on the social dimension to his own design activities; working 'with social enterprises and government by using design to look at youth unemployment and the ageing population' (Hunter, 2014). Researchers in the field of design have recognised 'a strong commitment among designers to make a fundamental difference' (Michlewski 2008, p. 384) and the 'possibilities for positive action to redress disablist and disabling design' (Imrie, 2002, p. 3). Due to its 'humanistic agenda' (Meyer, 2011, p. 188), design offers 'intrinsic benefits' to organisational life, providing 'critical value', not only in 'end products', but in the overall 'culture' of an organisation (Meyer, 2011, p. 191).

Borja de Mozota, (2011) argues that interdisciplinarity, in the context of Design Management involves respecting differences and 'not the dream of the end of the disciplines' (Borja de Mozota, 2011, p. 291). Furthermore, rather than being a specialist area or a specific responsibility of the Product Designer, *The Principles of Inclusive Design (They Include You)*, published by the Commission for Architecture and the Built Environment (2006), stress that 'Inclusive design is *everyone's* responsibility...[it] should be an integral part of what we do every day' (Fletcher, 2006, p. 4). Design Management, therefore, is a key player in the process of inclusive design (Coleman, 2010). In the light of this discussion, the next section concludes by examining the practical implications for Design Management education, research and practice.

### *Conclusions and Implications for Design Management*

This paper presents reflections from an undergraduate team of Product Design and Engineering students, on their experience of an interdisciplinary project entitled *Together through Play*. It provides lessons for Design Management by highlighting some of the current issues in design education. The students gave insight to their experience of engaging with the user; working as part of an interdisciplinary team; cross-faculty studies and the challenges they encountered. Their feedback casts light on the practical implications for Design Management, with regard to embedding inclusion into Design Management research, education and practice.

Despite their initial reservations, the TTP students found their interdisciplinary collaboration a challenging, yet positive experience. The group recognized that a combination of the two perspectives led them to make 'better decisions'. Some of the students also expressed an interest in



further research in the area of inclusive design and careers in Inclusive Design, as a vocation. This calls for Design Management to increase opportunity for interdisciplinary collaboration in Design Management education, research and practice in the future. Interdisciplinary collaborations may present themselves in the form of student competitions, work placements, cross-faculty research and inter-departmental projects.

A particular challenge for Design Management at present is, 'managing complexity', and 'innovation' (Borja de Mozota, 2011). As highlighted in the TTP project, as projects embrace interdisciplinarity, Design Management will be required to adapt to dealing with increasingly complex data, and data of a qualitative nature. In doing so, Inns (cited in Borja de Mozota, 2011, p. 289) points out that emergent, more radical routes of 'exploiting and importing design knowledge across the traditional borders of design' offer engagement with new design forms that are 'value driven'.

The TTP project has highlighted the need for Design Management to develop more meaningful ways in which to assess design value in Design Management research, education and practice. As previously highlighted, the TTP students were of the opinion that, in the assessment of the project, the functional, engineering aspects were more highly favoured than the human-centred aspects. A similar sentiment is echoed in Design Management research. Borja de Mozota (2011) notes that when assessing value in design, there is either a reliance on peer reviews – as in design awards for "good design" – or on quantifiable evidence - improving sales figures, brand market share and reputation,' over the value it brings to society (Borja de Mozota, 2011, p. 278).

The social barriers to inclusion were deemed the 'hardest to deal with' by students participating in the TTP project. Despite learning about the physical barriers encountered by disabled people, through the Principles of Universal Design, they highlighted that the *social* aspects are not generally considered. Input from the social sciences may be beneficial for Design Management in this regard. Coleman (2010) suggests 'Build appropriate knowledge and skills within design and marketing teams. This may require the engagement of specialists, attendance at appropriate conferences and workshops and collaborations with the research community' (Coleman, 2010, p. 13).

As highlighted in the TTP project, there is much to be done in design education, with regard to building student confidence in the power of inclusive design. This calls for Design Management to showcase its successes, to highlight its social impact, and to raise the profile of a design

approach to social inclusion. Furthermore, the lack of exposure to inclusive artefacts received by the TTP students, and the way in which coverage on the topic of inclusive design was limited in their studies, now poses a creative opportunity for Design Management education. We learnt that designers tend to develop and acquire new knowledge through artefacts, rather than reading and writing papers. New ways of acquiring knowledge through Design Management education in the future, therefore, may involve more active participation in artist collaborations, exhibitions, interdisciplinary projects and modules of an 'applied' nature.

It was suggested by students participating in the TTP project that Inclusive Design should be taught as a subject in its own right. An implication of such a move, however, could result in inclusivity being perceived as an abstraction, rather than an integral part of the work of designers or engineers. If Inclusive Design is managed as a specialist area, or if it is limited to areas such as Product Design only, then, as illustrated in the TTP project, engineers and designers from other fields will continue to remove themselves from all lines of responsibility. Coleman argues that it is important to simply see 'inclusivity' on a par with 'quality' (Coleman, 2010, p. 27). Indeed, one might also ask, therefore: how do the skills of an inclusive designer differ from those of any other designer?

In response to the attitudinal and cultural barriers to inclusive design within design teams, Melanie Howard, Co-Founder of the Future foundation (cited in Coleman, 2010, p. 10), argues that it is essential for all design-related subjects to provide modules on the topic of inclusive design. Moreover, in response to issues such as age discrimination, Howard suggests that 'All design and marketing curricula should include some compulsory module on the implications of living longer, and the requirement to think differently about designing for the future'.

A particular problem for Design Management education, at present, is that it exists in 'insecure research programmes' and 'poorly funded research departments' (Borja de Mozota, 2011, p. 291). Furthermore, Gorb (1986) flagged up 'cultural inhibitions' (Gorb, 1986) as a particular barrier to a design approach to social problems. Design Management must, therefore, raise the profile of socially inclusive projects. In a bid to attract financial investment and support for Design Management education, Design Management must also take responsibility for ensuring that innovative ideas are delivered to non-specialist audiences, in accessible ways.

The TTP project highlighted the need for more accessible resources on the topic of inclusive design for designers. This, the students informed the researcher, would help them to develop a better understanding of inclusive design. In response, Design Management must now learn to exploit new technologies, and demonstrate a commitment to promoting and facilitating Knowledge Sharing and experimentation in the area of inclusive design. In the light of the findings of the TTP project, and the reflections highlighted in this paper, work is currently underway to further enhance Knowledge Sharing at the University of Leeds. A Massive Open Online Course (MOOC) is currently being developed, which uses the TTP project as a Case Study for learning online. The MOOC is designed to help students to understand that innovators come from diverse backgrounds, and to learn about the way in which people can help organisations to innovate.

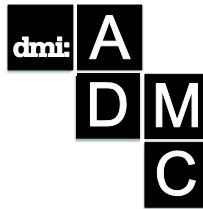
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# Culture Criminals: Social Media's Affront to Subculture and Design Management

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*Due to the advent of the age of social media, youth culture, typically catalysed by media and fashion movements and bound by geographic location, is behaving in an entirely atypical manner, changing the way innovation is diffused among consumers. With this, the methods employed by marketing practitioners may be in danger of being rendered archaic as the innovations and trends that they pursue operate in an exaggerated and accelerated state of flux as the barriers between traditional subcultures collapse and merge, further challenging the functions of design management in a NPD project. This paper aims to investigate these phenomena through primary research (based upon the findings of six case studies and ten in-depth interviews). A theoretical reworking of Roger's diffusion of innovations model illustrates the shortening of trends and the increase in velocity of tipping due to the wider population of innovators and early adopters that social media allows. This leads to the urgency of involving consumers in the process of innovation; and participatory design being an important aspect of NPD. The discussion implies that the function of design management should shift from acquiring marketing intelligence to facilitating the involvement of consumers in the process of innovation and NPD.*

**Keywords:** Youth culture, Innovation, NPD, Design management

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## **Introduction**

“In the future, everyone will be famous for fifteen people”  
(Momus, 1991)

Momus’ take on Andy Warhol’s famous quip is in the present age far more relevant than he would ever have known in 1991. More than a decade after it was written social media emerged as a juggernaut of communication and information exchange; terms such as ‘tweeting’ ‘posting’ and ‘sharing’ no longer immediately conjure images of birds, letters or charity, but of banal descriptions of an acquaintances meal-time activities, the intrusive display of another’s holiday photos or the digital exchange of the days gossip. Frivolity aside, these activities serve as an example of how deeply engrained in the fabric of modern society social media has become, this in turn presents an enormous set of implications and opportunities for those that are willing, and able, to capitalise upon them, as well as threats and pitfalls for those engage with these platforms carelessly or not at all. Indeed, social media has been cited as a key tool in the overthrow of governments (ASMR, 2011), the orchestration of protest (Casciani, 2010), the chief tool of communication in the gathering of individuals for criminal civil disobedience (Douglas, 2011), an Orwellian means of generating mass hype and hysteria (Saarinen, 2012. VC, 2012), the golden goose of marketing, a threat to national security (Chieh, 2012), the saviour and downfall of economies (Shore, 2012) and the end of the concept of privacy as we know it (Rosenblum, 2007). Social media has made heroes, billionaires, celebrities, villains and so, so, much more yet it is still perceived to be in its infancy and it is with this that social media presents significant challenges to business and society. The argument presented here not only is social media allowing the development of new consumers, who bring with them an unprecedented wave of materialistic values (Chan, 2010) and distorted approaches to traditional market ambition (Kremer, 2013), it is presenting them with the platform to diffuse information across a vast geographic span, without physical boundaries, at such an accelerated pace that it is fundamentally altering the business and cultural landscape.

### *Design Management*

The importance of embracing market intelligence into design process as part of the design management functions has long been recognised in literature, such as in Bruce and Cooper 1997, Topalian 1980, Cooper and Press 1995, Perth 2000 and Kotler 1984. In the design management

conceptual framework proposed by Sun et al. (2010), design management is positioned within the industry's knowledge supply chain and is defined as *'the management of the interface between design practice and other industry forces'*. Among the five key design management functions (line management of design teams, management of knowledge input, management of design output, managing the interface with substitute design products, and managing and repositioning entry barriers), the 'management of knowledge input' ensures that required knowledge is captured and available to inform design. Given that there is a trend towards an increasingly knowledge based profession, marketing insight is considered vital to a successful design project.

In NPD, market research is used at all stages of the product life cycle, from the conceptual stage to maturity, in establishing consumer needs, estimating demand, pricing, and shaping the specification of the product. Fain et al. (2011) considered that the more innovative the NPD projects are, the greater the need to integrate marketing functions within the project; and technical innovations are considered less important than they used to be, whilst industries depend more on their intellectual capital than on production capital alone. The role of design managers is therefore crucial in informing NPD by unveiling the trends and unmet needs of the market.

### *Rogers' Innovation Adoption Model*

One of the frameworks that are widely referenced in the literature of NPD is Rogers' innovation diffusion model (1962), which explains how, why and at what rate ideas and technology infiltrate popular culture. It shows the change in the number of new adopters of a product over time, at different stages of the product lifecycle within a social system. Among these groups, the 'innovators' are the earliest users of the product/idea who welcome change. Innovators are risk takers, typically in their teens and twenties, extremely social and have close contact with other innovators. They tend to abandon a trend long before it reaches saturation where they leave behind the current dominating social climate and seek to generate new trends or recycle old ones. It is impossible to truly test a product or idea in a market, and thus reach the much more economically valuable majority of population, prior to release. Innovators provide value at this stage as they are required to spread initial influence until the trend 'tips' and thoroughly infiltrates public consciousness (Gladwell, 2000). It is these individuals who, despite only representing a small proportion of the population in the context of diffusion of innovations model, explore new generations of



popular culture amongst consumers, and it is they who the majority of the population turn to for inspiration and new knowledge of trends and emerging culture. Because of their ability in predicting and dictating trends, this demographic is of particular interest to NPD in testing new ideas and exploring future trends.

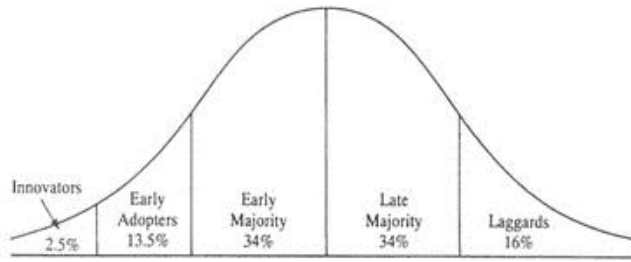


Figure 1: Rogers' Innovation Diffusion Model (Rogers, 1962)

### **Youth Culture**

A large proportion of the 'innovators' and to some extent 'early adopters' are young people, therefore the study of youth culture is extremely useful to design management. Youth culture was defined by Rice & Dolgin (2007) as *"the sum of the ways of living of adolescents; it refers to the body of norms, values, and practices recognized and shared by members of the adolescent society as appropriate guides to actions"*, and can be further broken down into distinct subcultures, each with their own beliefs, behaviours, styles, interests and values, the pursuit of which is highly linked to the exploration of self-identity and individualism in a social group setting (Brake, 1990. Muggleton, 2000. Bennett et al, 2004). From a marketing perspective youth culture represents an extremely volatile, vague, and less-than financially prudent demographic, yet it remains highly valued and sought after by marketing practitioners. The value of youth culture, as with over-arching subculture, lies in its ability to present business with new ideas and trends, offering, often through the process of 'coolhunting' (Gloor & Cooper, 2007), a yardstick of what is 'fresh' or 'emerging', and presenting businesses with creative ways to reach new demographics and focus marketing activity. Indeed the youth market should be of special interest to all NPD managers both due to its perceived ability to innovate and generate new trends that are inevitably adopted by different age groups and because of the fact that its inhabitants represent the future of consumerism.

## The Challenge

The advent of social media has however dramatically transformed the traditional dynamics of subculture and, consequently, the NPD practices that surround them. Traditionally, subcultural groups within the youth demographic were extremely tribal, and often at odds with different groups whose values, appearance and interests did not mirror their own. These groups typically formed within local communities as the spread of information regarding new trends was restricted by the media that united them, be it specialist magazines, forums or a relatively disorganised internet that limited two-way, or communal, interaction. This led to the development of strong local physical subcultural communities or 'scenes' which slowly shifted over time and are a large factor in the development of local culture bound by geographical areas. However due to the advancement of social media platforms, it is now possible for an individual to follow a particular subculture, and remain as part of that community in a virtual world, exchanging media, ideas and imagery instantaneously, in real time, 24/7 (Krotoski, 2011), thus allowing individuals to draw influence from other cultures extremely quickly as information diffuses over a much wider geographic span without having to 'trickle' into areas that would previously be left untouched due to limitations in communication. Examples of this phenomenon could include the influence of Japanese youth culture upon the West in recent years (McGray, 2002. Koshikawa, 2003. Nagata, 2012. Ito et al, 2012), a move that began in the late 90's and was solidified by social media, highlighting the way, and ease, in which information spreads from continent to continent. Indeed to be immersed in any area of an extremely foreign subculture, to have a finger on the pulse of fashion anywhere from New York to Tokyo, in real-time simply involves being connected to the right people in the form of blog subscriptions.

Alongside geography, subcultures were typically catalysed by a musical and fashion movement, another area undergoing change, as it is argued that in the age of social media it is much more difficult to draw this link and that lines between different subcultures are becoming blurred as the characteristics that so set them apart mix (Kjelgaard & Askegaard, 2006). An example of this could include the way in which tattoos, piercings, hairstyles and other elements were traditionally associated with punk or alternative culture have been adopted by the mainstream consumers (Berkowitz, 2011. Asphodel, 2012). Big business took note, such as in the case of sportswear multinational Nike and New York based niche streetwear brand Supreme, both of whom cater to a melange of skateboarding, punk, basketball and

urban culture; elements that were traditionally socially diametrically opposed (Bakare, 2011). Given that subculture is no longer bound by geographical location, and its development is no longer fully catalysed by media, be it music, film, art or fashion, its reliability in predicting and mapping trends, fashions and subcultural movements is in question.

This paper aims to understand this challenge by:

- Unveiling new and/or confirming the assumed behavioural characteristics of the youth demographic in the context of social media, as described in the literature; and
- Relating the behavioural characteristics to Roger's diffusion of innovations model, to explore the impact of this challenge on the dynamics of innovation diffusion.

This paper then further explores the impact of the dilution of trends, fashions and subcultural movements on the practice of design management.

## **Methodology**

The research comprised two stages. This first involved case study analysis of levels of consumer interaction with six brands regarded as drawing on high levels of consumer fanaticism in young consumers, namely Nike, Supreme, Apple, Blackberry and the three major computer games manufacturers (Nintendo, Sony and Microsoft). This stage also included a high level of interaction with social media in the form of blogs, forums, online communities, specialist consumer media and news feeds.

Following the case analysis, the line of enquiry was extended to primary research that took the form of ten in-depth interviews with a sample group, collected using the defined generalised group method. Phenomenological research is concerned with the study of experience and as such is intended to bring forth the views, perspectives, emotions and beliefs of the interviewee allowing the researcher to view the perspective of others objectively, gaining insight into their motivations and actions. The gathering of this research will be achieved through the execution of in depth interviews with consumers.

The sampling method used to select suitable participants for interview is the defined generalised group. Participants were assessed for suitability for interview against the following criteria:

- Holding an active interest in, being a user of, or self-defining as a 'fan' of one or more of the brands examined in the secondary research.
- Falling into the age catchment range of 16-34 as outlined by Viacom's research into 'youth marketing' (Viacom, 2008).
- Being a regular user of social media platforms.

The intention was to use this group to represent the 'innovators' and 'early adaptors' in Roger's model, overarching with the youth demographic in the marketing research context. Each interview took 45 minutes to one hour in length. In the interviews, the following three aspects of open-ended questions were used to collect Phenomenological data:

- Relationship with and attitudes towards the brands
- Relationship with and use of social media
- Key influences regarding lifestyle choices

As this study concerns young people, extra consideration was given to ethical issues. Research participants took part on a voluntary basis and consents were given. The participants were informed fully about the purpose, methods and intended possible uses of the data, what their participation in the research entails, and what risks, if any, were involved. Alongside interviews, the research process demanded the collection a significant amount of image data, the main precursor to this was that data was not to be placed in the public domain and the anonymity of respondents was respected.

## Findings

The findings can be summarised as the following behavioural characteristics in comparison with the literature:

### *Disposable Identities*

The study reveals that the identities of the individuals represented in each of these cases are in a state of flux. The experimentation with image, culture, and the concept of the self, as part of a social group, is not new; and the formation of an identity is of course a core part of adolescence and early adulthood (Brake, 1990), though never before has youth and youth culture been subjected to the pressures, and competitive nature, associated with the juggernaut of global social networks and information exchange; pressures which threaten to create new generations of super-consumer.

This is consistent with the literature and is exemplified by the 'fake geek' debate that, in recent times, caused a large storm on social media channels (Letamendi, 2012). The dispute alluded to the allegations of 'hijacking' of comic book, computer game and film 'fandom' by young women who were perceived to have no interest in the culture that surrounds the media beyond a pretentious attempt at attention seeking, allegations stemming from those who refer to themselves as 'true' fans of the genres and a conflict which threatened to alienate newcomers (Brown, 2012. Hern, 2012).

Such accusations of a lack of integrity shown by increasing numbers of 'latecomers' or 'posers' were dominant themes of the interviews and extended beyond the realm of comic book conventions into every facet of subculture with several of the interviewees complaining of a huge influx in the last few years of consumers 'jumping on the bandwagon' of areas they had a strong personal interest in, consequently threatening their identities through misplaced association, a feeling commonly described in fanaticism literature. This is supported by the images collected, which provide detailed visual depictions of individual interviewees experimenting with dramatically different types of subcultural imagery in a relatively short space of time. The key feature of each is that the photographic record was produced not simply for personal reference, but for the benefit of the wider world, the social network. In the case of each participant there are countless jumps between different noted subcultural groups; including hip-hop, grunge, punk, emo, hipster and many more. Though each individual appears in some images to be modelling, implying that the pictures were not entirely for their own benefit, and it can be ascertained from the medium through which they were shared, the social network, that they intended to provide a visual record for other peoples reference, therefore it is impossible to ascertain his/her true cultural interests.

### *Individuality*

The most common recurring theme of the interviews was the importance placed upon the concept of individuality, or more specifically the concept of being recognised as a worthwhile individual as part of a group. So completely crucial was it that the majority of interviewees visually separated themselves from their peers that they would go to extreme or unusual lengths to purchase products that were difficult to attain in order to achieve this aim. This provided a double boost for the sample group in that

it offered a great deal of psychological stimulation both from the recognition they received from their peers as well as the affirmation of knowing that they owned a product that nobody else could get, as recognised in previous literature (Engs, 1987. Greenwald et al, 1988. Wong, 1997. Garbarino et al, 2010). This desire for recognition and affirmation, the drive to shine as an individual, whilst desiring to remain as part of a group, to belong, when coupled with a rapidly expanding social circle, both physical and digital, is a strong driving force in causing individuals to seek and explore cultures with which they are unfamiliar. These interactions are permitted by technological advances and media platforms that allow them access to a visual reference of anything in the world, instantaneously, thus providing them the opportunity to draw on an enormous range of sources for inspiration and chop and change their visual identity as they see fit.

### *Cultural Gluttons*

This idea of 'disposable identities' is further facilitated by one of the key uses of social media by young people; the exchanging of media and information relating to it, be it music, film, art or fashion. This ease of access to different forms of media lowers the barriers of entry to subcultures, making it much easier for an individual to immerse themselves in a culture they are unfamiliar with without any real requirement to make a complete commitment to participate in it. To elaborate; traditionally being part of, or gaining entry to, a particular subculture required a measure of effort, an individual would have to physically leave the house, meet people and gather information, invest time and money and attempt to remain 'on point' as fashion changed by watching the people around you or drawing inspiration from magazines or the television. The advent of social media completely changed this dynamic as the information required to give an individual enough knowledge to at least feign interest in a particular subculture became freely available and required little effort to attain, as such information and media began changing hands with such velocity that the trends themselves have started to reach social saturation much more quickly.

Music, often a key catalyst of any subcultural movement, is a perfect illustration of this and is central to the phenomena (Corgan, 2012). One of the interview participants stated that:

*"You used to have to pick a side with music, albums were expensive... If you spent £12 on that album you were getting into it... you took it home and listened to it again and again... because you couldn't afford*

*Culture Criminals: How Social Media Facilitated the Dilution of Subculture another one... then that threw you off to other bands. You couldn't afford to wake up one day and say 'I fancy hip-hop today... or dance...' you had to find a genre, a scene, and stick to it... Now you can just go on YouTube and you can listen to anything with a touch..."*

The same attitude applies to film, fashion, art and all printed media, with piracy becoming an unfortunate and wide scale by-product of the phenomena. Consequently, this disposable attitude to music, film, art and fashion by young social media users is threatening to create a generation of gluttonous consumers who are used to devouring media at no cost and on an extremely superficial level. Aside from the obvious issues presented to the entertainment industry by this, which have been extensively documented elsewhere, these issues pose an extremely strong set of challenges to wider business and society which will be revisited and explored with more depth later in this paper.

### *Internet Famous*

Another factor in the mechanics of this issue is the level of access that social media allows individuals to have to celebrities, leading to a crystallisation of the existing fascination that many have with celebrity culture whilst making it much easier to visually and culturally imitate celebrities as their lives are essentially tracked in real-time. Alongside this, social media is responsible for the development of the term 'internet famous', used to describe an individual, group or entity who achieve a level of fame or notoriety almost exclusively online, such as 'celebrity' bloggers or other personalities.

## **Impact on Cultural Diffusion**

The findings led the researchers to consider how the observed characteristics of youth culture impact on the dynamics of wider popular culture. Based on Roger's model, the connectors come in the form of celebrities and bloggers (Recuenco, 2006) who have the potential for great influence in 'tipping' ideas by presenting them to innovators and early adopters who then diffuse the information to early and late adopters through social media platforms. Due to massive advances in methods of communication and the free availability of media, this can happen almost instantaneously on an international scale. This led the authors to assume

that despite the same rate of adoption and timeframe as the traditional model, the lifespan of the trend is shortened.

The sample population demonstrated that innovators and, to a slightly lesser extent, early adopters possess a strong desire to separate themselves from their peers and achieve this by seeking out and experimenting with new ideas and trends. As the information regarding new ideas, trends and fashions is so freely available, and is often presented directly to individuals on social media platforms and blogs this creates not only a very congested, and extremely fast, platform for innovation, it also gives individuals the opportunity to become innovators or early adopters extremely easily. This leads to a much higher population of early adopters than in the traditional diffusion of innovations lifecycle, heightened by the pressures placed on young consumers to distinguish themselves from others in ever-widening social groups, and as such the velocity of the tipping of a trend is greatly increased.

This is further complicated as innovators and early adopters are highly likely to 'dump' a trend or idea long before it reaches saturation and seek out and experiment with new ideas in order to further separate themselves and consolidate their position as innovators. This leads to the development of new trends whilst existing trends are in the ascension or approaching saturation amongst the early and late majority. These new trends are then adopted by the same early and late majority creating a highly fluid and accelerated pace of change.

These changes are illustrated in fig 2, characterised as:

- The advances of social media and the accessibility of information significantly shortening the lifespan of trend;
- A larger population of innovators and early adopters resulted in an increased velocity of the tipping of trends; and
- New trends emerging before existing trends ascending or saturating leading to the co-existence of multi-subcultures/globalisation of subculture in the same space and time.

This phenomenon is referred to as 'hyper-trends' by the authors, the contemporary phenomenon of trends, fashion and ideas rising to popular public consciousness and falling out of favour at high velocity.



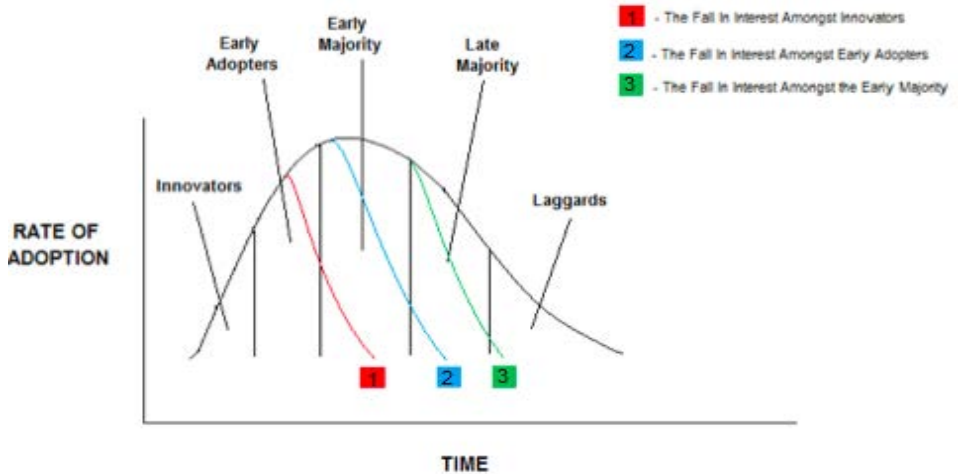


Figure 2 Hyper-trends

Roger's model was criticized as it attempts to generalise an extremely complex social issue (McAnany, 1984). The authors acknowledge that the model developed in this paper shares the same problem. What it offers is an attempt to explain the merging and erosion of subcultures, as well as the appropriation of old subcultural styles as innovators are forced to draw upon wider sources of information to consolidate their position as innovators. Given this, this model, as with the original diffusion of innovations model, only serves as an illustration of the phenomena revealed within the study. The purpose of this paper is to explore the implications of the challenge on design management roles.

## Implications for Design Management

The study has considered the communication and information exchange amongst young people alongside the issues with which they are faced as they attempt to develop their identities under a crushing weight of infinite information and free media. Alongside this, the study has established the understanding that the barriers between subcultures are eroding and merging, that geographical boundaries are falling leading to widening social networks and increased competition and pressure to achieve recognition as an exemplary individual as part of a social collective. The 'hyper-trends' model illustrates the way in which these factors, when combined, are

leading to the development of an environment of disposable culture and identity.

This presents a challenging environment for design management. Given that the geographical boundaries of lifestyle demographics have eroded, the traditional marketing methodologies in identifying target user groups and in collecting marketing intelligence have become less effective. For example, the previously reliable practice of coolhunting (Gloor & Cooper, 2007) has become redundant as a rapid turnover of trends has led to a situation in which brands could be forced to constantly change their position to suit what is 'on point' in an expensive game of marketing cat and mouse. In such a turbulent, yet exciting, environment, the 'management of knowledge input' function (Sun, 2010) of a design manager is challenged as to how to ensure that required knowledge is captured and available to design.

This reinforces the integrity of consumers in the process of NPD and innovation. Instead of taking consumers as targeted market segments, a much more effective approach would be involving consumers into the process through co-creation, allowing consumers to form a community around it. A good example of this practice is Nike, who offer a 'personal touch' by operating in many independent subdivisions each catering to different clientele; such as Nike SB, who cater to the skateboarding and urban fashion crowd and Nike Football, who cater to sportspeople and fans as well as Umbro (who until very recently were a subsidiary of Nike), who operate an experimental concept, art and culture space in the centre of Manchester (Umbro, 2009).

Co-creation allows the transcendence of the traditional consumer/business relationship and the formation of a mutually beneficial existence that is truly embodied in a trend or movement. This is exemplified by popular fashion chain Urban Outfitters who, whilst operating as a multi-national chain, maintain strong cultural links with whichever location in which they sit through their policy of only hiring staff that hold interests and knowledge in local art, music and fashion subcultures. The brand subsequently allows a great deal of creative freedom to the staff that operate the store thus entrenching the brand in local culture with minimal effort or expense. This allows each local store alter its position with ease to suit new trends as it becomes a melting pot for popular culture.

The hyper-trends model also suggests the shortened lifespan of trends presents a challenge when products become so closely linked to a particular movement or subculture. When a trend falls foul of popular fashion it ceases to exist, as it no longer offers any cultural relevance, or becomes

stigmatised, as it is associated with a particular 'type of person'. These factors can result in brands or products running the risk of being 'dumped' by their fans if they perceive a shift in values and integrity away from what they initially identified with. Examples include Burberry, heavily associated with 'chav' culture (Bothwell, 2005), Prada with football hooliganism (Hamilton, 2004), and Nokia's perceived lack of quality (Rushton, 2012). Involving consumers in the process of innovation enables designers to pre-empt and embrace changes in consumer attitudes, thus evolving with the trend.

Social media platforms offer a tremendous opportunity to interact with the consumer on a level never before experienced. The development of social media and online communities represents a huge shift in the traditional power-base from business to the consumer (Krostoski, 2011). It is now the consumers who dictate their own needs, offering self-initiated promotion of products they deem worthy through lateral diffusion (DeSanctis & Monge, 2006) and word of mouth, both digital and in person. Social media and online communities should be considered as a complex adaptive system (Miemis, 2009. Ramalingam, 2010), both highly fluid and susceptible to outside influence, with the users acting cohesively and in unison to accept or reject the messages they receive. Consumers, in particular the young consumers who represent the total of future business, are becoming more highly informed and as such extremely cynical of traditional 'pushy' methods, preferring to do things on their own initiative by seeking the information they desire, or being informed from trusted sources. As a result the traditional top-down NPD models are in danger of becoming archaic.

These developments offer an excellent platform to design managers for a complete reworking of the design process, if we return to the ideas of co-creation we can see that the NPD process can be conducted without boundaries in real time. The user is, on one hand the source of innovation and on the other, the evaluator of new products (Fain et. al 2010).

The role of a design manager in this sense is therefore to facilitate the involvement of consumers in the NPD and innovation process. Instead of attempting to access the consumer groups it is time to include them through co-creation and participation. Only through these methods can design move from the adoption of current culture, whilst attempting to navigate the minefield of the hyper-trends phenomena, to the creation of current culture.

## Conclusion

The research concludes that the advent of the social media age and its facilitation of the development of a new generation of young consumers who, through their interaction with ever widening social networks and their desire to express individualism through consumption, have eroded and merged the barriers between traditional subcultures. In turn, this behaviour has triggered an acceleration of trend cycles and an increased velocity of tipping in the context of the diffusion of innovations model. Subcultural and fashion trends disappear much more quickly, and have a far shorter shelf life, thus threatening the traditional innovation model as well as making the practices of design management different, whilst representing a shift in the balance of power away from business and into the hands of the consumer. Therefore, the paper suggests that instead of attempting to access the consumer groups it is time to include them through co-creation and participation.

Participatory design and co-creation have become an important aspect of NPD; and thus the function of design management has shifted from acquiring marketing intelligence to facilitating the involvement of consumers in the process of innovation and NPD.

It is recognised that the limited scope of the sample population may have limited the implications of the study; and the study attempts to generalise what is an extremely complex set of factors, influences and implications. However, presented herein is an exploration of an emerging topic. Much of the current research into the co-existence of young people and social media concerns the cultural dimensions of the relationship, such as the aforementioned safety, privacy and social issues. Very little current research considers how today's youth demographic will develop as consumers and what implications of this will be to innovation and design management practice.

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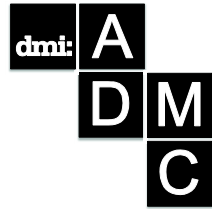
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# Transforming organizations – Linking Design Practices to Managing Organizational Capabilities

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*Today's business is challenged by the constant change of technologies, markets and user preferences. This dynamicity forces modern organizations to constantly affect and adapt to the environment. Both management and design literature have explored the potential of design practices in addressing organizational change. However, the streams still hold in their respective traditions and fall short in convincing design's capacity. To contribute to this research gap we explore the intersection of design practices and organizational capabilities as an avenue to link the literature streams. Focusing on collaborative activities in the organizations we find five propositions for future research in the intersection of the domains. The motivation of this paper is to encourage design scholars to publish in management outlets in order to justify design practices' promise as a driver of organizational change.*

**Keywords:** Organizational Change; Design practices; Organizational Capabilities; Dynamic Capabilities; Literature Review

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## Introduction

Today's organizations experience more than ever turbulence in their operating environment. Institutional settings and legislation change, competition overarches the entire globe, advancing technologies pose new threats constantly, and the preferences of users both disperse and develop in an unforeseen pace. To keep up with and to influence the changes, organizations need to be able to transform. To address the challenges and opportunities posed by the changing environment, past research has explored design as a means to transform organizations (e.g. special issues in *Design Issues* (e.g. (Buchanan 2008)) and *Organization Science* (e.g. (Dunbar & Starbuck 2006))).

Despite these efforts to prove the benefits of design practices in transforming organizations, design scholars yet struggle to attain the attention of management and organization science. One potential reason is that both streams are padlocked to their respective research traditions. Organization scholars intend to put increasing attention towards the processes that enable organizational change, but the underlined findings still tend to focus on the constellations of teams (Carroll et al. 2006) or organizations (Jacobides & Billinger 2006) and their fit with the environment. Similarly design scholars concentrate on their core – how design tools, methods and processes can be applied to drive change in organizations (see e.g. (Junginger 2008)) – and scarcely contribute directly to managerial challenges.

Overcoming the barriers raised by the differing research traditions (such as research concepts, methods and epistemology) is a prerequisite for establishing design practices as viable management devices. For design research to gain permanent foothold in the organization and management discourse, it needs to be published in organization and management outlets addressing applicable management challenges and using the applicable concepts and methodologies. While the mission discussed is vast and overarches a plethora of topics, we explore the specific issue of how design practices can be connected to the management of organizational and dynamic capabilities as an avenue for future research.

## Background

Research on the adaptation of organizations to changing markets can be dated back to Herbert Simon's seminal work *Sciences of the Artificial* (1996, 1969). To change existing conditions into favorable ones managers need

three essential capabilities: intelligence, design and choice (Boland et al. 2008, Simon 1960). Salient in the design capability is the ability to conduct under *bounded rationality* – with imperfect information and uncertain future (Simon 1996). For the illfortune of management and organization science it has mostly focused on the aspect of choice, i.e., analytical decision making (Boland et al. 2008). However, increasingly over the past 15 years Simon’s work (among others) has inspired a management and organization science stream publishing over 300 scientific articles annually. This organizational and dynamic capabilities literature strives to explain the sustained success of organizations through their ability to maintain and innovate capabilities that allow them to respond to and drive the change of the external environment (see, e.g., (Grant 1996a; Teece et al. 1997; Teece 2007).

Organizational capabilities as a research concept stems from the understanding that an organization is a collection of integrated specialized knowledge of its individuals (Grant 1996b). Thus, the performance of the organization is dependent on its ability to coordinate the integration of knowledge from outside and within the organization (Grant 1996a). The development of these capabilities actualizes as organizational structures, activities and hierarchies (Simon 1996; Grant 1996b), which are often the objects of change in organizational transformation. Dynamic capabilities focus more on how to change these organizational structures, activities and skills (collectively titled here as resources). Teece (2007) divides dynamic capabilities to sensing and shaping opportunities, seizing opportunities, and reconfiguring the organization. While the first is grounded in the cognitive and creative capacity of the individuals and organizational processes, the latter two are enabled through encouraging change and co-specialized alterable resources (Teece 2007). In both (organizational and dynamic) the capabilities are inherently linked to collective social activities and aspects of individuals. For this, we approach the organizational capabilities<sup>68</sup> as ‘the governance and coordination of social interaction within the organization and with outside entities’ (Dosi et al. 2008) and organizational processes, structures and routines as the object of change.

For design scholars the activities described above are intuitively linked with the facilitation of social interaction and the design of complex artifacts.

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<sup>68</sup> For the sake of clarity we use the notion organizational capabilities to refer to both organizational and dynamic capabilities.

There exists a vast body of literature that has studied designer's capability to conduct under uncertainty and complexity (Schön 1984b; Simon 1996; Liedtka 2000; Johansson-Sköldberg et al. 2013), designer's ability to interpret and communicate insights as a mediator of knowledge (Stevens & Moultrie 2011; Stevens 2012), or design tools, methods and processes to facilitate collaboration and teamwork (Stempfle & Badke-Schaub 2002; Steen 2013; Kumar 2013). However, to provide more than intuitive value, a more rigorous approach is needed to collect and analyze the insights in both streams of literature. Therefore, we undertake a systematic literature review to connect the two streams of literature.

Current research tends to distinguish design activities as either individual or collective (Mutanen 2008) or as activities towards the design group or the content (Stempfle & Badke-Schaub 2002). However, in the organizational context we assume that both design practices and organizational capabilities are collective social endeavors that contribute to an organizations ability to address change. For this end, we narrow our scope of exploration in the intersection to collaborative social activities, such as, teamwork, co-design, or inter-organizational knowledge creation. We intend to seek potential avenues for future research connecting the design literature with organizational capabilities assuming and utilizing collective action as our focal concept.

The rest of this paper is structured as follows. We first conduct a systematic review of the literature in both streams to uncover the phenomena and concepts in them. Second, we explore the literature to discuss potential openings of future research for design scholars to publish in management outlets. Finally we conclude by summarizing the implications of this paper for research.

## **Systematic review of current research in the intersection of design research and organizational capabilities**

We employ a systematic literature review to explore what common avenues design and management, or more specifically, design's collective activities and organizational capabilities can potentially take.

### *Methodology*

The paper follows the methods of a systematic literature review (see, e.g., Helkkula 2011). First, a set of top journals is selected and a pool of

articles is found using search terms. Second, the articles are further reviewed and some are excluded using criteria. Third, the contents of the articles are analyzed and they are categorized inductively. Finally the categorizations are cross-examined and refined jointly between the two streams of research for analysis.

The initial search of the articles in both streams was narrowed down by three factors: selecting journal sources, selecting keywords and selecting a timespan. Two top design journals, *Design Studies* and *Design Issues*, were selected as they are clearly are most valued by the design research community (Gemser et al. 2012). In addition the *Co-Design* journal was included for focusing especially on collective design activities. A search for articles in these journals was done in the Scopus database using search terms related to both collective activities and managing organizations.<sup>69</sup> The time scale was selected to include papers published in and after the special issue concerning designing organizations in *Design Issues*, i.e., 2008 and forward. This search resulted in 51 articles that were first reviewed by the abstract and if needed by the full content. Criteria for inclusion were to address collective activities and to have organizational implications. With the criteria 14 articles were included in the sample.

Similarly five top general management and organization research journals were selected from the Financial Times list (2012): *Academy of Management Journal*, *Academy of Management Review*, *Strategic Management Journal*, *Organization Science*, *Journal of Management*, and *Journal of Management Studies*. Timescale was spanned from the year and after the special issues of organizational design in *Organization Science* in 2006. The search for these articles was done in the Web of Science database using search terms.<sup>70</sup> This resulted in 44 articles, of which after the review 15 were selected. The criteria for inclusion were to address the capabilities of an organization and to focus on micro-level phenomena of collective activities (for example, papers studying firm collaboration using patent data were excluded).

The content analyses and categorization of the articles were first conducted independently by the two authors and a third colleague, followed

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<sup>69</sup> Search terms in the title, keywords and abstract of the papers: OR (collaboration, teamwork, knowledge creation, co-design, inter-organizational, group, team, interaction) [for both streams] AND OR (capability, organization, process) [in design search] AND OR (organizational capabilities, dynamic capabilities) [in management search]

<sup>70</sup> *ibid.*

by a discussion session, where the categories were integrated to our common view. The management research papers were held as the starting point of the analysis and categorization. First, our analysis found a common theme in most of the papers, which we considered as a top-level category. Second, we found five categories under that, which can potentially link the design research in to the management of organizational capabilities.

### *Findings – Five themes for future research*

The common theme found in the management papers concerning organizational capabilities and especially dynamic capabilities was that all papers (with the exception of (Lechner & Floyd 2012)) underlined the importance of utilizing and incorporating external information, knowledge or capabilities into the organization to be used with its existing knowledge and capabilities. This interplay of intra and extra organizational knowledge and capabilities was addressed using different concepts, all emphasizing its importance in securing the organizations success in the changing environment.

The discussion of the interplay between internal and external knowledge utilization was on two levels. First, the heterogeneity of individuals and especially their access to heterogeneous information (external or internal for the organization) are suggested to contribute to the organizations ability to create value (Felin & Hesterly 2007, Samarra & Biggiero 2008, Baer et al. 2013). Second, on the organizational level concepts of ambidexterity and the ability to sense and seize opportunities are discussed. Ambidexterity refers to an organizations ability to simultaneously exploit its existing capabilities and resources and to explore for new ones from outside the firm (Lubatkin et al. 2006, Jansen et al. 2009, Sammarra & Biggiero 2008). These two modes (explore and exploit) require the use of different types of knowledge sets and routines. While the former can be built on codified knowledge and stable routines the latter requires more tacit knowledge and collective, creative efforts (Lubatkin et al. 2006, Jansen et al. 2009). Sensing and seizing opportunities (a dynamic capability) on the other hand build more on the notion that success of organizations depend on continuous search of external information for discovering new opportunities (Teece 2007). Sensing requires the utilization of more reflexive and intuitive skills and decision-making in collective arrangements than the traditional analytical managerial knowledge (Hodgkinson & Healey 2011, Kor & Mesko 2013). However, to be able to develop those opportunities to actionable

business organizations need to have the capability to flexibly deploy and invest its resources (Teece 2007).

While the common argument in the management works is in short to utilize external knowledge to identify and address changes in the organizations environment, the course of this paper is to identify more concrete and specific research opportunities for design research in the domain of organizational and dynamic capabilities research. For this end we categorized the management research into five groups that each provides an avenue for future research: (1) teams and individuals, (2) mechanisms, processes and routines, (3) culture and the dominant logic of the organization, (4) engaging external parties for knowledge creation, and (5) managers and the management team. Implications in the design research papers were categorized accordingly to these groups. The findings of the categorization are presented in Table 1. It provides an overview of the research themes in each group. The potential connections in terms of future research between the groups are elaborated in the following discussion section.

*Table 1. Five themes for connecting design research to organizational capabilities.*

1. TEAM AND IT'S INDIVIDUALS	
<p>Designers as individuals have the knowledge and capability to understand and translate different viewpoints from different stakeholders. (Morelli 2011, Steen 2011, Steen 2013). Essential for human centered designers is to balance between user needs and their own creativity and ideas (Steen 2011).</p> <p>Collective activities are enhanced through practices and communication that help to create, construct and communicate shared understanding among the participants (Kleinsmann &amp;</p>	<p>The firm's ability to find and employ external knowledge depends on individuals' access to heterogeneous information (Samarra &amp; Biggiero 2008, Rothaermel &amp; Hess 2007, Felin &amp; Hesterly 2007), on their capability to sense and seize opportunities (Teece 2007), and on the cognitive and emotional capacities (Hodgkinson &amp; Healey 2011). These capacities are unevenly distributed in the organization (Teece 2007).</p> <p>In addition, on the group level the ability process unfamiliar information and to engage in</p>

<p>Valkenburg 2008, Whyte &amp; Cardellino 2010). Language, text and verbal communication among physical objects, roles and spaces help to mediate ideas, meanings, intentions and symbols (Buur et al. 2013, Pei et al. 2010, Kleinsmann &amp; Valkenburg 2008, Whyte &amp; Cardellino 2010).</p> <p>Collaborative design is a social (Steen 2011, Feast 2012) and iterative (Steen 2011) activity where the roles, responsibilities and relationships have an effect (Feast 2012). Design can even be a strategic activity in organizations, where the collective activities are systematically managed and embedded in the ways in which organisational actors work, think and communicate (Mutanen 2008)</p>	<p>creative intuitive processes depend on the group's social identity (Pandza 2011, Hodgkinson Healey 2011), cognitive frames (Pandza 2011), team composition (Baer et al 2013, Martin &amp; Eisenhardt 2010), group's practices and activities (Pandza 2011; Lechner &amp; Floyd 2012), it's autonomy (Pandza 2011), and on an environment that enable cognitive, emotional, creative activities (Pandza 2011).</p>
<h2>2. MECHANISMS, PROCESSES AND ROUTINES</h2>	
<p>Design processes can be used to enable the integration and coordination of knowledge creation, by engaging customers and employees in co-design (Kleinsmann &amp; Valkenburg 2008, Steen 2013), through managing collective innovation processes (Paulini et al. 2013), by using iterative product design process as an inquiry to the organization (Junginger 2008), using visual practices and prototyping as a means to trigger communication in the processes (Kleinsmann &amp; Valkenburg 2008, Whyte &amp; Cardellino 2010, Junginger 2008), and by increasing design ability</p>	<p>The essence of collective activities in terms of knowledge are its source in heterogeneity of the knowledge of individuals (their access to various sources of info) (Felin &amp; Hesterly 2007, Teece 2007), the team (or BU) of heterogeneous individuals and capabilities (Lichtenthaler &amp; Lichtenthaler 2009; Jansen et al. 2009), and heterogenous routines (ability to change them) (Teece 2007, Lechner &amp; Floyd 2012). To be productive this heterogeneity needs to be integrated and coordinated through various mechanisms,</p>



<p>through various methods and processes that should be evaluated and changed from time to time (Mutanen 2008).</p> <p>Design can be also incorporated on a strategic level to the organizations work through systematical management of the collective activities of the organization (Mutanen 2008). The development of design capabilities should be regarded then both on the individual and the routine level (Mutanen 2008).</p>	<p>processes and routines (Kor &amp; Mesko 2013, Jansen et al. 2009, Teece 2007, Lewin et al. 2011).</p> <p>Such are, e.g., formal and informal means of integration (Jansen et al. 2009), socially enabled learning (Kor &amp; Mesko 2013, Lewin et al. 2013;), balancing between internal and external routines (Lewin et al. 2013), ambidexterous processes (between exploration and exploitation) (Jansen et al. 2009) and cross-functional links between business units (Jansen et al. 2009, Teece 2007, Martin &amp; Eisenhardt 2010). Concrete examples of integrative processes are Social and Creative Framing Practices such as strategic workshops (Pandza 2011) and the Collaborative Structured Inquiry process (Baer et al. 2013)</p>
<p><b>3. CULTURE AND THE DOMINANT LOGIC OF THE FIRM</b></p>	
<p>Fundamental assumptions of people form the organizations culture and behavioral norms, which give stability to organization (Junginger 2008). The culture of the organization affects especially the fuzzy front end of creative activities (Feast 2012).</p>	<p>Culture (Teece 2007), dominant logic (Kor &amp; Mesko 2013), and ambidexterity (Lubatkin et al. 2006) determine the firm's proneness to change.</p> <p>Managing and reconfiguring the identities on individual</p>

<p>To be able to change organizations need to adopt a design attitude (Boland et al. 2008).</p> <p>Understanding and articulating the beliefs facilitate change as it enables relating the beliefs and implicit goals to the purposed ones (Junginger 2008). To communicate and construct the beliefs of employees visual practices can be used (Whyte &amp; Cardellino 2010).</p>	<p>(Hodgkinson &amp; Healey 2011, Teece 2007) and group level (Hodgkinson &amp; Healey 2011, Pandza 2011), together with the corporate culture (Teece 2007) help organizations be more able to change.</p>
<p><b>4. ENGAGING EXTERNAL PARTIES FOR KNOWLEDGE CREATION AND LEARNING</b></p>	
<p>Designers have the knowledge and capability to understand and translate different viewpoints from different stakeholders – especially users’ needs, behaviors and cultures. (Morelli 2011, Steen 2011, Steen 2013). Essential for human centered designers is to balance between user needs and own creativity and ideas (Steen 2011).</p> <p>Design tools, methods and processes are also used to understand and incorporate user and market knowledge to the organization. Such are, for example, provotypes (Boer et al. 2013), product development process (Junginger 2008), and other participatory design processes (Junginger 2008). In general collaborating using design methodology aims to bring skills and perspectives of different stakeholders together (Feast 2012).</p>	<p>Knowledge and insights should be incorporated into the organization from the environment. This entails users, partners, suppliers, technologies, changes in the market, etc. (Sammarra &amp; Biggiero 2008, Teece 2007).</p> <p>The means for this are to build social enabling mechanisms (Lewin et al. 2013), to develop individual capabilities (Teece 2007), or to augment the amount and types of connections to share knowledge with partners (Sammarra &amp; Blggiero 2008).</p> <p>Understanding customers not only includes their needs, but their willingness to pay, purchase cycles, related costs and potential competitive actions – in other words the whole business model (Teece</p>

	2007).
<b>5. THE EFFECT OF MANAGERS AND THE MANAGEMENT TEAM</b>	
<p>As Simon (1996) already suggested, design can become one of the key managerial activities (Buchanan 2008) by shifting away from analytical decision making towards empathic understanding of stakeholders, creative and intuitive activities (Steen 2011), and ability to work with unfinished abstract objects with design capabilities and methods (Boland et al. 2008).</p> <p>For managing collaborative (design) processes managers can use learnings from product development processes (Junginger 2008), by guiding the analytical and evaluative spaces (broaden or narrow the scope) in innovation processes (Paulini et al. 2013) or by facilitating creative discussion fostering certain characteristics of the discussion and culture (Buur et al. 2013).</p>	<p>Managers' way of conduct is affected by their experience and skills (Kor &amp; Mesko 2013; Hodgkinson &amp; Healey 2011). While special skills can hinder the incorporation of 'unfamiliar knowledge' (Kor &amp; Mesko 2013), more general skills allow the integration of new knowledge (Teece 2007, Hodgkinson &amp; Healey 2011, Pandza 2011, Gary &amp; Wood 2011).</p> <p>In addition to (even instead of) traditional analytic optimization skills in their decision making, managers should harness entrepreneurial skills (sense opportunities, creatively coordinate specialized elements (Teece 2007), be able to use both reflexive and reflective responses (emotional (intuition) and cognitive) (Hodgkinson &amp; Healey 2011), and to employ more accurate mental models instead of accurate knowledge (Gary &amp; Wood 2012).</p> <p>While each individual in the management team have their own way to conduct, also the</p>

	<p>management team needs to be orchestrated to enable integration (Kor &amp; Mesko 2013; Jansen et al. 2009; Lubatkin et al. 2006).</p> <p>The tasks of the managers and the management team are to synchronize social and task processes to promote diverse understanding of issues (Lubatkin et al 2006) and to recognize and help to communicate different conflicting aspects (Jansen et al. 2009)</p>
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## Discussion – Exploring 5 streams for future research

In this paper we have taken the endeavor to find connections between the management and design literatures on the specific area of organizational change. We narrowed down the scope of the research to study the intersection of design and organizational capabilities literature and how they address change as a social collective activity. With the help of a systematic literature review we identified five potential streams for future research. Those streams and their potential are discussed in this section.

### *Design(ers) to enhance team work and collaboration*

Management literature on organizational capabilities underlines the role of individuals in sensing and seizing opportunities for business. Both the individuals' skill base and access to heterogeneous information (Sammarra & Biggiero 2008, Rothaermel & Hess 2007, Felin & Hesterly 2007) and the ability to collaborate among individuals with differing capabilities (Teece 2007, Felin & Hesterly 2007, Hodgkinson & Healey 2011) are seen as prerequisites for an organization to creatively sense external knowledge and combine it with the existing capabilities. What shadows this management literature is that it mainly develops these necessities theoretically (Teece 2007) or shows that the heterogeneity has a role (Felin & Hesterly 2007)

without investigating in detail how the heterogeneity contributes to the organizations success. Similarly design literature emphasizes the need to incorporate various aspects of different stakeholders, in or outside the organization, for creative activities (Steen 2013, Feast 2012). Design literature on the other hand focuses on how designers (Morelli 2008, Steen 2011, Steen 2013) or design methods (Kleinsmann & Valkenburg 2008, Whyte & Cardellino 2010, Buur et al. 2013, Pei et al. 2010) can facilitate this collaboration and scarcely advance to contribute to whether it affects, e.g., organizations competitive advantage.

Steen (2011) suggest that central in a designer's skills is the ability not only to translate viewpoints of different parties, but also to balance between those and the creative ideas of the designer. Thus we identify that a designer can have a role as a part of a team in the organization bringing the heterogeneous capabilities and knowledge into the team, or as an external facilitator of a team with a set of heterogeneous capabilities. If management science proposes that a source of competitive advantage is the interplay of heterogeneous individuals, we can examine how the designer's skills to mediate and translate viewpoints affect a team of heterogeneous individuals. Thus we propose:

***Proposition 1a for future research:*** *How do designers as an integral part of a team or as facilitators of a team advance its capability to fuse heterogeneous information and capabilities to identify and develop business opportunities?*

Management research has also identified a set of characteristics for a team that affect its productivity in terms of collaborative work and ability to incorporate external information. Such are, e.g., group's social identity (Pandza 2011, Hodgkinson & Healey 2011), cognitive frames (Pandza 2011), team composition (Baer et al. 2013, Martin & Eisenhardt 2010), group's practices and activities (Pandza 2011, Lechner & Flypd 2012), it's autonomy (Pandza 2011), and an environment that enables cognitive, emotional and creative activities (Pandza 2011). In the design literature the collective (design) activities help to communicate and shape the understanding and even the identity of team members (Kleinsmann & Valkenburg 2008, Whyte & Cardellino 2010). Such design activities include the use of visual and verbal communication augmented with physical objects, roles and spaces (Buur et al. 2013, Pei et al. 2010, Kleinsmann & Valkenburg 2008, Whyte & Cardellino 2010). Likewise again here the management literature has settled

to recognize an effect of the characteristics, but trail in examining the mechanisms of the effect. Design literature has examined how the use of different visual and physical artifacts advance the collective activities, but fall short in assessing its significance for the performance of the organization. To address this gap in the research traditions we propose:

***Proposition 1b for future research:*** *How do design methods using visual and tangible objects to augment collaboration build the teams capability to interact and engage in creative activities that are used to identify and develop business opportunities?*

### *Design processes and routines as capabilities*

Continuing with the assumption that a source for organization's capability to sense and seize future opportunities is the heterogeneity of individuals and the interaction among them, management research calls for coordination for these activities and routines (Kor & Mesko 2013, Jansen et al. 2009, Teece 2007; Lewin et al. 2011). What is essential for activities and routines that contribute to the organizations capability to seize opportunities is that they are not ad-hoc activities, but purposefully generated activities that are systematically in use (Teece 2007). Interestingly both streams of research offer concrete suggestions for processes and mechanisms to coordinate these creative knowledge creation activities. Management research has studied integrative processes, such as, Social and Creative Framing Practices (Pandza 2011) and the Collaborative Structured Inquiry process (Baer et al. 2013). Both of the examples pay importance to the problem framing activities that precede problem solving – the phase where incorporating different knowledge and aspects is crucial. Likewise characteristic to various design processes, such as collaborative design (Kleinsmann & Valkenburg 2008, Steen 2013), collective innovation processes (Paulini 2013) and product development processes (Junginger 2008) is a fuzzy front end where insights from various perspectives are used to frame the challenge or the goal to be achieved.

Management research also emphasizes the need for cognitive and emotional routines that enable the organization to balance between exploration and exploitation (Jansen et al. 2009) and internal and external routines (Lewin et al. 2011). However, it does not describe what kind of routines or processes would enable such balancing. Design literature on the other hand suggests that design processes and routines engaging employees and customers allow the integration of knowledge to the firm (Kleinsmann & Valkenburg 2008, Steen 2013). It is emphasized that those routines should

not only be incorporated, but also evaluated and changed from time to time to maintain their validity with the current business (Mutanen 2008). Mutanen (2008) also suggests that the collective activities and routines can be systematically managed providing strategic level design capabilities for organizations. Since both streams of research call for processes and routines that enable collective activities, we propose that future research should address:

***Proposition 2 for future research:*** *What and how design processes and routines can be incorporated to organizations activities aimed to identify and seize business opportunities and how those processes and routines can be coordinated on a strategic level?*

### *Culture and the dominant logic for the firm*

As routines and processes tend to become stable in organizations, they can be considered a threat for organizational change (Teece 2007). The proneness of an organization to change its routines and processes is affected by its culture (Teece 2007), the reigning dominant logic (Kor & Mesko 2013) and by its ambidexterity (Lubatkin et al. 2006). For example, managers' mental models are often reflected as the dominant logic of the firm, which in turn helps its members to economize their resources on information search potentially narrowing the access to heterogeneous information (Kor & Mesko 2013). In addition to culture, the individual and group level identities of employees play a role in how resistant to change an organization is (Hodgkinson & Healey 2011, Teece 2007). While management research recognized the effect of culture and dominant logic in organizations, it fails to elaborate in more detail how does a culture that enables change look like.

The effect of culture and behavioural norms in organizational change has also been recognized by design research, especially for the fuzzy front end of creative activities (Junginger 2008, Feast 2012). Design research offers two alternatives for managing resistance to change. Boland et al. (2008) suggests that organizations need to adopt a design attitude, which entails being comfortable with unfinished products (such as organizations) and with imperfect information. Designer's capabilities and design processes can also be used to understand and communicate the hidden beliefs, norms and goals and transform them to purposed ones (Junginger 2008, Whyte & Cardellino 2010). As these implications are also on a conceptual level in design research we propose to study:

**Proposition 3a for future research:** *How can design practices and capabilities help to enhance the culture and dominant logic in the organization towards one that is more apt to change?*

**Proposition 3b for future research:** *How does the adoption of a design attitude develop the capabilities of an organization to change in response to its opportunity sensing and seizing activities?*

### *Engaging external parties to knowledge creation*

Key for identifying and developing business opportunities is to understand what is going on in the market. This entails information from users, partners, technologies, changes in the markets and legislation. (Sammarrà & Biggiero 2008, Teece 2007). Management literature recognizes that organizations cannot rely solely on analytical information, but need to engage in activities that involve the different parties in knowledge creation (Lichtenthaler & Lichtenthaler 2009, Lewin et al. 2011). The organizations capability to do this depends on social mechanisms (Lewin et al. 2011), individual capabilities of employees (Teece 2007), and the amount of social connections the firm has with its partners and other instances (Sammarrà & Biggiero 2008). Knowledge of the user needs is often emphasized. Teece (2007) reminds that understanding customers not only includes their needs, but their willingness to pay, purchase cycles, related costs and potential competitive actions. Management research calls for knowledge from the external parties but scarcely devises the capabilities or processes needed for this.

Design research places much emphasis on understanding different parties. An inherent capability of a designer is to understand especially users, their behavior and culture (Morelli 2011, Steen 2011, Steen 2013) and translate that to an industrial offering (Morelli 2011). In addition to an individual designer's capabilities, design research has devised a school of tools, processes and methods, which enable and facilitate the incorporation of user knowledge to the organization and the collaboration among various stakeholders (Feast 2012). Such methods are, e.g., prototypes that bring up conflicting views (Boer et al. 2013), the product development process and prototyping (Junginger 2008). If understanding viewpoints of various stakeholders is a management need and it is simultaneously one of the key capabilities of designers and design processes, we suggest to study:

**Proposition 4 for future research:** *How do designers and design processes affect and develop organization's capability to understand*



*different stakeholders and thus help to identify and develop business opportunities?*

### ***Managers and the management team***

It has already been recognized earlier in this paper that for a firm to be able to sense and seize opportunities, pure analytical managerial skills will not serve the purpose. Managers need to employ a skill set that is capable of decision making in the absence of sufficient information – entrepreneurial skills (Teece 2007), both reflective (cognitive) and reflexive (emotional, intuitive) responses (Hodgkinson & Healey 2011), and to practice more accurate mental models over accurate knowledge (Gary & Wood 2012). How managers act is based on their experience and skills (Kor & Mesko 2013, Hodgkinson & Healey 2011). Too specialized skills can blind the manager from unfamiliar knowledge (Kor & Mesko 2013). This is why managers should harness skills that are more general and focus on coordinating the integration of knowledge and intuition (Teece 2007; Hodgkinson & Healey 2011, Pandza 2011, Gary & Wood 2011). While these propositions of the management literature are supported by some psychology research, management literature itself doesn't again formulate what are such skills or how they should be practiced. Design literature suggests similarly that managers should shift from analytical decision making towards a more empathic approach to understanding stakeholders and more creative and intuitive activities (Steen 2011). Such design skills allow as well the ability to work with abstract and unfinished artifacts (Boland et al. 2008). If it is innate for designers to balance between their own intuitive conduct and processed knowledge (as Steen 2011 suggests), we propose to find out:

***Proposition 5a for future research:*** *How does training managers with design skills (or alternatively employing a designer-manager) contribute to the organizations capability to sense and develop opportunities for business?*

Management research has paid also attention to the activities of the management team. Some responsibilities of the management team include synchronizing social processes with the operational processes, promoting diverse understanding of underlying business issues (Lubatkin et al. 2006), and to recognize and communicate different conflicting aspects (Jansen et al. 2009). While these responsibilities do encompass the organization at

large, the management team itself needs to orchestrate such activities among themselves. Being composed of individuals with differing capacities and viewpoints the management team needs to be coordinated for integrating those viewpoints (Kor & Mesko 2013, Jansen et al. 2009, Lubatkin et al. 2006). Design research suggests that to coordinate collaborative processes and decision making, managers can, e.g., employ learnings from product development processes (Junginger 2008) or facilitate creative discussion by allowing crossing intentions to surface (Buur et al 2013). In addition to our proposals concerning general teamwork, we suggest to pay special attention to the activities and capabilities of the management team and propose for future research to examine:

***Proposition 5b for future research:*** *How does employing design activities with the management team contribute to the coordination of their own opportunity sensing activities and activities in general in the organization?*

These five distinct, but interrelated avenues for future research in the intersection of design practices and organizational capabilities provide a starting point for the discussion how designers and design methods can contribute to identify and develop business opportunities in the changing world. Moreover, it provides a common ground for academia in both streams to knit the two loose ends together in the pursuit to justify designs significance as a driver and enabler of organizational transformation and success.

What is surprising is that our findings imply that both the organizational capabilities literature and the design literature share perceptions of what is needed for an organization to stay on the crest of change – individuals with diverse capabilities, working collectively, to understand various viewpoints, and to be ready to change the course. How the two streams differ is more in the level of abstraction of the research concepts and methodology. While management research regards the needed capabilities on a fairly general, even meta level, design literature aims to uncover more specific skills, processes and tools that can be employed in driving and adapting to change. Thus the intersection of these two pose a challenge for design scholars to extend their discourse beyond providing methodologies - to studying the specific mechanisms how those methodologies contribute the firms ability to act in todays changing and ever so competitive environment.

## **A Brief Epistemological and Methodological Consideration**

Indeed, the two fields of research reviewed here build on different research traditions and assumptions. While it is common for design scholars to fret the overly positivist stance of some organization and management research, we dare to maintain that there exists a common epistemological ground to be explored. In design research knowledge is seen as nested in actions, processes and objects (Mareis 2012, Cross 2006) – as practice as knowledge (Schön 1984a). Contrary to the common belief, it is not rare for organization research to understand knowledge in a similar way, as tacit practices (see e.g. Cook & Brown 1999). Specifically, dynamic capabilities that are considered to be purposeful routines, actions and processes in organizations (Teece et al. 1997) are the collective knowledge of an organization in its practices. To be able to study such knowledge as practice, like design science, organization and management research is increasingly recognizing the value of a more constructivist approach where the researcher is itself an actor in the community and interprets data relative to the context (Mir & Watson 2000).

To study such tacit knowledge organization science faces the same challenges as design research in devising applicable methodologies. Reviewing some of the works of this paper we can again agree that both fields share similarities: taking an inductive approach, interpreting data as an observer or participant, and using a vast array of methods to collect qualitative data (for organization research see Pandza (2011), Martin & Eisenhardt (2010), Jacobides & Billinger (2006), for design research see Whyte & Cardellino (2010) and Kleinsmann & Valkenburg (2008). However, at least two significant differences stand out that can be turned into recommendations for design scholars in order to publish in management outlets. Firstly, while the used methodologies are similar, both fields naturally refer to their respective methods. To address the management research audience design scholars should apply a research method familiar to management scholars, such as, Eisenhardt's (1989) case-study method or Glaser and Strauss's (2009) inductive theory building. Secondly, design audience is clearly used to mix the reporting of data collection, analysis and the interpretation of findings in a narrative way. In order to publish in management journals we strongly recommend distinguishing data and the interpretation of data in reporting research (for good examples in design

research see Stempfle and Bladke-Schaub (2002) or Kleinsmann & Valkenburg (2008).

## Conclusions

The venture of this paper was to provide design research avenues with which to increase the visibility and credibility of design practices for management research. With our specific focus to organizational change through capabilities and design as a collective activity we found five propositions to be studied.

Those five propositions are naturally only the top of an iceberg. The propositions provide fairly superficial ideas for design researchers to delve into. Further research not only should take these found issues, but also explore more broadly opportunities in the organizational change and organizational capabilities literature.

This study is limited by the selection of the systematic literature review process. This selection has potentially excluded existing research that could have had a significant contribution to our paper. This choice was made in the spirit of the management publications, emphasizing the credibility and replicability of the study.

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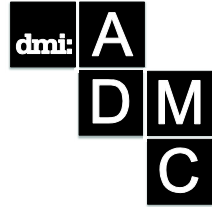
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## Corporate Design Germination Model

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*This paper focuses on what design in business entails. For this purpose, initially existing design management literature is reviewed to reveal various design classification models suggested by different authors. Secondly, the paper offers an updated conceptual model for corporate domains affected by design by analyzing various conceptualizations in the marketing literature. The goal is to reach a comprehensive, interdisciplinary and updated classification model that incorporates many of the physical manifestations of design. For this purpose, design germination is used as a metaphor: Planting the design seed is not adequate to grow a deep-rooted tree. Similarly, to benefit all the corporate domains from the shadow of the tree; different design disciplines are to confront, communicate and collaborate in harmony. To facilitate collaboration, having a unanimously accepted picture of the territory of design is important. On the other hand, empirical findings suggest that such an unanimously accepted territory of design among non-designer executives does not exist.*

**Keywords:** *design in business, design classification, design taxonomy, physical manifestations of design.*

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## Introduction

Design is an important differentiator for all businesses since it is the main medium of launching new products and services. In this aspect, rather than merely being instrumental in determining the form and function of products, design can be regarded as a major element in applying purposive creativity to establish novel product-service systems.

Today companies strive to innovate constantly to distinguish themselves from competition. Innovation is driven, either by technology or design. According to Rampino (2011), design driven innovation results in one of the following domains: Aesthetic, functional, meaning and typological innovation. For design driven innovation, a suitable design strategy (Dell'Era and Verganti, 2007), top management attitude towards design and strategic deployment of design become crucial (Ravasi and Lojacono, 2005; Acklin, 2010). Since the design management process should start at the stage of defining the corporate strategies (Dickson *et al.* 1995; Walsh, 1996; Er, 2005; Chiva and Alegre, 2009), design awareness of non-designer executives plays an important role in the successful deployment of design.

What design in business entails is unknown to non-designer executives because they are not educated in design. On the other hand, awareness is a prerequisite in order to form an attitude. Top executives with a traditional business education rarely have a high degree of design awareness. However, although non-designer executives are not always aware of what design in business encompasses (Archer, 1967; Topalian, 2002), they are willing to discover the virtues of design. Cooper and Junginger state that:

*Many businesses and organizations want to know what design means, how it can help them and how they can employ design in a meaningful and cost effective manner. (Cooper and Junginger, 2011; p.540)*

The teaching of design at MBA level was pioneered at London Business School in the early 80's (Gorb and Dumas, 1987). A few leading schools (Rotman in Canada, Aalto in Finland) around the world have also started to address this issue by means of offering new programs where business and design education is merged. However, majority of the current top managers are graduates of traditional MBA programs where the curriculum is intact by design.

On the other hand, design taxonomy based on three pillars developed in the early 80's -comprising of product design, environmental design and

information design- has ever since become the foundation of many classification models until today (Johansson and Svengren, 2003).

Design in business is interdisciplinary. Design management, brand management and organizational theory deal with design in business to some extent. However, each discipline has a different perspective. Holm and Johansson (2005) compare design management with brand management and conclude that there are five main areas where the two approaches differ. These are namely attitudes toward the product, corporate identity, professional identity, relation to value creation and approach to market research. Concerning physical manifestations of design, particularly the first two areas emphasized by Holm and Johansson (2005) are relevant: They claim that design management highlights the need to integrate various elements from product, graphic and environment design based on company's true identity; whereas brand management focuses on (*the identity*) where the company wishes to be.

Another controversial approach to design in business comes from organizational theory literature. Hatch (1997; p. 257, 258) - while elaborating on Olins' claim on the importance of coherence between physical elements to reinforce strategic vision- she states that identity related components of physical structure are available to other interpretive readings than those that are intended by designers or by top managers. In this respect, she emphasizes that there may be a difference between intended targets and perceived outcomes due to external factors. In general, marketing management and organizational theory approach (Hatch and Shultz, 1997; Balmer, 1998; Melewar and Saunders, 2000; Melewar, 2003) treat corporate design as a subset of corporate identity.

Non-designer managers, particularly those in charge of marketing, are more likely to be aware of design related issues through concepts related to communication design. Concepts such as *Integrated Marketing Communication* (IMC) (Shultz, 2004) and *360 Degree Marketing Communication* (Blair *et al.*, 2003) deal with designing consistent messages for different media and stakeholders.

On the other hand, professional designers partially know what design in business entails since they are usually focused merely on a single area of design specialization. However, design in business is interdisciplinary. A recent trend observed in the UK, is the establishment of integrated design agencies and the consolidation of existing single-focus agencies (Lalaounis *et al.*, 2012) that enable customers do one-stop shopping. The trend provides evidence that one single business may have multiple design needs related to

different design disciplines. The trend also hints that the fulfillment of these needs should rather be coordinated.

The fragmentation of design scholars on the definition of design suggests that the subject is still immature in the academic field. 25 years ago Black and Baker (1987) stated that 'design is an emotive concept open to interpretation....rarely discussed within a fixed frame of reference'. Little seems to have changed since then: Recent on-line discussions between scholars suggest that there is still no single commonly agreed definition or description of design (PhD-Design Mailing List Discussion; 2013) and the only consensus concerning the definition of design seems to be its being open to interpretation and misunderstanding.

In a business context, it becomes particularly difficult to identify design's borderlines. Roy and Potter (1993) suggest that design is often misunderstood because it includes disciplines ranging from engineering, product and industrial design to fashion, textiles, graphics, interiors, exhibitions and architecture...Bruce and Bessant (2002) suggest that design is the application of human creativity to a purpose, to create products, services, buildings, organizations and environments which meet people's needs. In sum, designers and scholars do not agree on one single definition of design, thus it is not unexpected that the concept becomes even more ambiguous for other stakeholders (Walsh, 1996; Candi and Gemser, 2010). Since there is no agreement on the complete set of activities covered by design (Candi and Gemser, 2010), it would be naïve to expect the business executives to understand thoroughly what design in business is and to provide a complete list of corporate domains affected by design within their company.

As there is not a consensus on the definition of design in business, the authors of this paper suggest that starting by classifying design related activities in business is likely to facilitate rendering design more comprehensible for non-designers in business. In design management literature so far, however, little attention has been paid to develop an up-to-date design taxonomy model.

This paper is constructed in four parts. In the second part of this paper, in order to determine the scope of design in business, existing taxonomy approaches suggested by various authors (Farr, 1966; Gorb and Dumas, 1987; Walker, 1989; Chung, 1992; Cooper and Press, 1995; Olins, 1995; Borja de Mozota, 2003; Lockwood, 2006; Kim and al., 2009; Moultrie et al., 2009) are analyzed in detail. The third part elaborates on the proposed

taxonomy model and suggests future implications. The fourth part provides a conclusion.

## **Literature Review**

Michael Farr's *Design Management* (Farr, 1966) is the first book that elaborates on the issues related to design in business. In accordance to the needs of the era, the book concentrates on the nature and the content of corporate/design agency relationships. According to Farr (1966; p.3), design management is the function of defining a design problem, finding the most suitable designer and making it possible for him to solve it on time and within an agreed budget. In the same book, a checklist taken from the special 'House Style' issue of *DESIGN* is provided (Farr, 1966; p.114). Concerning design taxonomy, the checklist is confined to corporate identity, communication and partly packaging related physical manifestations of design.

In 1987, Peter Gorb and Angela Dumas (1987) conducted a one-year pilot research study in 16 companies in UK. They use unstructured interviews in four industries (apparel, electronics, retail and transport). They examined all the aspects of the business where design is utilized and try to identify how the enterprise organizes itself to make best use of design. Gorb and Dumas (1987) stated that design and management relationship appears to be ambiguous and unclear. They also added that design activity is frequently not classified and even if it is classified there is no consistency in classification. To reach the ultimate classification, they developed several matrices. Although the content of the matrices they use changed during their study, the main design categories remain intact. These categories are products, environments and information.

In 1989, David Walker developed the Design Family Tree (Figure 1) which demonstrates the interrelations between various design related disciplines. The roots of the tree symbolize the influence of various craft (artisan) techniques on design; the trunk of the tree stands for various crafts disciplines and the branches of the tree synthesize design specialization with market needs (Borja De Mozota, 2003; p.23-24). David Walker's design family tree, rather than being a taxonomy model, serves as a conceptual model for identifying design related disciplines.

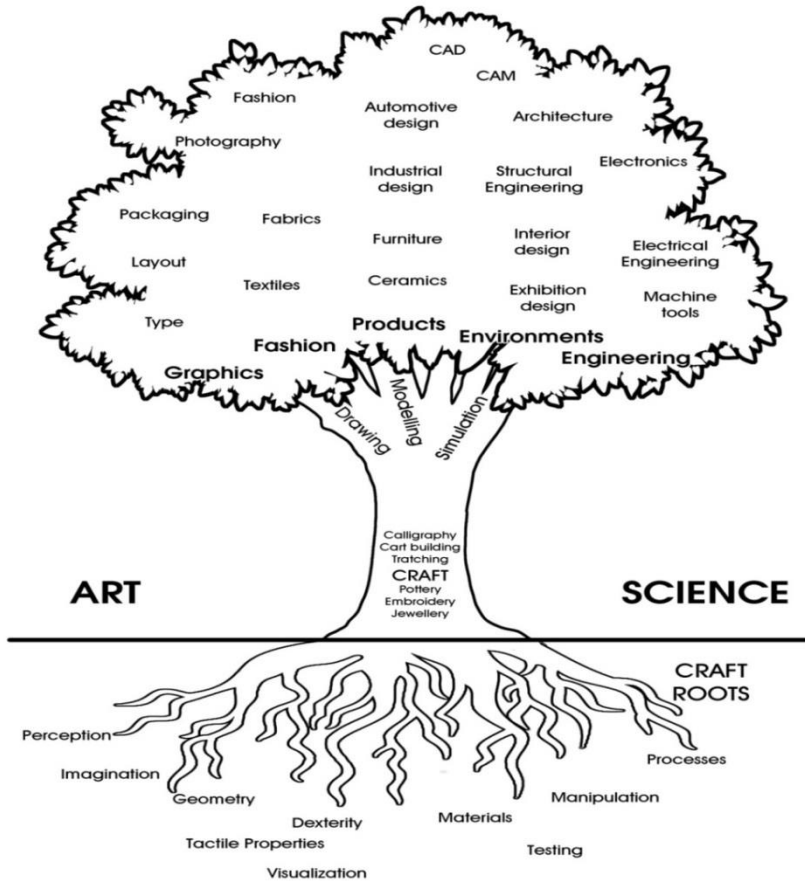
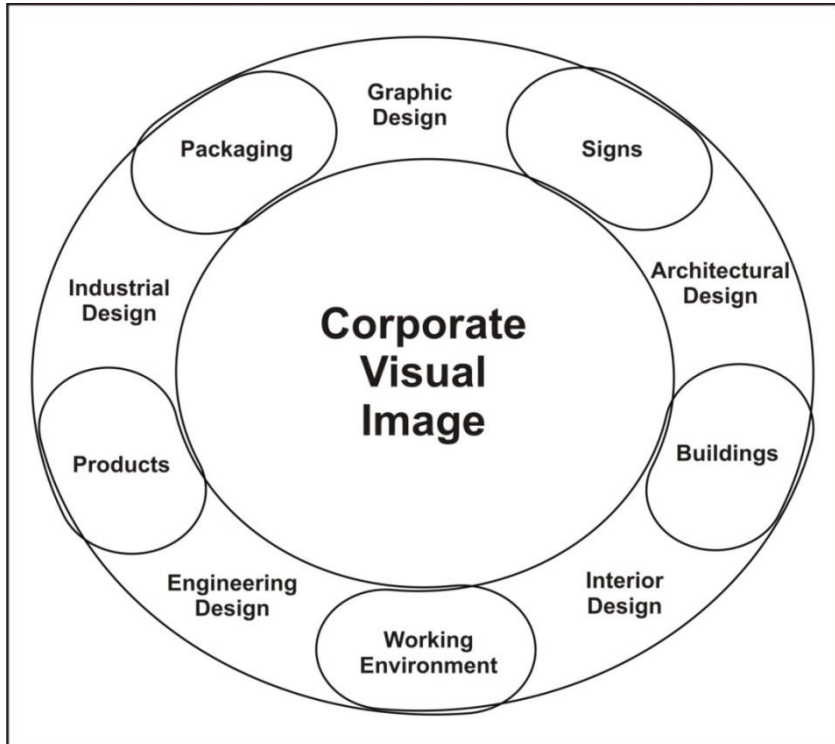


Figure 1: Design Family Tree (Adapted from David Walker, 1989, in Borja de Mazoto, 2003).

Chung (1992) believes that there is a certain semantic difficulty in design management since it is open to a variety of interpretations. In his paper, his primary objective is to identify a design management spectrum which comprises major design activities in the manufacturing firm for proposing a combined approach to the subject.

Chung (1992) suggested the Corporate Design Mix model (Figure 2) which is formed by the interaction of many design areas (disciplines) and various design works (physical manifestations of design). The Corporate Design Mix comprises of product, packaging, signs, buildings and working environment.



*Figure 2: A Corporate Design Mix (Chung, 1992).*

Chung (1992) claimed that the view of design management as a synthesis of many aspects of a firm's design activity leads to the possibility that design management can be used as a corporate strategic tool. On the other hand, he also states that the design strategy provides a comprehensive visual framework in which the firm's design activities can be integrated with the total efforts of the company. According to Chung (1992) there are certain advantages in having a combined approach of graphic

design, industrial design and engineering design which is based on the idea of integrating highly specialized designers in order to enjoy a synergy effect in new product development.

Olins was one of the pioneers in the domain of Identity Consultancy and in 1985 he depicted what design could potentially encapsulate, by means of narrating a former colleague's journey:

*Michael Wolff's journey encapsulates the various points of contact which take place sequentially between an organization and those who come into contact with it... The journey starts with the critical telephone conversation or other initial point of contact. It takes into account both how long it takes to answer the phone and in what manner it is answered. It moves on then to the correspondence. Naturally it takes into account the content of the letter, but it also takes account of its form – the time taken in response, the politeness, clarity and level of literacy of the reply as well as the physical qualities demonstrated by the letterhead. The next act in the journey might well be "the meeting", which geographical area, which part of the town, what kind of signs, what kind of building, the reception area, its appearance, size, cleanliness, comfort (Olins, 1985).*

Olins's audit of 1985 is excellent in terms of capturing most corporate domains influenced by design by means of revealing all contact points. The elaboration on contact points- (which will later be referred as customer touch points in service design literature) also hints how wide the scope of design in business is.

According to Olins (1995), identity manifests itself primarily in three main areas. These areas are *products and services* (what you make or sell), *environments* (where you make or sell) and *communications* (how you explain what you sell).

Going back to Olins's 1985 audit, it is very successful in conveying the whole philosophy behind a design audit of the era and it is the first think-piece that hints to go over all the physical manifestations of design while auditing. However, Cooper and Press (1995) emphasize its absence in most texts on audits due to its rather unstructured style which makes it inconvenient for measurement, comparison and evaluation. Olins must have realized the structural problem in his former audit because in his book in 1995 (Olins, 1995; *The New Guide to Identity*) he provides the reader with a detailed checklist for visual (design) audits (Figure 3).



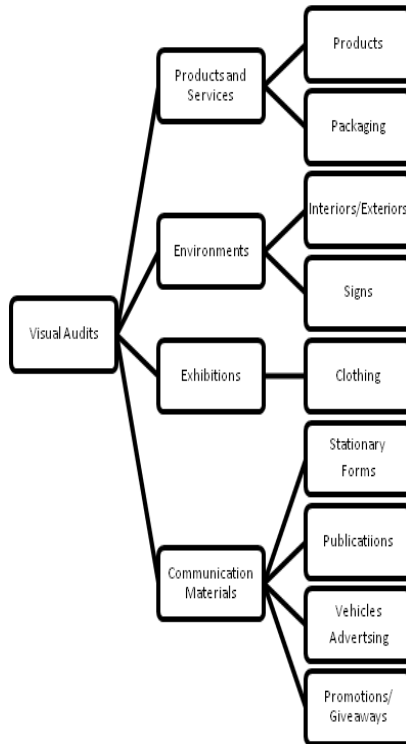


Figure 3: Checklist for visual (Design) Audits (Adapted from Olins, 1995)

In his classification, Olins treats design as a subset of visual identity. It is no surprise because his background is identity design and his book is titled as a “new guide to identity”. Nevertheless he provides us with one of the most exhaustive lists of physical manifestations of design.

Another important point concerning Olins’s classification is that it focuses only on visual aspects of design. This is most probably due to the fact that in the early 90’s non-visual aspects of corporate design that are perceived by senses other than vision (eg. hearing, smelling, tasting, touching) were not common yet.

In the same period, similar to Olins (1995), Cooper and Press (1995) also approached the design taxonomy issue from an audit perspective. In the design audit proposed by Cooper and Press (1995), the term “physical manifestations of design” is coined for the first time. The physical

manifestations of design were listed as visual identity, corporate design standards, product, work environment, pre project.

In 2003, Press and Cooper (2003, p: 54-55) revised both the title and the content of their prior model. The title became “Areas for a design audit” and physical manifestations of design are listed as visual identity, corporate design standards, products and work environment. The preproject item is omitted.

In the same year, Borja de Mozota (2003) developed the Design Integration Matrix. In the columns design areas were presented and the rows stand for corporate functions. Design areas were listed as Graphic Design, Packaging Design, Product Design and Environment Design (Borja De Mozota, 2003). Corporate functions were defined as CEO, Corporate Communication, R&D and Manufacturing and Marketing. In the intersecting points of functions, with design areas various physical manifestations of design were listed.

Lockwood (2006) used design disciplines rather than their outputs to depict how customer experience is created. The framework provided by Lockwood (2006) (Figure 4) suggests a wider range of company activity relating to design: Customer experience comprises of identity design, product design, environment design, communication design and interface design.

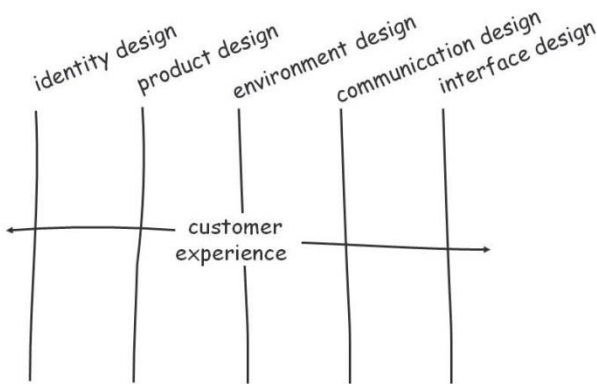


Figure 4: Depiction of Customer Experience by Lockwood (2006).

In a private discussion with Lockwood in 2010 in Istanbul (during the coffee-break of the Design Conference at Kadir Has University), Lockwood mentioned that he could update his model to include social media in the activities.

More recent studies on the other hand, relate these physical manifestations of design to the issue of customer touch points. 'Touch points refer to the multiple contact points between service providers and their customers' (Gloppen, 2009). Towards the turn of the new millennium, as the economy shifted from products to experiences (Pine and Gilmore, 1998), the list of physical manifestations of design got longer. Today, particularly the number of on-line touch points of a company, used in contacting with its internal and external customers, is increasing significantly. Kim *et al.* (2009), argue that we are living in an era of marketing where 'prosumers' (consumers that also produce) and 'trysumers' (teens and twenties seeking new experiences) prevail, due to the development of information technology. In this era of marketing, sight, hearing, touch, taste, smell- a brand should take advantage of all of these to reinforce its presence and deliver its messages. Therefore Kim *et al* suggest a model called the Brand Experience Wheel (BEW) which deals with the integration of sensory branding with brand touch points.

Kim *et al.* (2009) claim that normally firms utilize as many touch-points as possible; however in difficult economic times it may not be possible to maintain all of them. They further elaborate that companies thus need to carefully evaluate the degree of impact of each touch point in terms of experiential breadth and depth where *experiential breadth* is the range of contact points experienced by customers; *experiential depth* is the degree of impact expressed through number and diversity of sensory clues- that each touch point can have on a customer, whether current or potential.

According to them, designer is not just a creator of objects but also an enabler of experiences, therefore sophisticated designers must focus on balancing experiential breadth and depth to move consumers from mere awareness to true 'experience'.

Kim *et al.* (2009) claim that the core value/identity of a brand can reach customers through the five senses of sight, hearing, touch, smell, and taste, greatly influencing experiential depth. Previous literature on brand-touch points has not clearly considered the importance of those senses in evaluating touch point and breadth and depth. Each touch point needs to appeal to at least some of the senses. They conclude that brand building done in this way reflects the decision making shift from the rational to the

emotional and experiential. If companies can evolve to orchestrate a holistic experience with a brand, product, or service in response to the ever-changing marketing environment, they will be assured of a bright future.

Moultrie *et al.* (2009) on the other hand, developed a conceptual model for the classification of design expenditure within companies by means of conducting a series of case studies. Their ultimate goal is to collect financial data using this model. Their revised model classifies design expenditures into three categories:

- Design in the creation of products and services.
- Design in the communication, promotion and delivery of products and services and in the creation and communication of the identity of the business.
- Design within the business: Environments, workplaces, processes and systems.

This classification (products and services, communication and environment) is parallel to that used by many organizations today (Design Management Journal; International Design Alliance's formation principle, etc.). The only problem is that identity design is treated under communication. But anecdotal evidence suggests that products, services, environments all influence the identity to a great extent.

Existing design in business taxonomy approaches imply that the classification of design is to be made with respect to corporate domains affected by design. Once corporate domains affected by design are identified, it becomes easier to list the outcomes of design activity. From now on, within the scope of this article the outcomes of design activity will be called physical manifestations of design. Table 1 summarizes design taxonomies (branching categories) suggested in existing design management literature by various the authors between 1966-2009.

All of the taxonomic approaches mentioned above contribute to our understanding of the scope of design in business yet when it comes to clarifying the ambiguity on the scope of design in business the non-designer executive faces today, a more contemporary and more comprehensive model may turn out to be beneficial.

Table 1: Design taxonomies suggested in existing design management literature between 1966-2009).

Year	Author	Product – Service Design Related	Environment Design Related	Communication Design Related	Identity Design Related	Other
1966	Farr	packaging		communication	identity	
1987	Gorb& Dumas	product	environment	information		
1989	Walker	product	environment	graphic		engineering fashion
1992	Chung	product packaging	buildings working environment		signs	
1995	Olins	products services	environment	communication	exhibitions	
2003	Cooper & Press	product	Working environments		identity	
2003	Borja de Mozota	Product packaging	environment	graphic		
2006	Lockwood	product	environment	communication	identity	Inter- face
2009	Kim et al.		space	advertising promotion events & sponsor PR & publicity Personal selling		
2009	Moultrie et al.	Products and Services	environments	Communications and Identity		

In this respect, analyzing the concepts of experiential marketing (Pine and Gilmore, 1998) and 360 degree communication (Blair *et al.*) from the marketing literature may facilitate to develop a more up to date and comprehensive design taxonomy model. The former concept suggests that all the five senses should be taken into account while designing an experience and latter suggests that both off-line and on-line touch points should be considered.

The authors believe that this is mainly due to a lack of formal education in design and the absence of design courses in business and engineering

curriculums. On the other hand, a systematic taxonomy of corporate domains of design is likely to help the non-designers to grasp the issue more clearly and develop their own lists of physical manifestations of design more competently.

In an on-going filed research carried out with non-designer marketing managers, initial findings revealed that as of 2014, non-designers are not able to recall fully what design in business entails. The initial findings of the on-going study are important because even after a decade of intensive discussions on design both on the academic side and the business platforms, non-designer business executives are still not aware of design. Parallel to the existing literature (Archer, 1967; Topalian, 2002), the study provides evidence that the hypothesis concerning “what design in business entails is not known to managers” is a valid one which needs to be tested.

## The Proposed Design Taxonomy Model

This paper suggests a new taxonomy model for design in business. The model has been derived from existing design management literature and has been updated by means of using marketing literature. The proposed model suggests a four category breakdown (products, communication, environments, identity) instead of the traditional three category breakdown taxonomy (products, communication, environments) used since 1980s by the design management literature. In existing literature, identity has been treated as a fourth category by a few authors (Kotler 1984; Olins 1995; Lockwood, 2006, Best, 2006). Recent developments in IT have led most of explicit communication to take place on-line. Consequently, design agencies that specialize in identity design do not necessarily have an expertise in communication design. On the other hand, as suggested by Borja De Mozota (2003), identity design is treated at strategic management level (CEO) whereas communication is mostly dealt in middle level management.

The new taxonomy model is called “corporate domains affected by design germination”. The new taxonomy model is a stylized tree (Figure 5). The trunk of the tree incorporates five senses that should be taken into account while designing any artifact or experience for business. The trunk then branches into two: featuring *off-line* and *on-line* outcomes of design. Each branch has 4 leaves, depicting the essence of the new taxonomy model i.e. the four major corporate domains affected by design germination. These leaves (domains) are namely *product-service systems design*, *communication design*, *environmental design* and *identity design*.

## Corporate Domains Affected by Design Germination

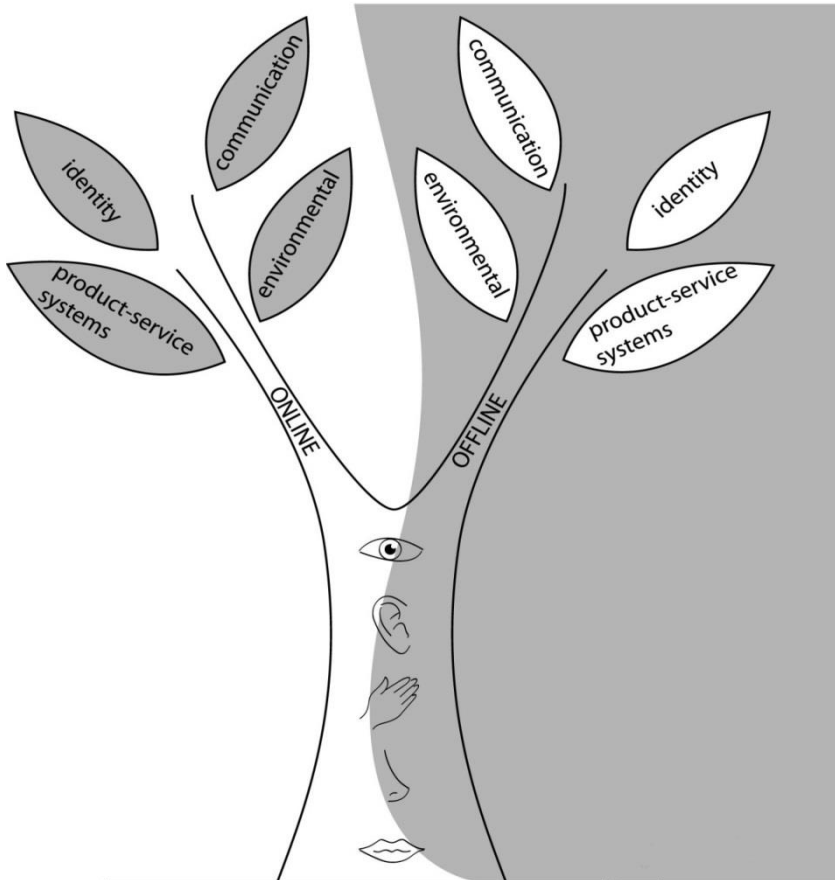


Figure 5: Corporate Domains Affected by Design Germination (Author, 2013).

### *Product Service Systems Design*

A substantial shift from the production of goods to the provision of knowledge intensive systemic solutions (Morelli, 2002) has occurred particularly in the last two decades. The developments in information technology and an increased need for differentiation have triggered the shift. Products are no longer adequate to satisfy customer needs on their own. For this reason even manufacturing companies design their offerings as bundles of physical products coupled with services.

The term product service systems (PSS) refers to a set of products and services capable of jointly fulfilling a user's need (Goedkoop et al., 1999). Manzini and Vezzoli (2003) claim that the notion of PSS originates from the shift of marketing focus from products to a more complex combination of products and services supporting production and consumption. On the other hand, Buchanan (2007) approaches PSS from a different perspective by means of asking "What is the product of a service design?" He claims that the word product in this context is used to mean the result.

Anecdotal evidence suggests that industrial designer activities have usually focused on the physical product ie. the material artifact. Traditionally educated designers tend not to be widely employed in service companies (Hollins, 2004). However, according to Manzini and Vezzoli (2003) the major element of a PSS is that a client (both business and final user) demand is met by selling *satisfaction* instead of providing a product. The client does not really demand the products or services, per se, but what these products and services enable a user to achieve (Manzini and Vezzoli, 2003). Building on that argument, packaging design can also be considered as part of the PSS. After all, the satisfaction obtained from buying an IKEA cupboard or a take-away coffee as in the case of Starbucks depends substantially on the design of its packaging.

In this study the physical manifestations related to PSS design for all businesses are identified as: Products, services and packaging.

### *Environmental Design*

Environmental design deals with human designed environment. The arts and sciences related to environmental design are architecture, geography, urban planning, landscape architecture, historical preservation, lighting design and interior design. Most companies have offices, cafeterias, factory buildings, where their internal and external customers interact. The styling and the functionality of premises affect how the stakeholders see the company and how they interact within the premises. Issues regarding efficiency and image are affected by the parameters of environmental design. In this study, the physical manifestations related to environmental design for all businesses are identified as: Buildings, retail points, interiors, production line, warehouses.

### *Communication Design*

Communication design is the planning of media and messages within an organization, taking into account the aesthetic and functional attributes of



the information exchange as a single integrated process. In this study the physical manifestations related to communication design for all businesses are identified as: Publications, advertising, promotional material, tradeshows, website, interfaces related to electronic devices.

### *Identity Design*

Identity Design is the design of visual aspects that form part of the overall brand (justcreative.com). Identity design entails deciding on issues regarding the image of an organization perceived by all stakeholders. It usually manifests itself with the logo. However, it distinguishes itself from communication design in the sense that it comes into being if a strong organizational culture exists (wikipedia.org). In this study, the physical manifestations related to identity design for all businesses are identified as: Logo, signs, uniforms, cars, stationary.

*Design germination* phrase was used to describe the model because seed is used as a metaphor to describe design. Theoretically, any seed may be planted in any soil. However, if the place is suitable for the seed geographically, the plant grows efficiently. The farmer has the knowledge on where to plant it; however the hobbyist gardener usually lacks the know-how and finds it out after several trials. Similarly a design manager may be well equipped concerning the identification of potential design areas within a company; however a non-designer business executive is not always likely to figure out all corporate areas where design implementation may turn out to be beneficial.

The suggested model facilitates our understanding of design in business by means of demonstrating the outcomes of design related activities relevant both for manufacturing and services industries, by means of listing the physical manifestations of design.

The suggested model is *comprehensive* because it suggests that sensory integration of design is also to be considered in the taxonomy. Business and particularly marketing literature offers insights on the importance of sensory integration (Pine and Gilmore, 1998). Concerning design management literature however, Svengren (1995) mentions visual integration and Kim (2009) deals with sensory integration of design to some extent.

This suggested model is *contemporary* because it suggests that all corporate domains affected by design should be analyzed both on-line and off-line.

### *Future Implications*

In order to test the validity of the model the research is still on-going. In the on-going research top marketing executives of the largest 1000 manufacturing companies in Turkey, are being surveyed. The first 1000 companies account for 27.1 % of the value added in the manufacturing output realized in Turkey in 2011. Once the survey is completed, it is hoped that the comprehensiveness of the model will be tested and industry specific patterns (if any) will be detected.

## **Conclusion**

The authors of this paper claim that non-designer executives are not equipped with tools to manage design in business because they are unaware of what design in business entails. The preliminary results of the study (18 companies) showed that the respondents (who are either MBAs or engineers and did not receive any formal design education) were not capable of providing a comprehensive list of physical manifestations of design. The same executives were able to mention only some of the physical manifestations of design, depending on their professional experience.

On the other hand, if they had received such a formal design education, they would be able to provide a complete picture of design in business remains to be another question mark. As it has been stated earlier in the article, design in business is interdisciplinary and even design scholars do not agree on a single systematic list of the basics. However, if the same marketing executives were asked information concerning other managerial disciplines eg. details regarding 'the 4 Ps of Marketing', 'Net Present Value (NPV) of a Project' or 'Balance Sheet', the answers were likely to be more similar. Design embraces differences, however the lack of a holistic point of view on the design management side, is likely to degrade its potential performance.

In order to shed some light on the ambiguity concerning the borderlines of design in business, this study proposes a new design taxonomy model. The proposed model "Corporate Domains Affected by Design Germination" is derived from existing literature.

Design germination phrase was used to describe the model because seed is used as a metaphor to describe design. Theoretically, any seed may be planted in any soil. However, if the place is suitable for the seed geographically, the plant grows efficiently. The farmer has the knowledge on where to plant it; however the hobbyist gardener usually lacks the know-

how and finds it out after several trials. Similarly a design manager may be well equipped concerning the identification of potential design areas within a company; however a non-designer business executive is not always likely to figure out all corporate areas where design implementation may turn out to be beneficial.

Although, the classification of design is a very basic step and it is by no means adequate for the proper deployment of design in business; the authors of this paper believe that this preliminary step to reach a systematic and unanimously accepted classification of design will not only contribute to design's penetration in business but it will also provide the environment for a holistic design approach to flourish more easily. If product, communication and environmental designers all know what the big picture in business is like and how their profession fits into the big picture, designing the business is likely to be achieved in greater harmony.

Design professionals may utilize the proposed model in establishing a better communication with their clients. On the other hand, the model may turn out to be instrumental not only for design education, but also it may be enlightening for business education in increasing design awareness of potential business executives.

The deployment of the proposed model may facilitate a more holistic approach of design. A more holistic approach to design eventually is likely to render companies to be more unique, reliable and sustainable.

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**Section 4c: The Role of Designers in the Shift  
Towards Product Service Systems**

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# Editorial: The Role of Designers in the Shift Towards Product Service Systems

Christine DE LILLE, Erik ROSCAM ABBING, Froukje SLEESWIJK VISSER and Dirk SNELDERS

Many organizations are making the shift towards Product Service Systems (PSS). As products seldom stand alone these days, companies have to make this shift in order to unlock new value, both for themselves and their customers). They must re-organise themselves. The number of new phenomena, models and strategies to deal with seems endless, and the people managing them need flexibility and openness to be able to adapt. In order to deal with this shift designers, project leaders and senior managers play an important role.

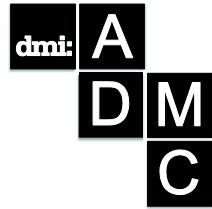
The following articles submitted within this track include two different perspectives on designing for Product Service Systems in organizations. Akoglu discusses these two perspectives based on interviews with industrial and interaction designers. The first perspective discusses the usage of tools and methods for designing PSS. The second perspective looks at how designers can support organizations in dealing with PSS. Papers submitted in this track tackle both of these perspectives.

Within the first perspective Kim, Nam and Chung discuss the design of a tool that supports in designing PSS based on the customer's activities. Valencia, Mugge, Schoormans and Schifferstein discuss seven challenges encountered by designers in the design of PSS and different ways in which designers can contribute.

The articles in the second perspective provide both an overview of various organizations that undergo a transition as well as details on one organization. Straker and Wrigley explore the different ways of being able to deliver PSS for organizations and the according role of designers as innovation catalysts. Debacker, De Lille, Eijkelenboom and Santema zoom in on the transition process itself in a supplier in the aviation industry.

Ceschin, Resta, Vezzoli and Gaiardelli link those two perspectives by explaining how visualizing PSS business models enables designing PSS within organizations.

This track aims at starting a discussion how the role of the designer in designing PSS is different from designing products? What skills of designers are important in this shift? How do they organize themselves? We hope to bring together those on the client side (the organization) and designers and other facilitators coming from both practice and academia.



## Are you being served? Not onboard! Aviation manufactures moving towards service enabling systems.

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*To maintain a competitive advantage, suppliers in the aviation industry have shifted from passive producers to active innovation research partners, sharing responsibilities and risks. This approach has fuelled technological advances over the years, delivering aircraft that are lighter, faster and safer than ever before. However, the passenger inflight experience has not changed radically in the past twenty years. In order to offer a personal brand experience and remain competitive, airlines are shifting their focus to onboard experience and service satisfaction. This paper investigates the practice of a large supplier in aviation to identify how designers can support the company's transition from product supplier to the supplier of service enabling systems. An inductive case study approach was employed to investigate the internal shift by mapping the influence of the transition towards service enabling systems on several of the supplier's projects and interviewing the main internal and external stakeholders. A total of twenty interviews were conducted with stakeholders of the galleys & equipment department, including airline staff, catering providers, development engineers, sales and purchasing. This paper concludes with an overview of the main challenges encountered by the supplier and how designers played a role in tackling them such as: changing the internal mindset towards the end users, facilitating internal collaboration and reframing the design briefs in collaboration with airlines.*

**Keywords:** aviation industry, manufacturer, supplier, transition, service design

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## Introduction

### *The aviation industry in transition*

Suppliers of commercial aviation cabins see their industry at a stand still for the first time since airline deregulation in 1978 (Hall, et al., 2013). Although aircrafts are constantly being improved, passengers continue to be dissatisfied with the experience delivered by airlines (The Economist, 2013). Ticket price was the main competitive differentiator after 1978 (Williams, 2002). More recently, revenues in the airline industry have come under constant pressure due to disruptive competition from low-cost carriers, consumer criticism of fragile reliability and technology-driven pricing transparency. In order to offer a personal brand-related experience and remain competitive, airlines are now shifting their focus back to the onboard experience; this in turn challenges suppliers to shift their innovation focus (Jones, 2012). Ideally, suppliers understand and adapt to the changing demands of airlines to deliver innovative onboard service and to meet this challenge they need to move from purely delivering products to becoming a more active partner in airline service provision (Doganis, 2001).

### *Differentiation for airlines*

With the advent of the jet age in the 1950s, the sky was the limit in terms of the quality of the travelling environment, with cabin design mirroring the luxury car counterpart. Since then the trend seems to have reversed (Hall et al., 2013). The advent of new technologies in cabin design initially provided a competitive edge, but this has ceased to offer an advantage and airlines are instead focusing efforts on differentiation through service provision. Differentiation is the main enabler in achieving customer retention in this highly competitive industry (Ennew and Binks, 1996). Typical differentiating values include customer experience, services, sustainability and airline efficiency (Hall, et al., 2013). The cabin design itself represents the integration of the differentiating values of on board experience and service, and to a certain extent the values of sustainability and efficiency.

The main question is how to create services that offer competitive differentiation. When services are less visible and more labor dependent, they are more difficult to imitate, and thereby become a sustainable source of competitive advantage (Heskett et al, 1997). Service can be seen as the cabin in the context of its operating process; the product manufacturer is therefore an important stakeholder, since it has knowledge of the product service

requirement during its life cycle (Oliva and Kallenberg, 2003), and because services create value-in-use for customers (Blomkvist et al. 2010)

An additional challenge for aircraft cabin designers is that a single cabin needs to fulfill the requirements of many airline brands. The design needs to provide a primary platform for different airlines to express their unique brand identity but must also convey to the airline the brand values of the original equipment manufacturer (OEM). If new industry hurdles of changing consumer demands and competitive pressures are to be met, cabin design must engage the full range of stakeholders via a user experience driven scenario (Hall et al., 2013).

### *Consequences for airlines manufacturers*

Zodiac Aerospace Group, the company under investigation in this paper, is the world leader in aerospace equipment and systems for commercial, regional and business aircraft, as well as helicopters and space applications. The company (founded in 1896) holds a robust traditional engineering, technological, industrial and management reputation, offering comprehensive and integrated cabin solutions.

Presently, it is the only company in the aircraft cabin interiors business to design and manufacture all the components of an aircraft cabin, from cabin structures to seats, galleys, equipment, aircraft systems and aerosafety equipment. Altogether the group employs over 30.000 people worldwide and works with clients (airlines & OEM's) throughout the world. In 2008, the group started the shift from passive product producer to active innovation research partner, sharing responsibilities and risks (Beelaerts van Blokland et al., 2012). This approach has fuelled technological advances, delivering products that are lighter and safer than ever before.

Although delivering superior products, the traditional industrial engineering mode does not allow for the design of services (Polaine et al., 2013). Where the traditional engineering company perspective focuses on problem solving, other cases discussed in literature show that designing for services requires a perspective that encompasses value adding (Shimomura et al., 2009, Polaine, et al., 2013). Successful businesses of the future will foster an even more reciprocal relationship with customers, recognizing customers as co-producers in service (Bettencourt, 1997). Zodiac Aerospace recognizes this, and sees future innovation as requiring a push away from its traditional comfort zone.

Specifically, in the context of cabin interiors, this means looking further than the historical technical engineering mode (focusing primarily on solving

problems with regard to weight reduction, new materials and certification) towards an approach where the wishes of the customer (ie. airline) are the main driver for new product development. In order to support and deliver services, the customer and user's questions are reframed and integrated with new layers of knowledge. This is an approach to technology innovation that merges people and processes (Polaine, et al., 2013), and is key to developing products that are not only technically superior, but also support service delivery staff (ie. onboard crew) to outperform – 'As the distinction between products and services blurs, so does the distinction between consumer and producer' (Brown, 2010). Product development in itself can thereby become the vehicle by which a business realigns itself with its external environment, consumers and markets (Junginger, 2007).

Although involving suppliers is a long-standing practice in the aircraft industry, it has not pertained to inflight services; in this paper we investigate how suppliers in aviation can alter their innovation practice and partnership structure in order to support airlines in delivering competitively differentiating inflight services.

### *Role of designers*

Design focus has traditionally been on new product innovation, but more recently designers are characterized as facilitators of innovation, especially in relation to design for services (Calabretta et al., 2014). Traditional design skills, including imagination, creativity, innovation and value creation (Gloppen, 2009), have already proved to be of great value for facilitating collaboration between different stakeholders in developing the Product-Service Systems of the information age. There are new roles for designers that do not frame design as a new aesthetic layer around existing products. Rather, the cognitive, attitudinal and methodological aspects of design are looked at as a way to facilitate organizational change. The added value of these roles for designers does not only lie in the aspects most people think of: visualizing, prototyping, creativity, and such. The real value of a designer primarily lies in the mindset of designers. Designers tend to see problems as opportunities for the invention of new alternatives. They think more in terms of creating new possibilities rather than in terms of selecting between existing alternatives (Boland and Collopy, 2004). The very nature of design problems is that they are wicked problems (Buchanan, 1992). This makes designers able to deal with uncertainty, to take risks and to work in the fuzzy area of the design process.

Furthermore, designers are people-persons; they have empathy for different stakeholders and have experience in dealing with people. The one thing that seems to remain relatively stable, even in times of great change, is the need to understand human behavior. It is therefore no surprise that business managers increasingly look to the field of design to help them get in touch with their customers' (and other stakeholders') unarticulated needs and desires. When made a part of an organization's work processes and competencies, these roles for designers enable an organization to embrace change as a normal part of managing its business (Coughlan and Prokopoff, 2006). In such a cases designers can support an organization in the transition equation from products to service: service innovation can be seen as a customer focus with an added level of complexity, it requires an holistic approach, future thinking and other skills typically attributed to designers. These roles of designers have been recognized, but knowledge lacks on how they can be used during a transition of focus from products to services. This paper describes these possible roles of designers based on projects within Zodiac Aerospace. The different observed roles are described in relation to literature in the Discussion section.

## **Method**

To address the main research questions, an empirical inductive case study approach based on the practice of the Zodiac Aerospace Group was used (Eisenhardt, 1989; Yin, 2003). Focusing on the market leader for the case study helps to set an ideal ground for the inductive approach, which allows for findings to emerge from the frequent and dominant themes in the field of practice (Thomas, 2006). We began the inductive study by collecting company's internal empirical data related to the innovative design practices deployed since 2008. Data were collected through: a) desk research (websites, internal business archival material, reports, etc.); b) in-depth interviews with executive board members and senior directors from three different business units; c) two new product development sessions with engineers and program managers in which we joined as part of the development team; d) one workshop with the head of purchasing, engineering and service delivery at a large international commercial airline during which informants were also part of a new product development session and team employing a new approach to service design; e) formal & informal follow-ups with emails, phone calls, and New Product Development (NPD) reports' discussion.

We investigated internal business practices by working together with different departments within the Zodiac Aerospace Galleys & Equipment segment (NPD, sales and management) based in The Netherlands & France. Galleys & Equipment products are directly linked to onboard catering which is an active service delivery tool for commercial airlines, thus empirically related to the onboard experience. A total of 12 semi- structured interviews were conducted with cabin crew from three different large international commercial airlines (who are considered the end users of the Galleys & Equipment products) in order to gain perspective of the client.

We first analyzed interview transcripts, field notes and archival data and then built information reports to be compared across interviews, aiming to find similar themes (Eisenhardt, 1989; Yin, 1994). With a ready structure, we compared the findings with the existing literature to find similarities and differences, validate and refine findings. Accordingly, we undertook several scans among different data sources, literature, and emerging findings (Patton, 1990). This procedure was repeated to describe the role designers played in Zodiac Aerospace transitioning from traditional engineering to becoming service design enablers and the external face of aviation manufactures.

## Results

In order to describe the transition that has been taking place at Zodiac Aerospace, the following section describes three main activities that have been taking place at the company in the past two years. The authors have witnessed and taken part in these activities and reflect upon the activities to explain why the activities have taken place, what has been done, what the role of designers was and how the results influenced Zodiac Aerospace. The main design method initiatives of this transition are described below. Table 1 provides an overview of the various activities, which design skills played a role and what challenges were encountered.

### *Essence of change: background of transition activities*

#### **Bringing the end user in the engineering process – The Experience Lab**

The company's engineering team is highly effective in finding solutions that are technically advanced and appropriate for certification procedures, however they have limited understanding of the products' context of use (primarily based on personal experiences) and their relationship with the user



*Are you being served? Not onboard!*

(ie. onboard crew and passengers). The newly developed Experience Lab aims to bring the NPD process closer to the real life perspective of the user, where the NPD team can observe the user-product interaction. The newly built Experience Lab is situated at the R&D department of the air catering equipment & cargo business units. This approach has been termed staging design, and aims to support immersion in the service experience (Blomkvist and Segelström, 2012). The goal is to identify underlying customer needs in order to develop solutions that customers and engineers have difficulty envisioning, due to the lack of familiarity with the possibilities offered by new technologies or the lack of familiarity with the true everyday use of products. It serves as a platform to consider the user as an active participant in the design process requiring non linear thinking, less mechanistic structures and more subjective participation in innovation processes (Morelli, 2009). The focus is on user-centered design, which is employed using several stages of the design process. During the Experience Lab sessions, the development of new concepts and services is practiced by involving the users of the products themselves, in this case the airline cabin crew instead the airline procurement or the OEM's. In the case of the business unit involved in this research, these are the cabin crew & catering staff. While role-playing the processes onboard, the engineering development team learns about the benefits and effects of empathy-driven consensus building, such as faster generation of ideas by collective intelligence, building of relationships with users and designing with activity support intention. In the Experience Lab, engineers are supported in making early-stage prototypes, exploring new product opportunities with users and test-developed prototypes in order to gain quick feedback. All of this did not take place before the development of the Experience Lab. Prototypes were usually created for certification purposes and to win customer's final approval.

### **Design and Engineering in a new mindset – Partnership with university**

The aviation industry holds a traditional mindset, inherited from its foundations in military purposes, where safety and reliability are the main anchors for NPD. Partnering with a university had the objective to leap out of the traditional development ways, get an update on recent developments such as service design and initiate an internal shift of mindset leading to solid momentum of motivation for change. Zodiac Aerospace started a partnership with Delft University of Technology based on an employees' previous contact with a researcher at the university. In two consecutive years, Zodiac

Aerospace provided cases for students to work on, and university researchers coached them. In the first year, the aim for Zodiac Aerospace was to become acquainted with service design and what it could bring to the company. Students designed different concepts based on improving the inflight experience of passengers in a time frame of ten years. At the end of the course, the students pitched their concepts for a jury of different internal stakeholders within the company. This created such a momentum and interest that the company decided right away they wanted to partner up for another year. During this year, a team of engineers of the business unit participated in the course to learn some of the design skills for service design themselves such as prototyping services. Prototyping services is said to involve three steps: exploration, evaluation, and communication (Blomkvist, 2010).

Different concrete design briefs coming from projects taking place within Zodiac Aerospace provided the starting point. This time a second perspective was added in the design process: that of cabin crew, through the involvement of an airline in the course. By integrating both the passenger and cabin crew perspective, another step towards service-enabling systems could be taken. The main objective was to leap out of the comfort zone to initiate a mindset change built up through solid momentum, and establish a steady rhythm of mindset. The engineers were asked to work out of their comfort zone in an effective teamwork environment. The result was aimed to relate business momentum to productivity and leverage motivation for change.

Table 1: Overview of the three activities undertaken in the transition towards designing service enabling products.

☐	Experience Lab ☐	Collaborate with University ☐	Development Sessions with Airlines ☐
Goal ☐	Identifying underlying customer needs in order to develop solutions ☐	Creation of a new mindset ☐	New approach for co-creating new designs ☐
Design Role ☐	Let engineers gain empathy and prototype in various ways early in the design process ☐	Internal mindset change & creation of momentum ☐	Reframing the problem ☐
Benefits ☐	<ul style="list-style-type: none"> <li>• The Experience Lab is always available for NPDP sessions; it is observed that the user context environment replicated in the location affects the outcome of brainstorming meetings/discussions positively with empathy for users.</li> <li>• External partners and other departments also make frequent use of the facilities, in order to understand the user's context and communicate cross silos.</li> <li>• User input and insights during the early stages of NPDP are incorporated into the design decisions of the products, and therefore reduce risks associated with costly misalignments.</li> <li>• The possibility of quick prototyping also enriches the conceptualization phase of the NPDP process.</li> <li>• It facilitates internal and external communication via the development of a common language and channel of communication.</li> </ul>	<ul style="list-style-type: none"> <li>• NPDP engineering team found the new views proposed by designers interesting.</li> <li>• The management team was positive about the resulting concepts.</li> <li>• Creating momentum and wave of interest throughout the company</li> <li>• Providing hands on examples of what new approaches could bring to the company</li> <li>• The entirely different approach led to unique design solutions of the traditional problem briefed.</li> </ul>	<ul style="list-style-type: none"> <li>• The method supports the customization process of products through the real-time integration and collection of data on product structure preferences at an early stage of NPDP, involving as many users as possible as well as representatives of target users and the process decision makers of both the client and manufacturer.</li> <li>• Results show the need for improvements in understanding the needs behind the question, and the job to be done.</li> <li>• Shortens the time to market of new products.</li> </ul>
Challenges ☐	<ul style="list-style-type: none"> <li>• Coordination of activities, which are coherent for overall company goals and market relevance, is proving to be a challenge without an active engagement from marketing and sales departments.</li> <li>• Remote location of the NPDP team has also challenged informal communication between Business Units.</li> <li>• Expanding the participation of participants from different geographical locations.</li> <li>• The setup of formal procedure of incentive airline catering participants to join the lab sessions.</li> <li>• Measuring the return on investment in monetary terms.</li> </ul>	<ul style="list-style-type: none"> <li>• Engineers look on the client role instead of hands on design team NPDP participating, focusing on restraining the students in their work.</li> <li>• Universities are accustomed to receiving agents rather than outsourcing agents in R&amp;D activities.</li> <li>• The results are limited with regard to further implementation as students are not fully understanding of the industry context and challenges (was also not the primary focus of the students).</li> <li>• Developing solutions that belong to the core expertise of the U not only is opposed to that of the company as a whole.</li> </ul>	<ul style="list-style-type: none"> <li>• Changing the mindset of the industry towards suppliers</li> <li>• Aligning the airline internal department aims</li> <li>• Opening communication channels with the product development teams on side airlines &amp; NPDP teams from the supplier.</li> <li>• Broaden the current setup where the emphasis is the supplier-customer relationship instead of discussing technical details and not the holistic view of the processes.</li> <li>• Internally prioritizing urgency for developments with immediate market request.</li> <li>• Externally proving the benefits of developing solutions for the need, instead of patching solutions with existing products.</li> </ul>

☐

### **Co-creating new designs**

The industry is used to the traditional role of the supplier as a product producer. In this role, airlines need to adapt their services into the currently available certified product base selecting from catalogues. In the case of onboard services, this situation amounts to a patching of symptoms, instead of seizing the opportunity to identify and treat underlying causes. In many cases airlines are not even aware of what is possible in terms of tailored product development, as this requires more effort and long-term commitment from the supplier (for example, quick sales of delivering what the airline is asking, in contrast to reframing the problem to co-create a more long-term solution). Knowing that a holistic approach to co-creation and visualization of service sequences makes services more tangible (Stickdorn, 2010), Zodiac Aerospace organized workshop sessions together with major commercial airline partners, with the aim to transform customer needs into the functional requirements of the product. Invited to join these workshops from the airline side were: a) the account manager (sales); b) a development engineer; and c) an experience designer (facilitator). From the airline: a) the head of purchasing, engineering & maintenance; b) inflight product development & onboard service specialists. The workshops were set at the beginning of the product development process, to allow the NPD and sales teams to deduce from available data, including results from the Experience Lab sessions, the requirements of new industrial customized products. As in service design techniques, multiple representations (storyboards, scenarios etc) were used to help stakeholders think and understand the current situation better. A physical prototype of the product concept is then developed as a draft version by the development team and re-configured according to customer needs, using follow-up and feedback sessions.

## **Discussion**

The three design roles we found at Zodiac Aerospace during its transition to a service enabler are: *gaining empathy*, *changing mindset* and *reframing of problem*. Together they help to forge a stronger, more holistic relationship with its stakeholders. They provide a basis to further explore a possible role for designers in supporting manufacturers in the transition towards designing service-enabling systems. The most salient results are summarized below, for the benefit of discussion:

## **Design Role 1:**

### **Empathy – Bringing the end user into the engineering process**

Design choices are linked to results (Andreasen and Olesen, 1990; Duffy et al. 1993), which can either be good or problematical for whom the product is intended. Design problem definition activities that assist to minimize unintended results are therefore of primary importance when designing a product intended for services, as the consequences become evident only later when the product performance is witnessed in its context.

Immersive and empathic methods are employed in design and by real life simulation, supported by hands-on exercises where the product & human interaction onboard is analyzed. By bringing the user into the development process, the NPD team can better understand the context of the problem. The engineers also learn empathy toward the product's users, and finally can translate user needs to technical products that otherwise would have been developed internally with technical requirements only.

The main challenge when implementing this design role is to understand the implications for company strategy and culture - direct input from stakeholders and full support from the marketing department points research in the direction that links the company's overall objectives to market relevance. The next challenge is to create an official channel to facilitate the organization of sessions, in which members will be confident to share information - for the purpose of this study; participants were selected through friends' request (see table 2 for an overview of the different challenges and benefits).

End users put time and effort into these initiatives but the results can only be measured once the product reaches the market; the true ROI is therefore difficult to measure. The role of the designer is to translate ideas and categorize insights - the designer is the facilitator of the conversation about the original idea and a participant in its communication to the engineering team. Designers are inherently concerned with bringing people, structures, and resources into alignment around an outspoken purpose. (Junginger, 2007).

In short, although presenting some limitations, the method showed to be effective as an extra tool to define scope when a certain situation pertaining to the product is not fully clear to the NPD team, or when an internal innovation needs to be validated with external inputs. Finally it straightens the product development process as customer value joins technical requirements and cost analysis in the problem definition and solution finding routines (Shimomura et al., 2009).

Table 2 Overview of the main benefits and challenges of the design goal “Gaining Empathy”.

Benefits	Challenges
Increased empathy towards the user	Align topics with goals and market relevance.
Platform for communication between silos.	Find participants and make official channel to get people to join.
Inspire new concepts faster.	Measure the ROI.

## Design role 2:

### Mindset change – Motivation for change

Service is a differentiator for competitive advantage (Karmarkar 2004), and through it, for superior market performance (Barney 1991). Service has never been a priority in the approach of traditional product suppliers, and therefore mindset change must be introduced as part of the development culture of the company. The change needs to happen internally, by a continuous emphasis on strategic direction and internal process improvements. During this time, one should be open to both problem reframing and to changing solutions (Holmlid, 2010). Design in this scenario becomes a partner of the traditional engineering process, because it has the capacity to provide vision and motivate change by providing desirable alternatives to trusted norms (Polaine, et al., 2013).

The challenge for designers is to break the mentality of established industry practitioners. For example, it was difficult to persuade the Zodiac Aerospace engineering team to feel involved as part of the design team; this led to the second challenge which is the translation of design concepts into producible products, either for lack of involvement from the engineers during the conceptual phase, or the lack of industry knowledge from the designers, or both (see table 3 for an overview of the different challenges and benefits).

program delivered concepts that were far removed from the core competences of the department, making it difficult to communicate new ideas according to the current mindset context and engineering processes. Although translation of new ideas into business daily activities proved to be challenging, the motivation to try new product development techniques was welcomed by the engineering team. The aim was to use authentic and diverse research data to provide broad and qualitative descriptions to be used throughout the development process (Sleeswijk Visser, 2009).

The students involved in the project were the only group of that academic year that received the international award for excellence in aircraft interior innovation, the Crystal Cabin Award. This was another indication for Zodiac Aerospace that it was on the right path and that these endeavours are appreciated by the industry.

*Table 3 Overview of main benefits and challenges regarding the design role of “Mindset change”.*

Benefits	Challenges
Visibility & approval to managers	Involving the team as developer equal
Unique out of the box design solutions.	Limited feasibility of concepts.
Recognized in the industry CC Awards.	Translating concepts to Business Unit’s products

Although integrating universities as a research partner of private firms proves to be fruitful, the industry often does not trust the research capabilities of universities. Methods such as partnering with research institutions support the integration of different sciences in the improvement of methods and tools for product development (Morelli, 2006).

### **Design role 3:**

#### **Co-creating new designs – reframing the problem**

Conventional value delivery in aviation is based on a one-way channel between manufacturer and customer, where the customer is the passive receiver of goods (Morelli, 2009). As a break from that framework, Zodiac Aerospace has focused its attention on co-creation processes.

Traditionally, industrial design follows a series of steps, from defined requirements or opportunities proceeding through ideation, synthesis, analysis and optimization, to production (Hall, et al 2013). Following increasing demand for product variety and customization, aviation products must be developed to satisfy specific regulations & safety requirements. However, whether the provided user experience and service delivery meet the expected requirements is questionable (Hall, et al, 2013). After all, innovating only in technology ignores the innovation of performance of products and services related to them (Sobordone, 2010).

Service designers need to have the skill to transform information on stakeholders to actionable insights that can be used as design inspiration. (Blomkvist and Segelström, 2012). Passenger satisfaction driven design would create a win-win scenario, that should generate industrial solutions starting from individualized and highly context-dependent needs (Morelli, 2009). The analysis of what customers really want, by understanding the use of the products in their specific environment (onboard) and specific service processes, is one of the methods used to establish successful product development process.

This requires a reciprocal relationship with engineering design being challenged to deliver innovations to meet a customer driven concept model (Hall, et al., 2013). This new approach implies a shift in the role of manufacturers from value creators to facilitators in a collaborative process of value production (Morelli, 2009). In the context studied, this approach minimizes risks and costs related to NPD while improving interactions along supply chains.

*Table 4 Overview of main benefits and challenges regarding the design role of "Reframing the problem".*

Benefits	Challenges
Customization and product structure preferences happen in an early stage.	Dealing with the traditional mind set – what do you want from me?
Understanding of the job to be done.	Align departments to a holistic aim – inflight service x purchasing
Shorter time to market.	Internally prioritizing such projects.

Challenges encountered in the application of this design method involve communication with stakeholders in the industry - airlines are not accustomed to having suppliers as development partners, and are afraid of sharing information to protect their practices from competition. They also believe that working as a partner may reduce their bargaining power for negotiation. Finally, the prioritization of co-development projects is difficult to realize, as the purchasing department does not align with the same objectives of the service delivery team, creating a diversion of interests and the feeling of ownership over the initiative.



Currently, issues of payload, regulations and business economics serve to define design decisions (Morelli, 2009). However, reintegrating the customer and the user into the design approach helps to define solutions that improve or design new services.

## **Conclusions**

This paper describes how a large manufacturer in aviation identifies how designers can support the company's transition from product supplier to the supplier of service enabling systems. Product development may serve as the source for creating also new organizational core capacities in the future. Designers play an important role tackling the company's main challenges in three ways: changing the internal mindset towards the end users, facilitating internal collaboration and reframing the design briefs in collaboration with airlines.

Current innovation methods work retrospectively and with internal knowledge. This process only allows incremental innovations. As manufacturers transition from product - to service enabling suppliers, designers can support the R&D team to jointly improve internal innovation practices and bring customization benefits and proactive initiatives to the company's development processes.

The designer is the denominator in the transition equation from products to service: service innovation can be seen as a customer focus with an added level of complexity, it requires an holistic approach, future thinking and other skills typically attributed to designers: 'Creating value requires the simultaneous design of product, service & organization' (Pawar, Beltagui and Riedel, 2009, p.p 468). The industry traditional barriers separating design, NPD teams and the rest of the organization from external stakeholders need to be lowered. Becoming a service enabler involves changing the company's culture so everyone starts thinking like the customer, and feels part of the same design. Designers can play a supporting role, however the mindset change must happen at all levels of the organization. Positioning service as a business priority clearly challenges traditional practice; it implies a reframing of the business mission and its collaborative role in value co-creation. (Kowalkowski, 2010).

Each of the discussed roles of designers is implicated in a different activity within the company. The transition that takes place is a lengthy one. At the moment of writing, the authors both from practice and academia have been collaborating for almost two years and the transition is currently gaining

momentum in the company. However, there are still many years to go, and many initiatives to undertake. This paper is a first attempt to describe the process; in the near future we aim to publish more detailed papers describing the different results on a project level.

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## Challenges in the Design of Smart Product-Service Systems (PSSs): Experiences from practitioners

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*Smart Product-Service Systems (Smart PSSs) are market offerings that integrate products and services into one single solution through the implementation of IC technology. Smart PSSs allow organizations to develop relationships with consumers in new ways and have a growing presence in the marketplace. As designers' involvement in the design of these offerings is likely to increase, the understanding of the challenges emerging from the integration of product and service is of increasing relevance for the effective management of the design process. To identify the challenges in the design of Smart PSSs, interviews with ten practitioners from various companies with experience in the design of Smart PSSs were conducted. Based on the findings, we outline seven challenges: defining the value proposition, maintaining the value proposition over time, creating high-quality interactions, creating coherence in the Smart PSS, stakeholder management, the clear communication of goals, and the selection of means and tools in the design process. Furthermore, we outline five ways in which designers can contribute to the design process through the use of their capacities: designers as foreseers of future scenarios, as guardians of experiences, as integrators of stakeholders' needs, as problem solvers, and as visualizers of goals.*

**Keywords:** *Smart, Product-Service System, challenge, design, process.*

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## Introduction

A practice with growing attention from the design community is the design of Product-Service Systems (PSSs). PSSs integrate products and services to offer an overall value proposition to consumers (Baines, et al., 2007). While the majority of products contain service elements (e.g., after-sale services, warranties) and vice-versa, in PSSs both the product and the service play a central role for the *value-creation-in-use* for the consumer (Baines et al., 2007; Tan, Matzen, McAlloone, & Evans, 2010). For example, when visiting launderettes, an example of a traditional PSS found in the literature (e.g., Mont & Plepys, 2007), consumers' opinions of the launderette may be influenced by the way the washing machines work, but also by aspects of the service, such as employee friendliness and the quality of the end-result (Bitner, 1992). PSSs have gained considerable attention among the sustainable production and sustainable design communities, who acknowledged its potential to reduce the environmental footprint of products; for example, by reducing the relevance placed on product ownership, thereby maximizing the lifespan of products. However, literature in this area often centres on business-to-business cases, and describes business models/frameworks that can influence the implementation of these types of offering (e.g., Baines, et al., 2007; Tan et al., 2010; Tukker, 2004). Although these insights are pivotal for the implementation of PSSs, they provide limited insight for designers on the distinctive aspects of the design process and its management. This paper addresses this need by reporting the challenges faced by experienced designers in the design of PSSs. In particular, our efforts are focused on a specific type of PSSs, which we call *Smart PSSs*.

Smart PSSs integrate smart products and e-services into one single solution through the implementation of information and communication technology (ICT)(Valencia, Mugge, Schoormans, Schifferstein, 2014). The ICT in the smart product is central to the concept of Smart PSSs because it guides the development of e-services and innovative interactions for the consumer. For instance, Laundry View (<http://www.laundryview.com>) can be considered the smart version of the traditional launderette explained above. Laundry View connects the washing machines to the Internet, allowing consumers to check and be notified about the availability of the machines in the laundry room (remotely). Hence, the ICT in the machines facilitates the generation of relevant information, which can help consumers make more informed decisions about their laundry activities (Valencia et al., 2014). Moreover, through the e-service, consumers can report incidents or

*Challenges in the Design of Smart Product-Service Systems: Experiences from practitioners* give comments/suggestions, facilitating the communication between service provider and individual consumers. Thus, the integration of smart product and e-service opens up an array of opportunities for designers, who can implement new touchpoints and interactions, enabling organizations to develop relationships with consumers in new ways.

Smart PSSs are a type of offering with growing relevance in the design field. Due to advances in technologies (e.g., ICT, connectivity of objects), and consumers' advancing attitudes towards online transactions, the number of Smart PSSs in the market place has increased over the years. Companies, such as Philips, Oral B and Nike have all attached e-services to their connected products. And as the knowledge economy continues to unfold, we expect more companies seeking to provide individual experiences to consumers (e.g., information, feedback; Johannessen & Olsen, 2010; Valencia et al., 2014) to make the move towards Smart PSSs.

As designers' involvement in the design of Smart PSSs is likely to increase, so is the need to enlarge the knowledge related to the process of designing Smart PSSs. The creation of Smart PSSs may pose new challenges for designers. Designers are accustomed to creating products and services separately. However, the product and service in a (Smart) PSS are so deeply intertwined that a distinction between the two may no longer be possible. Despite this apparent complexity, there is limited existing knowledge that can help designers anticipate the possible challenges emerging from the creation of Smart PSSs (e.g., Isaksson, Larsson, & Rönnbäck, 2009). This information can help designers to fine-tune their best practices to the integrative design of product and service, and to manage the design process of Smart PSSs more effectively.

### *The design of (Smart) PSSs*

The design of PSSs is defined as the process of integrating business models, products and services to create innovative solutions with added value for customers (Vasanth, Roy, Lelah, & Brissaud, 2012). Generally speaking, PSSs are developed when manufacturing companies add service components to their offerings (i.e., servitization), service companies add products to their service offerings (productization) (Baines et al., 2007, Tischner & Vezzoli, 2009), or when a new company forms its market proposition based on both. Thus, the design of a PSS often requires that a specialized company moves to new domains where it has little or no experience (Morelli, 2002), and entails considerable organizational and intellectual efforts from those that are involved in its development (Tischner & Vezzoli, 2009; Isaksson, et al., 2009).

Organizational efforts may derive from larger transdisciplinary design teams (Issaksson et al. 2009), where the involvement of stakeholders (i.e., co-creation with suppliers, public organizations, users, etc.) is key to reaching innovation and added value (De Bont & Smulders, 2013). However, different stakeholders may differ in their views and interests towards the PSS (Dougherty, 1992), which can lead to efforts in managing their interactions. Furthermore, companies making the shift from manufacturing to service provision (and vice versa) may require a shift in organizational culture, and to rethink their ways of working and communicating (Mont, 2002; Issaksson et al. 2009; Martinez, Bastl, Kingston, & Evans, 2010).

Intellectual efforts may derive from having to consider multiple touchpoints (or service interfaces; Sangiorgi, 2009) in order support the relation-based value creation characteristic of PSSs (Martinez et al., 2010). Thus, while designing PSSs, designers need to think holistically at a system level, but should also be able to shift easily to details, for example, when discussing the specifics of product or service elements (Vasantha et al., 2011). Thinking at a system level (i.e., covering all touchpoints, product and service elements) is important because it can influence the creation of coherent experiences for customers (Sangiorgi, 2009).

Finally, on a more general level, the appropriate specification of the development context (e.g., business-to-business vs. business-to-consumer) can play an important role in PSS development. Different contexts may lead to the definition of different value propositions (Morelli, 2002), and consequently, to the identification of different capacities (i.e., stakeholders) (Vasantha et al., 2011) and methodologies (Mont & Tukker, 2006) needed in the design of the PSS. These traits may lead to efforts to achieving a thorough understanding of the context, but also to reaching a shared view among stakeholders of the value to be delivered through the PSS.

When not managed appropriately, the above instances can become challenges in the design of PSSs. The design of Smart PSSs may evoke similar challenges, as we suspect they are transferrable across development contexts. However, little is known about the design of Smart PSSs. The characteristics of Smart PSSs (Valencia et al., 2014) may bring about distinctive challenges, which may influence the effectiveness of the design process. With this study we set out to identify the challenges that experienced designers face in the design of Smart PSSs. Our insights aim at broadening the existing literature by (1) studying the challenges in the design of PSSs with a particular set of characteristics (i.e., Smart PSSs), and (2) by exploring the design of (Smart) PSSs developed for the consumer



*Challenges in the Design of Smart Product-Service Systems: Experiences from practitioners* market. Furthermore, we aim at supporting the activities of design managers by identifying the specific capacities of designers that can contribute to an effective design process.

## **Method**

To explore the design process of Smart PSSs, we interviewed ten professionals from six different companies (see Table 1). Participants fulfilled a set of criteria. First, we included companies with different characteristics to have a broad perspective on the employed design processes. Thus, large and small companies were contacted, as well as design consultants and in-house designers. Second, we selected professionals with experience in the design of Smart PSSs who could reflect on challenges they encountered while designing Smart PSSs. Participants included designers (e.g., product designers, service designers) and other professionals involved in the creation of Smart PSSs (e.g., problem owners). This varied group of participants, with ample experience in design, helped to bring the various perspectives that are characteristic for the design of PSSs. Furthermore, it permitted us to make use of multiple Smart PSSs cases related to business-to-consumer solutions.

### *Procedure*

Semi-structured in-depth interviews were conducted with all participants. Designers were asked to choose a specific Smart PSS case that they had worked on to be discussed during the interview. Nevertheless, they were free to make use of other cases to reflect on the issues being discussed. An interview guide was developed to guide the interview while leaving room to address other, interesting topics. The interview guide was divided into four sections: First, a short introduction about the purpose and content of the interview was given to participants. Second, participants were asked to describe the Smart PSS they had chosen. The goal was to assure the common understanding of the Smart PSS being discussed, and to verify it could be categorized as a Smart PSS. All Smart PSSs discussed complied with our definition of Smart PSS. The third section was directed to understanding how the design of the Smart PSS was organized (e.g., in terms of stakeholders) and which challenges were faced during the design process. This provided contextual information that facilitated the interpretation of the data during the analysis phase. The final section was directed to discussing the tools that were used during the design of Smart PSSs.

Table 1. Overview of participants. Note: Due to a request for confidentiality, the names of the companies are not disclosed.

Interviewee	Role	Type of Company
#1	Designer (facilitator)	Design consultancy 1
#2	Problem owner	Tools and technology for the taxi market
#3	Designer (manager/facilitator)	Tools and technology for the taxi market
#4	Designer (product)	Design consultancy 2
#5	Designer (product)	Design consultancy 2
#6	Problem owner	Tools and technology for the event industry
#7	Designer (service)	Tools and technology for the event industry
#8	Designer (service)	Design consultancy 3
#9	Designer (manager/facilitator)	Manufacturer of consumer products
#10	Designer (service)	Manufacturer of consumer products

Participants were visited at their place of work. The goal was to facilitate the use of readily available material related to the design of the Smart PSS, such as images or diagrams, whenever possible. This was a useful approach because many participants not only made use of past material, but they also made use of diagrams or information displayed in their offices to reflect on the issues that were discussed.

Interviews lasted between 50 and 80 minutes. Participants were open when talking about their experiences in designing Smart PSSs. Only one participant, who was an outsourced designer and bounded by a confidentiality agreement of his employer, had some restrictions to speak openly about his design expertise. Although he refrained from disclosing sensitive information, he was still able to give his opinions in general terms. As a result, his input proved to be insightful and is included in this study.

### *Analysis*

All interviews were recorded and fully transcribed. Interviews were analysed making use of the software Atlas.ti. The coding process was as

*Challenges in the Design of Smart Product-Service Systems: Experiences from practitioners* follows. First, a set of five interviews was fully coded by the main researcher, generating an initial set of 135 codes. This initial set of codes was then discussed with the other researchers, taking into account quotes of different participants to assure the correct interpretation of the data. In this step, codes were refined and merged. Furthermore, an initial set of 5 themes describing the data was identified (e.g., challenges, stakeholders, tools), giving a first structure to the data.

Following, the remaining five interviews were coded, adding new codes to the list when applicable. Twenty-five new codes were added to the list, all belonging to any of the already identified themes. In a second session, all researchers reviewed the overall themes and codes again, trying to find subgroups within the themes, and connections between the different themes.

## **Results and Discussion**

The findings from our interviews are presented in three sections. The first section reports the distinctive elements in the design of Smart PSSs, where we highlight general differences/similarities with traditional PSS design. Second, we outline the challenges participants faced during the design of the Smart PSS. Finally, we elaborate on how designers help to tackle the outlined challenges through the use of their capacities.

### *Distinctive elements in the design of Smart PSSs*

Some of the companies interviewed were traditionally manufacturing companies, while others were established since their beginning as a developer of Smart PSSs. Despite these differences, we found important similarities in their perceptions towards the process of designing Smart PSSs, which helped us come to generalizable findings across participants.

In general, the design of Smart PSSs was considered a new area of expertise that is yet to be developed. Participants generally worked on a trial and error basis, where the use of traditional product and service design tools (e.g., prototypes, illustrations, scenarios), was predominant. However, participants indicated how these existing tools are being adapted and improved for the integrative design of products and services.

Organization-wise, the design of Smart PSSs was perceived as requiring the involvement of a large number of stakeholders in the design process, such as designers, manufacturing firms, problem owners, and consumers, who had a more or less prominent role depending on the stage of the design process. This view is consistent with traditional PSS design (e.g.,

Isaksson et al. 2009), where the identification of primary and secondary stakeholders is perceived as important to manage the design activity (“MePSS, Worksheet W03”, n.d.).

Design-wise, Smart PSSs were considered to be complex market offerings. As in traditional PSSs, the integration of products and services implies the creation of multiple touchpoints (Martinez et al., 2010), which all need to be holistically considered in the design of Smart PSSs. However, the technology embedded in the Smart PSS, in combination with e-services, broadens the options designers have for implementing the interaction between the Smart PSS and the end-user, making decisions about the experience of the end-user more critical.

Furthermore, the design of Smart PSSs was seen as highly context dependent. Different than the reported literature (e.g., Tischner & Vezzoli, 2009; Vasantha et al., 2012), participant did not emphasize the relevance of context for stakeholders/actors identification. Rather, participants highlighted the importance of context (i.e., market, type of user, end goal, etc.) in defining a correct value proposition for the consumer. Participants considered the characteristics of each individual Smart PSS (Valencia et al., 2014) to be unique, not generalizable, dependent of the context for which the Smart PSS is developed, and the aimed experience for the end-user.

Moreover, participants declared that Smart PSSs are in constant evolution, typically through the e-service (Valencia et al., 2014). This is in accordance with Isaksson et al. (2009), who suggest developers of PSSs need to be prepared for ‘life-long development issues’ rather than regarding the development process as completed after product launch (p. 344).

To conclude, there are noted similarities between Smart PSSs design and traditional PSS design. However, there are important differences too, which are derived from the particular characteristics of Smart PSSs (e.g., ICT; Valencia et al., 2014). In the following section we outline the challenges related to the design of Smart PSSs, both in relation to the characteristics of Smart PSSs, and the distinctive elements of the design process discussed above.

### *Challenges in the design of Smart PSSs*

#### **Defining the value proposition**

One of the most significant challenges mentioned by participants is the clear definition of the value proposition for consumers. Because companies

*Challenges in the Design of Smart Product-Service Systems: Experiences from practitioners* providing Smart PSSs seek to create long-lasting interactions with end-users, a well-defined value proposition can be key in building relations that last.

Well-defined value propositions are a challenge for two reasons. First, technologies in Smart PSSs facilitate the generation of data related to end-users (e.g., measurements, content; Valencia et al., 2014). Furthermore, e-services facilitate the direct communication between companies and end-users, allowing companies to talk in a more direct and frequent manner to their clients (Rust & Kannan, 2003). Consequently, through Smart PSSs, consumers may be confronted with loads of data and information, much of which may be irrelevant to them. The challenge lies in determining the value users can derive from such data, and designing the service in a way that it can effectively support the transition from data to meaningful information. Consequently, designing Smart PSSs with perdurable value for consumers may be largely influenced by the thorough understanding of the use context, such as the end-user, his/her goals towards the system and expectations.

*Any artefact doesn't empower anyone. The empowerment comes through how someone interprets that. What their goals are related to the data. #10*

Second, the nature and heritage of the company may influence the clear definition of the value proposition. Some companies have a heritage in the manufacturing of products, and may explore the possibilities offered by Smart PSSs starting from technological opportunities (i.e., servitizing; Tan et al., 2010). Such technology push may cloud the definition of a well-rounded value proposal, one that is coherent with the needs and goals of the context for which it is developed.

*In the case of some of the projects, I am not entirely convinced of certain directions, because I don't... I don't see an issue being solved. #9*

### **Maintaining the value proposition relevant over time**

Smart PSSs are characterized for being ever-evolving and in constant growth (Valencia et al., 2014). The design of Smart PSSs is characterized by the continuous 'introduction' of new content or functionalities via the e-service. For example, a Smart PSS that sells games may periodically create new possibilities in specific games to keep users motivated and excited. This characteristic of Smart PSSs poses opportunities and challenges for the design process. The opportunity lies in the low risk associated with

maintaining the value proposition relevant through the service. As companies involved in this study were traditionally manufacturing and start-ups, they perceived service design as demanding much shorter lead times than product design. Furthermore, this approach was seen as a means to test the Smart PSS with consumers, making it possible to react to changes in the market (e.g., new needs) rapidly.

*We release product updates as often as possible and we try to have about a six-week product cycle or six week release cycle [...]. We build it and we test it and make it available [...] every six weeks we can say this is good but let us work on something completely different. #7*

However, the challenge relates to having a clear vision, from the outset, for where the market is heading in the longer term. Having this vision can help anticipate required characteristics of the smart product (e.g., sensors), which may be needed to enable certain functionalities or features in the service.

*You just have to kind of create enough degree of freedom [in the product] to be able to get what you want in the [service]... And here of course we have no degree of freedom... There is no freedom for the software to really change, or to do anything with the data. #4*

### **Creating high-quality interactions**

A challenge often mentioned by participant was that of creating meaningful, high-quality interactions, between the end-user and the Smart PSS. Creating high-quality interactions, as defined by participants, refers to the importance of understanding the human dimension in the Smart PSS; to being empathic about the emotions evoked through the Smart PSS and the overall experience that is created for the end-user. As previously discussed, Smart PSSs aim to create long-lasting relations with consumers. These interactions are of a recurrent nature, and may evolve together with the system (Valencia et al., 2014). Thus, designers face a challenge in translating end-user needs and wishes into meaningful interactions that create value, and to maintain these relevant as the system and its user evolve. This can be achieved, for example, by implementing technology in such a manner that it results in a simple and intuitive process and by making use of an appropriate tone and language in the communication towards end-users.

*It was challenging, but the reason we have won the market and killed our competitors is that they didn't understand the fundamental*

*Challenges in the Design of Smart Product-Service Systems: Experiences from practitioners emotional aspect [...] we really understand the emotional aspect of what makes it a success. #6*

An important side effect of creating high-quality interactions is the positive effect it can have on trust. The concept of trust and its relevance in online transactions have been studied before (see e.g. Harris and Goode, 2010). In the case of Smart PSSs, trust can be related to the technology being used (i.e., a new product's functioning), but also to the data that is being handled through the Smart PSS. As some Smart PSSs may generate data that is considered sensitive, interactions with the system should reassure consumers of the proper handling of data by the provider. Furthermore, trust may be influenced by the correct interpretation of the needs of consumers, and a challenge may surface in designing interactions that match the expectations of end-users. As exemplified by one participant:

*A lot of parents also said to us, don't take over my intuition, I am the parent. So there is a delicate, delicate balance there, you know. I don't want, [a] machine or iPhone to tell me [what] I am, or what I should do as a parent. Just give me hints. #9*

### **Creating coherence in the Smart PSS**

Achieving coherence was acknowledged as an important challenge in the design of Smart PSSs. Coherence is particularly important because of the multiple touchpoints that are part of the system (Martinez et al., 2010), which can influence consumers' experience with it (Sangiorgi, 2009; Shostack, 1982). Coherence was defined as relating to two aspects.

First, visual coherence was defined as the cohesiveness between the visual representations around the system, such as colours, shapes, images or written language (e.g., Van Rompay, De Vries, & Van Venrooij, 2010; Valencia, et al., 2011). Consequently, visual coherence can help consumers to associate different touchpoints with the Smart PSS.

Second, coherence was perceived to be related to how the system behaves across different touchpoints (e.g., gestures in the system), and how end-users interact with it. Despite the changing character of the Smart PSS, the interaction of the system should remain consistent across touchpoints, minimizing the time invested by consumers learning how to interact with it.

*The reason why [coherence] makes sense is to, on the one hand you create one experience for the user, but it is also [that] you help the user to use it more easily, you know. Like he doesn't have to relearn how to use the service. #3*

### **Stakeholder management**

Because the design of Smart PSSs is typically transdisciplinary, multiple stakeholders are involved, who may have different perspectives on what the system should deliver, have different problem-solving approaches, or communicate differently (Dougherty, 1992; Martinez et al., 2010). For example, while an entrepreneur may have more daring attitudes towards product development and rely on fast product launches, investors and development partners may follow more cautious approaches, and aspire longer development cycles. This is particularly important for (Smart) PSSs because of the larger number of stakeholders with an interest in or influence on the system (Issaksson et al., 2009). Consequently, integrating the demands of stakeholders, getting to agreements on the approaches to be followed during the development process, and getting commitment from all parties involved, may be particularly challenging in the design of Smart PSSs.

*It opens up a whole new world, a whole new box of stakeholders that need to be involved... And a lot of these stakeholders especially these product developers... are not used to being exposed to the methodologies that we use in for example digital methods. So we have technological people, business people, engineers, who aren't necessarily aware of the way we designers do things. #10*

Furthermore, due to the different degrees of involvement throughout the development process, the clear communication of the tasks/involvement among stakeholders may be particularly challenging:

*What we learned in this process is that [the problem owner] would continue with another design company to get the app on the market. We learned that it was a company called [company name], nobody knew about them. We never had contact with them at all. #8*

Finally, it is relevant to note that differences between stakeholders regarding the Smart PSS were defined to be desirable at times, as they were suggested to lead to better solutions. Thus, the challenge lies in managing the discussions around the Smart PSS, and clashes between stakeholders, so they do not exceed the limits of what is considered desirable.

*We went through many iterations that were not quite right. And the people that helped create [the] iteration felt like it was right. I was the one that was pushing back. So [by] picking and having different*



*Challenges in the Design of Smart Product-Service Systems: Experiences from practitioners people involved in different stages, but all during the design process [helped us] came up with this [solution]. #6*

### **Clear communication of design goals**

The communication of design goals among stakeholders is challenging for two reasons. First, the multiple elements making part of the system (i.e., products, e-services, other touchpoints) may complicate the visualization of the Smart PSS and the depiction of connections and relations between its elements. For example, some Smart PSSs have different use contexts, with different products and services in each of them. Thus, the information depicted through the service may vary considerable among contexts, complicating the visualization of the system as a whole. Because visual representations aid in the discussions around design goals (Valencia, Person, & Snelders, 2013), this challenge may hinder the effective communication among stakeholders in the design process. Second, while designing Smart PSSs, designers undergo cognitive shifts, jumping from abstract (i.e., system level) to specific (e.g., product level), while discussing the Smart PSS. However, these cognitive shifts may be more difficult to attain by some members of the design team than others. Discussions around the Smart PSS can be overwhelming, and affect the shared understanding of design goals.

*Even in my mind, I had to cut out a whole part of it and cut it out even to the team; just have the team focus on one little piece. The product was being developed in the wrong direction. I had to say, forget all that and focus only on this [...] you have to start very simple. #6*

### **Selection of means and tools in the design process**

The design of Smart PSSs is considered to be a new domain, where designers are learning by doing. All of our participants were experienced designers, however, none of them was particularly trained in the design of Smart PSSs. This 'newness' poses challenges for designers when selecting tools and methods to support the design process. Participants expressed uncertainty about the effectiveness of some tools, and a required change in mind-set when combining products and services.

*Not many people have experience with this. And specially getting kind of all these disciplines together, figuring it all out, trying to do the best for [the company], but nobody has really experience, that's a challenge in itself. #9*

### *The role of designers in the design of Smart PSSs*

Our interviews revealed five ways in which designers can positively contribute to the design of Smart PSSs, which are consistent with previously discussed roles of designers in the existing literature:

#### **Designers as foreseers of future scenarios**

Designers can contribute to maintaining the value proposition relevant for consumers in the long run. To counter the challenge that Smart PSSs are continuous and fast changing, designers bring tools to the design process to help the team to keep an eye on the future. Scenario thinking was particularly acknowledged as an important tool in the design process because it helps foresee (changing) end-users preferences and technologies (Sanders & Stappers, 2008), or the roadmap needed (and actors involved) to reach a particular result (Morelli, 2009).

*And then define in let's say the future, or the co-creation process that we will continue, if there is a co-creation process with the consumers, or the community or the local people, to actually determine what kind of games, or what things they found nicer to do in the interaction. #1*

#### **Designers as guardians of experiences**

Designers may face challenges in achieving coherence in the design of Smart PSS. Incoherence can lead to poor experiences for the end-user, and result in dissatisfaction with the Smart PSS. To counter this challenge, designers were acknowledged to play an important role in defining and guarding the experience around the Smart PSS (Valencia et al., 2013). Designers have been trained to think in a user-centred manner, have been equipped with tools to understand the context of the end-user, and his/her needs towards the system. To this end, designers perform a series of activities traditional of their practices. For example, by prototyping the product and service, designers can evaluate and discuss the concept first hand with the end-user and other stakeholders (Blomkvist & Holmlid, 2010), and have a better understanding of its usability and perceived value. Furthermore, by using visualization tools, such as customer journeys, designers can achieve a clearer perspective of the current and desired user experience, and translate research insights into clear design specifications for the Smart PSS (Segelström & Holmlid, 2009).

*Once we designed it only in kind of squares and points, we sit down with designers and talked about the feeling it should have and trust.*

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They would start designing it around it, and those are really important. #2*

### **Designers as integrators of stakeholders' needs**

To manage the different views and expectations of stakeholders, designers were perceived to have the capacity to listen to stakeholders and integrate their demands (Valencia et al., 2013). Moreover, participants highlighted the importance of the project champion, someone with an overall view of the system and a clear understanding of what the project should deliver. This project champion was associated with the problem owner (i.e., a design thinker), but also with designers themselves. Having an overall vision of the project eases the integration of demands, and contributes to the effective communication among stakeholders.

*And what we notice often, that direct communication doesn't work. People who design the electronics think in a different way than the consumer does. So, basically we were some kind of translator between different worlds and different stakeholders, and keeping constantly all stakes. #5*

Furthermore, designers contributed to generating interesting discussions that lead to important solutions or decisions around the Smart PSS. Specifically, designers' role in asking questions during developing meetings, bringing forward solutions and listening to stakeholders' opinions was perceived to have a positive impact on the final solution. This contribution closely relates to the role of designers as 'facilitators' discussed by Sanders and Stappers (2008), and the role of designers in helping organizations define the reason, focus and value of implementing innovation in the firm discussed by De Lille, Roscam Abbing and Kleinsmann (2012).

### **Designers as problem solvers**

Reaching a clear communication of design goals during the design of Smart PSSs was outlined as an important challenge. In relation to this challenge, the problem solving capacities of designers were perceived to have a positive effect on the communication among different stakeholders. For example, designers are able to cope with abstract information, which makes them particularly suited for the design of complex systems (Sanders & Stappers, 2008).

*If you're working with a lot of parties, you are working from abstract to concrete. So if you want to have something in a certain amount of*

*time, you have to start freezing things on an abstract level, otherwise you never reach the kind of concrete level that you can actually produce something. #4*

### **Designers as visualizers of goals**

Finally, the visualization skills of designers contributed to visualize project goals and communicate them to other stakeholders (e.g., Krucken & Meroni, 2006; De Lille et al., 2012; Valencia et al., 2013). Design tools typically used both in product and service design, such as storyboards, drawings, and prototypes, helped to attain a better visualization of the system. Furthermore, these visualizations contributed to a shared understanding of the project objectives among team members, for example, when used to discuss project goals during project meetings (Blomkvist & Holmlid, 2010).

*If you have a product described on paper, people won't really understand it. With visuals they can create a storyboard and it can be just going from page to page, and then describing the story to the people, and they will understand, and [this] makes it come alive. #7*

## **Conclusion**

In this study, we set out to research the challenges designers are likely to face in the design of Smart PSSs. In doing so, we contribute to the existing PSSs literature by deepening the knowledge related to the process of integrating products and services. Our focus was on the design of Smart PSSs because we consider it to be an activity with increasing relevance for designers. Our study allowed us to attain a deeper understanding of the distinctive elements surrounding the design Smart PSSs, and to identify seven challenges and five contributions of designers that can help lessen the drawbacks likely to be encountered in this particular design context. The challenges and roles outlined in this paper relate to the design process (e.g., stakeholder management), but also to aspects with significant influence on the definition of the final solution (e.g., visualization of design goals). Consequently, our findings can help design managers to anticipate on design challenges, and to take action towards more effective design processes, leading to a more meaningful outcomes for companies and consumers (end-users).

We found undeniable similarities between Smart PSS design, traditional PSS design, and service design. In particular, the involvement of a large set

*Challenges in the Design of Smart Product-Service Systems: Experiences from practitioners* of stakeholders seems to be a concurrent aspect between the three product development contexts. However, there were also important differences between them that evoke particular challenges in the design process of Smart PSSs. For example, the numerous options that Smart PSSs offer in terms of creating content and interactions for end-users can be an overwhelming factor for designers, with a negative effect on the value proposition brought to consumers. Furthermore, the continuous nature of Smart PSSs makes it particularly important to oversee aspects of the tangible product (e.g., technology) that could influence the implementation of important service interactions in the future.

Many of the discussed roles/contributions of designers are consistent with the broadening role of designers discussed in the existing literature (e.g., Sanders and Stappers, 2008). Particularly, the capacity of designers to solve problems, and consequently, to simplify complex information, can have a positive effect on how design goals are understood by stakeholders. In this regard, the capacity of designers to visualize project goals seems to be an important channel for effective communication during Smart PSS development. The user-centred mind-set of designers, and their toolset (e.g., prototyping, scenario thinking, customer journey maps, context mapping), can contribute to the creation of Smart PSSs whose value propositions matches the expectations of end-users. Furthermore, many of the identified challenges seem to emerge from the service design arena. Thus, there is much to be learned from service designers, and their involvement in the design process of Smart PSSs could be key.

Existing product and service design tools are predominantly being used in the design of Smart PSSs. Designers are adapting these tools to the design of Smart PSSs, and their use appears to be effective. Interestingly, we did not find evidence about the use of design tools generally associated with the design of PSSs. For example, system mapping (“MePSS, Worksheet W21”, n.d.) could be an important tool to manage stakeholders and other important actors in the design of Smart PSSs. Moreover, the design of Smart PSSs may require the use of specific tools in the design of this type of offerings. Specifically, the challenges of defining the value proposition, having a shared understanding of such proposition among stakeholders, and keeping it in mind as the Smart PSS evolves, seem to be not sufficiently addressed by the tools being used. Thus, future research needs to explore these challenges further, and the extent to which current/new design tools contribute to lessen them.

Other limitations and opportunities for future research come out of this study. First, our findings are based on the experiences of design consultants, traditionally manufacturing companies, and providers or Smart PSSs. Our study did not include traditionally service companies moving into the manufacture of products, which could bring about different challenges. Second, our findings are based on the views designers (and design thinkers) have of their own work, and their contribution to the design process. Thus, future studies should broaden the scope and include other important actors in the development network (e.g., technology specialists), which can lead to the identification of new challenges and/or contributions of designers. Finally, our findings are a first step in identifying the differences between product, service, PSS and Smart PSS design. Future studies should deepen this knowledge, for example, by defining the critical phases in the design of Smart PSSs, where challenges are more likely to occur. Such research can lead to the identification (or development) of key design tools that can effectively support the design Smart PSSs.

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## Criteria for Customer Activity-Driven PSS Design

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*A Product–Service System (PSS) can be defined as consisting of products and services so that they are jointly capable of fulfilling specific customer experience. In the absence of PSS-specific design methods, service design methods such as service blueprinting are commonly used in the design of PSS. However, neither do they address the detailed activities of the interaction with products, nor the expectation around the use of PSS.*

*This research attempts to identify new criteria for PSS design focused on customer activity related to the expectation and experience occurring from the use of PSS. As an empirical research target, a self-checkout system was chosen for its sufficient level of complexity in user interactive activity. Concrete criteria of customer activity-driven PSS designs were used to evaluate the duration of use and breaks that prevents a smooth operation.*

*The criteria for customer activity-driven PSS design were analysed in viewpoint of promoting smooth activity stream and minimizing the gap between expectation and experience related to activity, and signifiers in both product and service were identified as important gap-fillers. A holistic customer activity modelling as a significant tool in PSS design is proposed as the analytical framework of PSS design and the criteria are suggested by customer activity analysis of attribute, context, and structure of the action that can be deconstructed into sub-sets.*

**Keywords:** PSS (Product-Service System), Activity Unit Sequence, Expectation and Experience, Signifier

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## Introduction

Manufacturing companies realised the limit of mass production, and are seeking a converging strategy between product and service to strengthen economic value and develop interest in service business. In 1999, Goedkoop proposed Product-Service System (PSS), a name for items converged with products and services. PSS is generally defined as a highly marketable product combined with service in order to satisfy customers' needs (Goedkoop, 1999, p.132).

Recently, new attempts started from the simple concept of a combination of product and service. This is now making a remarkable progress, and the current trend of PSS is becoming increasingly complex. This is shown not only by various stakeholder and physical evidence but also by new technology such as the Internet. In addition, many companies emphasise the design of the management of the customer experience more by accepting the shift of the paradigm of PSS, which manages all sort of things including the experiences of using products and of smooth service from customers' viewpoints.

However, traditional service design methods have been adapted to the design of PSS without an essential understanding of PSS (Morelli, 2003), even though PSS is becoming more complicated and market conditions are becoming significantly more competitive. This creates a different set of criteria for the PSS design from those of conventional approaches to product or service design. In the absence of PSS-specific design methodology, service design methods are commonly used in the design of PSS. For example, service blueprinting, one of the typical methods, has the advantage of helping people to apprehend the general concept, weaknesses and areas for improvement in service, many important details are missing (Hara, 2009, p.373).

Geum and Park (2011, p.1604) quoted PSS blueprints as a new, integrated view of products and service. Kim suggested customer activity modelling for PSS design in 2011, and he suggested affordance design for PSS and quoted customers' affordance for PSS design in 2012. However, his researches for affordance design were focused on product, rather than service, and discussion was mainly about production and function from the view of engineering design.

Various methods including the ones discussed above are utilised in service design, but unfortunately there is no method for comprehending fine points of design about integration between products and service from the point of view of customers' activities and for explaining the details linked among customers' activities.

In this research, it is proposed that activity-driven PSS design criteria can be used for specified design methods for PSS design based on a viewpoint focusing on customers' activities. This is because industrial design specifications of products are mainly decided based on customer activities such as purchasing, using, feeling, experiencing, and disposal. Also, service design is designing activity, and so customer activity should be designed reasonably, effectively, and desirably, which is why all these activities and specifications are synthetically designed into PSS.

Therefore, the PSS design pivoting on customer activity is the focus of this study. The research involves customer activity issues such as how customers use PSS, how they feel about their activity, and what are necessary for customer activity design.

The customer activity is broken down in more detail, in the view of industrial design. The criteria for PSS usability that can maximize customers' value, as well as the criteria for activity design factors are proposed. The aims of this research are as follows:

The research aims to:

- establish relevance of and the current understanding on customer activity-driven PSS design
- establish the analytical framework for customer activity-driven PSS design
- determine actual activity sub-sets in using PSS and the expectation-experience axes surrounding the activities
- propose a set of criteria for customer activity-driven PSS design

To achieve these aims, empirical research is conducted to deduce customer activity-driven PSS design criteria. Self-checkout systems are selected as the targeted case study for observation that involve recording with a camcorder and interviews with customers, to determine how they use the self-checkout system and their expectations and experiences.

## **Activity-Driven Approach to PSS Design**

In the field of service design, there have been many existing studies on customer activity, which have been applied as core method in practical projects. However, they are mostly about service; research on activity for PSS design is rather rare.

In this study, customer activity and service design methodology are dealt with. Subsequently, the research area is expanded to general activity approach.

### *Inadequacy of Service Blueprint and Other Methods for PSS Design*

Service blueprint, which is intended for modelling of service activities, was first introduced by Shostack in 1982 and is one of the most traditional methods in the service marketing field. Since it was introduced by Shostack, it has been continuously developed and has been adopted in various parts of service design, including line of visibility and line of interaction (Shostack, 1982). Despite the service blueprint led total understanding of physical evidence by service flow and the function of the service provider, it lacks the factor of the potential importance of activities, time, and customers' expectations and experiences (Zeithaml, 1996).

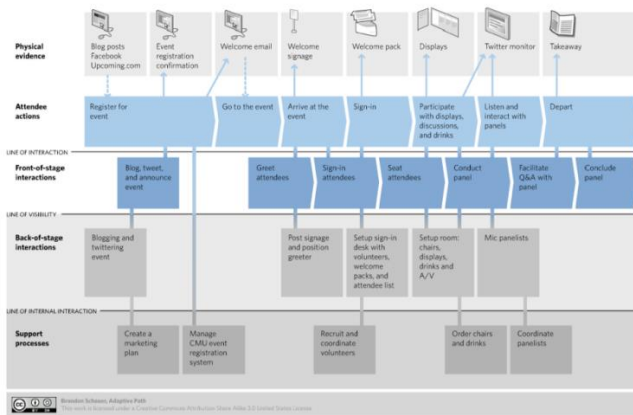


Figure 1 Typical service blueprint. Source: Brandon Schauer-<http://www.flicker.com>

Also, in typical service blueprinting, the product is regarded as only physical evidence and not an intrinsic element of PSS. Many types of physical evidence are treated at once, as a consequence, when designers try to apply service blueprints to figuring out the design specifications of physical evidence, and they find it difficult to understand the specific requirements of physical evidence. However, beyond the service blueprint, there is no other method for approaching from expectation and experience with customers' activities (Wild, 2010, p.116), and adjusting other methods is somewhat

inefficient with limited time and resources. As a result, the development of blueprints specialized for PSS design is necessary. This PSS blueprint seems to be desirable.

### *Need for New Activity Approach as a PSS Design Method*

Services are actions or performances for and with the customer. From the customer's point of view, services are a sequence of steps with actions and activity. Many other factors are combined in this process, so services are a flow of activities or experiences, which are evaluated by the customer him/herself (Wilson, 2012). Even though there are many articles that insist that service consists of actions, few articles suggest practicing perspectives in detail (Wild, 2010, p.119).

Activity theory has been described as “a framework for describing activity and provides a set of perspectives on practice that interlink individual and social levels” (Engeström, 1987). Vygotsky (1981) developed a powerful idea visualised as a triangular unit of analysis, the mediated act, to explain human behaviour in mediated relation to its socio-cultural environment.

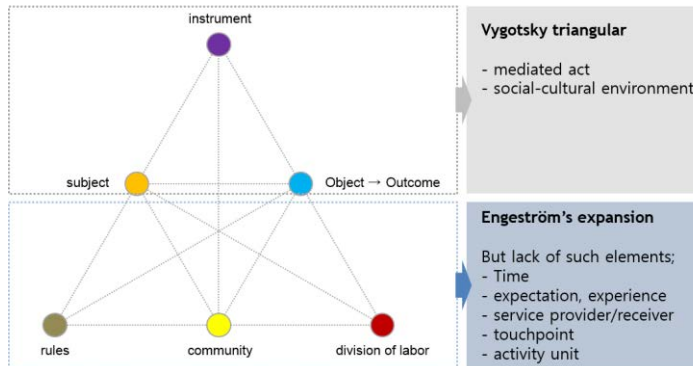


Figure 2 Activity theory. Source:Engeström (1987)

Engeström's expansion added the components of community, division of labour, and rules to the Vygotsky triangular 'mediated act' in order to: enable an examination of macro-level of the collective and the community in preference to a micro-level concentration on the individual actor or agent operating with tools. This expansion aims to represent the social/collective elements in an activity system while emphasizing the importance of analysing their interactions (Daniels, 2004, p.123).

However, Engeström's activity theory, even with the expansion, does not show a detailed time-based activity stream and mechanism. This implies that

Engeström’s activity theory needs to be modified in the direction of practical application for the purpose of PSS design that goes beyond the expansion of the collective elements.

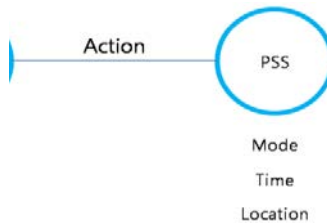
Further, Engeström’s activity theory was mainly about products’ one-way operations, thus mostly ignoring two-way communication, particularly at service touchpoints. The theory lacks a reflection of the two-way communication and the relationship between expectation and experience relevant to interactive activity, although the mutual interaction between PSS and the customer should be considered (Jung & Nam, 2007, Yang & Nam, 2012).

Moreover, a new customer activity approach is required to search for the factors that influence the customers’ activity pattern. Also, the synergy from a combination of products and services needs to be considered to strengthen the PSS design by modifying the prior activity theory and blueprints.

### Customer Activity System & Sequence

Customer activity is a complex system. While an action consists of simple customer motion, an activity consists of more complex action patterns (Kröse, 2011, p.326). Bobick used another new taxonomy. He suggested movement, activity, and action reflect an analysis of humans regarding movement as an elementary factor of action and activity as a sequence of movement (Bobick, 1997, p.1257).

**Action**=Basic Unit(Task)



**Activity**= $\sum$ Action(Sub-Goal)



Figure 3 Activity sequence. Source: Kröse (2011, p.326)

However, because this research is not focused solely on activity, but rather covers the relationships between product and service and between expectation and experience, a taxonomy that is much simpler and leads to an easier approach from an integral view is needed, in this research. Therefore, the division of the service unit and service element, which Kim (2011) suggested, is accepted, and the concept of the activity unit and activity element is used for the customer activity system. This will be discussed more in the following section.

While the customer's activity sequence and expectations play an important role, expectations are created on the basis of previous experience, and newly made experience can lead gradually to other expectations (Polaine, 2013, pp.137-138). Also, in order to find the optimal customer activity sequence, the method used to select and combine customer activity elements and units is significantly important. Thus, an investigation of relevance among activity, expectations, and experience is crucial.

### *Interrelationship between Expectation-Activity-Experience Unit and PSS Unit as Integrated assembly of Elements*

To support customers' actions, service elements, as basic service entities, grouped with other relevant elements, become a service unit and perform main functions of PSS (Kim, 2011). A single service unit is able to fulfil customization through its combination with multiple service elements (Kim, 2012). Product units also can be combined with multiple product elements as a kind of system in terms of hardware and software and in terms of form, function, interaction, material, and finishing. Service units and products units are interrelated with each other and merge into integration units.

Customer activity also can include activity unit systems such as motion, action, activity, behaviour. Each activity unit is related with expectation and experience unit, and this expands and makes a kind of Expectation-Activity-Experience system. This system affects PSS corresponding to service, and product unit system.

In this research, a new hierarchy regarding the PSS is set up. A product unit consists of product elements. A service unit consists of service elements. Simultaneously, a customer activity unit consists of customer activity elements. As such, a combination system performing expectations and experience regarding each activity element and matched it to the PSS usage sequence was organized.

This new model typically categorizes PSS to produce a unit-element system and service unit-element system. For customer activity, it combines customer expectations with customer experience.

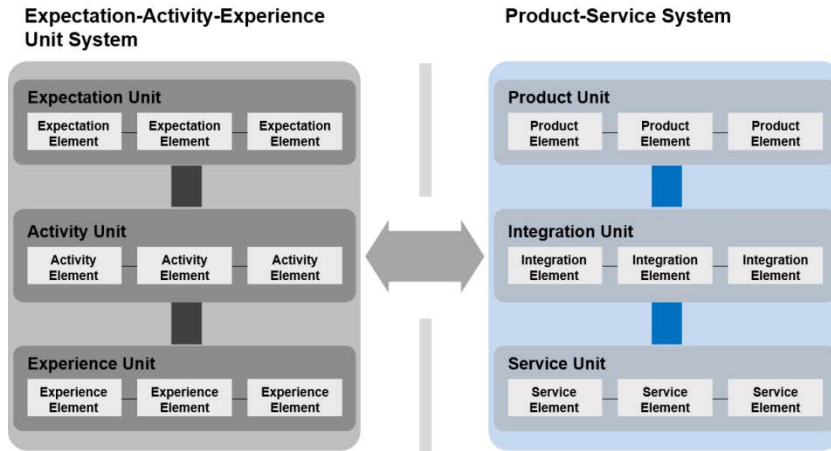


Figure 4 Interrelationship between Expectation-Activity-Experience Unit and PSS

### *Experience & Expectation of Customer Activity*

Much has been written recently about customer experiences and their important influences on customer behaviour. Goods and services companies are both being admonished to create 'memorable experiences for their customers' (Schmitt, 2003). Services are high in experience and credence relative to goods; thus, how customers evaluate the actual experience of a service is critical in their evaluation process (Wilson, 2012).

All of the factors that customers' perceive, consider, and feel, are accumulated in the structure of the experience. That is to say, traces of an experience continue to remain in consciousness and form a structure of experience (Wright, 2004, p.63).

Basically, service quality depends on gaps between customers' quality perceptions and expectations in service delivery. This gap model of Parasuraman (1985) is widely used as a conceptual framework for measuring service quality delivery. The model evaluates the dimensions, and their relationships, that determine service quality among customers and suppliers.

The foundation of expectation and experience is the gap model in service quality measurement, which suggests that the difference between



expectations and actual performance drives the customers' perception of service quality (Parasuraman, 1985). Expectations are beliefs about the level of service that are delivered by a service provider, and they are assumed to provide standards of reference against which the delivered service is compared (Zeithaml, 1993).

Especially, this research focuses on minimizing the gap between expectation and experience arising from activity, because it is hard to manage all area of expectation and experience.

## Case Study

### *Target Setup & Method*

A self-checkout system is, chosen as an empirical research target, a kind of PSS combined product and service which provides the customers with the functions of payment, issuing receipts, and collecting customers' information on and offline. Additional reasons for their use include that a self-checkout system is a complicated typical example of PSS related to customers' shopping; that it includes complex parts such as the shelf, scanner, display monitor, card reader, and receipt dispenser; and that self-checkout facilities provide customers with individual service regarding purchased items and points, using constructed databases during payments.

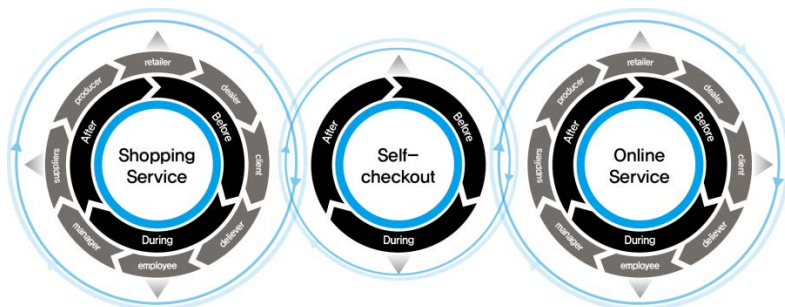


Figure 5 Self-checkout System as a kind of PSS

Different methods were used to investigate the activity-driven PSS design criteria with a case study of the self-checkout system. Firstly, customer's usage system was recorded by video. After observation, the video was analysed and the use sequences, duration, and causes of mistakes were identified. Secondly, a questionnaire was formulated based on the collected

data and was also used in the post-questionnaire qualitative interviews. The questions were a primarily about gaps in expectation and experience and also concerns for smoother action. Thirdly, the statistical significances was examined and established. Finally, the criteria for customer activity modelling were proposed for integrating expectations and experience for customer satisfaction.

### Analytical Framework

To investigate the self-checkout system, a new analytical-framework-utilized PSS blueprint is proposed. This framework is based on the activity unit-element corresponding PSS's service unit-element and product unit-element. Also, in order to identify what may act of links between expectation and experience, a field survey is conducted to discover how customers feel the gap between the expectation and experience units to each activity.

Two viewpoints are set up to promote the overall stream of customer activity. One is the activity unit sequence axis, and the other is the expectation-activity-PSS-experience axes. The former is to make the stream of activity units smooth, and the latter is to link expectation and experience through interaction and touchpoint of PSS as shown figure 6.

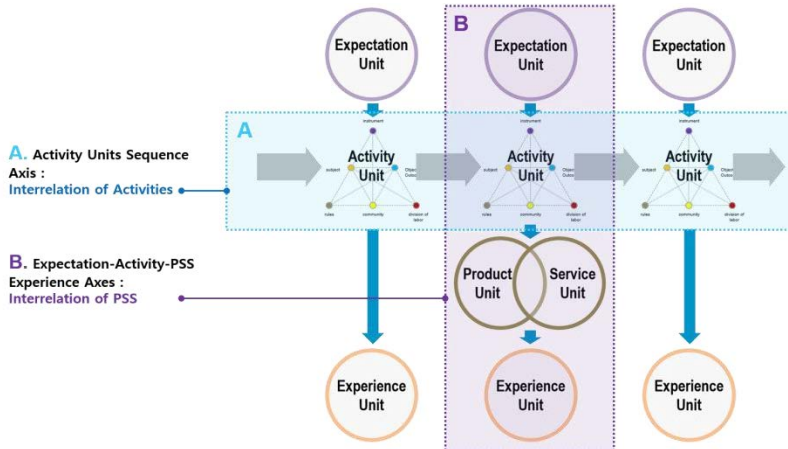


Figure 6 Viewpoints of research based on customer activity modelling

For the activity unit sequence axis, a flow model of a seamless and smoother experience is applied. And for strengthening the link among activity units, observations and interviews are conducted. It is to find out how

activities can be connected without trouble and what makes customers not confused when one function is ended and another function is started.

There are two cases of expectation-activity-PSS-experience axes; one is for using PSS, and the other is not. This study focuses on the former, as these cases are more complicated and have more problems to solve. In this case, it is concentrated upon the points that can lead customers to use a self-checkout system without any mistakes or troubles, as well as how much time it takes and when they receive an assistant's help.

## *Analysis*

### (1) Overall use situation

Self-checkout systems consist of various products for different activities, so the customer activity sequence was complex with an awkward flow. Some customers were confused regarding the flow of operations and how to pay and avoided using it without a helper. Self-checkout system requires the availability of an assistant although this machine is intended to replace the role of cashiers.



*Figure 7 Self-Checkout System Outline (1. Lane light / Store attendant call / 2. Touch screen monitor / 3. Basket stand / 4. Barcode scanner and weighing scale / 5. Payment module / 6. ATM PIN pad)*

### (2) Activity hierarchy of self-checkout

Customer activity on the self-checkout was broken down and linked expectations and experience relevant to the activity. The activity unit was related to the primary use step and cannot easily be changed another activity.

The activity element consists of an action related to activity unit as shown follow.



Figure 8 Activity System of Self-Checkout

(3) Results of the expectation and experience relevant to the activity

The shadow tracking method was used for 50 customers, and use procedures were observed. After this, customers were interviewed regarding problems using the self-checkout system, customer expectations and experiences, and other concerns.

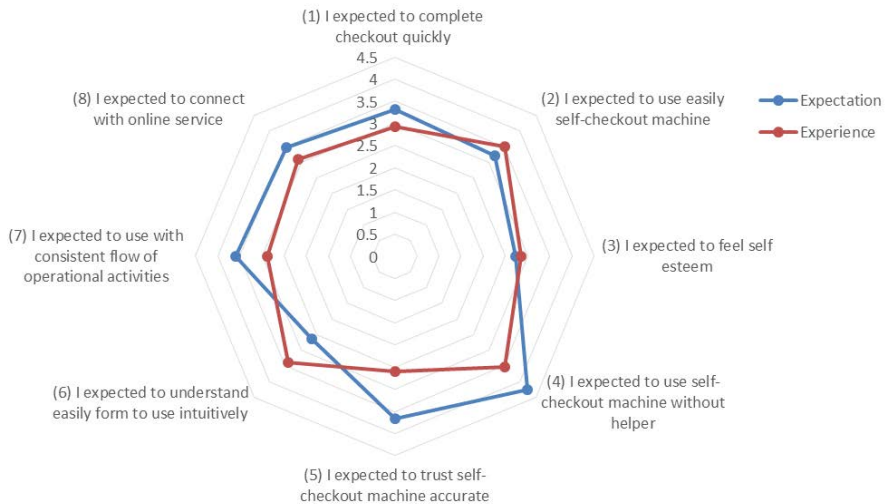


Figure 9 Expectation & Experience of Self-Checkout

Customers explained the gap of expectation and experience as follows:

- I couldn't trust the self-checkout system to be accurate.
- I couldn't use it with a consistent flow of operational activities.
- I couldn't use the self-checkout system without a helper.
- I couldn't complete the checkout quickly.
- I couldn't connect to the online service.

For the questions about expectations in specific actions, inducing correct actions by form was shown to be the most common issue and recovering mistakes was the second most common with a slight difference between the two shown as follow.

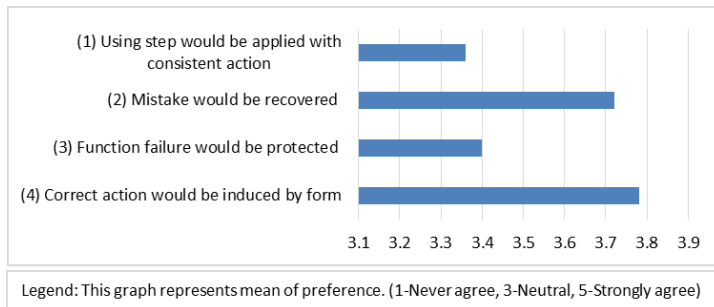


Figure 10 Expectations of Activity

For the questions about experiencing action in use, interviewees answered that they had confused direction and type of action most frequently and that they also felt there were too many steps and the action was too complex.

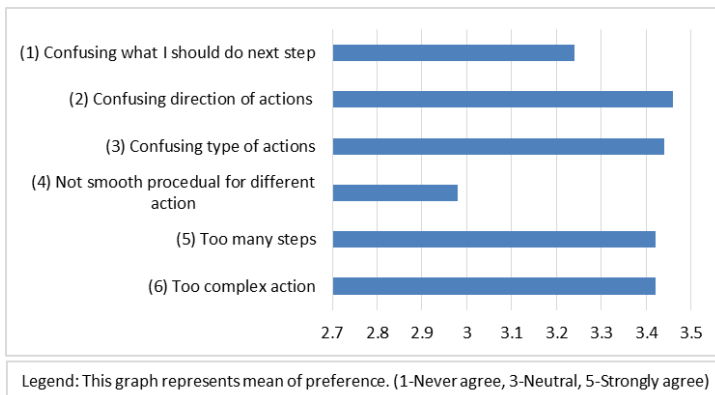


Figure 11 Experiences of Activity

(4) Problems of the Use Process

For the question of what the most difficult action in the whole process was, searching items were shown in offline shopping and signing up for membership and changing self-profiles in online shopping were difficult. However, in self-checkout, the difficulties were found in more actions, including packing items, finding barcodes, putting items down, picking items up for scanning, and understanding the screen menu on the display.

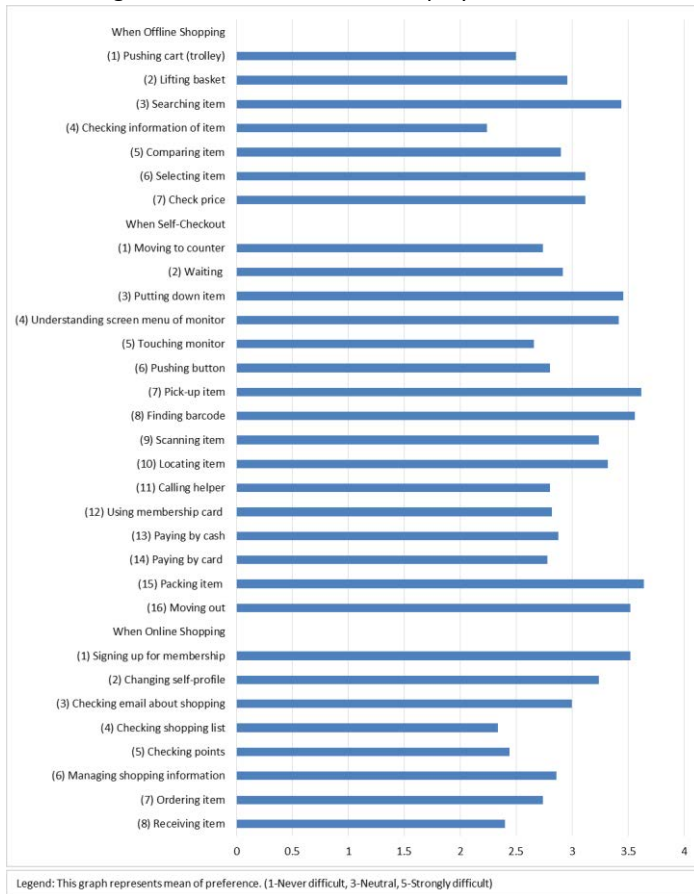


Figure 12 Difficulties of Activity

This implies that difficulty of activities should be reflected on PSS design. Because difficulty of activities influence errors, failures, time of operation and physical specification of PSS design. Therefore, the sequence of activity should be tuned according to importance, effectiveness or difficulty of activities.

#### (5) Analysis of Time-Based Activity

As a result of observation and interview, customers hope that action itself is usable and simple, steps are short, and the form induces correct use. Also, customers felt that stress regarding when they should change elements of their actions, such as action type or action direction, tended to confuse them regarding the next action when the function had ended.

These are all related to the time of the activity processing, so customers were observed in terms of time, including when they took a long time and when they stopped. However, repetitive actions should be checked to evaluate the length of time of the activity performance. For example, scanning was not difficult although the time spent scanning was long.

Paying consists of various actions relevant to cards, point cards, cash, coupons, and receipts. The process of paying was too complex, action types varied, and the layout was irregular. The simple activity sequence had important effects on the time of activity processing. The shorter the activity sequence was, the more customers liked it.

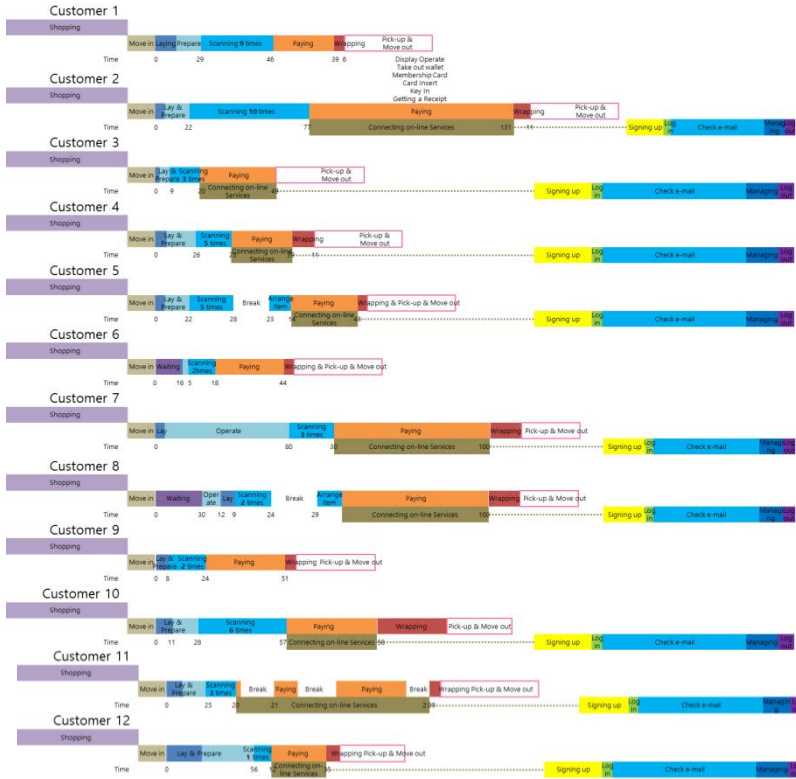


Figure 13 Timelines of customer's Procedure

The paying activity time of customer 2 was longer than those of other customers. Customer 2 had problems using coupons and the membership card. Customer 7 spent more time paying and operating the display. They were novices.

Customer 11 had problems paying because of card recognition difficulties. Customer 5 had problems of misrecognition of the item and needed assistant. Customer 8 made a mistake in the scanning activity and so needed the assistant's help in processing. Paying and scanning were recognized as primary activities using the self-checkout system, which implied that different activities had different levels of importance.



## Discussion

### *Signifier as a Link between Expectation and Experience*

As a result of the observation and interview, the gap between expectations and experiences is identified. Generally, the experience level was lower than that of the expectation. The customers expected that they could use the self-checkout system with a consistent flow and without help from someone and that the machine would be accurate. However, it was found that this was not the case.

In general, the customers did not have the expectation for the machine to have an intuitively easy-to-use form, but they were able to use the self-checkout system without major problems. They did not, however, grasp the specific directions of the required actions. Divergent activity types, too many steps, and complex actions confused the customers as to what action they needed to go onto the subsequent steps. Also, various difficulties in the activities were identified. While it is not reasonable that all activities are designed with the same level of consideration, the gaps between expectation and experience need to be filled.

In PSS design, affordance to induce a desirable activity is an essential factor to minimize the gap between expectation and the experience of activity (Kim, 2011). However, the signifiers replace affordances because they are broader and richer. The perceivable part of an affordance is a signifier, and if it is deliberately placed by a designer, it is a signifier (Norman, 2008, pp.18-19). Therefore, the signifiers can be used as a design device that naturally induces customer activity. A product signifier can enable customers to understand and express their experiences through product interaction on a case-by-case basis (Norman, 2008; Kim, 2011).

The interest in signifiers for products has been growing and studied by many scholars. However, studies on service signifiers are rarely found. Service signifiers are, for example, gestures and body language, and occur in PSS design between service providers and service receivers. As actions contain signification, they can realize communication and message delivery. In addition, with measurements of the meaning of action, the states of customers' minds were caught indirectly. Because of the difficulty of measuring the changes in sense and emotion, service signifiers, by which it is possible to predict the shape and states of customer activities, can be very useful.

The signifier could be divided into product signifier and service signifier in the case of PSS, and further discussion is needed for the service signifier. The

signifier feature for the service signifier is provided by context. Therefore, it is necessary to figure out how to adjust the context in the service touchpoint and to set up a detailed relationship. The effect of the service signifier has synergy when it is established with a product signifier. Thus, it is also necessary to consider how to strengthen the service signifier visually in the service signifier context, and, at the same time, how to converge it with the product signifier feature.

*Proposing activity unit sequence axis and expectation-activity-PSS-experience axes and as a criteria*

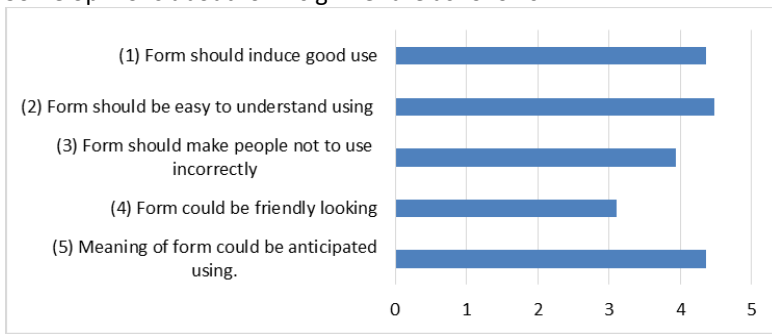
In this research, the relationship between elements should be focused on through the breakdown of the hierarchy based on the customer activity of self-checkout. Criteria of customer activity-driven PSS design were analysed in terms of activity unit sequence axis and expectation-activity-PSS-experience axes in the hierarchy, as mentioned previously in Figure 6.

(1) In viewpoint of the expectation-activity-PSS-experience axes

In this viewpoint, the relationship between PSS and the customer should be managed with a focus on minimizing the gap of expectation and the experience of activity. There are two categories of relationships in PSS design. One is the product-oriented signifier, and the other is the service-oriented signifier.

The product signifier is mainly related to form of self-checkout system, and the service signifier is connected to the activity using function of self-checkout system or the help of an assistant. In the first, the product signifiers were investigated, as were how customers think about product signifier, and what the inducement was to use self-checkout system.

Some opinions about form signifier are as follows:



Legend: This graph represents mean of preference. (1-Not critical, 3-Neutral, 5-Very critical)

Figure 14 Critical factors of operating not to be halted in terms of form

Service signifiers could be identified by the factors of confusion with the use of the self-checkout system; how to prevent these errors or failures; and factors for promoting the activity with the appeals of fun, value, increased self-esteem, etc. Primary factors of interrupting the smooth stream of activity are shown as follow in viewpoint of function.

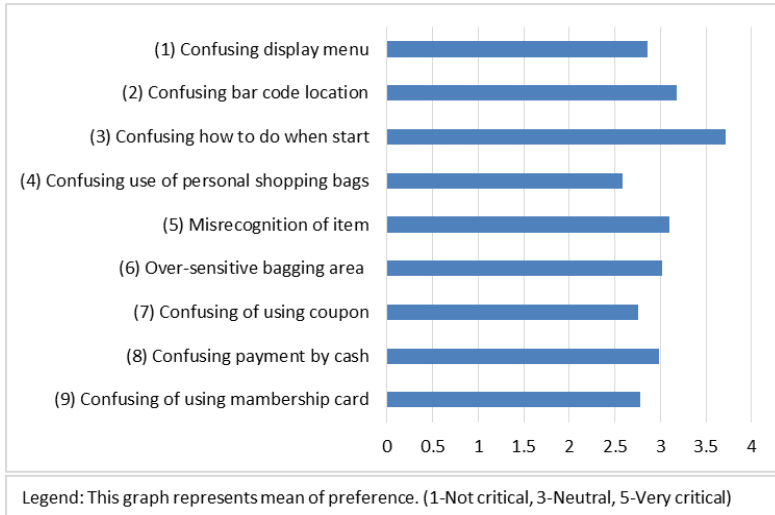
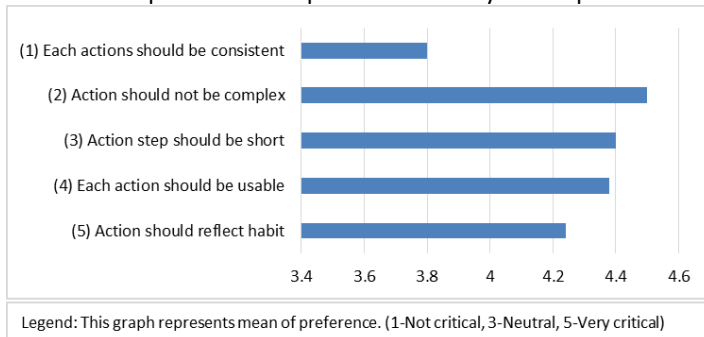


Figure 15 Critical factors of operation not to be halted in terms of function

And customers like to complete service with expected and simple activities. In the case of the self-checkout, customers felt that action should not be complex, action step should be short, and each action should be usable as follow in viewpoint of the expectation-activity-PSS-experience axes.



*Figure 16 Critical factors of operating not to be halted in terms of action*

(2) In viewpoint of activity unit sequence axis

At this point, customer activity can be tuned through manipulation of the activity unit sequence: for example, the integrating, dividing, switching activities, and bridging activities with linker, etc.

The activity unit sequence consists of actions. While action in PSS design has been discussed as the interaction or touchpoint until now, the linkage of activity units has not been issued enough. The activity unit corresponds with the product unit and the service unit of PSS; the linkage is about the activity consistency or balance when the functions are overlapped.

Then consistency or relation of action type, action direction, and action range can be considered. Better-organised activity sequences can be built, because if these properties are changed in different levels, it can cause customers' confusion.

For example, after the scanning function of the self-checkout system, the customer would stop for the next payment activity due to different directions and types of action. Also, the direction of the operating display was different to that of the scanning activity.

The activity unit sequence can be used as a new approach to develop PSS design. Integrating activities and relevant functions are one of the possibilities of a new approach to PSS. For example, customers tend to think that the most difficult activities are scanning items, packing items, searching for items, and these activities could possibly be integrated through smart shopping carts. A smart cart is connected to a network system, providing information on how to search, and pre-scanning item into the cart. This integrates the scanning activity and shopping activity. The new, integrated activity is a helpful for PSS design concept and creates a better stream of customer activities.

### *The Criteria for Activity-Driven PSS Design*

The criteria for customer activity-driven PSS design were established in view of the smoothness of the activity stream and of minimizing the gap between expectation and experience. Well organized activity stream enables the customer to use PSS comfortably.

Consistent or inconsistent stream of activity needs to be regarded as a strategy. It is a matter of choice as to which strategy is better for customers' expectations and experiences. Therefore, an appropriate strategy should be considered in a different context. Also, the customers' activities can be designed differently according to their difficulty, frequency and preference.

To summarise, the criteria are proposed that activities can be deconstructed into unit and element and analysed by identifying their attributes and weighting. To do so requires setting up the context and structure of activity and then creating within the viewpoints of Expectation-Activity-PSS-Experience Axes and Activity-Unit-Sequence Axis.

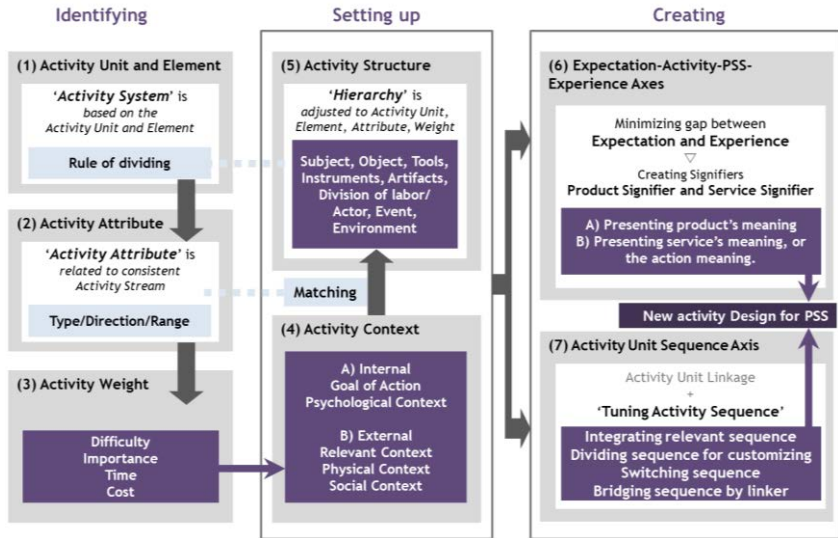


Figure 17 Criteria for customer activity-driven PSS design

### (1) Identifying Activity Unit and Element

The activity unit consists of activity elements and can be distinguished from the concept of activity element. In the case of self-checkout, activity that is not changed but maintained regardless of the customer's characteristics is set up as the activity unit (Figure 8). Factors related with the activity and detailed actions are set up as the activity element such as motion and meaning of action.

### (2) Identifying Activity Attribute

Figure 11 shows that the activity attributes are various and affect next customer activity. As a result of observations and interviews about self-checkout, we've found that customers have been confused with too many action steps and too complicated actions. They have been especially affected by the factors of activity direction and types.

### (3) Identifying Activity Weight

Discussed in Figure 12, difficulties of activities are different. And so, influence and weight of activity units should be considered and applied in the whole activity modelling system because the sequence or structure differs depending on the weight of difficulty, time, and importance.

### (4) Setting up Activity Context

Context is divided into internal and external contexts by considering the Kim's taxonomy (Kim, 2012); goal context for action, relevant structure, physical context, social context and actor's psychological context.

### (5) Setting up Activity Structure

Hierarchy is set up by grouping factors of the activity unit and sub-factors of the activity element. Also, activity structure is set up by the weight and relation of major factors such as actor, event, environment, subject, object, tools, instruments, artefacts, and division of labour. Subsections can be diverse, but in this study, Engeström's six factors of activity and Kim's seven factors of activity are synthesized and applied.

### (6) Creating Signifiers in Terms of Expectation-Activity-PSS-Experience Axes

The centrepiece of this study is to minimize the gap between expectation and experience related with PSS activity in the expectation-activity-PSS-experience axes. There are several ways to minimize the gap, but this study proposes signifiers. Many customers felt the needs of signifiers in order to use easily (Figure 14, 15, 16), thus in this research, the signifier is subdivided into two and used as critical criteria to close the gap between expectation and experience about activity.

One is the signifier-presenting product's meaning. Another is the signifier - presenting service's meaning, or the action meaning. Regarding the criteria to force the consistency of the two signifiers, the picture is deduced as shown below.

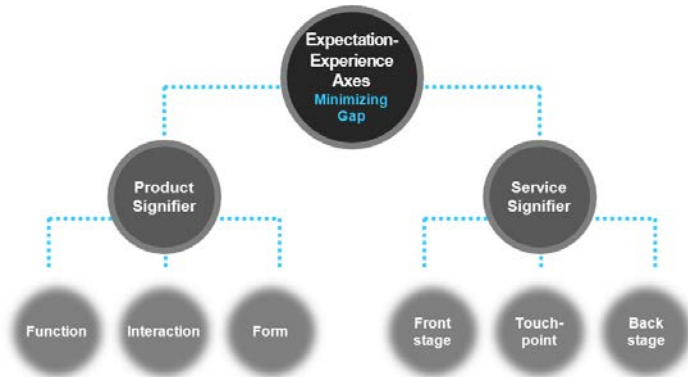


Figure18 Signifier types for minimizing gap between expectation and Experience

#### (7) Tuning Customer Activity Stream In terms of Activity Unit Sequence Axis

On the other hand, this research focused on modification and improvement of the customer activity stream by using the activity unit sequence axis. The activity units are connected, linked within one stream, and become a service experience. This means that the activity stream is chosen by the customer in all of the activities developed with correlations with PSS.

The activity stream involves using integrating, dividing, switching, bridging of the activity units and adjusting the link between activities in order to create a smooth stream. For this, it is important thing whether the activity stream should be consistent or inconsistent (Figure 13).

However, the number of connections is not equal to the time spent, because even though the reduction of the connection step is helpful for effective progress of the activity, fewer steps do not necessarily take less time.

## Conclusion

Designing service is designing action (Wild, 2010, p.127). However, designing PSS is designing a blend of product and service. The product in PSS design should not be treated as subsidiary physical evidence of service design but rather as a key connected by intelligent networking and interacted with continuously. Therefore, it is obvious that the PSS design is mainly made up of customers' activity though it becomes more and more complex and difficult to draw clear demarcations among factors.

In this study, to overcome the limit of the service blueprint, which is typical in the service design field, the criteria of customer activity-driven PSS design is proposed.

The major findings of the research include:

Firstly, background and features of customer activity-driven PSS design are examined in the dimension of the customer activity system and sequence. Concepts of the activity unit and activity element are established. Then, connections between activity units as activity sequences are examined.

Secondly, linking expectation and experience in the sequence of customer activity unit is the most distinctive viewpoint. With this concept, to minimize the gap between expectation and experience of the activity, both activity unit sequence axis and expectation-activity-PSS-experience axes are proposed.

Thirdly, the product signifier and service signifier are suggested in terms of expectation-activity-PSS-experience axes. Signifiers aim to minimize the gap between expectation and experience, and consistent linkage between activity units is proposed for a better activity stream in terms of activity unit sequence axis.

Fourthly, in order to explain customer activity-driven PSS design systematically, a self-checkout system is chose as an empirical research study. Detailed particulars of criteria are deduced for the intensions regarding the activity system through shadow tracking, and criteria for customer activity modelling is suggested as an analytical framework.

Lastly, concept of customer activity-driven PSS design was reinforced through interviews of 50 customers. Due to the result of the interview, criteria can be strengthened for solving the problem of service, advising improvement, finding service chances, and so on.

### *Limitation and Further Study*

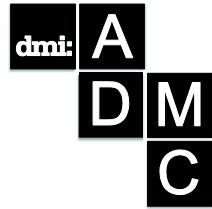
In the study, observation and interview of 50 users is accompanied. Therefore, it is difficult to get statistical evidence. To be more reliable, more case studies with much more users are needed. However, it can be meaningful to find out the possibility of quality approach of customer activity-driven PSS design such as observation and interview in order to deduce the criteria of customer activity modelling.



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## Visualising Product-Service System Business Models

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*The paper addresses the issue of how to visualise innovative business models at various stages of the design and development process. The focus is on a particular type of business model, defined Product-Service Systems (PSSs), characterised by an integrated product-service offering, but can be generalised to other business model innovations. The paper presents a visualisation system based on a formalised business model ontology and a set of visualisation tools, and discusses how it can be used to enhance internal and external communication and improve dialogue and co-design activities inside the company and with external stakeholders.*

**Keywords:** Product-Service System (PSS); Business model; Ontology; Visualization tools; Visualisation system.

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## Introduction

The current situation that manufacturing firms are facing is characterised by a fierce global competition, as well as by the saturation and commoditisation of their core product markets (Gebauer, 2008; Matthyssens and Vandenbempt, 2008; Vandermerwe and Rada, 1988), with consequent negative effects on product sales and margins (Wise and Baumgartner, 1999). In addition, customer needs are becoming more complex and comprehensive (Mathieu, 2001), often based on what a product does for the user, not on the product itself (Mont, 2002; Sawhney et al., 2004; Stahel, 1997). The combination of these factors has pushed companies to move beyond manufacturing towards the service domain, and the old dichotomy between product and service has been replaced by a product-service continuum. This phenomenon, usually termed as *servitization of manufacturing*, represents the evolution of companies' business models from a "pure-product" orientation towards integrated Product-Service Systems (PSSs), based on the provision of integrated bundles consisting of both physical goods and services.

There are several benefits associated to PSS business models. First of all, services increase the generation of sustainable revenues from the installed base of products over their life cycle (Cohen et al., 2006; Potts, 1998; Slack, 2005), and are to some extent counter-cyclical to sales of products (Davies, 2003). They tend to be less sensitive to price-based competition (Malleret, 2006), and thus reducing the volatility of cash flow (Brax, 2005; Malleret, 2006). Moreover, services can be an important source of competitive advantages and a way to differentiate products (Gebauer and Friedli, 2005), supporting companies in building up barriers to entry, and making market penetration by potential new competitors more difficult. It is especially true for mature industries, where market expansion and technological innovation are relatively slow (Oliva and Kallenberg, 2003) and are characterised by a high installed-base-to-new-unit ratio (Wise and Baumgartner, 1999). Secondly, services can be an argument for selling more products (Gebauer and Fleisch, 2007), increasing first-time and repeat sales, and thus gaining market share. Moreover, services are a mean to tailor the offering and enhance customer loyalty (Correa et al., 2007). Finally, potential environmental benefits of decoupling ownership of assets and use through the introduction of product-service combinations are mentioned in literature (Mont, 2002; UNEP, 2002; Vezzoli, 2007).

In real life, there are several successful stories of traditional manufacturing companies that innovated their business model and became

product-service providers, as Xerox, IBM (Gerstner, 2002), Alstom (Owen, 1997), ICI-Nobel Explosives Company (Schmenner, 2009) and Rolls-Royce (The Economist, 2009) only to mention some famous examples.

However, besides these benefits, the actual implementation of PSS involves several challenges (Martinez et al., 2010; Ceschin, 2013). It is not enough just to innovate what a business offers to its customers by introducing new services and solutions, but further changes in all areas of a company's business model are required, in an organic, structured and coherent fashion (Kindström, 2010). Modifications are needed not only internally, but also externally, downstream towards customers, and upstream towards suppliers and partners. Consequently, different stakeholders and business units may be involved when products and services are combined through the establishment of interdisciplinary and cross-functional processes. The involvement of several internal and external actors creates the need for an effective system of communication (Lusch, 2007) able to address all the elements constituting a PSS business model. As argued by Morelli (2009), communication channels between the actors that are actually producing the service usually utilise highly codified and specialised languages that work very well among experts, but not among local actors and final users. New tools and models are needed to communicate new PSSs to a larger audience of actors: likewise engineers and technicians in the production departments, all the other stakeholders in the value chain, including customers, must understand their role in the PSS and be able to contribute in the design and development process.

Despite the importance assumed by the implementation of a suitable system of communication to facilitate strategic conversations among the actors and to efficiently and effectively design, develop, operationalize and manage a PSS business model, a few studies address this topic.

This study makes a first attempt at building a communication system for PSS business model innovation based on a PSS business model ontology and a set of visualisation tools. In particular, the main research question is specified as follows: How can innovative PSS business models be effectively visualised to support communication inside and outside the company in design and development activities?

This paper is structured as follows. First, we review the extant literature related to ontologies and their use in the business model domain, with a particular emphasis on the PSS business model ontology. Then, we introduce the methodology used for shading light on the research question. In the sections that follow we describe and discuss the development of a

visualisation system for PSS business models and we show its application to a real case company, highlighting the benefits that derive from its use. Finally, we conclude the proposed visualisation system for PSS business model with its limitations and suggestions for future research.

## **Ontologies for visualising innovative PSS business models**

Having an effective system of visualisation in place facilitates an ongoing evolution in the development of the services business and ensures that all participating functions within the organisation are engaged and have more visibility of each other contribution and impact on the business. In particular, the elaboration of a visualisation system is considered vital to support a well-articulated system of actors and the creation and the development of stakeholder networks (Krucken and Meroni, 2006). It aims to: (a) explore the interest of potential partners in a solution idea, by presenting the idea and its possible benefits; (b) make new partners converge upon an idea, defining, for each actor, tasks, responsibilities and benefits; (c) verify the interest of potential users; and (d) promote the final solution .

In such a context, the use of ontologies helps managers easily communicate and share their understanding of a business model among other stakeholders (Fensel et al., 2001), promoting information exchange and knowledge sharing, thus facilitating discussions, changes and innovation (Petrovic et al., 2001). Generally speaking, an ontology can be defined as a formal, explicit specification of a shared conceptualisation (Gruber, 1993). In the business model domain, a Business Model Ontology (BMO) can be defined as a conceptualization and formalization of the essential components of a business model into elements, relationships, vocabulary and semantics (Osterwalder, 2004). In particular, Osterwalder's BMO, also called Business Model Canvas (Osterwalder and Pigneur, 2010), was built through the comparison and the synthesis of the models mentioned most often in literature. The result is an ontology composed by nine building blocks (Osterwalder and Pigneur, 2010): i) Value Propositions; ii) Customer Relationships; iii) Channels; iv) Customer Segments; v) Key Activities; vi) Key Resources; vii) Key Partners; viii) Cost Structure; and ix) Revenue Streams.

The application of the Business Model Canvas to the PSS field is discussed by Gaiardelli and Resta (2010) and further refined by Resta (2012).

More specifically, the authors developed a PSS Business Model Ontology (PSS BMO), made up of five constructs (Figure 1):

- **Value proposition** concerns the bundle of products and services offered, representing the substantial value to the customer for which he/she is willing to pay.
- **Infrastructure and Network** defines how the value proposition can be produced in order to create value. In particular, it is related to the definition of organizational structure, resources, competences and the value network of a company.
- **Relationship capital** encompasses issues related to customer relationship, describing “who” are the target customers, how to deliver them products and services (distribution channel), and how to build a strong relationship with them.
- **Sustainable aspects** (economic, environmental and social value proposition) are related to the three pillars of sustainability: economy, society and environment (Elkington, 1997).

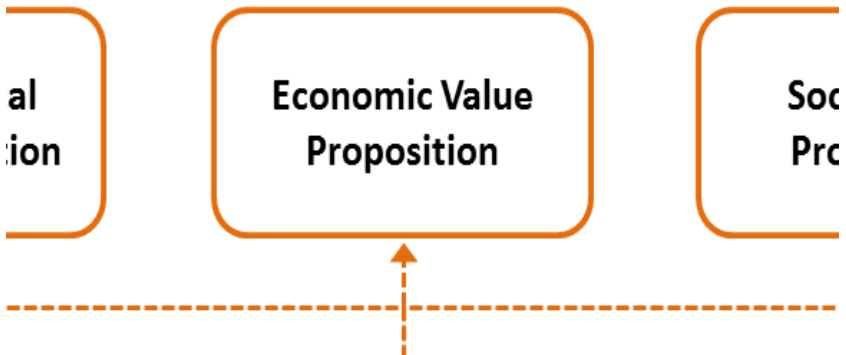


Figure 1 PSS BMO.

Even if the use of a business model ontology can support the communication and understanding of a business model, it must be stressed out that it works only at a general and abstract level. It helps to understand the constructs of a PSS business model and their interrelations, but it does not provide details on each of its construct. It is very useful in understanding and communicating the ‘big picture’ of the business model, but not in communicating its specific details.

For this reason it seems promising to look at the PSS BMO in combination with existing PSS visualisation tools. In the last decade, several tools have been developed to help to communicate PSS business models (for an extensive overview see Verkuijl et al., 2006). However, there is not a single visualisation tool capable to communicate all the aspects of a PSS business model. A set of different visualisation tools is required to comprehensively communicate PSSs.

Our assumption is that the combination of the PSS BMO with PSS visualisation tools can foster the communication potential of the PSS BMO itself. On the other hand the PSS BMO can provide a structure to coherently organise the existing PSS visualisation tools. In other words, the hypothesis of the paper is that integration of the PSS BMO with visualisation tools can give shape to an effective communication toolbox.

## **Research methodology**

The research methodology applied in this paper is based on the "analytical conceptual research" approach (Merdith, 1998; Wacker, 1998) for theory building (Handfield and Melnyk, 1998). This research methodology comprises new insights through logically developing relationships between carefully defined concepts into an internally consistent theory. Basically, it involves integrating research, often from a diverse background of literatures, and suggestions relationships between variables based on these existing findings. Analytical conceptual research methodology has been utilised in a number of recent publications in the PSS field (e.g. Abramovici et al., 2011; Aurich et al., 2006; Durugbo et al., 2012; Le et al., 2007; Ming and Liyue, 2011; Morelli, 2006).

In this paper, a literature review on visualization tools for PSSs was conducted to identify to what extent existing tools commonly used in other disciplines, as design and engineering, could be applied to a business model innovation process, with particular reference to its communications among the involved actors. Then, explicit conceptual links and interrelations are drawn between PSS business model ontology constructs and the visualisation tools.

Finally, a case study example is used to reflect on the application of the developed conceptualization. In particular, the visualisation system was applied in a research project commissioned by KONE Corporation to Politecnico di Milano (in particular to the Design and Innovation for Sustainability -DIS- research group, Design Department). The aim of the



project was to develop a set of PSS business model innovations capable of providing economic, competitive and environmental benefits. The project lasted 14 months and was coordinated by Politecnico di Milano. The project was structured in three main phases (see also section 5.2): *Strategic analysis*, to collect and analyse all the relevant information necessary for the project; *Exploring opportunities*, to generate a “catalogue” of promising business model ideas; and *PSS development*, to select and develop in detail the most promising ideas. KONE was involved in all the stages of the process: in the Strategic analysis it provided to DIS all the requested information; in the Exploring opportunities it participated in a workshop to identify the most promising ideas to be developed; in the PSS development it was involved in a workshop to select the business model propositions to be developed in detail. Several company departments were involved in the project. The R&D was the department who played the most important role, working back to back with DIS in all the project stages. In addition, staff from the management, service innovation department, and maintenance was involved in the Exploring opportunities and PSS development phases: in particular they played a crucial role in the workshop, providing comments and criticism on the ideas presented by DIS, generating new ideas and selecting the most promising ones.

## **Visualization tools for PSSs**

As argued in the Introduction, PSS innovations are complex business models, made up of an integrated combination of products and services. Because of this complexity, an articulated system of stakeholders is usually required to deliver such solutions. Thus, an effective communication between these socio-economic actors is crucial in order to support and facilitate the design and development of PSS business models.

Many visualisation tools have been developed in the last decades to address this issue. A first important contribution came from the *HiCS* research project (Highly Customerised Solutions, 2001-2001, EU funded under the 5<sup>th</sup> Framework Programme). In particular the project led to the development of a set of visualisation tools to facilitate networks of partners to be born, grow up and converge on shared visions. More specifically, the tools developed are (Jégou et al., 2004):

- *Stakeholder system map*: it visualises the socio-economic stakeholders involved in producing and delivering the PSS offer, and their interactions/relations in terms of: a) material/product

flows; b) information flows; and c) financial flows (Figure 2). A similar tool aimed at visualising which stakeholders are involved in the value creation and how they interact is the *Interaction map* (Morelli, 2006).

- *Stakeholder motivation matrix*: it is used to describe the motivations and benefits that each stakeholder has in being involved in the PSS (Figure 3). The tool investigates the PSS business model from the point of view of each stakeholder (what are the benefits derived from being part of the PSS? What are the benefits brought to the other partners? What are the conflicts or synergies with the other stakeholders?).
- *PSS solution elements*: it is used to describe the material and non-material elements (e.g. products, services, communication etc.) required to deliver the PSS offer (Figure 4). Moreover, it also visualises who (among the project partners) is responsible for designing/providing these elements.

Important contributions came also from another EU funded research project called *MEPSS* (MEthodology for Product Service System development, 2002-2005, EU funded under the 5<sup>th</sup> Framework Programme). In particular, the project led to develop visualisation tools to communicate the PSS offer (the set of products and services offered to customers), and the PSS process (the sequence of the interactions, between providers and users, necessary to deliver the PSS offer). These tools are (van Halen et al., 2005):

- *AD Poster*: initially developed by Jégou within the SusHouse project (Strategies towards the Sustainable Household, 1998-2000, funded by EU under the 4<sup>th</sup> Framework Programme), it is a simulation of a future promotional advertising of the PSS. It usually consists of an image, a title and a slogan (Figure 5), and it aims at communicating very quickly the core offer delivered to customers.
- *Offering diagram*: it shows, through a combination of visual and textual elements, and in a concise form, what the PSS offers to customers (Figure 6). Compared to the AD poster, it is more detailed, highlighting the main services delivered to customers.
- *Interaction table*: it is related to how the PSS offer is delivered to the customers (Figure 7). It chronologically visualises the sequence of interactions occurring at front-desk level (interactions between the customer and the offer system) and back-stage level

(interactions between the stakeholders involved in producing and delivering the PSS). It derives from the *Service blueprint* (Shostack, 1982; 1984), but compared to this, it is more visual (i.e. it uses images to visualise the interaction between the PSS providers, other stakeholders and the customer).

The visualisation of the PSS process (chronologic sequence of the interactions required to deliver the PSS offer) has recently been explored by several researchers, with the aim of improving the *Service blueprint* (considered not suitable for visualising the whole PSS process). The most important contributions in this area are: the *Modified service blueprint* (Lee and Kim, 2010), *Product-service blueprint* (Geum and Park, 2011), and the *PSS board* (Lim et al. 2012).

Researchers have also focussed on how to communicate the sustainability aspects of the PSS solution. In this respect, Vezzoli, Ceschin and Orbetegli developed the *Sustainability diagram* (Ceschin and Vezzoli, 2007; Vezzoli and Ceschin, 2009), which is aimed at succinctly describe and visualise how the PSS achieves certain sustainability aims (Figure 8). It basically consists of a summary of an interaction table and notes describing the sustainability benefits.

In summary, PSS visualisation tools can be grouped in relation to their aims. In fact they focus on different aspects of the PSS business model (Table 1):

- Tools to visualise WHAT is offered to the customers: *AD Poster, Offering diagram.*
- Tools to visualise WHO are the stakeholders involved in the design, production and delivery of the PSS offer: *Stakeholder system map, Interaction map, Stakeholder motivation matrix.*
- Tools to visualise HOW the PSS solution works: *Interaction table, Modified service blueprint, Product-service blueprint, PSS board.*
- Tools to visualise WHY the PSS should be implemented (i.e. economic, environmental and socio-ethical benefits): *Sustainability diagram.*

Table 1 *Visualisation tools classification.*

Focus	Tool	Description
WHAT is offered to the customers	AD Poster	It is a simulation of a future promotional advertising of the PSS
	Offering diagram	It shows what the PSS offers to customers
WHO are the stakeholders involved	Stakeholder system map	It visualises the socio-economic stakeholders involved in producing and delivering the PSS offer, and their interrelations
	Interaction map	It describe the motivations and benefits that each stakeholder has in being involved in the PSS
	Stakeholder motivation matrix	It chronologically visualises the sequence of interactions occurring at front-desk and back-stage levels
HOW the PSS solution works	Interaction table	It is used to describe the material and non-material elements required to deliver the PSS offer, and who is responsible for designing/providing these elements
	Modified service blueprint	It succinctly describes and visualises how the PSS achieves certain sustainability aims
	Product-service blueprint	
	PSS board	
WHY the PSS should be implemented	PSS solution elements	
	Sustainability diagram	



Figure 2 Stakeholder system map.

Central kitchen	Local Producers Cooperative	Biologic Local Producers	External restaurants	Appliance company
-increased sales -increased efficiency	-expertise in food preparation	-risk participation	-offer diversification (with higher quality)	-possibility of testing innovative solutions
	-new market	-easier to get fair prices -management expertise		
-possibility of preparing healthy food	-quality products	-new market	-expertise in food preparation	
-new sales channels			-new offer typologies based on organic food	
-efficient equipment				-find new application fields
-higher quality offer -greater efficiency	-new business opportunities	-new business opportunities	-new business opportunities	-new business opportunities -brand differentiation-

Figure 3 Stakeholder motivation matrix. It is a double entry table visualising, for each actor: the motivations for being part of the system; the contribution that is given to the partnership and in general, and to the other single actors; the potentials synergies or conflicts between the actors.

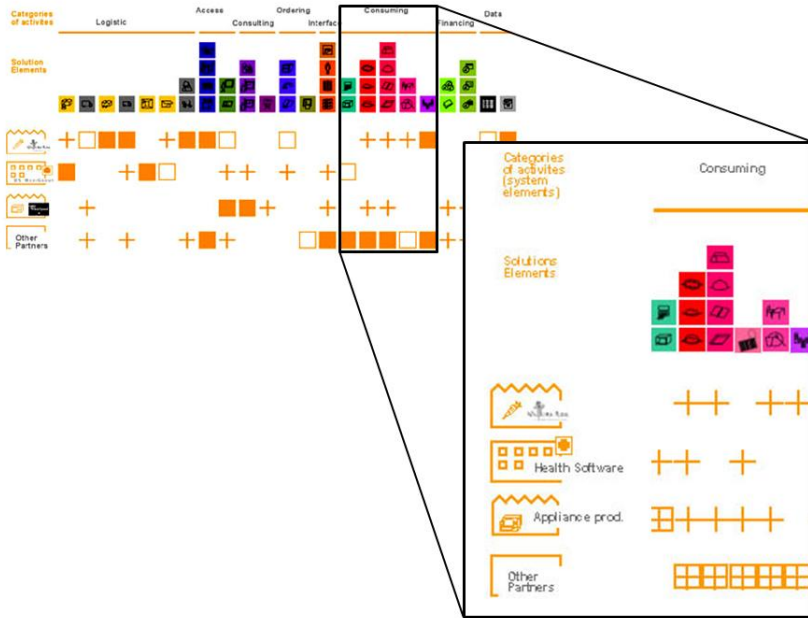


Figure 4 PSS elements. On the horizontal axis, the material (products, equipment, etc.) and immaterial (information, services, labour performance) elements necessary to implement the PSS are visualised. These elements are usually represented by pictograms. The vertical axis visualises the actors involved in the PSS. Crossing the elements with the actors it is possible to understand the contribution that each single actor gives in the design, production and or delivery of such elements. The “cross” means design, while the “square” means produce/deliver.

**WEAR  
YOUR  
WARDROBE...**



**... IN  
YOUR  
POCKET**

Figure 5 AD Poster. It is a simulation of a future promotional advertising of the PSS. It usually consists of an image and a slogan.

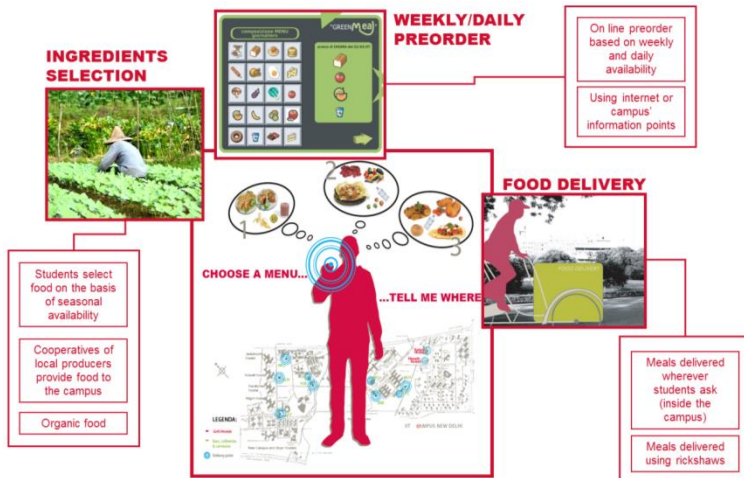


Figure 6 Offering diagram.

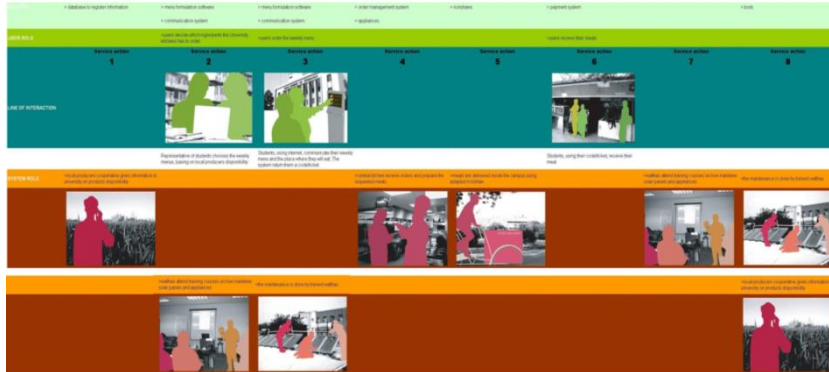


Figure 7 Interaction table.

### Delivery service for the IIT Delhi university campus



Figure 8 Sustainability diagram.

## A visualisation system for PSS business model innovation

As illustrated in the previous section, several visualisation tools are required to visualise all the aspects of a PSS business model. However, it might not be easy to understand how the different tools are interrelated,



and which tools are the most effective ones in relation to specific communication needs. The PSS BMO can provide a framework to organise the visualisation tools, understand how they relate one another, and facilitate its selection in relation to specific communication requirements.

More specifically each PSS BMO construct can be coupled with one or more visualisation tools (Figure 9 and Table 2):

- The *Value proposition* is about the package of products and services offered to the customer, and thus it can be linked with the *AD Poster* and the *Offering Diagram*.
- The *Infrastructure and Network* concerns the value chain and how the PSS offer is produced and delivered. Therefore, this construct can be linked to the *Stakeholder system map*<sup>71</sup> (because it shows the actors involved in the value chain), the *Stakeholder motivation matrix* (because it describes the reasons for each actor to be part of the system), the *PSS elements* (because it visualise the roles of each actor in designing, producing and delivering the PSS), and the *Interaction table* (because it shows what stakeholders have to do in order to deliver the PSS offer).
- The *Relationship capital* concerns how the PSS offer is delivered to the customer. Thus it can be linked to the *Interaction table*<sup>72</sup>.
- The *Sustainable aspect* can be visualised by the *Sustainability diagram* tool.

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<sup>71</sup> The Interaction map tool can also be used. However, we opted for the Stakeholder system map because it is a more diffused tool.

<sup>72</sup> The Modified service blueprint, the Product-service blueprint and the PSS board tools might also be used in combination with the Interaction table. Again, we opted for the Interaction table because it is the most the most flexible tool: it can be used with different levels of details along the whole PSS development process.

Table 2 *Interrelation between the PSS business model ontology and the visualisation tools.*

PSS BMO construct	Description	PSS visualisation tool
Value Proposition	Bundle of products and services offered	AD Poster Offering diagram
Infrastructure and Network	How the value proposition is produced	Stakeholder system map Stakeholder motivation matrix PSS elements Interaction table
Relationship capital	How the value proposition is delivered to the customer	Interaction table
Sustainable aspects	Three pillars of sustainability	Sustainability diagram

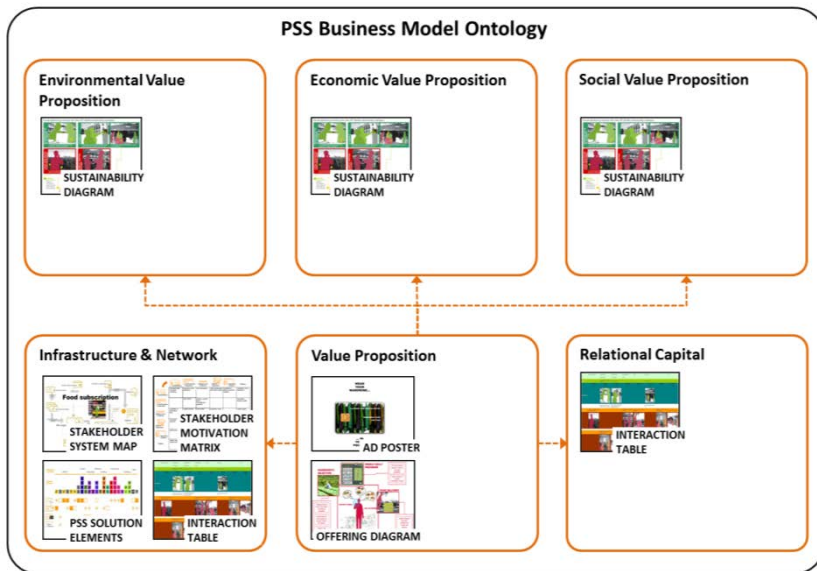


Figure 9 *Interrelation between the PSS business model ontology and the visualisation tools.*

### *The case example: Kone Corporation*

This section presents the application of the communication system described in this paper in a research project commissioned by KONE

Corporation<sup>73</sup> to Politecnico di Milano (in particular to the Design and Innovation for Sustainability research group - DIS, Design Department). The aim of the project was to develop a set of PSS business model innovations capable of providing economic, competitive and environmental benefits. The following text describes the process that led to the development of the business model innovations and in particular the role played by the communication system.<sup>74</sup> Figure 10 shows the development process and the visualisation tools used during the project.

In the first phase of the project, namely *Strategic analysis*, the aim was to collect and elaborate background information necessary for the development of PSS business models: understanding the main characteristics of KONE (current business models and value propositions; core competences and main strengths and weaknesses of the company; supply chain and key stakeholders involved), understanding KONE's competitors, and understanding the set of macro-trends that represent the background against which KONE operates (economic, regulatory, social and cultural dynamics). In the second phase, *Exploring opportunities*, the aim was to use all the information collected and elaborated in the previous stage to define a "catalogue" of promising PSS business model ideas. A first ideas generation workshop was organised to generate explorative and promising ideas. The workshop, which involved only members of the DIS research group, led to the generation of 60 ideas to improve existing business models and develop new ones. These ideas were visualised using only the AD Poster. At this stage in fact, given the high amount of ideas generated, it is not useful to describe each idea in depth. Rather, it is useful to quickly describe them by visualising its core element.

In a second workshop, involving both DIS and KONE staffs, the ideas generated in the previous workshop were presented. The aim was to evaluate and improve these ideas and stimulate the generation of new ones. After the workshop, the KONE staff selected the ideas considered promising to be carried forward.

At this stage, building upon the feedback collected from KONE, DIS combined the idea selected and elaborated four PSS business model propositions. Each proposition was described using a set of visualisation tools: *Offering diagram*, *Stakeholders System map* and the *Interaction table*. It was decided not to use all the visualisation tools because at this stage the

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<sup>73</sup> One of the global leaders in the elevator and escalator industry.

<sup>74</sup> For a description and analysis of the KONE project see also Cortesi et al. (2010).

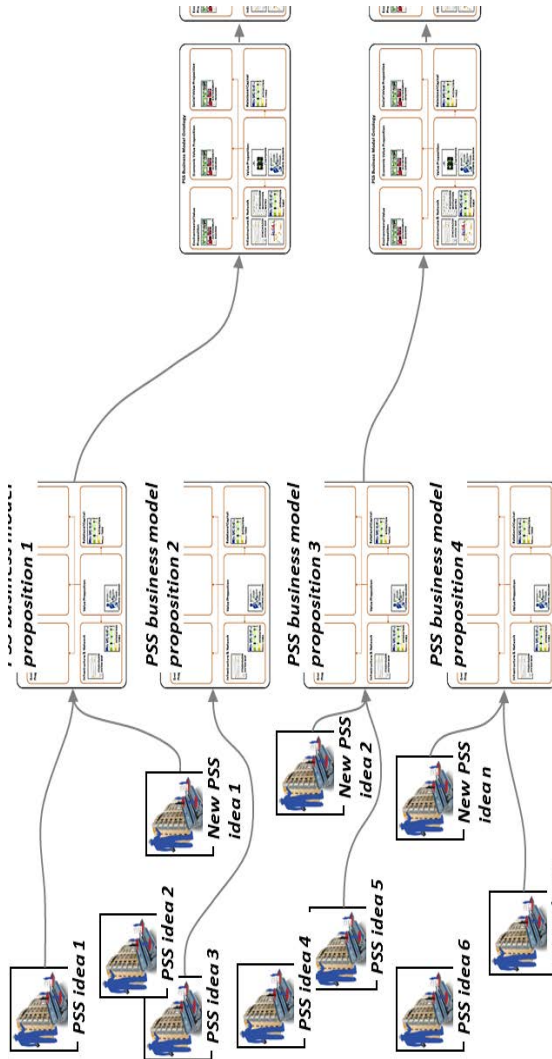
aim was not to describe in depth each single proposition. Rather, the aim was to use the visualisation to stimulate a first discussion about the initial PSS business model proposals. The PSS BMO was used as a framework to organise the information.

After elaborating the four PSS business model propositions, a workshop, involving both DIS and KONE staffs, was organised. The aim was to present and discuss the four propositions. The PSS BMO was used to support communication and facilitate the understanding of the business model constructs as well as the interrelations between the visualisation tools used. The presentation not only stimulated KONE staff to criticise the proposal, but also to contribute with new ideas. In particular each single visualisation tool stimulated KONE staff in producing comments and ideas on specific elements of a business model (e.g. the Stakeholder system map made KONE staff to think about the best actors to be involved in the new PSS propositions).

After the workshop, KONE staff took two weeks to take a decision about the PSS business models to be carried forward. A discussion took place at different levels of the company involving individual from different departments. The PSS BMO and the visualisation tools were used to support and stimulate the discussion. Two proposals were selected: the PSS business model for green office buildings in eco-cities, and the PSS for social housing buildings. For each proposal, a set of comments and additional ideas were made by KONE.

The next stage was the development of the two selected business models. All the visualisation tools were used to describe in depth each business model construct. The final results were then presented to KONE. Again, the PSS BMO was used as a framework to organise the complexity of the information to be communicated. Examples of final deliverables are the *Offering diagram* (Figure 11), the *Interaction table* (Figure 12) and the *Stakeholder system map* (Figure 13).

Visualising Product-Service System Business Models



PHASE	DESCRIPTION	ACTIVITIES	OUTPUTS	TOOLS	ACTORS
RATEGIC ANALYSIS	Selection and elaboration of background information			KONE	
EXPLORING OPPORTUNITIES	Idea generation workshop on PSS business model ideas	Workshop to present the ideas, generate new ones, and select the most promising		KONE, DIS	AD Poster
PSS DEVELOPMENT	Elaboration of 4 PSS business model propositions	Workshop to select the most promising business model propositions		KONE, DIS	Offering diagram, Stakeholders System map, Interaction map
Final Development	Development of PSS business models			DIS	All
Final Review	Final review of business models			DIS	All

Figure 10 KONE project: development process.

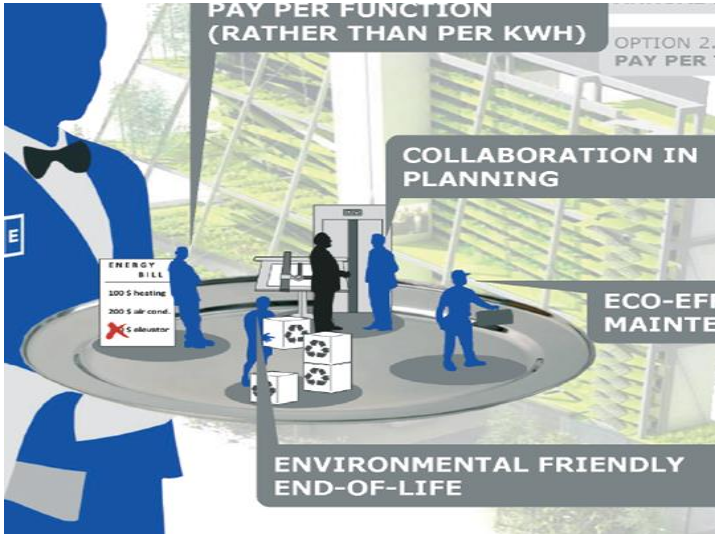


Figure 11 PSS business model for green office buildings in eco-cities: Offering diagram.

	CONCEPT DESIGN										
<b>KONE</b>											
<b>ACTIONS</b>	KONE designs the layout of an office space and develops a production-service system for green buildings, identifying the tasks of stakeholders to involve.	KONE designs the basic structure of an office space and identifies products and services that could be included in the project.	KONE gets information about the location of the building, all the risks and identifies the local stakeholders, including the tenant.	KONE presents the production-service system to the tenant, ready for building in a concept project.	When the offer, KONE presents four modules for the tenant: collaboration in planning, efficient performance and an environmental friendly environment.	Based on their needs, KONE offers products and services to offer a high efficient system and a service once with a pay per function offer for energy and improvements.	Based on their needs and potential energy use, KONE offers a pay per function offer for energy and improvements.	KONE presents the project to the tenant and offers two pay per function long-term contracts: 'service based' and 'pay per function'.			
<b>Tenant</b>											
<b>ACTIONS</b>			A company in USA, according to requirements, needs a new headquarters and announces the planning stage of a new green building.				The tenant agrees about a meeting analysis of the project proposed by KONE.			The tenant agrees about a meeting analysis of the project proposed by KONE.	
<b>Facility manager</b>											
<b>ACTIONS</b>											

Figure 12 PSS business model for green office buildings in eco-cities: Interaction table.

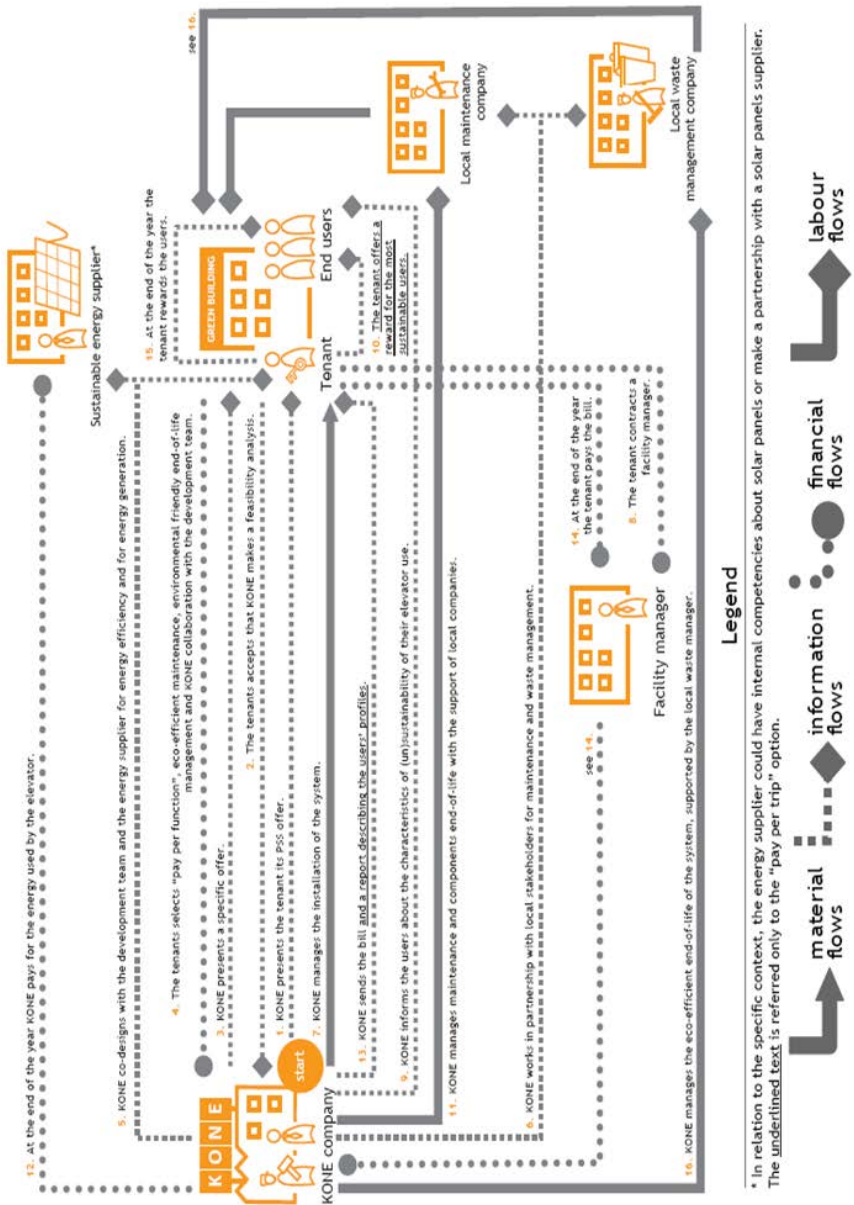


Figure 13 PSS business model for green office buildings in eco-cities: Stakeholder system map.

### *Discussion: benefits of visual thinking in PSS business model innovation*

The adoption of the previously described communication system brought about several benefits.

**Make tangible the intangible.** A PSS business model is a complex system made up of several elements (products, services, stakeholder network, customer relationship, distribution channels, etc.), which are strictly interrelated and thus influence one another. The complexity of a business model, and the intangibility of some of its elements, makes it difficult to effectively visualise and communicate it. For example, the PSS business model innovations elaborated during the KONE project entail several changes compared to the current business models: a substantially new stakeholder network, a new offer proposition, and a new customer experience. For this reason it can be problematic to coherently visualise all the aspects of a new PSS business model to different company's department and external actors. Also, some of the business model elements are intangible per se. This makes even more difficult the visualisation and communication.

The PSS BMO and the visualisation tools can help to organise the information to be communicated and make tangible the intangible. The PSS BMO visualises the "big picture", showing the constructs of a PSS business model and their interrelations. The set of tools help to visually communicate each construct. Thus, the PSS BMO and the visualisation tools complement each other: the former can support to organise the PSS business model elements and see their interrelations; the latter can support to visualise and make tangible each single business model construct. During the KONE project, the PSS BMO was used as a guiding framework along the whole PSS development (see Figure 10), allowing all the stakeholders involved in the project to easily follow and contribute to the evolution of the project.

In general, the value of this visualisation system relies on the combination of a general framework and some specific tools, which allows the simplification of a complex system and the concretisation of its abstract elements.

**Improve dialogue and co-design activities.** The PSS BMO and the visualisation tools can be used as a shared visual grammar to enhance dialogue and co-design. In fact they can support communication and improve information exchange because of two main reasons:



- *Visual thinking and storytelling can engage listeners more effectively than other communication means.* Let us take for example the offering diagram and the interaction table (Figures 6 and 7): they have been used at various stages of the PSS development to present and discuss ideas with people from different company functions. In addition to the description of PSS business model ideas using text and oral communication, these visualisation tools have helped to gain the attention of the listeners. This is fundamental in order to enable them to actively participate in the discussion.
- *Visual thinking helps to create a shared understanding,* because visual techniques represent a common language that can facilitate conversation and ideas exchange between individuals and groups who have different background and expertise (e.g. people from different department of the organisation). In fact, during the KONE project, the visualisation tools have been used to interact with individuals from different company functions (i.e. individuals from management, R&D, marketing, service innovation, and maintenance). Despite their different backgrounds and sets of skills, they were able to actively contribute in the development of the different aspect the of the PSS business models. The common language of the visual tools facilitated participants to easily discuss and criticise ideas, as well as propose alternative ones.

Another important aspect to be underlined is that the visualisation system can be used to enhance dialogue and co-design at different levels:

- Inside the company, at various levels of the organisation;
- Outside the company, with stakeholders, collaborators, investors etc.;
- Outside the company, with potential customers and users.

During the KONE project, the visualisation system was mainly used to support co-design processes within the company, and to interact with potential partners and stakeholders. However, it can also facilitate discussion with customers and users (e.g. in focus groups) to gain insights on how to improve the value proposition.

**Support communication during the whole PSS development process.**

One of the characteristics of the visualisation system is its flexibility. The

system can in fact be used at *various stages of the PSS development process*, and at *different levels of details*. During the KONE project, as showed in Figure 10, the system has been adopted to:

- Show initial PSS business model ideas: at this stage the aim was to quickly visualise several business model ideas and for this reason we only used the AD Poster tool.
- Explore and develop the most promising ideas: at this stage most of the visualisation tools were used. Several iterations took place before identifying the two business models to be developed.
- Visualise the final business model: all the visualisation tools were used at this stage. The difference, compared to the previous phase, is the increased level of details in the visualisations (e.g. in the Stakeholder system map all the actors of the value chain were inserted, while during the exploration phase only the main ones were included).

In sum, depending on the specific objectives of each development phase, the visualisation system can be used with different combinations of visualisation tools, and with different levels of detail.

**Customise visualisation for different needs.** The proposed visualisation system is also characterised by modularity. In particular it is possible to customise the visualisation in relation to specific needs and stakeholders. For example when a company has to interact with the potential final users of its business model the visualisation system will mostly focus on the *Value proposition* and *Customer relationship* constructs, and thus the most important tools will be the *AD Poster*, the *Offering diagram* and the *Interaction table*. If a company has to interact with some potential stakeholders in the business model, the *Infrastructure & Network* construct and its two visualisation tools (*Stakeholder system map* and *Stakeholder motivation matrix*) will play an important role.

More in general, the most appropriate combination of visualisation tools can be selected in relation to the type of actor the company has to interact with.

## Conclusions

The servitization phenomenon relies on the innovation of manufacturing companies' business models, whereby existing product offerings are

extended through the provision of related services. Having an effective system of communication in place can facilitate the innovation and the development of PSS business models, ensuring that all internal and external stakeholders are engaged and have visibility of each other's role and contribution. In this paper a new visualisation system for PSS business model is developed, based on the PSS BMO, combined with a set of visualisation tools. There are four main advantages in using the proposed visualisation system. In particular it supports managers in: i) making tangible the intangible; ii) improving dialogue and co-design activities; iii) supporting communication during the whole development process; and iv) customising communication for different needs.

The main limitation of the paper is related to the methodological approach adopted. We relied on the "analytical conceptual research" approach (Merdith, 1998; Wacker, 1998) for theory building, and our insights are elaborated through logically developing relationships and links between defined concepts (PSS BMO on one hand, and PSS visualisation tools on the other). This led to the proposal of a new visualisation system (which has been adopted in an exploratory case study), and the discussion of its benefits. Even if this is an important contribution, it has to be stressed out that there is not any quantitative measurement of the benefits deriving from using the proposed visualisation system. This represents a future research direction. In particular, the visualisation system should be applied in other cases in order to quantify its advantages (in particular in terms of time and resources saved during the business model development process).

Looking at the visualisation system in itself, its main limitation is related to the skills required to elaborate the visualisations. In particular some visualisation tools (i.e. interaction table, offering diagram, and sustainability diagram) can only be developed by someone equipped with certain communication and graphic design skills. This consideration opens up two other interesting directions for future research.

First, it might be useful to investigate who (inside or outside the company) can take the role of the communicator during the whole PSS development process, the skills he/she should have, and how he/she would be integrated with the company functions.

Second, it seems promising to develop a set of visualisation tools that can be easily used by a broad range of people without the need of any particular communication/graphic skills. In particular the development of standardised visualisation tools (i.e. based on the combination of pre-

defined visual elements instead of the elaboration of ad hoc elements) represents a potentially fruitful direction to be explored.

Another potentially interesting research direction is related to the adoption and adaptation of the visualisation system in other types of business model innovations. In fact, even if the communication system has been conceived for PSS business model innovations, it might be potentially used in other business model innovations (in particular in those business models which require complex combinations of several actors, products and services).

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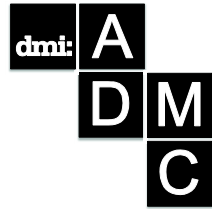
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## The Nature Service Design by Industrial Designers and Interaction Designers

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*As the service sector has become a crucial part of the economy, addressing service design by investigating the role of designers, design process, and tools and methods has a huge potential to contribute to the professional needs, the industry, and also academic research. Starting out from the viewpoint that its origin is within interaction design, this paper explores how industrial and interaction designers have an understanding of service design as a professional practice. As this research is closely related with design practice, interviews were conducted with industrial and interaction designers who have several years of experience in design consultancies and companies in Sweden in the fields of industrial and/or interaction design. There are different ways of understanding service design from the viewpoints of the mentioned practitioners. There is diversity between industrial designers and interaction designers about understanding the field, its design process, and the tools and methods of service design practice. This diversity might be related with the professionalization level of service design in different industries, with how organisations make investments on and adopt service design as a professional practice either in-house or out-source; depend on designers in keeping themselves updated about the developments that are connected with their practices.*

**Keywords:** Industrial Design; interaction design; service design; professional practice; understanding

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## Introduction

Design practice is expanding its borders. Besides its traditional realms, today design is seen as a catalyser, a process and a way of thinking for developing strategies, organisational change, business structures and for transforming the way people live in this century.

As we move from an industrial to a post-industrial society, Cross (1981) portrays a potential crisis in design and a completely new paradigm of design emphasizing that 'such a paradigm would suggest a reorientation of the values, beliefs, attitudes of designers, the goals of design (i.e. the nature of design products and the methods for achieving these goals' (Cross, 1981, p.5)

The increase of service sector in industrialized economies, the shift from manufacturing industries to experience based service industries and the penetration of information and communication technologies especially in daily life have caused new professions to emerge and take place in design processes. Kimbell (2009) states that in the beginning of 21st century, design has witnessed new fields emerging both with the development of information and communication technologies (ICT) and the changing role of design especially in organisations. The emergence of new design professions in design processes defines new areas for design, but also potential areas for collaboration. One of these professions has been interaction design and recently service design has taken a place as a new actor in design processes.

Within line to the above developments, many organisations have been in the process of shifting towards service systems as it is not really possible stand alone anymore when we think about products; products need to be included in a service system more than ever (Miettinen, 2011; Moritz, 2005; Visser & Stappers, 2012). The revenue of product oriented companies has increased in terms of their investments in services especially in the last decade (Miettinen, 2011; Rae & Ogilvie, 2004). As a result, the structure of product oriented companies has turned out to be hybrid based on products and services. But how about the designers of products who need to work with service design practitioners? Are they really knowledgeable about the field of service design even before collaborating with each other since they need to be involved in the service development processes? To work in an open and collaborative way for complex projects, designers first need to have an understanding of each other's professional practice; the way they work, approach to design and their design processes. In the same way, Holmlid (2007) points out the importance of firstly understanding each other's disciplines to be able to work in an integrated way. Starting out

from this perspective, this paper aims to put forward the way(s) that industrial design and interaction design practitioners see and have an understanding of the field of service design rather than defining the disciplines or making a comparison among them. This paper is an attempt to set up a background for shaping service design as an established profession from the viewpoint of industrial design and interaction design practitioners. In this paper, the focus was not finding formal routines since service design is not yet at seen as a fully established practice; the vocabulary, methods and approaches of the field haven't been fully understood yet (Holmlid, 2007; Kimbell, 2009; Sangiorgi, 2009).

Based on the findings of the interviews, this study takes service design into two approaches in terms of industrial design and interaction design practitioners: the first one that is accepted very closely to interaction design is seeing service design as a series of interactions and experiences; the second one is seeing service design as strategic and transformational actor in organisational change. These two ways of seeing service design field by industrial design and interaction design practitioners also overlap with the development of service design as well. The initial focus of service design has been on the interactions and experiences and then gradually expanded towards having a more strategic and transformational role in organisational and social change, system design and sustainability (Holmlid, 2013; Mager, 2004; Sangiorgi, 2009).

## **Changes in the Design Space in terms of Service Design**

There are different approaches to service design field from seeing it a new field of design to stressing that it has origins in other disciplines and making references to design, management, and the social sciences (Kimbell, 2011).

There has been a change in the nature of design objects. Buchanan (2001) suggests four orders of design which are symbols, things, action and thought as shown in Figure 1. These orders are also connected with the establishment and development of design professions such as graphic design grew out of a concern for visual symbols, the communication of information in words and images; industrial design grew out of a concern for material things. Buchanan (2001) argues that designers have turned to two new places which are action and environment to reflect on the value of design in people's lives; according to Buchanan (2001), interaction design is

a domain and professional practice which has grown out of a concern for action. Buchanan (2001, p.12) states that 'the focus of design is no longer on material systems-system of "things"-but on human systems, the integration of information, physical artefacts, and interactions in environments of living, working, playing, and learning'. The fourth order is related with service design where focus is organising a system or environment. In a parallel way, Manzini (2011) describes how the object of design changed based on products towards events by the need of understanding dynamic and interactive systems better within the scope of human behaviour. Manzini (2011) explains this shift as the object of design turning into a process that occurs over time.

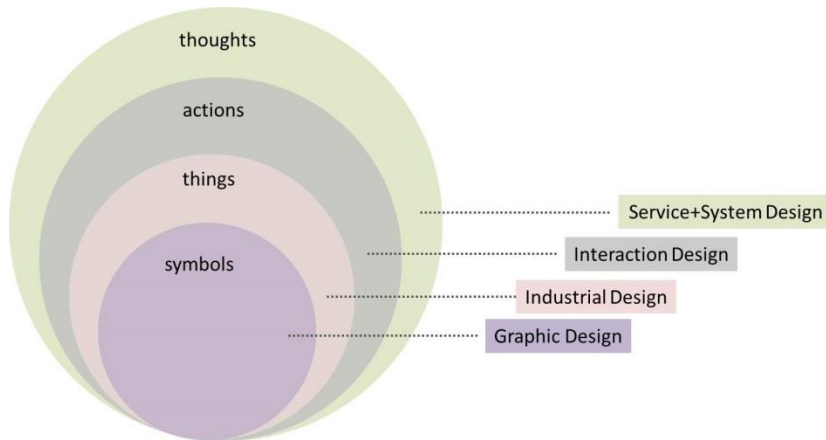


Figure 1 Four orders of design and their relationship with design disciplines. (Adapted from Buchanan, 2001).

Based on the definition of the Industrial Designers Society of America, Miettinen (2011) states that industrial design itself might be seen as a service that benefits users and manufacturers of products and services. Miettinen (2011) writes about Kone shifting its approach from focusing only on end-users and the products towards expanding its approach to the whole experience of people in a context together with their products.

In some resources, service design has been seen as a subset of design in terms of having a character that is based on designing interactions with technology (Moggridge, 2007; Holmlid, 2007) while in others it is seen as a part of marketing and operations management (Kimbell, 2011). In the same way, also Kimbell (2009) states that the emergence of service design

accompanies two developments in the way that information and communication technologies have changed the traditional outputs of design and in increasing attraction of design in organising production and consumption by the management discipline and profession. This emergence addresses the first way of understanding service design from the viewpoints of industrial design and interaction design practitioners as pointed out early in the paper.

Rittel and Webber (1973) point out that many problems especially involving social facts cannot be accurately modeled and an engineering approach to tackle with them would fail. Manzini (2011) claims that the nature of service design is un-designable since it supplies a background, a platform that can be changed, directed and developed by people. This characteristics is also related with the projections in society and economy. The very beginning of 21st century witnessed the emergence of a society and economy based on experiences, knowledge and services (Manzini, 2011). Especially the knowledge age has showed us new business models where stakeholders might have multiple models and create consume value by supplying a background or basic guidance where people can contribute in many different flexible ways (Brand & Rocchi, 2011).

## **The Research Method**

Because the topic of this study is mainly based on design practice, a set of 22 interviews with industrial designers and interaction designers were conducted in Sweden between 2011 and 2013. The interviewees are industrial designers and interaction designers who are not expert but related to service design and who have several years of expertise so to say senior designers working in design consultancies or large-scale corporations. This study is part of a wider research that attempts to find the viewpoints of design practitioners about service design field by asking open-ended questions ranging from the way they see industrial design, interaction design and service design practice, the design processes, the tools and methods that these three professions use, what these professions might get inspired from each other. In this paper, the scope is limited to understanding service design based on the explanations made by the interviewees.

The interviews put forward in this paper are not necessarily generalizable, but still might be seen in different contexts. Much of the empirical data for this research was collected through interviews with senior

level industrial designers and interaction designers. Many of the opinions here are designers' personal views on their understanding of service design rather than any commonly accepted patterns of this perception.

All the interviews were semi-structured. Conversational analysis was used to analyse and interpret the data gathered from the interviews. The interviewees have been promised to keep their anonymity and therefore they all are referred to a number.

## Service Design as a Series of Interactions and Experiences

Service design has a diverse nature in terms of broadness because it includes many interactions, interfaces, touch-points both at the front-stage and back-stage and all of them need design input. All these are designed by specific design practitioners with their own methodology and theoretical framework (Polaine, 2013).

First and the most common issue is that the interviewees mostly tried to explain service design based on examples. Explanations based on examples might lead to the idea that the interviewees do not have the idea of service design settled in their daily work life yet. Additionally, Kimbell (2009) emphasizes this way of explaining service design as well. A design manager having industrial design background explains service design by examples as such:

*That's probably one of my difficult ones. Service design for me is more an experience based design. I think it's a field of design that might draw information and also gets support from other fields of design to become the total experience. It could be that you design a service experience: let's say that you come to visit a hospital or a company and without anybody telling you anything you feel that you're not intimidated by the place you're in, the service information and the interior experience when you go there guides you into wherever you need to go, whatever services it is that you're expecting. There could be a number of different integrated systems in that; it's everything from information systems, interactive or dumb-as in just signs- but it could also be the different colour schemes inside a building that intuitively helps me navigate through the building to a specific place. For example in a hospital, it's something simple like following the yellow line to the x-ray department or whatever it is; that to me is a part of service design experience. But it can also be branded; then it*

*The Nature of Service Design by Industrial Designers and Interaction Designers includes the people who actually work there and the way that they approach you. So it depends on how big you want it to be or how small you want it to be. (Interviewee 2, 2011).*

Especially industrial design practitioners tend to compare the output of service design projects that the output is not only a product, but might consist of several products or even intangible ones and does not necessarily have physical outputs. This is in line what Buchanan (2001) and many other researchers have mentioned. An industrial designer explains service design from this perspective as such:

*For me service design would be more likely to see the whole concept; it's not about a product, industrial design is more about a product. Service design would be interested in for example if there is a hotel as a project, how to design the experience of people starting from check-in into the hotel going towards how the keys of the rooms would look like, how the rooms would look like etc. Everything is connected there to get an overlook of the experience, not so much connected to one product. (Interviewee 5, 2011).*

Some of the interviewees have background in industrial design and interaction design; they sometimes switch roles between being either an industrial design practitioner to an interaction design practitioner or to a service design practitioner. One of these industrial designers who works in a design consultancy and takes role as a service designer as well depending on the scope of projects in the consultancy describes service design as such:

*There is a lot research going around service design, but people haven't come to an end definition of this field, because it is rather new. I have the same definition with the book 'This is Service Design Thinking'. Service design is about getting the insights in the early research stages; going out in the reality-in the field to see what are the problems and needs of end-users of the service and taking these inputs to make a service better: more useful, usable, attractive, desirable-everything that you want the service to be. What I think unique about service design is that you take your insights about the customer and the end-user; you take the innovation methods and you put these things together and then you create something new with your design methods. You do this together, not in parallel worlds. I think a lot of companies still today, they do it separately. There could*

*be a development department at one end of the building and then there might a marketing department on the other side of the building; they don't work together as closely as you may think that they should do. You have to work closely and altogether when you work on service design. It's about improving existing services and making them better, but also creating totally new ones because you see a need for them. And a service could be anything... What is a service actually? It's like a black box; it's about touch points actually happening over a time, you can relate it to a timeline. When you're doing service design, you can't just look upon the time period during the service, it's also about the stage before using the service and also after using the service. You have to look upon the whole picture; you have to have a holistic view. (Interviewee 16, 2012).*

In a similar way, Kimbell (2009) states that services might be developed well by different departments by repeating the conventional divisions in management approach. On the other hand, in a service design approach all of the touchpoints and interactions with customers are accepted to consider holistically (Holmlid, 2013; Kimbell, 2009; Kimbell, 2011; Polaine, 2013; Sangiorgi, 2009). When we also look at the changing role of design, especially Press and Cooper (2003) points out that the way of working within design has changed from a more linear working process to an integrated approach involving customers and individuals from several different practices by giving a “baton” example saying that the product is passed from one department to another one and “rugby approach” in which specialists from each practices come together and have cross-functional integration (Press & Cooper, 2003, p.148).

As seen above, some of the interviewees especially emphasized about the necessity for interdisciplinary and close collaboration work for service design and mentioned how service design brings in all the stakeholders or actors in a service development project. Another designer who comes from industrial design background and recently has been expending her work towards service design as well and works in the combination of the three practice areas explains:

*I call myself both an industrial designer and an interaction designer- it might be a bit blurry. I mix the competences from both industrial design and interaction design. Also for the toolbox that I use when I work with service design projects, I mix these areas and I cooperate with other people. It's a bit difficult for me to apart those professions*



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as I do it within my own skills so to say. Service design is a professional area that you can work within or approach from lots of different professional backgrounds. What you want to reach in service design that goes beyond industrial design or interaction design is that you are very much interested in the fourth dimension which means time. Of course you're also interested in it when you work in interaction design and industrial design. You use a different mind-set and different toolbox; it helps you to separate the interactions between the person using a service, giving a service and dividing the perspectives. I think it's very much about the mind-set, the nomenclature and the tools that you use in service design that help to keep other perspectives on what you're doing. (Interviewee 15, 2012).

The nature of service design and the involvement of designers might embrace different types of innovation either radical or incremental; improving a given frame, doing it better or change of frame, doing what hasn't been done before (Norman & Verganti, 2012). Another interviewee who has a background in industrial design, but recently works in a managing level at an international design consultancy explains service design in two ways based on its character having either radical or incremental innovation:

*Service design is a tricky one. In my opinion you can define service design in 2 ways: I would define it as experiences that can service touch points. For example an app could be a touch point. So you have service products within service design. But then you also have the totally tangible service design projects-service design approaches. That's where you completely re-define service experiences. If you would be working for creating an ATM machine and you would be re-doing an ATM machine, that's more like a service design touch point because it's a service that has already been designed so you are improving it. Because it's always been there where complete service design project as it is in its ideal shape in my opinion is when you completely re-frame and re-understand an experience. So it's like a radical innovation compared to maybe more incremental innovation. So I would say that there are two ways you can approach to service design either as a complete re-think or that you are addressing experiences, touch points within a service and you're improving those. (Interviewee 3, 2011).*

Another industrial designer stated that industrial designers might learn to think about the whole life-cycle of a product before designing it, during the design process and after the design and development process getting inspired by service design. Additionally, some of the interviewees mentioned about the benefits that industrial designers might get from service design processes. One of the industrial designers states:

*Industrial designers could benefit from the service design tools and methods in the same way that you do in a service design project; you could use personas as well as customer journeys when you design physical products. When we have a product design project, of course we think about the customer and the end-user, but we don't create personas. If we could have made them, we could have remembered the target group and the needs properly; these things are easy to forget in a way. Especially when you talk with engineers, you discuss materials and production methods with them-you dig really deep into these questions. Then it might be possible to forget for whom we design this product. Maybe this would be a good way to remember and to have an objective discussion about what is a good solution and what is not. It's very easy to say "I think that we should do this because I like it" etc; not objective but subjective discussions. It's easy to go into that type of discussion and it's not good. (Interviewee 6, 2011).*

There are also some radical examples from industrial designers; some of them were not even aware of the field of service design and haven't heard of it before.

*I think you have to explain what service design is. I don't think it's a function we use in [the name of the organisation], I have not encountered it before when I worked as a consultant either, so for me it's a new definition. (Interviewee 11, 2011).*

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*Figure 2 The highlighted statements of the interviewees about seeing service design as a series of interactions and experiences.*

This way of seeing service design is very much connected with series of interactions and experiences and has similarities especially with interaction design apart from service touch-points and life cycle of a service. The highlighted statements of the interviewees about the way they understand service design is shown in Figure 2 as a summary. These statements are grouped according to their closeness with each other. Most of the interviewees approached this aspect of service design from the viewpoint of customers, not all of them mentioned the wide nature of service design taking in all the stakeholders, the client, the potential customers in the early in design processes. The interviewees who emphasized the wide nature of service design work in design consultancies, not in large-scale corporations. This situation might be related with not having worked with service design practitioners before or the viewpoint of especially industrial designers based on understanding the needs and desires of end-users while interacting with the product.

## Service Design Having a Strategic and Transformational Role in Organizations

In this research, the interviewees mentioned the role of service design as a transformational actor in organizations very rarely. Although the role of service design in this aspect was mentioned quite less, the cases and ideas about this topic are seen remarkable. Service design practitioners seem to have high potential to take roles in re-thinking about and changing the strategies and structures of organizations (Junginger & Sangiorgi, 2009). However, especially in an organizational mind-set change, service design might meet several resistances (Junginger & Sangiorgi, 2009). One of the interviewees gave an example of mind-set change of organization the interviewee works at in this way:

*Service design is the full offer. I would say the only hurdle is the organization for people to work within. The software development tools are very similar as well or even more lightweight. But you need to think about other things like platforms etc. and you also need to understand the business aspect as well. I think central to all of these is the scenario how people use the service; what is the scenario and what is the user journey basically. Recently I found myself talk about these in our meetings in the organization. Organizations like [the name of the organization] nobody understands why we wouldn't have it. Process-wise I see no problems, but there are issues communication-wise and organization-wise here. It's an organizational issue rather than a design process issue from my point of view (Interviewee 9, 2011).*

On the contrary, another interviewee who has a background in industrial design and interaction design explained about working with companies by having a transformative role for re-thinking about the resources and structures of the companies as a design consultant:

*We have been trying to look into how they [companies] could benefit from creative processes. And it has a lot of different aims for different people. But the main aim of the project is to try to match or try to find a way for the creative industry to meet the traditional industries like the steel manufacturing company for example. So my job has mainly been to first introduce what is a creative process and how could the company benefit from those. Then I try to make them take the next*

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*step by themselves to start thinking about and maybe change the way they work a bit; also let them know what sort of help they could get from a designer or from other creative industries. I think this process, how they use it and what they think of creative processes are very interesting. I wouldn't say design processes because they are only certain parts of the process that we are actually working with. (Interviewee 21, 2012).*

From the above explanation, it is possible to assume that the above interviewee had a role as a communicator and a facilitator of a process (Knight, 2013). Even though service design practitioners might meet strong resistances when working for organizational transformation (Junginger & Sangiorgi, 2009) as also pointed out above, according to the above interviewee's statements, it was pretty easy for the clients to get the designer's guide to approach to their organizational strategies in different ways and adapted themselves quickly to the new mind-set.



*Figure 3 The highlighted statements of the interviewees about their understanding of service design having a strategic and transformational role in organizations.*

The contradiction between the above two interviewees on service design meeting resistances in the organizations is remarkable; the first interviewee who works as an in-house designer at a large-scale organization argues about the organization-wise resistance where the latter who works a design consultant (being out-sourced by the client) stated that it was relatively easy

to work in a mind-set or strategy change in an organization. Based on this finding, it might be possible to assume that working as an in-house designer at a large organization might experience some resistances when the roles of designers are considered in terms of organizational transformation.

Figure 3 shows a summary of the interviewees' statements about their understanding service design having a strategic and transformational role in organizations. Since this way of seeing service design is not common among the interviewees of the study, the highlights are limited. Apart from all these, only one of the interviewees stated about the role of service design in public sector by giving an example on designing a public transportation system for a city which needs to have a huge budget. The same interviewee also emphasized that this type of public projects do not take place often since the budget for such types of projects would be too high and these type of structures do not change often. The interviewee found it difficult for service design to take place in such high budgeted public sector projects.

When we think about the examples of service design and public sector, these types of projects need collaboration of a wide range of stakeholders including governmental organizations and relatively a huge budget. That seems to be the main reason for not being knowledgeable about the role of service design in public services at least in terms of industrial design and interaction design practitioners.

## Conclusion

This paper explored how industrial designers and interaction designers have an understanding of service design as a professional practice mainly based on interviews with industrial designers and interaction designers who have several years of experience in industry. It provided an overview of service design by means of interaction design and industrial design practitioners.

In small-scale design consultancies, industrial designers move in-between industrial design and interaction design and even sometimes service design. In this type of context, industrial designers and interaction designers seem to be knowledgeable about service design. In corporations, the situation changes: Designers have fixed roles, some designers are not even aware of service design as a term.

The understanding of service design varies between industrial design and interaction design practitioners. It is common among the interviewees that services are understood in two ways: the first and the widespread

understanding is seeing services as a series of interactions and experiences while the second one is seeing services as having a strategical and transformational role for organizational change. Only one of the interviewees mentioned about the role of service design in public sector or social innovation which is not therefore pointed out in this paper. Very few of the interviewees, especially industrial designers mentioned that they have not even heard of the term service design.

Even though service design field has been expanding its role focus from a series of interactions and experiences to organizational change, sustainability, and public sector, the understanding of service design according to the series of interviews in this paper can be seen related with late the third order stage and early fourth order stage of design from the viewpoints of industrial design and interaction design practitioners based on the four orders of design put forward by Buchanan (2001).

The understanding of service design is very much related with how organizations make investments and adopt service design as a professional practice either in-house or out-source, as well as the cultural contexts of the environment in which it is performed. Interaction design practitioners tend to be more knowledgeable about the field of service design while the interviewees from industrial design practice do not. The reason for this seems to be because of having a relatively common approach, vocabulary and tools at some points. Moreover, it is also very much connected with especially industrial designers to keep themselves updated about the developments which affect their professions intellectually.

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— Chapter 5 —

**Thinking, Leadership and  
Impact**

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## **Section 5a: Design Leadership**

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# Editorial: Reflections on Design Leadership

Karen MILLER and James MOULTRIE

In the 21<sup>st</sup> Century, organisations, irrespective of size, location or strategic outlook and either profit or non-profit making face significant pressure to adapt through change in order to thrive in shifting environments (Drucker, 2007). Leadership as a consequence is critical as leaders catalyse change by envisioning an attainable path for followers (Bass and Bass, 2008). Leadership is positioned as a distinct activity from management; managers provide stability and order (Kotter, 1990). Leadership and management are complimentary elements in organisations and these elements potentially coexist in individuals (Miller, 2014).

For millennia, leadership has fascinated scholarly minds - Marcus Aurelius wrote *The Emperor's Handbook* while Emperor of Rome from 161 to 180 A.D., extolling the virtues of effective leaders, encouraging others to follow a specific path and use what Hicks and Hicks (2002) suggest translates as 'creative problem solving' (p.8). Therefore the basic premise of leadership has potentially remained virtually unchanged.

Basic concepts have transcended through, although not exclusively, transformational leadership and more recently creative leadership in mainstream research (Mumford, 2012). Research in the mainstream leadership field has burgeoned as the needs of organisations have diversified and multiplied (Avolio, Walumbwa & Weber, 2009). In the past year alone leading journals focusing on leadership including *The Leadership Quarterly* published over 200 peer-reviewed papers.

Yet, only four papers specifically focus on design leadership in this 2014 Academic Design Management (ADMC) in an Era of Disruption Conference. Even with attrition through the review process what does this reveal about the health of research into design leadership? Does this mean design leadership is moribund in practice? No, design leadership is active in the many organisations, but research is evidently currently focused elsewhere.

Historically this has not always been the case - pioneers in design leadership such as Alan Topalian established the territory back in the 1980s. But design leadership research has in contrast to, for example design theory, suffered from a lack of robust studies, relying instead upon what McDermott (2007) argues is personal experience and anecdotal evidence.

More recently there has however been discussion on the nature of individuals in design leadership positions (Miller and Moultrie, 2013), through empirical research in an attempt to bring greater conceptual clarity. In essence, design leadership in association with the diverse needs of organisations identified in the opening paragraph is recognised as a complex construct and this chimes with mainstream research.

Mainstream research adopts multiple approaches in an attempt to better understand organisational leadership and leaders (Avolio et al. 2009), and the four papers that feature in the ADMC 2014 conference design leadership track do indeed each follow different routes. All are however based upon empirical research and provide unique opportunities to advance our understanding of design leaders and design leadership.

The first paper by Han and Lam explores the characteristics of design leaders and their ability to communicate design to non-designers in the 'Fuzzy Front End' (FFE) of the new product development (NPD) process. Interestingly these authors investigated mainstream literature in order to generate a theoretical framework of leadership characteristics that was used as a foundation for the remainder of the study. Through a two-phase data collection process the authors initially studied design students engaged in NPD with non-designers through observation and interviews, and subsequently experienced design leaders through in-depth interviews. Both phases focused on the characteristics required to effectively engage with non-designers in the FFE.

The results reveal that experienced design leaders in contrast to design students, possessed key characteristics. Firstly, they understood the entire NPD process, secondly they either possessed or rapidly assimilated the capacity to 'learn non-designer language' thus engaging all stakeholders. Thirdly, these individuals actively listened and empathised with non-designers in the FFE stage of NPD and retained a flexible approach. Overall, these scholars conclude that design leaders have specific skills that enable them to operate effectively in situations of uncertainty.

In the next paper, by Lou, Southee and Bohemia, the focus is not on design leaders per se, but on design leadership through design-led NPD in Chinese SMEs. Chinese SMEs are, the authors suggest immature and splintered in terms of NPD, thus providing an opportunity to generate benefits for firms to advance process wise through this study. Here, the objective was to compare conventional and designer-led NPD approaches on the basis that in literature to date it is suggested that a design orientated NPD process may positively affect a firm's performance. Methodologically



the study was experimental in nature with two NPD groups working simultaneously in a single Chinese SME (producing own brand car accessories) over a 16-week period. One group used the SME's conventional NPD process model. The other group utilised a refined designer-led NPD process model developed by Lou et al. (2013).

The results of the experiment reveal that both teams produced new products, which the firm adopted for production and there were similarities between the processes that related to pursuing and developing new ideas. Thereafter, distinct differences were generated - using the conventional NPD process less of the team were involved and the authors use the term 'autocratic' to describe this effect. Whereas, the team adopting the designer-led NPD process were demonstrably more 'democratic' with numerous interactions and communication streams between team members. The designer-led NPD process team also took greater risks through experimentation. However, because of the nature of the designer-led NPD process more time was expended, hence, greater costs would be incurred. As a result of this study, the authors recommend that Chinese SMEs utilise both NPD approaches, using the conventional process for incremental innovation, reserving the designer-led model for radical innovation projects.

Gloppen's study takes a different tack by focusing on service design leadership in contrast to the two previous papers; service design is a rapidly expanding discipline, which deals with both tangible and intangible elements to provide value to both the user and provider. The focus in this research returns to an individual design leader level and here there are some interesting links with the research of Han and Lam. The research, which is a reflective personal study, explores a process of developing from a service design manager to a strategic level service design leader, which occurred through detailed involvement in the initial design, development and delivery of 'Flytoget' the Norwegian Airport Express Train. A subsequent stage of leadership development was affected through the revitalisation of the brand. The author clearly states that they do not have formally acquired design skills, but go on to argue that service design leaders embrace both business and design thinking to become 'T' shaped. Exposure to designers in multiple disciplines together with specialists in other fields in the service design projects allow these mindsets to be osmosed according to Gloppen. Here, a link may be made to Han and Lam's study, although from the opposite direction, as experienced design leaders listened and absorbed non-designers' inputs.

Methodologically the research was conducted through active participation in workshops and participative observations, which place the user at the centre of a complex project involving multiple stakeholders. The author's design leadership learning process was enhanced through understanding how knowledge was transferred, collaboration occurred and diverse capabilities were balanced in relation to the service design and broader teams; this resulted in being able to provide holistic and strategic design leadership to the Flytoget project. Gloppen concludes that non-designers with business thinking can develop design leadership attributes, through close collaboration involving knowledge exchange with designers and design thinking.

The fourth paper by Lee and Joo also focuses on the design leader described as the 'Design Executive Officer' (DEO). Essentially the DEO is a design-trained individual who operates as a CEO, in other words combining the role at an executive level. The study investigates how the DEO implants a 'design mindset into organizational culture' through communication with employees. The role is different to that of the Chief Design Officer (CDO) according to these scholars as these individuals report to a CEO. Also the DEO differs from a CEO using design thinking. The authors in a similar fashion to Han and Lam used mainstream leadership literature to derive three elements: vision, reward and empowerment that could be used to determine how effectively a leader communicated with followers.

In terms of methodology, the research was composed of a case study of Woowa, a Korean firm developing mobile applications (APPS) for food delivery. Within the case study data was gathered through interviews, observations and a survey of 100 employees. Most importantly, 'Brunswik's Lens Model' (1955) which is extensively used in other fields was adopted in a novel way to depict the similarities/differences between the DEO and the employees' perceptions of the DEO's messages in terms of vision, reward and empowerment. These messages in verbal and non-verbal forms were 'leadership cues' that took multiple forms providing the DEO with the opportunity to steer the organisational culture. Lee and Joo put forward the proposition that a DEO most effectively uses visual cues to communicate vision. By nature, vision is potentially the most challenging of the three elements to communicate to others. Consequently, designers as DEOs as result of this research are shown to offer a 'unique leadership style'.

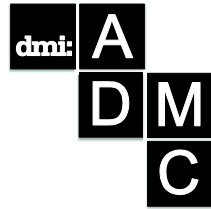
An examination of the four papers reveals interesting patterns with design leadership in its various forms (design leaders as individuals and designer-led processes), requiring someone with design understanding and

competence in a leadership role and this makes a significant difference to outcomes. What was also elicited, as a common strand in relation to design leaders, is that effective design leadership is contingent upon adept communication skills. From these papers it is evident that design leadership as a field deserves to move from its outlier situation and regain its position at the forefront of the research agenda. This assertion gains credence given the level of activity in mainstream leadership and the compelling needs of organisations in the 21<sup>st</sup> century.

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## Designer-led NPD Implementation Issues in Chinese SMEs

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*Design-oriented New Product Development (NPD) has been recognised as beneficial for company growth; however, there is limited reporting on the understanding of its effectiveness in a real-world context especially in Chinese SMEs. This paper aims to explore issues related to the implementation of designer-led NPD in a Chinese SME. An experiment was setup whereby two NPD teams were assigned to conduct NPD concurrently. One of the teams carried out the conventional NPD process model used by the company, and the other adopted the designer-led NPD process model. A metrics tool was built in the form of questionnaires for obtaining the views of the participants. Results indicate that designer-led NPD is perceived to be more inclusive of team member's views, resulting in what we termed a 'democratic' NPD. Although, it was relatively resource intensive as it required more time, it provided an opportunity for the company to produce a radical new product. This research is a single case study suggesting that the marketing performance of new products can be valuable for further understanding the effectiveness of designer-led NPD and that the long term effectiveness of designer-led NPD in Chinese SMEs requires further investigation.*

**Keywords:** *design oriented; designer-led; Chinese SMEs; New Product Development*

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## Introduction

Design has received increasing attention by researchers exploring in the management of New Product Development (NPD). Kristensen (1998) suggests that design should be institutionalized into the firm's strategic orientation, and that the firm's core values be infused by design ideas; while Perks et al. (2005) emphasises that design should be seen as process leader throughout the NPD process. Roper et al. (2012) discovered that companies where NPD displays design-leadership characteristics have better economic performance. These studies represent the increasing importance of design in NPD and suggest companies develop new product by implementing design-oriented NPD.

Design-oriented NPD is considered to be beneficial for company growth and survival (Perks et al., 2005; Roper et al., 2012). There appears to be potential benefit in bringing design-oriented NPD strategy to Chinese manufacturing Small and Medium Enterprises (SMEs). However, there is no consensus among researchers as to what constitutes design-oriented NPD. For example, Perks et al. (2005) thought it would be totally designer-led, and emphasis is placed on expanding designers' actions and skills set; while research conducted by the UK design council (2008) indicates the importance of design engaged pre-NPD work such as team building and internal competition. Whereas, Jang et al. (2009) proposed that design-oriented NPD should engage expert designers and use design to push technology development; yet, Acklin (2010) thought design-oriented NPD in SMEs should integrate design and other management efforts, and involve stakeholders in the NPD process.

Chinese SMEs are typically fragmented and adopt a rather immature approach to NPD strategy (Siu et al., 2006), and have less resources when compared with large corporations. These existing design-oriented NPDs, as outlined above, cannot be incorporated directly into Chinese SMEs, because these NPD strategies, having been initiated in the main by large companies, may not be appropriate for Chinese SMEs' NPD practice. Serious financial constraints (Wang & Yao, 2002) determines that Chinese SMEs cannot afford in-house training for designers as suggested necessary by Perks et al. (2005) or the securing of expert designers, high quality external design consultancies to facilitate collaboration (Jang et al., 2009); They also have to face a competitive market environment with "shanzhai" (counterfeit or imitation) behavior (China Daily, 2009). They are therefore unlikely to invest heavily in designs which have the potential to be

duplicated, or dedicate sufficient time to internal competition as recommended by the Design Council (2009).

Lou et al (2013) synthesized the impact of factors specific to Chinese SMEs such as counterfeiting and financial issues and their impact on the NPD process. Their research proposed a design oriented NPD strategy model specific to Chinese SMEs. To derive this design oriented NPD model, the research explored factors such as product characteristic, market orientation, speed and cost. The aim of the conceptual designer-led NPD process is to shift Chinese SMEs NPD strategy to incorporate design-oriented aspects (Figure 1).

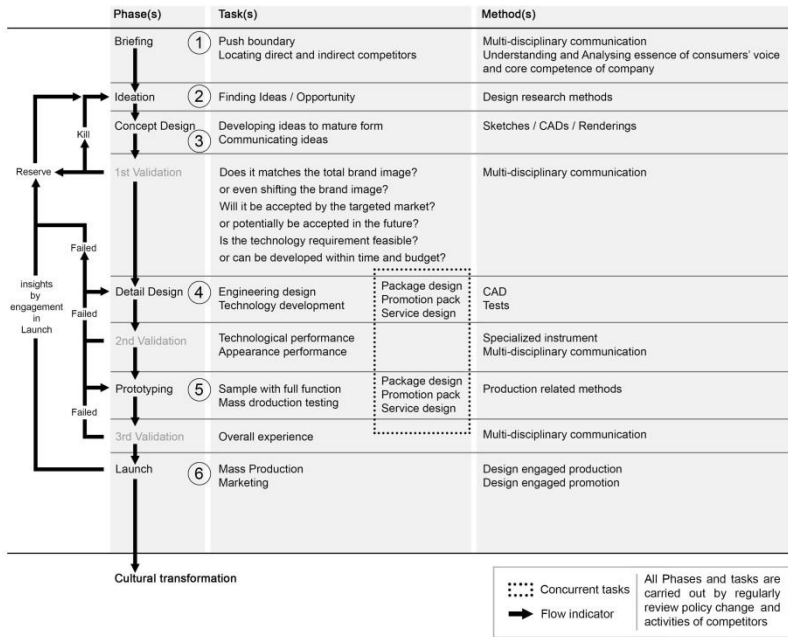


Figure 1 Conceptual designer-led NPD process model (Lou et al., 2013)

Distinct from existing NPD process models, this conceptual designer-led NPD process model evolved from the design process model commonly implemented in Chinese SMEs.

The Briefing phase was incorporated to offer an opportunity for designers to get involved in pre-NPD activities and work closely with the management team (see Figure 1, Phase 1). In the Launch phase (see Figure 1, Phase 6), designers are ‘permitted’ to engage in production and

marketing activities. The idea is to provide designers with an increased control of the overall new product quality and also providing them with an opportunity to gain insights of how design is mass produced. Also, the concurrent tasks, such as package design, service design etc. (see Figure 1, Phases 4 & 5) would run after engineering design, and concurrently with technology development and prototyping. The reason for this is to reduce the product development time. The next section will discuss process of testing the conceptual designer-led NPD process model and whether it can deliver advantages.

### *Company selection*

Owing to the nature of unknown and potential risks of making changes, personal contacts were used to select a company to undertake the research. However, the following characteristics were considered when selecting the target company. First, the selected company needed to be a small or medium size Chinese manufacturer and produce a product with their own brand: a number of Chinese SMEs are running as Original Equipment Manufacturer (OEM), they do not directly sell products to consumer but are contracted by other companies to manufacture products. Generally, it is the contracting company which is responsible for NPD process. Thus a company that is also responsible for the NPD process was essential. Companies producing products with their own brand would most likely undertake NPD. Second, a company that has experience of work with designers: SMEs which do not have experience of using designers would imply that this type of companies may see design as not important. It is hard to directly introduce the designer-led NPD to those companies and it may take a long time for them to incorporate design into their structure and processes. Thus, a suitable company that sees design as useful and better to have in house design team is essential. Third, company that has wants to make growth and willing to take associated risks: a conceptual model is mainly generated by synthesizing knowledge from literatures and theories, although there are some empirical data for constructing the conceptual model; however, it cannot assure its perfection, potential risks may contained and especially for the first time application, such as overestimate designers capability and contribution, unexpected mistakes etc. Fourth, NPD projects within appropriate complexity: the selected company must have NPD plan and not doing too complicated NPD project or too simple project. The complexity of NPD project may reflected by developing time. An appropriate NPD project time cost is up to 6 months. Fifth, a company that agrees relevant



information to be published in the way of literature. This is an academic research project, hence writing a report is a primary work of any academic researcher, and it is inevitable that the research information and data will be disclosed to others in academic purpose.

Three companies were deemed to be suitable for this research project. The one was a vehicle manufacturer and the other two manufactured vehicle accessories. All three were using designers within their NPD projects. However two of the companies hesitated to take part as they were unable to accommodate the research project schedule. The company left was seeking a new way of product expansion and accepted to cooperate and support the research project.

The selected company is a small enterprises located in one of the most manufacturer intensive city, Shenzhen, in China. It started as Original Equipment Manufacturer (OEM) since mid-2000s. In 2011, with the increase of national salary and decrease of profit margin, it registered a new trademark and the company transformed to become OBM (Own Band Manufacturer). On one hand, they play the role of supplier for other companies by providing moulding services and adaptor related technology consultant services, this accounts for about 87.4% of overall income in 2012. On the other hand, they sell products with their own brand since later 2011, which accounts for 12.6% of total income in 2012. There are about 55 permanent employees, while the moulding team takes over three fifth of all staff.

### *Metrics*

New product performance, for example the sales in comparison of former product and return on investment (ROI), is convictive evidence for company to understand the effects of NPD process by results. However, proper data of sales cannot be gained at this stage; therefore, before having the data of annual sales, effectiveness of the NPD process can be understood by three aspects. Table 1 summarized factors that applied in this research.

*Table 1 Factors for metrics*

New Product success factors	NPD process factors	Internal Factors
Product Advantage	Time	Employee productivity
Meet customer needs	Investment	workload
Technological sophistication	Risks & iterations	

Relevant NPD success factors were calculated for having the metrics. Product characteristic, market orientation, speed of development (Cooper, 1993; Cooper, 2001; Henard and Szymanski, 2001; Evanschitzky, et al., 2012; Parry and Song, 1994), and top management involvement, voice of the customer, well-planned and adequately resourced launch (Ledwith, 2000; Cooper and Kleinschmidt, 1995) are important for NPD success. However, some of these factors have almost no impacts for NPDs in one company with shared resources; therefore, these factors are separated into new product success factors and NPD process factors. The three items show in new product success factors are represented by the three aspects: (i) Product advantage is for gaining direct views towards the new product, (ii) meet customer needs is for gaining views in the eye of consumers, (iii) technological sophistication is for understanding the views in the point of competitors. NPD process factors are all for understanding objective factors, such as developing time cost, investment cost and iterations made in NPD process. Meanwhile, Staff commitment is critical for NDP success (Ernst, 2002; Brown, Schmied and Tarondeau, 2002), and this can be reflected by understanding staff productivity and workload.

## Methodology

There was about 16 weeks on investigating the implementation of the proposed designer-led NPD process model in the selected Chinese SME and evaluate its effectiveness in a practical context. The main method was making comparison with their current NPD process model in company. There were three stages of this research. The first stage was to develop an understanding of the current NPD process model of the selected company. At this stage, an interview was used to obtain initial information from the top manager about the NPD process used. The information was then correlated with archived information of a recently developed product coded as 'IG'.

During the second stage the conceptual NPD process model was optimised by seven staff members. These members were invited to a group discussion, four of them who were invited to optimise the conceptual model and then were selected to test the optimised designer-led NPD process model.

During the third stage the two NPD models were run in parallel. Two NPD teams were assembled with members having similar backgrounds and work experiences. One of the teams carried the current NPD process model

(conventional NPD team) and the other team adopted the optimised designer-led NPD process model (Designer-led NPD team). The execution of the two NPD processes was done in parallel and the two teams were kept separate to avoid any possible cross-contamination of ideas. An overall schedule, objective and techniques in each stage are summarised in table 2 below.

Table 2 Objective and techniques at different stage

Time	Objective	Techniques
Week 1-2	Understanding the current NPD process model	Interview with top manager Retrieve archive
Week 2-3	Conceptual Model Optimisation	Group discussion Recording
Week 4-13+	Concurrent Application	Observation Access internal documents

For further understanding the internal performance of the optimized designer-led NPD process model, members from two NPD teams were asked to contribute towards developing a post NPD measurement tool. The tool incorporated eight questions; each question in the tool incorporated a five likert scale, with -2 indicating negative and number 2 indicating positive score (Table 3).

Table 3 Questionnaire as metrics tool for understanding the effectiveness of two NPDs

Product Advantage	Will the new product be competitive against competitors' products?				
	-2(No)	-1	0	1	2 (Very much)
Meet customer needs	Will the developed product meet customers' needs?				
	-2 (No)	-1	0	1	2 (Very much)
Technological sophistication	How difficult will it be for competitors to copy?				
	-2 (Easy)	-1	0	1	2 (Difficult)
Time cost	Did the process take the time expected?				
	2 (Less)	1	0	-1	-2 (More)
Investment spent	Does the developing cost meet expectations?				

	2 (Less)	1	0	-1	-2 (More)
Risks & iterations	How much iteration was required in the development process?				
	2 (Little or none)	1	0	-1	-2 (Much)
Productivity	Has your contribution been as expected?				
	-2 (Less)	-1	0	1	2 (More)
workload	Have you spent more hours on the project than expected?				
	-2 (Less)	-1	0	1	2 (More)

The questionnaire were used as metrics tool to collect views of members in two NPDs teams; for avoiding insufficient understanding of NPD project, members from each team only fill questionnaires in judge of their own work in their own perspective.

### Current NPD process model

According to Siu et al. (2006), the NPD process in Chinese SMEs has four stages: ideas generation, prototype development, market analysis and testing, and commercialisation. Similar to their finding, the NPD process in the selected company had four stages, starts from ideation, for finding an idea or opportunity (see item 1, Figure 2); however, it was not conducted by a NPD team, but purely by insights of top manager or project manager. The second stage is development, there are four sub-stages in development process, firstly to investigate technological feasibility by reviewing existing technology and making tests, and then creating appearance and style by in-house designer or design consultancy. While the appearance assured, engineering design started by using Computer Aided Design (CAD) tools, and finally use production related methods for prototyping (see item 2, Figure 2);. The third stage is validation, to value the overall experience. Similarly to ideation, manager’s perspective determines whether it can be processed to launch stage (see item 3, Figure 2). In launch stage, product firstly be mass produced, and then the in-house designer contribute a package design to wrap the product before phoning distributors and doing online advertisement (see item 4, Figure 2).

Phase(s)	Task(s)	Methods(s)
① Ideation ↓	Finding Ideas / Opportunity	<b>Manager's accidental insight</b>
② Development ↕	Technological Feasibility <i>Appearance &amp; Style</i> Engineering Design Prototyping	Review Existing Technology & Tests <i>Inhouse Designer / Design Consultancy</i> CAD Production related methods
③ Validation ↓	Overall experience	<b>Personal perspective of Top Manager</b>
④ Launch	Mass Production <i>Package Design</i> Marketing	Production related methods <i>Inhouse Designer</i> Phoning Distributors / Online Advertisement

Figure 2 Current NPD process model in selected company

There is no failure of their current NPD process, because of top manager and project manager always set ‘safe objective’ with almost no risks: make little changes based on mature solutions. Bold writings in Figure 2 are activities execute by people from management; italic writings are activities undertaken by industrial designers. Industrial designers were only responsible for the appearance styling and package design. There is a review section while the appearance model/prototype was delivered to the project manager. However, the review focused only on the technical flaws. If any flaws were discovered then the design was return to the development phase (stage 2). Top manager provided the following reasoning:

*We produce power adaptors related products, functionality is much important than appearance*

Document of a former developed product coded as ‘IG’ was reviewed to understand their current NPD process (Figure 3). In the first ideation stage, top manager had an idea that to replace the non-transparent material inside the USB ports by transparent or translucent material, for having better vision of build-in LED. It was recognised as the upgrade version of car charger products in company, and then assigned a project manager to deal with this. Moulding technician within days’ tests and successfully replaced the material (see item 1, figure 3). Product designer made a rendering image, and passed it to engineering designer to accomplish the inside

structures (see item 2, figure 3). A functional prototype then was delivered to a manager, who tried and was satisfied with the product (see item 3, figure 3) it then moved to package making and promotion phase (see item 4, figure 3).



Figure 3 The 'IG', a recent developed car charger product.

In their current NPD process model and product development process, management plays key role and to some extent is autocracy. The management contributes ideas, and validates the outcome of ideas. Capability of design is limited to only styling, and package design are not seen as important for validate the overall experience. However, this way of doing NPD is comparatively low risks, because of most actions in their current NPD process is rely on previous experiences and mostly no challenges.

## Conceptual Model Optimisation

For further applying the designer-led NPD process model, the conceptual model was introduced and optimised. Seven staff members were invited to a group discussion, these included: top manager, one project manager, and two engineering designer, two technology specialists and one industrial designer.

Based on the conceptual designer-led NPD process model proposed by Lou et al. (2013), the conceptual model has been optimised; however, only elements associated with methods were modified. These modifications in figure 4 are highlighted in red.

## Designer-led NPD Implementation Issues in Chinese SMEs

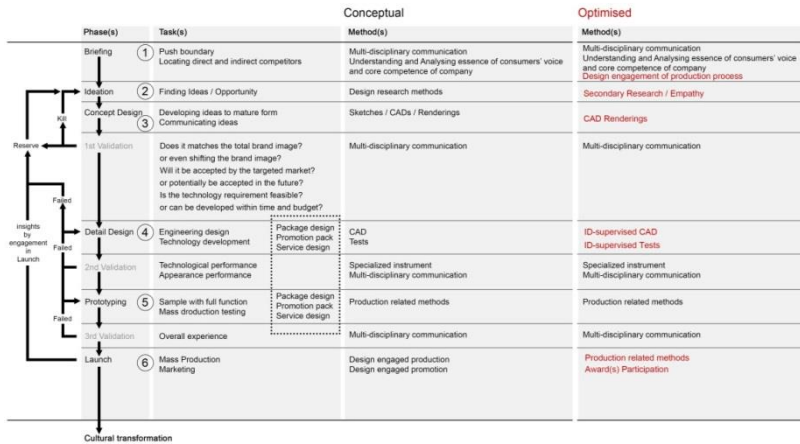


Figure 4 Modification of the Conceptual designer-led NPD process model

Design engagement in production process was moved from launch stage to Briefing stage (see item 1, figure 4). Rationale for having the Design engaged in production was to find insights for future NPD projects and to increase control of the product quality (Lou et al., 2013). However, Practitioners suggested that letting designers involved in production process to do quality control would not be practical. They argued that the technicians already try their best to fulfil the proposed tasks; and that the only benefit for designers engaging in production was providing them with insights of manufacturing process. Practitioners pointed that design can contribute to production, such as proposing good design or work with engineering designer's to simplify the production process; hence, detailed design activities were changed to be supervised by Industrial designer(see item 4, figure 4). Top manager stated that only low cost ideation methods are accepted, because of the limited budget. Therefore, ideation methods was limited to secondary research and empathy (see item 2, figure 4); Manager also pointed that the sketches from industrial designers are sometimes hard to understand without designers providing verbal explanation. They suggested that designers communicate ideas and/or concepts so that technicians and engineering designers are able to understand these from the drawings. Therefore, it was suggested that only CAD renderings to be accepted to represent concept designs (see item 3, figure 4). And design engaged in marketing activities and promotion were changed to awards participation (see item 6, figure 4). They proposed that

designers engaged in promotion or marketing is not needed, as there are already specialists to deal with consumer services. They suggested that the best way for design to get involve in marketing is to prepare document for awards, and win prizes.

## Concurrent application

Execution of the two design processes were in parallel by two independent NPD teams. These two teams were kept separate to avoid any possible cross-contamination of ideas. One of the teams carried the 'Current Conventional NPD' process (Conventional NPD team), and the other team adopted the 'Optimised designer-led NPD' process model (Designer-led NPD team).

### *Team assembling*

Each team consisted of four staff each having different expertise. The teams included: a project manager, a technologist, an engineering designer and an industrial designer. The aim for team assembling was assures each team to have members with similar backgrounds and work experiences (Table 4).

Table 4 Members' expertise and backgrounds

Title	Conventional NPD team		Designer-led NPD team	
	Tasks	Experiences	Tasks	Experiences
Project Manager	General management	6+ years' experience on marketing	Co-management	6+ years' experience on marketing
Senior Engineering Designer	Engineering Design, Prototyping	10+ years in manufacturing industry	Engineering Design, Prototyping	10+ years in manufacturing industry
Technology Specialist	Technical Solution	6+ years' experience on power adapter solutions	Technical Solution	6+ years' experience on power adapter solutions
Industrial Designer	Design	BA Industrial Design, 3+ year experience on electronics product	Design / Co-management	BA Industrial Design, 3+ year experience on electronics product



Each team included a project manager with marketing backgrounds, dealing with general NPD issues, such as: time management, sourcing of required parts, managing funding etc. Both technology specialists have over 6 years experiences on producing adaptor solutions and those two engineering designers both with over 10 years' experience and familiar with production process. Industrial designers in company were comparatively less experienced. One joined the company 18 months and the other is just about a year, but both have over 3 years' experience on electronic devices design. The industrial designer assigned to designer-led NPD was permitted to co-manage the NPD project with project manager as it was designer-led. This meant that the designer in designer-led NPD team had priority to make decisions and setting plans.

### *Schedule*

*Table 5 Timetable of Two NPD teams*

	Conventional NPD team	Designer-led NPD team	
Week1	Setting Goal	Find Goal	
Week2	Design Concept Ready	Internal Resources Reviewing	
Week3	Engineering & Technology Ready	Design Concept Ready	
Week4	Product Prototyping		
Week5	Preparation for launch	Engineering & Technology Development	Package & Promotional Files
Week6			
Week6+		Preparation for launch	

Owing to the fast-pace culture, both teams have very compact schedule for developing new products. The conventional NPD team set a 5 weeks fixed plan from having a goal to preparing for mass production. Similarly, the designer-led NPD team had a same plan till the industrial designer in team acquiring more time for adaption. Consequently, the developing time was extended and set with flexibility (Table 5).

### *Practical implementing process*

Two NPDs were carried out with different NPD models. These two models were reflected by two different practical processes. For the Conventional NPD team, they held seven steps; this can be seen in Figure 5. In the ideation stage, there was no method for obtaining ideas from team members, but only personal insights of the project manager. The project

manager tried hard to ‘think what should be improved as a user’, and concluded ‘a car charger with two USB ports and having different lighting colour’ as aim of this NPD project. The development stage included all process to materialise the idea: concept design, technological design, engineering design and prototyping. The design concept was a one-time work, with no iteration and rework, and successfully obtained satisfaction from the project manager. In the process of technology development, technology specialist proposed a solution that based on a previous Printed Circuit Board (PCB) and upgraded the process unit. Similarly, the engineering design was also a previous design work with few modifications. A prototype then was fulfilled by combining above works. The validation stage had two steps. Firstly, the prototype was accepted by project manager, and then it was passed to top manager to make further decision: schedule for mass production or lay aside.

	Practical Process	Contents
Ideation	Project Manager Setting Goal	A car charger with 2 USB ports and having different lighting colour
Development	Concept Design	
	Project Manager Review	Personal Satisfaction
	Technical solutions	Referring previous materials and making changes
	Engineering Design	
Validation	Prototyping	
	Management review	Management satisfaction and willingness for mass production

Figure 5 Conventional NPD team practical application process

The conventional NPD was effective and owing to most time-cost tasks were based on previous mature solutions, the developing time were significantly saved. Therefore, the conventional NPD team successfully accomplished the aim within the scheduled time on one hand. On the other hand, most decisions were determined by the project manager and top manager’s intervention at validation stage was crucial.

Different from the conventional NPD team, the designer-led NPD team firstly reviewed the production process for obtaining internal knowledge (Figure 6), and all members in team were gathered together to explored

ideas that could potentially compete with competitors' products. An idea that 'Design for precision' was proposed by reviewing the production process in meeting. Also designer mentioned that the new product should be much more powerful than competitors', and raised an idea of 'dual core'.



Figure 6 Designer-led NPD team practical application process

A gapless concept with dual core was proposed by industrial designer with consulting technology specialist in terms of the feasibility of dual core. Owing to the industrial designer was permitted to co-manager the project and also making decisions, obstructions from others was erased. He expressed a willingness of presenting his work to other team members and getting feedbacks. Consequently, changes were made during the group review of design concept: an extension was added for release the dual core power. In the technology development process, although the technology specialist in team mentioned the 'dual core' concept could be possible, but took quite a while for functionalization. Meanwhile, the engineering designer was trying to accomplish the gapless appearance without previous experience. And the packaged design was in process while other functions were on their tasks. Similar to concept review, the prototype in package was

presented to all members and also the top manager was invited for making comments.

However, although there were concurrently processes for doing tough tasks such as dual-core PCB and gapless body development, the time cost still more than expected, from scheduled 6+ weeks maximum time to about 10 weeks. For having an idea, the 'gapless' and 'dual core' are comes out at first week, the concept was ready at 2<sup>nd</sup> week, while there were changes made, consequently the finally concept was produced by the 4<sup>th</sup> week. The other 6 weeks were mostly used for experiments on creating the gapless body and combining two process units using one compact PCB. Although the final outcome was satisfied the stated project aims, the team experienced conflict between different members. For example, during the prototyping phase, the engineering designer complained that the proposed high quality standards specified by the industrial designer required changes such as amending CAD files and adjusts the draft angles. Industrial designer acquires high performance but in a compact space, this resulted more tasks for technology specialist to redesign the PCB. While the project manager considered it took too long for a new product and cost too much by paying material and testing bills. However, both the engineering designer and technology specialist though this product would be unprecedented. The 'dual core' for car charger was successfully applied the certificate of patent.

## Results by Metrics Tool

Result of metrics tool was collected and shown in figure 7 (-2 to 2 means from very negative to very positive). It shows that overall score of designer-led NPD team is lower than the conventional NPD team, it mainly because of extended time and cost on tests (Time cost, investment spent and risks & iterations are all marked below 0). Aside from that, it can be seen that staff in designer-led NPD team spends more efforts (Employee productivity, workload all marked more than 1) in NPD process and achieved a product that seems satisfied all members in team (Product advantage, meeting customer needs, technological sophistication all marked to max).

The current NPD process (conventional NPD) in company seems not tap all the potential of members in team (employee productivity, workload all marked 0 as usual), and indeed, members in conventional team once finished their job for the NPD and immediately move to new assigned tasks. In contrast, members in designer-led NPD team contribute all their working time on the single project, and even needed to extend the scheduled

timetable. Iterations associated risks, but not all. In this study, there were almost no iterations in the conventional NPD process, it do accelerate the developing process and saved developing time; however, there is no iterations are needed since they holed an ‘incremental’ view.

Project Manager	0	0	2	2	2	0	2	1
Project Manager	2	1	-1	-2	-2	2	2	2
Technology Specialist	0	0	0	2	2	1	1	1
Technology Specialist	2	2	-2	-2	-2	2	2	2
Engineering Designer	0	0	2	2	2	0	1	1
Engineering Designer	2	2	-2	-2	-2	2	2	2
Industrial Designer	0	0	2	2	2	0	1	1
Industrial Designer	1	2	-1	-2	-2	2	2	2
	Workload	Employee productivity	Risks&Iterations	Investment spent	Time cost	Technological sophistication	Meeting Customer needs	Product Advantage

■ Conventional NPD team  
■ Designer-led NPD team

Figure 7 Result of metrics tool questionnaires

## Discussion and Conclusion

Both new products developed by different processes were accepted by top manager and added to the production queue. Although the two teams followed different NPD models, the practical application process were similar to some extent. This related to the nature of developing new products, having an idea, develop the idea and market the idea (Kahn, 2001). In comparison of two NPD projects so far (Table 6), the conventional NPD team started by an idea from the project manager, and the outcomes were only validated by the management, less people were engaged in decision making process, it was an autocratic process to some extent. In contrast, group discussion took place several times because of industrial designer in team was permitted to co-manage the project, and he wanted feedbacks from others, it relatively is a democratic process. Members in

conventional NPD team conducted tasks mostly based on previous cases and experiences, thus the risk of NPD failure decreased significantly; rather than the designer-led NPD team set challenging goals, spent much effort and fund for achieving the goal, but there were no guarantee for success, all time and efforts may resulted profitable return, or nothing. The conventional NPD owing to its autocratic, there were less communications between members and consequently, less learn and impacts took place between members. Unlike conventional NPD team, designer-led NPD team had much communications and discusses because of industrial designer wanted feedbacks of their own work; meanwhile, took challenging objectives need well co-operation between members; therefore, learn and impacts between members were obvious.

Table 6 Differences of two NPDs in practical view

Conventional NPD	Designer-led NPD
Autocratic	Democratic
Experience Based	Aim for Challenge
Low risks	risky
Less internal impacts	Great Internal impacts

The current NPD process model in company is time saving, cost saving, it is a mature process for company to creating incremental products rely on previous experience. However, the success of new product relies much on the vision of people in management roles. Design in this type of NPD only in charge of styling and have less contributions and impacts on overall product, package design was seen as not important in this NPD process. They lost the opportunities of making radical products. The introduction of designer-led NPD process brought democratic atmosphere to company, they experienced the benefit of cross functional communications and faced challenges with passion; meanwhile, they were on the way of doing radical new product which like most large companies, to find challenges, face it and overcome it. However, the drawbacks are obvious. Designer-led NPD is a relative time consuming way for developing new products. Consequently, the extra time cost generates additional expenditures. Staff members involve in designer-led NPD would have limited time for doing other works because of the workload is relatively high. It appears that the proper way for SMEs to develop new products is mixed two processes: applying the conventional NPD process for developing incremental products, while using the designer-led NPD for generating radical innovations.

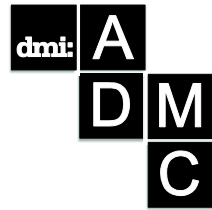
Two new products from these two NPD were added in production queue, this means outcomes were both internally succeed. External evidence are needed for making further comments of these two NPDs, marketing data of those two new products is a convictive evidence. In addition, participate awards is also a way to judge the outcomes of these two NPDs, and this was suggested in designer-led NPD process model, as way of letting design engage in marketing. Furthermore, it is worth to learn further actions of the company while the designer-led NPD process was introduced.

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## How a Design Executive Officer (DEO) Can Craft an Organizational Culture

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*Prior work on the topic of design leadership highlights its role at a strategic level and mainly focuses on the introduction and execution of creative activities across disciplines within an organization. Therefore, prior studies tend to delineate a Chief Design Officer (CDO) who manages and enhances design (or creative) activities. Different from prior work, we shed light on the corporate-level design leader, the Design Executive Officer (DEO) who instills a design mindset into the organizational culture. In the present work, we clarify a DEO by comparing it with a CEO and conduct a case study to establish its relationship with employees. In particular, we use Brunswik's Lens Model, a well-accepted psychological mechanism, to understand how a DEO communicates with employees. The present work contributes to the academic discussion on design leadership by introducing the notion of a DEO and its unique value in the business context. It will further assist designers to expand their boundaries.*

**Keywords:** Design Executive Officer, Chief Design Officer, Organizational Culture, Lens Model

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## 1. Introduction

The role of design is highlighted as a contribution to the strategic goals of business. In addition, along with the emergence of design thinking, the role of design has begun to cross business-dominant boundaries in order to solve problems that corporations encounter. The Design Council (2013, pp. 23-25) reports that, “design can add value to any [business] organization” in terms of “attracting customers, branding, work environment and culture”.

Thus, corporations seek to bring designers to the forefront of strategy development for their products and services in order to sustain their business; this is a prevalent claim in the design management literature and research. Non-design-oriented corporations call for design leadership in order to defy traditional sales-driven approaches and ignite transformation of their cultural DNA. Corresponding to this demand, researchers have made efforts to delineate implications in order to imbue design leadership within business organizations (Arnott, 2006; Verganti, 2003).

However, much effort focuses on envisaging features which will help business people to underpin design within their organization. Designers are still managed and ruled by a Chief Executive Officer (CEO). Although few CEOs might have some understanding of design principles and their value, most rarely appreciate design’s impact beyond traditional design territory. Jonathan Ive at Apple was able to continue to develop disruptive products and boost the company’s success with Steve Jobs’ endorsement of design and his vision of design. This successful case story of undertaking design faded without the leader’s support, i.e. since Steve Jobs passed away, people have noticed that Apple is not the same corporation anymore. From a different perspective, most designers cannot cross boundaries in advance without corporate endorsement. Despite the importance of the strategic and cultural role of design, in the past designers have had a propensity to confine themselves.

In contrast to the copious literature about design leadership for business people, this research starts with a conversation: “If a CEO were trained as a designer, s/he could run a company differently.” Therefore, this paper aims to identify the advantages of a CEO trained as a designer when crafting an organizational culture through an empirical study.

## **2. Theoretical Background**

### *2.1. Role of design in organization*

The role of design has evolved from making tangible things for a corporation to transform an organization into a design-driven, innovative, and strategically competent corporation (Baglieri et al., 2008; Cooper and Press, 1994). Corporations have sought to manage design as a process and have moved towards imbuing designerly ways – design thinking and acting – across organizational activities (Cooper et al., 2009; Poggenpohl and Sato, 2009; Jelinek et al., 2008). Design is now viewed as a source to enhance the value of intangibles: human, knowledge, cultural and technology capital (Mozota and Kim, 2009), “creative confidence” (Kelley and Kelley, 2014) and “strategic design” (Stevens and Moultrie, 2011).

Despite its highlighting in academia, the role of design in practice mostly takes place back stage, rather than early in engagement. According to a Design Council report (2004), design is mostly employed for outcome development and a creative thinking process: the appreciation of design is limited to outcomes and processes (adapted from Tether, 2005). On top of that, design is often eliminated or reduced due to the vulnerabilities and obstacles within an organization: the tension between marketing and design (Filson and Lewis, 2000), different appreciations of activities between marketing and design (Holm and Johansson, 2005; Bruce and Bessant, 2002), managers’ behaviour failures linked to inertia, risk aversion and myopia (Nesta, 2013, pp. 11).

Moreover, the Design Council (2010) reports that corporations have a propensity to build a design team in-house for the sake of cost-effectiveness. Within most corporations where there are no designers or design departments, a small department – marketing or brand – will collaborate with external design consultancies. This implies that most corporations do not have the chance to experience design.

Hence, Swann and Birke (2005) claim that fostering a design climate is essential to overcome the impediments to design and sustain a business with innovation. To disseminate design knowledge and build a design culture, Kutti (2009) argues that design knowledge can be transferred through three metamorphosis stages, from emergent-tacit knowledge to explicit knowledge and from explicit knowledge to traditional-tacit knowledge over time. He asserted that design knowledge cannot be obtained in one fell swoop but only through consistent design practice. Hence, collaboration with design/designers needs to underlie organizational

activities: collaboration flow for knowledge exchange between design and business disciplines (Ind and Watt, 2006), a collaborative learning mechanism (Davenport, 2009; Beckman and Barry, 2007) and design activities that contribute to and align with a strategic management domain (Stevens and Moultrie, 2011).

The efforts to build a design climate are mostly found in big corporations, such as P&G and Google. For example, after achieving corporate growth through empowering its design department, P&G started to revamp its organizational structure and relocate designers within non-design departments in order to let designers transfer their knowledge through daily routine activities; then designers can act as a catalyst to transform the culture and processes. Such efforts can result in better performance and productivity (Lafley and Charan, 2009).

To summarize, the role of design was limited to developing tangibles in the past but is now moving into institutionalizing an organization's design ways of thinking and acting. As design's role has evolved, the discussion of design leadership has also evolved from supporting design operations to seeing design as a cultural asset for an organization.

## *2.2. Leadership in business*

Leadership is a process of social influence in which one person can enlist the aid and support of others in the accomplishment of a common task (Chemers, 1997). Since leadership has a long history of research, a wide variety of definitions, measurement scales and research methodologies have been suggested in organizational behaviours. For instance, some consider leadership as a set of behaviours and try to identify broad leadership styles by evaluating the behaviour of successful leaders. Lewin et al. (1939), for instance, found that the management of group tasks performed by eleven-year-old boys in different work climates could be categorized as three styles: authoritarian, democratic and laissez-faire. In general, an autocratic leadership style is known to be the most effective one when the leader has more experience than the employees, whereas a more democratic or laissez-faire leadership style is more effective when the employees are motivated and have a similar level of expertise. Recently, even shared leadership was proposed, that is leadership that can be distributed among the members of an organization. It includes a process of influence that is built upon more than just downward influence on subordinates or followers by an appointed or elected leader (Yuki, 1989; Pearce and Sims, 2001; Pearce et al., 2009).

Although many leadership researchers focus on a single type of leadership and investigate its impact on a specific management activity, some aim to broadly cover different types of leadership (Atwater, 1988). In a seminal paper, Pearce and Sims (2002) examined the relative effectiveness of different leadership styles, whether vertical leadership or shared (horizontal) leadership is effective for change management teams. They designed a set of questionnaires to identify which leadership behaviours indicate which leadership styles out of (a) transformational, (b) transactional, (c) empowering and (d) directive. More specifically, questions under transformational leadership are about whether leaders provide a clear vision, direction and guidelines. Questions under transactional leadership are about whether leaders give rewards and feedback. Finally, questions under empowering and directive leadership are about whether employees have room for their own roles and responsibilities or if leaders assign them. In the present work, we combine (c) and (d) because these two leadership styles are strongly related to each other on the opposite side of an identical leadership style. Therefore, we decided to categorize leadership behaviour into three different leadership styles: transformational (vision), transactional (reward) and empowering (authorization).

### *2.3. Emergent role of a DEO*

Mozota (2003: 142) categorizes organizational strategic models of utilizing design into two modes: innate and acquired. An innate model accounts for a designer-entrepreneur starting from design disciplines, e.g. fashion, living, textiles, and furniture. An acquired model aims to valorize design through experiencing and learning it. That is, designers play a pivotal role in establishing and maintaining a business in the innate model whereas they play a role in transferring design knowledge through collaboration in order to lead a market and sustain a business in the acquired model. Since most corporations adopt the acquired model design, the designer's role needs to be considered in this context: designers disseminate what they learn from the development of new or innovative products and services into the organizational culture (Mozota, 2003). To make design proliferate in the business, an organization needs to employ two modes of designer thinking: leadership/strategic thinking and specialization/detail thinking (Cooper et al., 2009, pp. 23).

As illustrated above, most literature discusses designer's role or design leadership in the context of the innate model. Then, grounded in design(er) utilization, a design-acquired organization which has a different context

seeks to enhance its design activities and capabilities. Thus, most corporations find it hard to embed design into organizational activities. For example, by researching design-innate corporations, the activities for design are delineated thus: 1) assessing and starting new approaches to design, 2) connecting and coordinating design/business, 3) communicating design-fostering, 4) creative absorbing, supporting, testing and interfering, 5) strategic anchoring and stretching design, 6) capturing and protecting design assets and values (Jevnaker, 2000). From a design management perspective, design governance by the CEO is a competitive advantage and design governance by the chief design officer is a core competency (Mozota and Kim, 2009). This indicates that the designer's role is separate from the CEO's role. Such studies are still prone to confining the designer's role to a territory controlled by business-dominant disciplines.

Hence, for the design-acquired organization, design leadership at the strategic level is fundamental in gearing an organization to underpin design (Lee and Evans, 2012). According to British Standard 7000 (2008, pp. 14), a design leader also plays a different role at the organizational and individual levels:

- **Organization:** a trendsetter in design approach or style, or acknowledged to be at the forefront of design practice and performance.
- **Individual:** a person who takes the lead in design activities or is accepted as being the key authority who harnesses design expertise and infrastructure to exploit the full potential of design's contribution to an organization's performance.

However, studies of design leadership at the strategic level tend to delineate the features for a Chief Design Officer (CDO), who manages and enhances design (or creative) activities in practice rather than instilling a design-led mindset into a core culture. The CDO is often appointed to increase the success rate of new product development, and therefore their role and responsibilities within the organization depend heavily on the CEO's understanding and appreciation of design. Even well-known CDOs, such as Claudia Kotchka at Procter & Gamble and Jonathan Ive at Apple Inc., are strictly governed by their CEO's decisions.

There is an existing concept for a DEO. However, the concept does not stray beyond previous studies of leadership: 1) a CEO with a business background employs design thinking and disseminates what he has learned into the organization, 2) designers contribute to corporate growth through

objects and services designed, which enables a business to be sustained (Giudice and Ireland, 2013). In the former concept, the DEO is rarely highlighted as a means/enabler to defy traditional ways and trigger a move forward by amplifying the designer's capability to create affordance.

Thus, this paper develops the concept of a DEO, a new type of leadership combining innate and acquired models. Notably, this concept is proposed in order to expand the role of designer beyond its traditional periphery. It can be asserted that:

- The DEO can play the role of both CEO and design leader;
- The DEO can be defined as a CEO who is trained as a designer but establishes a company which traditionally tends to have an acquired model;
- The DEO can take on a role to build design as both a competitive advantage and a core competency: build the business as a CEO by thinking and doing as a designer;
- The DEO can take a role to build design as both a competitive advantage and a core competency, at the same time in a business, through designer thinking and acting;
- The CEO with design thinking finds it hard to undertake designer acting but the DEO has the capability to undertake both designer-thinking and -acting across organizational activities.

By suggesting the new concept of a DEO, this paper ultimately aims to identify 1) the characteristics of the DEO in terms of establishing a culture, and 2) ways of utilizing design.

### **3. Research methodology**

It is challenging to find multiple companies run by DEOs in non-typical design industries. We found only one in Korea, "Woowa (Elegance in Korean) Brothers". This company developed a mobile application (so called app) for food delivery services in 2010. Most app companies in Korea are run by engineers or businessmen. Interestingly, the CEO of this company was trained as a designer and worked for several web consultancies and an Internet search-engine company. While embodying the idea of app to deliver food, he was keen to develop the brand of the app by using a kitsch look and feel and humorous phrases. His brand philosophy is also adapted into the organizational culture (see Figure 1). As a result, Woowa Brothers achieved 77.3% brand awareness at a total cost of 74,000 dollars, whereas

similar services spend approximately 4 million dollars and only reach 38.8%. This app hits 10-million downloads for the first time in Korean app history.



Figure 1. Examples of brand direction: mobile app and organizational event

### 3.1 Research configuration

This research employs a case study as its research method using a mixed-methods approach – interviews, observation and survey – in order to scrutinize a phenomenon (case) and clarify how DEO crafts the organizational culture: i.e. explicate the relationship between a phenomenon and a context (Yin, 2014).

To build an in-depth understanding of the phenomenon, two interviews and observation of the company's infrastructure were conducted: an initial step was undertaken to build trust in terms of a preliminary stage in an unstructured way, and the latter was configured to understand how the CEO manages the company and his background in a semi-structured way. Subsequently, a company tour for observation was conducted. Afterwards, questionnaires for the CEO and the employees were developed in order to identify the DEO's ways of crafting organizational culture.

The questionnaire for the employees is threefold, grounded in the leadership illustrated in section 2.2, and has a general demographic part with three themes: 1) vision (transformational leadership), 2) reward (internal or physical motivational leadership), 3) authorization (employees' empowerment). Each section has one Likert-scale question and two open questions: one for any queries while the other asks the respondent to include at least one picture of an object, place or performance relevant to the question (See Figure 2 and the Appendix). Twenty-seven people from seven different departments took part in the survey (approximately 100 employees in total). The latter question was only asked to the CEO, asking him to include as many pictures as were applicable to the subject.



## How a Design Executive Officer (DEO) Can Craft an Organizational Culture

**Section 1**

Does the CEO have a company vision that is clear?  
No/Yes 1 2 3 4 5/ Other

What do you think is the company vision that the CEO had?  
(Please provide the year(s))

Please take and include at least one picture of an object, a place or an action that best reflects the company's vision.  
(Please provide the year(s) of the picture and/or please upload a picture to the survey)

**Section 2**

Do you think the CEO fairly and properly compensates/rewards/punishes based on job performance?  
No/Yes 1 2 3 4 5/ Other

How does the CEO compensate/rewards/punish based job performance?  
(Please provide the year(s))

Please take and include at least one object, place or action, which best reflects compensation/rewards/punish based on job performance.  
(Please provide the year(s) of the picture and/or please upload a picture to the survey)

**Section 3**

Does the CEO tend to delegate authority or provide instructions directly?  
No/Yes 1 2 3 4 5/ Other

How does the CEO delegate authority or provide direct instructions?  
(Please provide the year(s))

Please take and include at least one picture of an object, a place or an action that best reflect your thought on the CEO delegating authority or providing direct instructions.  
(Please provide the year(s) of the picture and/or please upload a picture to the survey)

Figure 2. Exemplar data received from employees

### 3.2. Lens model

In order to understand a unique leadership style as well as identify how it is communicated to the employees, we borrow a firmly established psychological research framework called the Brunswik's Lens Model. This research framework was originally proposed by Brunswik (1955) and further developed by Hammond et al. (1975). Brunswik argued that, because the external world is uncertain, psychologists should adopt a probabilistic approach to understand how people perceive, think, infer, predict, communicate and even learn others, most of which are discussed by psychologists in the Social Judgement Theory field.

Suppose that a woman tries to predict whether a man is nice. According to Brunswik's Lens Model, she makes a prediction based on the "lens" or multiple cues, such as whether he smiles at her, whether he speaks gently to his friends, and whether he wakes up early in the morning. As such, this model consists of three components: a subjective judgement made by the woman ( $Y_s$ : "he must be nice"), an objective judgement about the man or distal object ( $Y_e$ : "he is nice"), and multiple cues that are probabilistically related to both the subjective judgement and the distal object (proximal cues,  $X_1$ =his smiling,  $X_2$ =his speaking,  $X_3$ =his waking-up time).

Thanks to its intuitive mechanism and powerful application, Brunswik's Lens Model has been widely utilized by researchers who want to describe people's predictions or improve their prediction accuracy. For instance, it accounts for how people judge someone's personality (e.g., conscientiousness) based on his office (e.g. organized desk, good lighting, cheerful décor, and many books) (Gosling et al., 2002), how people perceive sexual orientation of another based on his hip-motion parameters (frontal, vertical, lateral) and shoulder-motion parameters (twist, side to side) (Johnson et al., 2007), how people form impressions about others based on the impressions about their websites (Vazire and Gosling, 2008). More recently, this model was even used when designers with different

backgrounds evaluate a series of new product concepts collaboratively (Petersen and Joo, 2012).

Although the goal of a judge is to make a judgement that is identical to the distal object ( $Y_s = Y_e$ ), this is not easy to achieve for two reasons. First, a distal object is related to its multiple cues in a probabilistic way (ecological validity); and second, a judgement is also related to multiple cues in a probabilistic way (cue-utilization validity). This suggests that there are numerous cases in which an incorrect judgement can be made. For instance, a distal object may give the wrong cues or not produce correct cues. Alternatively, judges may fail to identify correct cues or incorporate incorrect ones (Cooksey, 1996).

We believe Brunswik’s Lens Model can extend traditional leadership theory by incorporating a probabilistic property. The message generated by the leader (distal object,  $Y_e$ : “we *should be* creative”) needs to be communicated to the employees (judgment,  $Y_s$ : “we *might be* creative”) through multiple vehicles (proximal cues: “credo”). As elaborated, however, the leadership message may not be perfectly communicated between leader and employees. Although a leader aims to communicate the message to the employees through multiple vehicles, some messages may not reach the employees or the employees may receive incorrect messages.

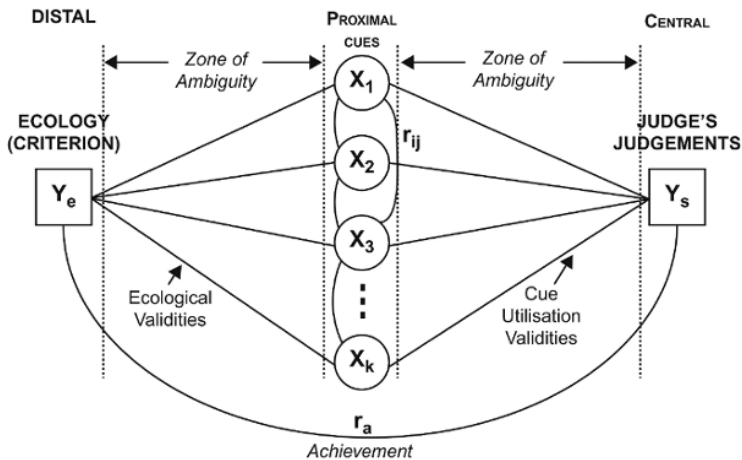


Figure 3. Brunswik’s Lens model adapted from Cooksey (1996)

## 4. Results

### 4.1. Interview

We interviewed the CEO and the director of People team (Human Resource Management) to determine the CEO's philosophy in terms of three themes. A brief summary of the interviews and observation is delineated below.

- **Vision (transformational leadership):** To achieve a consensus for a corporate vision, internal branding is vigorously utilized. Interestingly, even though internal branding is referred to as invisible branding, the tangibles – developed own typeface, brand products, posters etc. – are underpinned by the organization. The CEO intended to develop the brand for both external and internal communication.
- **Reward (internal or physical motivational leadership):** There is no financial incentive and formal evaluation system. The CEO does not refer to physical rewards as an incentive because he believes that a financial incentive system eventually hinders employees' motivation; instead, he described incentives as presents that the people team prepare to let employees feel cared for. To strengthen employees' bond with the company, the company keeps organising seamless events in which the employees take part.
- **Authorization (employees' empowerment):** The company has a strong hierarchy rather than a horizontal structure. The CEO is involved in most new projects, but after that he delegates authority to a team director to manage a project. Despite the hierarchy, the CEO is keen on horizontal communication: the CEO's office is in an open space and there are casual chats with employees etc.

### 4.2. Data Collection and Analysis

Next, we collected "cues" or vehicles in which leadership messages are carried. We asked the CEO to report as many cues as he wanted, and then asked the director of the People team to nudge all the employees to report up to 9 cues (3 different cues for 3 different leadership styles). However, we didn't force participants to repeat three different cues but did require that at least one cue be given. We encouraged them to report visual cues by taking pictures and providing a brief verbal explanation of each visual cue. Collecting data took about two weeks. In total, we collected 34 cues from

the CEO and 66 cues from 27 employees (or 2.44 cues per employee). The CEO reported around double the cues of each employee.

Note that this paper focuses on identifying how the messages generated by the CEO are communicated to the employees through multiple vehicles. We first investigated which leadership style is highlighted by comparing the percentage of the cues in each leadership category between the CEO and the employees. The CEO strongly emphasized vision (56%), followed by reward (32%) and authorization (12%). This pattern was not found among the employees. They distributed three leadership styles rather evenly: vision (27%), reward (39%) and authorization (33%), suggesting that many vision cues sent by the CEO are missing.



Figure 4. Leadership cues

Next, we categorized each cue into one of four different types of cue: object, object+place (place-attached objects), place and activity. Doing this helped us to understand which types of cues are the sources of discrepant understanding about leadership. We found that, first, place-attached objects are the most frequently used cues between the CEO and the employees and, secondly, the CEO relies too much on activities whereas the employees rely too much on objects. This suggests that, for the CEO, place-attached objects are effective cues whereas activities are not.

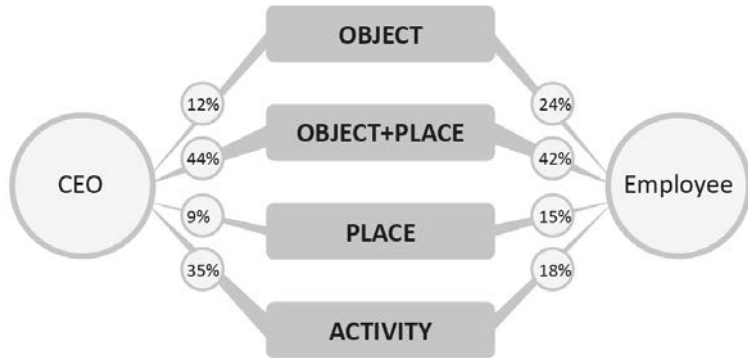


Figure 5. Leadership cues

### 1) Vision

In general, vision makes it challenging for the CEO to communicate with the employees. However, our findings suggest that objects are efficient cues to achieve this goal. Both CEO and employees use object-related types heavily: objects and place-attached objects (CEO = 84% vs employees = 73%) compared to place (CEO = 11% vs employees = 17%) and activity (CEO = 5% vs employees = 11%). Interestingly, the CEO distributes cues to objects and place-attached objects evenly, whereas the employees heavily rely on place-attached objects (56%). This suggests that the CEO can further increase his efforts to use place-attached objects when communicating vision to the employees.

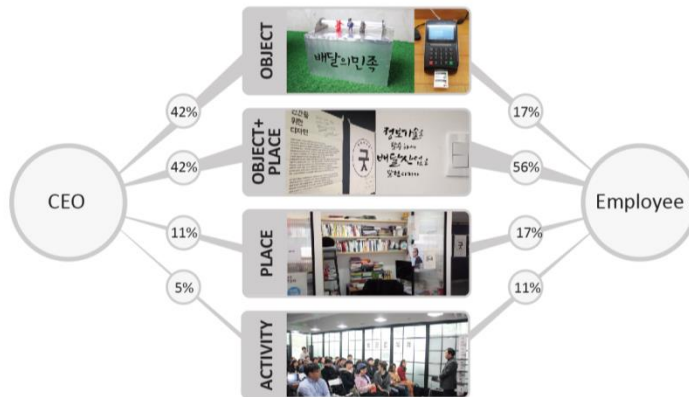


Figure 6. Leadership cues for vision leadership

### 2) Reward

When the CEO communicates rewards to the employees, he uses activities (73%) more than objects (9%), place-attached objects (9%) and places (8%). The employees receive reward messages mainly through object-related types: objects (31%) and place-attached objects (38%), followed by activities (23%). This significant communication gap suggests that the CEO’s activities may not reach the employees. Alternatively, employees mostly consider rewards as tangible objects rather than intangible activities.

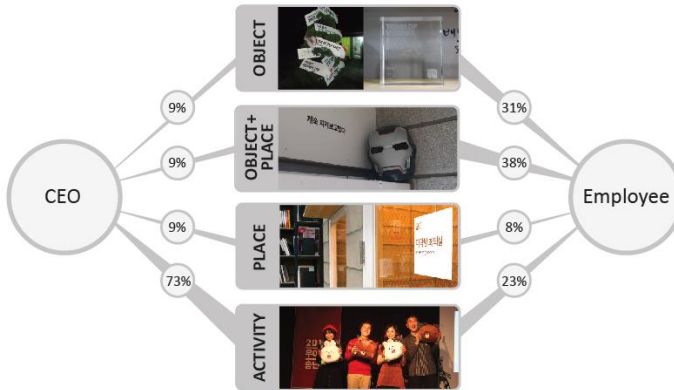


Figure 7. Leadership cues for reward leadership

### 3) Authorization (empowerment)

The CEO communicates authorization messages mainly through activities (75%) and objects (25%). However, employees receive them through objects (23%) and place-attached objects (36%), followed by place (23%). Once again, the CEO and the employees showed a significant discrepancy in authorization messages. Interestingly, the CEO does not even mention place-attached objects or places (0%) whereas the employees receive authorization messages through these two cues at 59%.

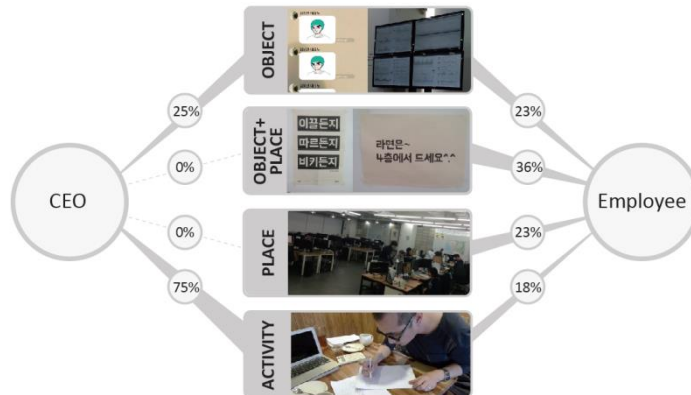


Figure 8. Leadership cues for authorization leadership

## 5. Discussion

We collected leadership cues from two parties, CEO and employees, in a company running successfully and then mapped them onto Brunswik’s Lens Model, a psychological framework often used in Social Judgement Theory. We found that the DEO utilized visual cues effectively when communicating leadership. We further identified that (1) a vision leadership was better communicated than reward and authorization leadership and that (2) objects and place-attached objects were more frequently cited visual cues than places or activities. Our findings also imply that there exists a fit between leadership style and cue style.

Our newly adopted research framework, Brunswik’s Lens Model, helps us better understand the designer’s unique leadership style because, different from typical business managers, designers often use a wide variety of visual cues. Since DEOs tend to think and communicate visually, this work benefits them in that the visual cues carrying their leadership messages can be fine-tuned.

In the future, we collect an equivalent set of data from another company run by a CEO. We expect that his leadership cues will differ significantly from the ones used by the company in this paper. We expect that, when a CEO runs a company, she communicates with the employees mostly through verbal cues (e.g. credo). We further expect that because of the unique features of verbal cues, many critical leadership messages may be

lost. This suggests that a DEO is superior to a CEO in terms of communicating leadership messages to employees.

## Appendix

### Survey questionnaire

#### Section 1

- 1. Does the CEO have a company vision that is clear? (Not Clear 1 2 3 4 5 Clear)
- 2. What do you think is the company' vision that the CEO has? (Please tell what you know.)
- 3. Please take and include at least one picture of an object, a place or an action that best reflects the company's vision. (Numerous shots can be taken, in which case, please add additional pages to this survey.)

#### Section 2

- Do you think the CEO fairly and properly compensates/rewards/punishes based on job performance? (Not Clear 1 2 3 4 5 Clear)
- How does the CEO compensate/reward/punish based on job performance?
- Please take and include at least one object, place or action which best reflects compensation/reward/punishment based on job performance.

#### Section 3

- Does the CEO tend to delegate authority or give instructions directly? (Give instructions 1 2 3 4 5 Delegate authority)
- How does the CEO delegate authority or give direct instructions?
- Please take and include at least one picture of an object, place or action that best reflects your thoughts on the CEO delegating authority or giving direct instructions.

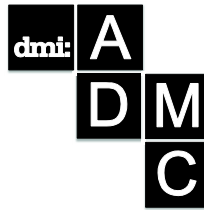


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# Characteristics of Design Leaders: Ability to Communicate Design to Non-designers in NPD

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*This study examines the key characteristics of design leaders in the context the of new product development process (NPD), especially during the Fuzzy Front End (FFE) or the early stage of the process. It focuses on how design leaders communicate design to non-designers. Increasingly, design has been acknowledged as a critical factor for NPD success. However, it is often observed that designers have difficulty in communicating design to non-designers. Previous researches and anecdotal evidence since the 1970s indicate that design leaders are effective design communicators. However, the definition and key characteristics of design leaders remain unclear. According to the comparative studies conducted with real-life NPD projects with designers, and in-depth interviews with design leaders in the UK, there are distinct differences between designers and design leaders in terms of attitudes toward non-designers, motivation, and communicating style. This study highlights key characteristics of design leaders, namely sufficient experience of the entire NPD process, a good understanding of design competency, motivation as having interest in people and all key stakeholders of NPD projects, and a reflective and flexible attitude with good active listening skills. The identification of these characteristics could help young designers who wish to become design leaders or to improve design communication and relationships with non-designers.*

**Keywords:** Design Leadership, Communication, FFE, NPD

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## **Introduction**

New Product Development (NPD) is a central business activity (Cooper & Kleinschmidt, 2000). A key challenge of NPD is how to delegate in an unstable environment to reduce the risk of failure either of the project or of the resulting product (Calantone et al., 2003). In particular, Fuzzy Front End (FFE) is the early stage of NPD and is seen as the period to create and activate ideas prior to the first official group meeting where it decides upon a new product idea and whether to develop the idea further (Moenart et al., 1995; Reid & Brentani, 2004). Owing to uncertainty at FFE, many companies fail to have clear product definitions (Khurana & Rosenthal, 1998). According to Brown (2008), the methods and sensibilities of a designer match people's needs, feasibility of technology, and visible business strategy to create customer value and market opportunity. Thus, design has been acknowledged as one of the key elements for business success, and its performance for business success has been evidently reported (Nussbaum, 2005; Bruce & Cooper, 1997; Design Council, 2005; 2008). Employing user-centred and informed design research methods supports the development of products and services from the beginning of the investigation (Mozota, 2003). Design is tailored to the various needs of different NPD. Perks, Cooper and Jones (2005) identified that, within NPD, the designer works as a functional specialist, an interdisciplinary team member and a leader.

Designers often face difficulty in delivering design to non-designers (Beverland & Farrelly, 2011; Montgomery, 2012), and different styles of thinking, working preferences and culture (Walker, 1990; Beverland & Farrelly, 2011) can cause difficult integration. This results in non-designers being in decision-making positions, a concept known as silent design (Gorb, 1987), and lack of resources constantly causes organisations to use design inappropriately. Consequently, designers do not gain sufficient confidence in business circles (Eckersley, 2003; Friedman, 2004). These issues of miscommunicating and misunderstanding design are anecdotally evident and academically reported. Researchers and practitioners have recommended several tools for improving communication: delivering design values by applying the Balanced Score Card (Borja de Mozota, 2006), using Persona to describe the lifestyle of the product's target market (Beverland & Farrelly, 2011), and employing a product strategy map and a visual mood board (Dumas & Fentem, 1996). Indeed, several researchers and practitioners have

repeatedly and commonly recommended that designers learn business language (Von Stamm, 2008; Fraser, 2006; Topalian, 2002).

However, some designers, competent in business language and communicating design, have been recognised as design leaders since 1970 (Topalian, 2002). Numerous researchers have identified that a principal activity of a designer is to envision a business objective turning into reality or to create an intangible experience. Design leaders are particularly good at envisioning the business directions (Roald, 2006; Turner, 2013). People in effective design communication rather than in roles of authority have been considered as having distinguished design leadership qualities (Nelson, 2003). However, it is difficult to find a designer who wishes to become an NPD leader and has business experience because designers usually tend to remain traditional style designers (Perks, Cooper & Jones, 2005). NextDesign Leadership Institute (2003) advocates a changing paradigm in design where designers need to be prepared to take on larger strategic responsibilities. Thus, Van Patter (2003) has warned that the design community will end up as 'a field of labourers'. Therefore, this paper investigates design leaders regarding:

- 1) How do they become design leaders?
- 2) What types of leadership do design leaders have?
- 3) How do they communicate design to non-designers at FFE of NPD?

## Design Leadership

*Design leadership* has been a buzzword for the last decade. Turner (2013) defines design leadership as a strategic value that makes a business plan and strategy tangible and visible, while Lockwood (2009) defines design leadership and design strategy as outputs of effective design thinking and design management. Similarly, other researchers and practitioners echo this definition at the strategic level (Turner & Topalian, 2002; Mozota, 2003). The Design Council in the UK has been promoting design to non-designers, and recently, the Council introduced a design leadership program that emphasises the importance of design for business success (Design Council, 2013).

Previous studies have explored design performance leadership as a global business resource (Lockwood, 2009), expectations of design managers for design teams (Lee & Cassidy, 2006), and skills of design leaders in the specific industry (Miller & Moultrie, 2013). These studies found that a design leader at a design-led company needs to be a visionary, a practice resource manager, and demonstrate strong design skills. Design team members expect a design

manager to be emotional, empathic, participative, representative, and charismatic. Thus, design leadership is identified as envisioning a future for design that includes managerial activities. This is in accordance with Kotter (2001), who mentioned that leadership and management are complementary because one function cannot survive without the other in the current economy. Similarly, project leadership requires both abilities. The abilities required are communicating project vision, creating the environment and direction, strong interpersonal skills and ability to engage the management culture's support, and integrative problem solving skills to apply them in multiple areas in related projects internally and externally (Cook & Tate, 2006; Pennypacker & Cabanis-Brew, 2003).

From the perspective of leadership studies, leadership does not have one universal definition (Avery, 2004; Bass, 1990; Stogdill, 1948). There are around 1,500 different definitions. However, a commonly agreed leadership trait via meta-analysis was self-esteem (Judge et al., 2002). Owing to different social, economic, and political environments, the definition has varied widely (see Table 1). Trait theories and classical theories, such as the 'great man' theory, focus on personal qualities (Carlyne, 1907; Gill, 2006; Kirkpatrick & Locke, 1991), and suggest that the major events in world history were led by members of the upper class who inherited extraordinary leadership abilities. However, the style of leadership depends on the situation. In the 1950s and 60s, scientific leadership, action-centred leadership in the UK and Blake and Mouton's (1964) Managerial Grid were popular approaches generating better productivity and efficiency in the manufacturing economy.

Due to economic paradigm shifts, various focuses on different types of leadership were researched, such as servant leadership, a business leadership concept developed by Greenleaf in the 1970s, which puts the leader as responsible to the followers (House & Mitchell, 1974). Developing leadership believes a leader will emerge as the needs of society, a group of people, or a certain situation arises (Bass, 1954). Transformation leadership is to meet a goal (Avolio, Bass & Jung, 1999). Transactional leadership is a traditional approach of rewarding followers based on their skills and abilities to handle tasks. Fiedler's contingency theory in the 1960s and situational leadership by Hersey and Blanchard (1993) are adjustable styles to meet the situation that leaders face. In other words, leaders change their styles in different situations.

In recent years, research has focused on a new style of leadership theory, such as visionary leadership (Sashkin & Rosenbach, 1998), charismatic leadership that has the complete trust of its followers (Bass, 1985; Ciulla, 1999), organic leadership, which mixes different types of leadership for better

outcomes for an organisation (Avery, 2004), and authentic leadership (Avolio at al., 2009), which aims to be more ethical and encouraging in sharing information needed to make decisions while accepting followers’ input. The organic leadership style is developed from transformation leadership. Avery (2004) indicated that the leadership studies tend to identify the importance of sharing value and vision and emotional support and to deal with multi-culture in globalisation.

Although each definition has shortcomings, they support each other. Recently, Dulewicz and Higgs (2003) proposed the competency leadership approach, which encompasses most theories to analyse skills and styles of leaders. They mention that effective leaders have competencies including traits, intellect, emotions, behaviour as problem-solving and management skills, adaptable attitude contingently in different situations, and charisma and vision from transactional and transformational leadership styles.

Theory	Key Idea	Researchers
Trait	Effective leaders exhibit common traits, leaders are born.	Carlyne (1907); Kirkpatrick and Locke (1991)
	Emotional intelligence has a stronger influence than intellect.	Goleman et al. (2002)
Behaviour or style	Effective leaders adopt styles and behaviour and leadership skills can be developed.	Blake and Mouton (1978 ); Tannenbaum and Schmidt (1958)
Contingency or emergence	Different situations need different types of leaders or the needed leaders emerge from situations.	Fiedler (1967); Greenleaf (1970); Hersey and Blanchard (1982)
Transformation & transactional	Leaders influence and develop followers and rewards. Most accepted theory in leadership with influence to develop related theories such as visionary, charismatic and organic.	Bass (1990); Bass & Avolio (1994)
Competency	Effective leaders have certain competencies such as traits, behaviour, emotions, and intellect. Different styles are better in different situations.	Dulewicz and Higgs (2003)

Table 1 Different types of leadership



While there are many different definitions of leadership caused by different perspectives, it is generally conceived as one person's action in leading a group of people to achieve a common goal (Avery, 2004; Gill, 2006; Vroom & Jago, 2007). Several researchers have indicated that effective communication is an essential component of effective management and leadership (Awamleh & Gardner, 1999; Flauto, 1999; Kirkpatrick & Locke, 1996; Snavely & McNeill, 2008). Pavitt (1999) and Madlock (2008) recommended that effective communication between leaders and subordinates is highly related to work satisfaction.

However, Vries, Bakker-Pieper and Oostenveld (2009) stated that although the core element of leadership is interpersonal communication, few researches have attempted to operationalise leaders' communication styles in their daily transactions with subordinates. By reviewing literature of leadership studies, the leadership process can be identified as: a leader applies leadership knowledge and skills to carry out a process, and uses their traits to influence the actions of others (Jago, 1982). Some design leadership research has focused on the definitions of design leaders in organisations and the positive business impact made by design. Thus, this research focused on exploring the characteristics of design leaders who can competently communicate design at the early stage of new project development.

## **Methodology**

Although most leadership researches have been conducted using positivist and quantitative paradigms, due to the nature of this research, which explores the characteristics of design leaders at FFE of NPD, it is more appropriate to employ a qualitative methodology. Qualitative methods allow a closer relationship between the researcher and the participants (Denzin & Lincoln, 1994), thus providing extensive and in-depth descriptions of a phenomenon (Geertz, 1973). Klenke (2008) proposed that qualitative research in the leadership study captures 'the subjective experience of leaders and followers, its slippery nature, and the local context in which leadership takes place'. To understand the characteristics of design leaders, this research included two studies designed to compare designers and design leaders.

## **Study one – Research setting**

A live case study with young designers at the early stage of NPD was chosen as the first study. The objectives of the first study were to identify

leadership styles of design students and how they communicated design with non-designers at FFE of NPD. The project was to create a concept for a learning centre, called U-Zine, a €12 million project of five hectares in Saint-Étienne, France. The aim of the learning centre is to be an academic, economic, and industrial realm that focuses on collaboration, innovation and teaching, and knowledge transfer. The brief given was to design user-oriented products. The place needs to have accessibility, flexibility, and service for knowledge transfer. Four universities (Brunel University, UK; Politecnico di Milano, Italy; Auburn University, USA; and Ecole des Mines, France) grouped together. There were thirty-two participants, with up to eight years of work experience. There were young designers from mixed disciplines and non-designers with engineering and business backgrounds.

The process of the program was conducted over four days and divided into two parts. For the first two days, all the participants were divided into four groups of eight to ensure that each team had a balanced mix of all disciplines and countries. For the first half of the program, they were given time to generate ideas. Each team had a facilitator, who led and wrote down ideas and concepts. Each team created 100 concepts. Then each team presented their project idea. The idea with the potential for further development was chosen by the facilitators. For the second half of the program, each group was divided into eight groups of four participants, and they developed the chosen concept further. In addition, they were asked to prepare a presentation at the Biennale Internationale Design Saint-Étienne. The project concept was presented to the public and the program participants.

## Research Methods

Direct observation and semi-structured interviews were the research methods employed to understand the characteristics of young designers and how they communicated design with non-designers and people from different cultures. Also, all programme participants including design and non-design students were asked to complete two different questionnaires. Adapting quantitative data is not for statistical significance. However, it aimed to provide an in-depth understanding of their leadership and behaviours from multiple perspectives. Understanding the real situation is vital for research initiation. Triangulating different sources of researched data to justify coherently different perspectives can be argued as the validity of the study (Creswell, 2009).

Questionnaires from the Leadership Dimension Questionnaires (LDQ) (Dulewicz & Higgs, 2003) and the Communicator Style Measure (CSM) (Norton, 1978) were adapted. LDQ from the competency school of leadership study (Dulewicz & Higgs, 2003) encompasses all the previous leadership studies of traits and behaviours because appropriate competency profiles may apply in different situations. After reviewing the literature on leadership studies, Dulewicz and Higgs (2003) identified fifteen leadership competencies, which were grouped into three main competence types: intellectual (IQ), managerial (MQ) and emotional (EQ). They also identified three leadership styles: goal-oriented style for low complexity projects, involving style for medium complexity projects, and engaging style for high complexity projects. The programme participants were asked to read the descriptions of the fifteen competencies carefully then rate the leadership competencies (Table 2) by assigning 3 for high, 2 for medium and 1 for low (Muller & Turner, 2007).

<b>Group</b>	<b>Competency</b>	<b>Goal</b>	<b>Involving</b>	<b>Engaging</b>
Intellectual (IQ)	1. Critical analysis and judgment	High	Medium	Medium
	2. Vision and Imagination	High	Medium	Medium
	3. Strategic Perspective	High	Medium	Medium
Managerial (MQ)	4. Engaging Communication	Medium	Medium	High
	5. Managing Resources	High	Medium	Low
	6. Empowering	Low	Medium	High
	7. Developing	Medium	Medium	High
	8. Achieving	High	Medium	Medium
Emotional (EQ)	9. Self-awareness	Medium	High	High
	10. Emotional Resilience	High	High	High
	11. Motivation	High	High	High
	12. Sensitivity	Medium	Medium	High
	13. Influence	Medium	High	High
	14. Intuitiveness	Medium	Medium	High
	15. Conscientiousness	High	High	High

*Table 2 Fifteen leadership competencies, adapted from Dulewicz and Higgs (2003) and the competence profiles of their three styles of leadership.*

Another questionnaire was the Communicator Style Measure (CSM) by Norton (1978), which was employed to compare the differences between design and non-design participants' communication styles. This questionnaire is self-assessed and consists of 51 items, of which 45 are scored using the

Likert-type scale. CSM has been validated as well as examined for reliability several times. CSM has been used in analysing a leader's communication style, such as: organisational studies (Snavey & McNeill, 2008; Sorenson & Savage, 1989); how humour functions in manager and subordinate relationships (Martin & Gayle, 1999); communicator style and managerial performance in complex organisations (Bednar, 1982); and occupational therapy students as a cross-sectional study (Brown et al., 2011). All data from the different research methods for the first study were triangulated for the validity claim of this study.

## Findings from Young Designers

Analysis of qualitative and quantitative data was conducted concurrently. First, the results of the self-rating questionnaire about leadership competency were not statistically significant. Overall, design students rated themselves higher scores.

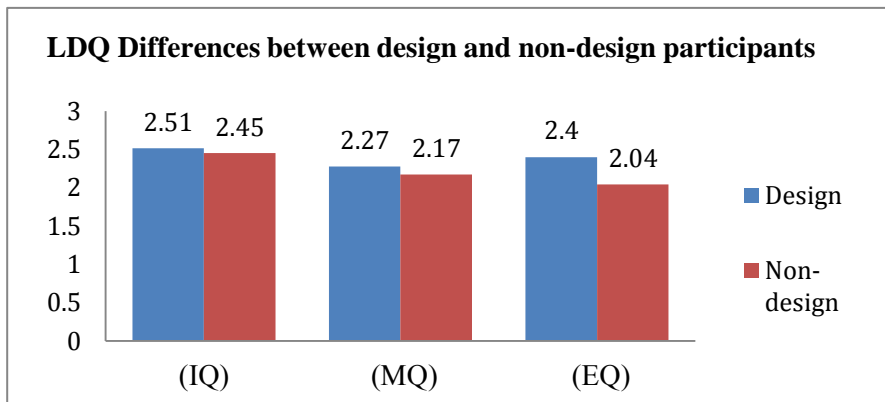


Chart 3 LDQ results of the participants

Non-design participants rated intellectual competency as more important than other competencies. Due to their lack of working experience, they humbly admitted that managing and distributing resources for NPD was difficult. This result illustrated that design students have slightly higher confidence in their leadership competencies than non-design students. The differential characteristics of both parties also referred to the result of the Communication Style Measure. Both design and non-design students shared a preference for communicating style, however, the ranks of preferred

communicating styles were different. The argumentative style of communication was ranked first by the design students, followed by the friendly style. In contrast, the first rank of communicating style preferences from non-design students was friendly and the second preference was attentive. These findings echoed with the observation results.

Design participants' favoured communicator styles				Non-design participants' favoured communicator styles			
First Preferences	Count	Second Preferences	Count	First Preferences	Count	Second Preferences	Count
<b>Argumentative</b>	<b>4</b>	<b>Friendly</b>	<b>6</b>	<b>Friendly</b>	<b>5</b>	<b>Attentive</b>	<b>3</b>
<b>Friendly</b>	<b>4</b>	Relaxed	4	Dramatic	2	Expressive	2
Attentive	3	Alternative	2	Open	1	Open	2
Dramatic	3	Attentive	2	Precise	1	Friendly	1
Expressive	3	Dramatic	2			Impression	1
Dominant	2	Expressive	2			Leaving	1
Precise	2	Impression	2			Relaxed	1
Friendly	1	Leaving	2				
Open	1	Precise	2				
		Argumentative	1				

*Table 4. Times of each category rated by the participants*

As reflected in the design participants' communication preference of argumentative style, their communication difficulties in sharing and developing project concepts were often observed. This is echoed with the results from LDQ (Table 5), where the design participants rated low in communication and self-awareness emotionally. In addition, the non-design participants also had difficulty in communicating their ideas and influencing the design participants.

During the observations and interviews, the designers seemed to be egocentric and jumped to solutions quickly. First of all, each team had a hard time understanding the project brief, as not only designers but also young non-designers showed similar traits. Most participants did not actively seek what to do for this project. This was caused not only by the language barrier but also by cultural and national differences and disciplines. Therefore, they

experienced friction in communicating ideas. Most design participants said that this multicultural group work was ‘a nightmare’. Designers tended to talk more about their ideas and concepts. Some design students on each team faced communication difficulties. The non-designer participants seemed to organise ideas from team members rather than insisting only on their own ideas. Their communication style seemed more attentive. On the other hand, it was observed that a few designer participants who had non-design work experience—such as marketing, insurance, and engineering—tended to have flexible attitudes and communicated better with different cultural and national participants. Most of them were emerging to lead their teams.

Leadership competences	Design participants	Non-design participants
<b>Highly rated</b>	1. Influence (2.75), EQ	1. Strategic perspective (2.7), IQ, and Developing (2.7), MQ 2. Critical analysis and judgement (2.45), IQ, and Achieving (2.45), MQ
	2. Strategic perspective (2.67), IQ	
	3. Critical analysis and judgement (2.58), IQ	
<b>Lowly rated</b>	1. Self-awareness (2.04), EQ	1. Empowering (1.5), MQ
	2. Engaging communication (2.08), MQ	2. Influence (1.75), EQ
	3. Resource management (2.21), MQ	3. Emotional resilience (1.95), EQ

*Table 5. Highly and lowly rated leadership competences*

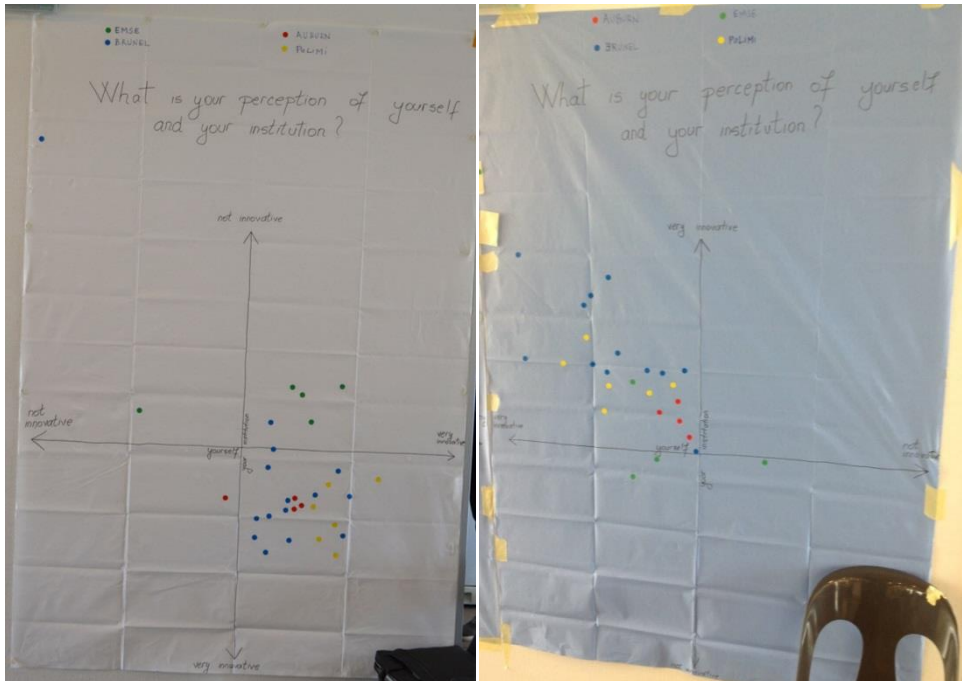
Second, most participants had difficulty adjusting to the new working environment. They admitted it was awkward to work with people they do not know well. Also, most participants were aged 25–33 and always worked with the Internet, and the facility provided limited Internet service. In addition, the project concept for each team was not decided based on an individual’s favourite concept in the team. This influenced them to create projects less productively and effectively. However, regardless of the facility or communication barriers and the lack of understanding of the project brief, designer participants were the most effective and productive participants in preparing visual presentations with the pressure of having a time limit.

Third, most designer participants who were studying business and strategy at the postgraduate level showed paradoxical behaviours. They said they knew how to apply strategies and marketing techniques but they did not use these methods to meet the requirements of the project brief. Throughout the

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multidisciplinary and multicultural group workshop for concept development, design participants commonly admitted that they wished to develop a better way of communicating their ideas to people from different cultures and different nationalities. Also, they realised that working personalities or leadership styles needed to be flexible and changeable. However, most of the students did not know what or how to study to acquire better communication and leadership skills.

One interesting fact was that their attitude and thinking can be influenced by their surroundings or guided environments. Prior to the workshop, the students were asked to put a dot on a map to determine how innovative they perceived their school to be. Four days later, most of the students changed the location of their dots from *less innovative* to *more innovative*. Though the schools had not changed over the four days, the participants' perspectives had been changed and influenced during this workshop (Figures 1 & 2).



*Figure 1 & 2 (Left: 1<sup>st</sup> day, perceptions of students and their schools; Right: 4<sup>th</sup> day, changed perceptions of students and their schools. Over the four days, the dots are moved toward more innovative from less innovative.)*

Fourth, the actual behaviour and attitudes of participants during the program and thematic analysis of their interview statements were sometimes paradoxical about self-awareness and their abilities in respect of communication and leadership. However, it indicated that young designers have difficulties in communicating design and have deficiencies in leadership abilities. Also, this study indicates that young designers can be easily influenced by given working environments and education.

## **Study two – Design leaders**

The purpose of study two was to explore how design leaders deliver design successfully to non-design members during FFE of NPD. To understand the characteristics of design leaders, semi-structured interviews were used. The interview questions were formulated based on deficiency in leadership and communicating design from the study with young designers and the literature of leadership studies regarding leadership qualities and behaviour at the early stage of NPD. The objectives of the interviews were to identify their motivation and career paths for becoming design leaders, characteristics of design leaders, and how they communicate design to non-designers at the early stage of NPD.

The sample for this was purposive and snowball sampling was used as a non-probability method, which is the selection of a small group of people to represent a certain type of person that meets the selected research criteria (Creswell, 2009; Gray, 2009). Eleven design leaders were identified for this study. The research interviewees were design leaders recognised by the UK Design Council. They were design associates from the Design Leadership Programme. Others were snowball samples who were recognised in the design sector as design leaders, design thinkers, and design strategists in the UK. They have experience of working in both corporations and consultancy. All interviews were face to face but one was conducted via Skype. Most interviews were between forty five to ninety minutes. All were recorded and transcribed.

Qualitative data analysis was supported by the Nonnumerical Unstructured Data: Indexing Searching and Theorising (NUD\*IST Vivo or Nvivo 10), a computer software for qualitative research and solutions. Nvivo was used to store and categorise interview transcripts and memos. Coding was created manually first, then organised through Nvivo. Thus, the interviews were initiated with open coding, then analysed thematically. A huge number of lower order categories of 155 from 617 open coding appeared initially in the coding process. For the fourth trial of clustering, codes were grouped with



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similar topics or themes into 28 categories. The codes at level 4 began to represent the specific characteristics of design leadership practice at the FFE of NPD. These topical codes were: 1) Group work, 2) Right team, 3) Strong self-awareness, 4) Interest in people and business growth, 5) Low ego, 6) Helping people, 7) Humble, not telling others what to do, 8) Understanding people, 9) Having confidence, 10) Self-taught, keep learning, 11) Diagnostic tool, 12) Lean, critical, creative, visionary thinking, 13) Selling your thought, 14) Fast analysis for vision, resources, aims, 15) Being objective and consistent, 16) Research-based, 17) Balance between intangible and tangible, 18) Design competency, 19) Design is a process, 20) Flexible (Leadership style), 21) Sensitive, influence of decision, 22) Acting as a GP, a solicitor, and a detective, 23) Observing, carefully listening, 24) Asking probing questions, 25) Not speaking in design terms, 26) Fine tuning conversation, 27) Explaining again and again, 28) Various experiences.

<i>Group of Level 4 codes</i>	<i>Level 5 Key Principal codes</i>
1. Group work; right team; low ego; humble, not telling others what to do	1, 3, 7 were merged as 1. Empathy (motivation)
2. Strong self-awareness; having confidence; diagnostic tool; selling your thought; fast analysis for vision, resources, aims; research-based	2. Independence
3. Interest in people and business growth; understanding people; not speaking in design terms; fine tuning conversation	
4. Lean, critical, creative and visionary thinking; design competency, design is a process	3. Design thinking
5. Self-taught, keep learning; flexible; sensitive, influence of decision; acting as a GP, a solicitor and a detective; observing, carefully listening; asking probing questions	4. Reflectively flexible (attitude)
	5. Active listening (carefully listening, analysing and asking probing questions)
6. Being objective and consistent; balance between intangible and tangible	6. Patience and consistency
7. Helping people; explaining again and again	
8. Various experiences	7. Epiphany: Experience of various types of work and a full NPD process

Table 6. 7 themes emerged from 28 categories

During the interview, the interviewees all mentioned that every design leader has different styles and characteristics. However, they have several common characteristics of leadership and similar communicating styles. This resulted in the emergence of common characteristics:

**Epiphany, a good grasp of the full NPD process and various discipline experiences:** Design leaders learned non-designers' language, information and culture by active listening. They explained that they realised they needed to learn active listening after experiencing the entire NPD process and working either in-house or in an agency, managing and running a company or working in non-design roles. This is reflected by self-leadership (Manz, 1983, 1992; Manz & Neck, 1999). Self-leadership explains how people can influence their own cognition and motivation so that it improves their behaviours (Bandura, 1997). Also, self-leadership indicates that people practise before the actual performance to avoid costly mistakes (Manz, 1992; Manz & Neck, 1999; Thoresen & Mahoney, 1974). Design leaders motivated themselves to learn how to communicate with non-designers. Most design leaders spent a certain amount of time (10–15 years) learning active listening properly.

*Several years in small consultancies, reinforcing the wrong view that designers are separate...The problem is that designers only relate to designers, as does anybody...there was one guy who was the corporate vice president of design. He was a very clever guy. He used humour, and he opened my eyes to the notion that designers are not automatically right...From that point, that is when I became more interested in design management...how different people see things (#7)*

**Empathy and interest in people and their business:** It is their motivation in having an interest in people, non-design colleagues or clients and business growth. Design leaders at the FFE of NPD claimed themselves as empathic leaders. To build a rapport, they deliberately do not use design terms to non-designers. Empathy is a central element of emotional intelligence (Salovey & Mayer, 1990, 1997). They acknowledge that NPD is a work with roles for a range of people, and design leaders believe different people need to be gathered together for positive results. Their positive attitude, combined with emotional intelligence, is related to authentic leadership (Avolio et al., 2004).

*We just think design is different, but actually, it is not any different (#1).*

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*If you do not build rapport, they are not interested in having you back (#4).*

*In some ways, that is just about the humans being interested in other humans and basic empathy (#9).*

*Always try to work with some sympathy and empathy with the people for whom you are designing. Put yourself in their place. Imagine how they feel and it makes you much more sensitive (#10).*

**Independence and confidence:** The early stage of NPD is known as the Fuzzy Front End because all of the information is unclear. Design leaders investigate NPD contexts objectively and holistically. This comes from the maturity of working experience, and it leads them to have self-confidence in leading and communicating their design from the accumulated experiences of the NPD success. Each one-third of the interviewees gained confidence after 10, 15, and 20 years of working experience. This trait is also echoed in leadership studies' literature and published articles.

*You need to link all design suggestions with business growth (#2).*

*I always ask how your business is first. I am not talking about design words at all (#9).*

**Design competency in the design thinking process:** Throughout this research, soft skills were essential at the early stage of NPD. However, this is based on an understanding of the full spectrum of design regarding the role of nouns and verbs and executing competent design abilities. Several interviewees mentioned that they were now more interested in identifying and using design properly for NPD direction than in the actual visualising and doing of the aesthetic part of the design. Sketching and other basic design skills are still important abilities to communicate effectively and efficiently.

*You can start changing things. What you are really trying to do is get them to understand how design really works so they can make decisions for themselves, rather than getting me to make decisions for them (#4).*

*It is still a very unrecognised (design leadership role)... I still have to explain to people what I do. It is not a readily recognised job title. You*

*will not find it in the drop-down box of job titles. It is still very unknown (#6).*

**Reflectively flexible attitude:** To enable design leadership characteristics regarding an empathic attitude, analysing NPD issues and design thinking at the FFE, design leaders strategically are reflective and flexible because every NPD has a different nature, such as a different aim, time, and budget, and involves stakeholders and players (Ulrich & Eppinger, 2012). Some design leaders appeared aggressive, and others had facilitative personalities. However, they were all reflective and flexible. Interestingly, all interviewees opposed egocentric attitudes. A reflective attitude successfully enables one to negotiate within situations of 'uncertainty, instability, uniqueness, and value conflict' (Schon, 1983). Researchers (Fiedler, 1967; Hersey & Blanchard, 1993) have noted that effective leadership depends on how favourable a situation is.

*I find I have developed an approach that means I will never speak to a customer, client, or business owner in my language but always speak in their language. So they understand from a business benefit's perspective, not a technical perspective (#8).*

*Being able to adapt the language for whoever the audience is (#11).*

**Active listening:** 'Two ears, one mouth'. Most of the design leaders learned the importance of listening carefully early in their career. To frame a meaningful challenge rather than responding to the given brief, listening and asking probing questions are vital. The attitude of reflective flexibility is enabled by active listening (Rogers & Farson, 1987). This also underlines the empathic attitude of serving others, which can be explained by the concept of servant leadership (House & Mitchell, 1974; Greenleaf, 1970). Design leaders strongly emphasised listening carefully and asking probing questions to uncover knowledge and information about NPD. FFE is the NPD period, where exploring, identifying NPD issues and deciding to either develop the project or not are required (Moenart et al., 1995; Reid & Brentani, 2004). Some learned this from various people or training, such as from a barrister, a board of directors, or empathic training courses. This is how most of them learned not only business language and knowledge, but also other disciplinary information related to NPDs. Some went on to get their MBA through the support of a corporation. However, the fundamentals of speaking business language came from mastering active listening.

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*Two ears and one mouth, you should listen twice as much as you explain (#6)*

*I think if you are sensitive and you have an interest, then you can learn quite a lot about the business side of things (#4).*

**Patience and consistency:** Although design leaders are not in a leadership position within NPD, their strong self-leadership characteristics enable them to conduct various tasks, such as actively listening, showing a reflective, flexible attitude, design thinking and conducting holistic context analysis of NPD at the FFE of NPD. They begin to fill a leadership role, and different leadership theories explain that an emergent leader is someone who plans to direct others toward a problem's solution among participants in an ambiguous situation (Bass, 1954). As authentic leadership emphasises supporting positive emotions and trust (Avolio et al., 2004), their design leadership behaviours build a rapport and confidence with non-designers. Design leaders lead through the authority of their communication, tasks and responsibility, not through their position (Turner, 2013).

Thus, design leaders at the early stage of NPD can be identified as empathetic people with experience in the entire NPD process and the ability to listen actively. They have reflectively flexible attitudes when it comes to understanding, communicating, and executing a design properly. Their leadership and soft skills, such as 'active listening' and 'empathy', are core design leadership characteristics and communication behaviours. Design leadership at the FFE of NPD does not belong to one leadership theory. However, the characteristics of design leadership at the FFE of NPD are explained partially through various leadership theories. Several researchers have identified that there are many different leadership definitions (Yukl, 1998). However, leaders for project contingencies need a distinctive set of leadership competencies (Turner & Muller, 2005, 2010). Leadership of design leaders and their behaviour and process of communicating design to non-designers at the FFE of NPD can be illustrated as shown below:

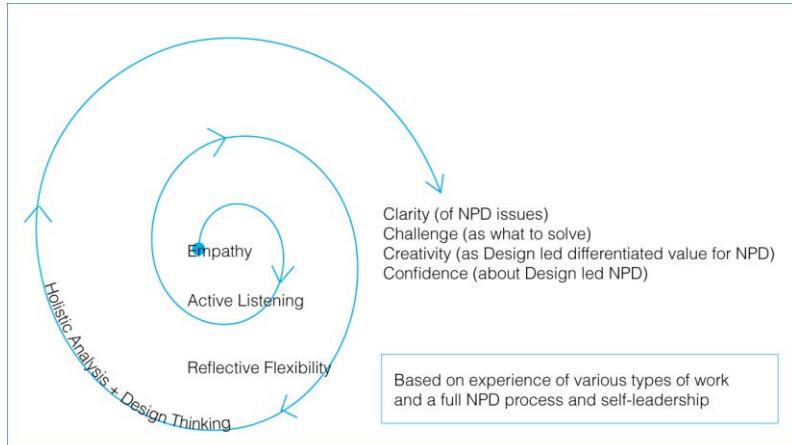


Figure 3. Conceptual model of design leadership at the early stage of NPD

## Conclusion

This research on the characteristics of design leaders who can communicate design to non-designers at FFE of NPD was initiated by identifying a gap, which is rarely researched. Although this research has limitations in investigating design leaders at a project level and at the early stage of NPD in the UK, it identifies key characteristics of design leaders that can increase the effectiveness in communicating with non-designers. Comparative researches between design students and design leaders identified distinctively different characteristics of leadership and communication behaviour. The interviews revealed that design leaders had epiphanies when they realised the importance of communication and appreciated what non-designers think about their design contributions. Subsequently, this motivated them to educate themselves to become design leaders. Thus, a conceptual model of design leaders at FFE of NPD is proposed. To fulfil the research questions, this study highlights key characteristics of design leaders at the FFE of NPD:

- Design leadership characteristics: Interest in people and involved stakeholders within business and NPD, Aiming for business growth first, understanding how design fits in NPD process, reflectively flexible attitude.

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- Their communication behaviours: Building a rapport, holistic analysis about NPD-related issues, active listening, willingness to explain repeatedly, showing examples for better communication.
- Becoming a design leader: acknowledging NPD is the work of different people, experiencing the entire NPD process, working in different sectors and organisations or in non-design roles, learning how to listen carefully to different non-design language, culture, and information.

Becoming a design leader takes time, and designers need to develop their fundamental leadership skills and design abilities and attitude. The identification of these characteristics could help designers who wish to become design leaders or to improve design communication and relationships with non-designers. During the course of this design leadership research, design students generally faced difficulty in group work and described the experience as a 'nightmare'. This result suggests that giving young designers opportunities to work in multidisciplinary teams is not enough to help them build empathy toward other disciplines and improve their communication skills. Design educators and lecturers should emphasise the importance of soft skills and perhaps include them as part of the assessment criteria. As a practice, this research indicates the abilities required and subjects that designers need to concentrate on within design schools and organisations. The limitation of this research is generalisability. Although this research was conducted with design students from different cultures and nations, it was mainly conducted with UK design leaders at project level only. Thus, further researches are recommended to be conducted in different countries and at different stages of NPD, which may require different leadership characteristics for design leaders.

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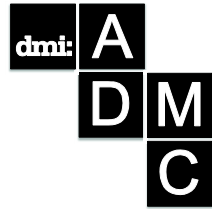
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# The Role of Service Design Leadership in Shaping Experience Oriented Organizations

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*Design has been argued to be of benefit to business and non-profit organizations beyond traditional use of design. However, in these organizations there are often a lack of knowledge and skills to engage with designers and an inability to see the relevance of design in design of services as well as in understanding the value of service design thinking on organizational behaviour, mindset, roles, and structure. This paper offers some perspectives that may help further frame an emerging understanding of how an experience oriented organization may benefit from a service design leadership role that bridges the potential differences in perspectives in business and design, while still taking advantage of the different epistemological perspectives in order to create value for the user as well as for the service provider. However, desirable and holistic service experiences do not materialize by simply adding design proficiency knowledge and approaches to the organizational knowledge, but rather as the result of a strategically managed process of integrating these diverse knowledge sets as part of a service design leadership role. Consequently, an individual learning journey towards developing a service design leadership approach is shared. Further, some organizational consequences of being exposed to the tacit and explicit knowledge of service designers are identified.*

**Keywords:** *service design leadership; knowledge building; user experience; service design*

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## Introduction

There is a rapidly growing interest of non-designers in leadership positions regarding the potential of exploiting service design, including how the explicit and tacit knowledge (Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995) of service designers can be transferred to, and benefit, service organizations. The term 'explicit knowledge' refers to knowledge that can be expressed in words and numbers, and which can be transferred formally and systematically between individuals (this may take the form of data, specifications, and/or scientific formulae). 'Tacit knowledge' is referred to as being more difficult to formalize and express as it is highly personal and includes intuitions, subjective insights, experience, and know-how.

Adapting design principles to business problems is becoming a focus of the management literature. In this context, it may be linked to the term 'design thinking' (Martin, 2009). There is a tacit knowledge aspect of design that is difficult to understand through verbal communication only. Consequently, to understand the value of the design process and the potential of the strategic use of design, one has to experience it. For non-designers, this experience may take place by working in collaboration with service designers as part of a design process to get a broader exposure to and a more enriched understanding of design methodologies. Thereby, a T-shaped knowledge platform (Bitner, Ostrom, & Morgan, 2008) is shaped and serves as a foundation for a service design leadership approach.

While it is a familiar concept that designers work for or with organizations, it is less well established within the literature of design and design practice how service design and service design thinking may have an impact on organizations and shape organizational behaviour towards a user experience oriented organization. This paper includes a case study on an organization that has done precisely that. The result is a strong brand that has great commercial success. A service design leadership approach is argued to be central for this success by focusing on desirable user experiences, which have resulted in achieving the highest score on customer satisfaction the last three years in a row.

Further, this study report on how the journey of leaders in service organizations who are transformed by their experiences at various cross-disciplinary service design workshops that take on a human-centered approach that put the needs and experience of the user at the center of the design process may be a catalyst for organizational change. One such change was the creation of new leadership roles, such as the introduction of



a role as responsible for the overall customer experience throughout the customer journey and across current organizational layers and silos.

We live in an experience economy (Pine & Gilmore, 1999), and design is key to creating meaningful customer/user experiences. At the same time we live in a world of complexity with a range of wicked problems (Rittel & Webber, 1973) in private and, not the least, public sector. Design can be a key to unpack these wicked problems, in close collaboration with other disciplines, and by being strategically managed at the intersection of design and strategic management.

The interest of service design is growing in business as well as in research. The design of services needs to encompass all levels of management and leadership in a service organization including at the project, business unit, and corporate levels. Researchers sometimes make a distinction between 'management' and 'leadership', associating management with fulfilling organizational goals and processes and leadership with playing a key role in evolving future strategies.

The aim of this paper is to contribute to further knowledge of the value of the strategic use of design and to better understand and capitalize on the role of service design leadership (Gloppen, 2012) in shaping service organizations that aim to offer desirable service experiences for the user, while at the same time create value for the service provider. The road towards a service design leadership approach is explored by literature review as well as by knowledge building by practice.

This paper is structured as follows; first, the term service design leadership is linked to design management and design leadership in the service sector. Next, an inquiry into the epistemology of practice (Schön, 1983) is presented and reflected upon in the form of a case study. Various examples of effects of synthesizing knowledge domains are offered. Finally, suggestions for further research are made.

## **Methods**

To broaden the current understanding of service design and the role of service design leadership, a mixed-methods approach has been utilised. This includes participative and non-participative observations of workshops as well as qualitative interviews. In addition, a situated understanding of the development of a large service design project, the case of the Airport Express Train – Flytoget – transportation service, was described, reflected upon, and to some extent related to literature. The background for this

approach is a belief that we do not only learn and build knowledge from our experiences as such, but even more so by reflecting on our experiences.

To reduce observational biases, I tried to be aware of what views I was likely to introduce in my observation due to my interests, expectations, and my own practical experience within design management and design leadership in a service context. Consequently, I tried to keep an open mind regarding the taking in of information in my perceptual observation process.

An explorative and reflective approach was chosen as service design, design management, and design leadership in a service context are dynamic, rapidly emerging fields, particularly in the role of shaping experience oriented organizations.

## **Service Design Leadership**

Service design leadership interlinks the discourse of design and the discourse of strategic management and leadership and sees design as an important part of corporate strategy and future experience vision development in service organizations (Gloppen, 2012).

Most researchers agree that both management and leadership are important to facilitate organizational performance and that these roles often overlap, although the degree of this overlap is still being discussed. Definitions of leadership differ in many respect but often address the role of the persons who are defined as leaders, the nature of their power and influence, as well as leadership processes (Yukl, 1989). Leadership may take on different styles and approaches. According to Haberberg and Rieple (2008), two main styles are transformational leadership and transactional leadership. Sternberg et al. (2004) argued that transformational leadership is just one of a number of models of creative leadership—transactional leaders seek to improve current practices based on the existing structure and culture, whereas transformational leaders will challenge the established ways of working. These differences in leadership styles have much in common with the three main kinds of creative leadership identified by Sternberg et al.: ‘... leadership that accepts existing ways of doing things, leadership that challenges existing ways of doing things and leadership that synthesizes different existing ways of doing things’ (2004, p. 145).

A definition of ‘leadership’ that takes into account a collective effort to meet future challenges is adopted in this paper in accordance with a definition by Yukl: ‘Leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and

the process of facilitating individual and collective efforts to accomplish shared objectives' (2010, p. 26).

The same kind of discussion of distinction between management and leadership can be made when discussing design management and design leadership. 'Design management seeks to position design as an essential part of business strategy' (McDermott, 2007, p. 84). In a Design Management context, a distinction can be made between design management and design leadership. Design management concerns the project level of operational management of design projects (e.g., the management of people, time, budgets, and processes). Getting the small things right is often what matters in design management (Olins, 1987). Design leadership concerns integrating design to enable corporate strategy, envision future scenarios, and encourage innovation (Lockwood, 2010; Topalian, 1997; Turner, 2013; Turner & Topalian, 2002).

Design leadership concerns 'where to go' while design management concerns 'how to get there' (Turner & Topalian, 2002). Joziasse (2011) has noted a shift from design management solving simple, discipline-specific problems towards design leadership addressing complex, interdisciplinary problems. A cross-disciplinary and holistic approach is typical in the design of services and therefore relates to design leadership. Although there are arguments that professional design training is important in order to be a design leader within specific fields (e.g. Miller & Moultrie, 2012), design of services often requires knowledge of a range of design disciplines. Therefore, in line with Joziasse, I take the position that one does not have to be a designer to take on a design leadership approach. I will argue, however, that a service design leadership approach calls for a T-shaped knowledge platform (Bitner, et al., 2008).

The term 'service design leadership' emphasizes design leadership rather than design management. Further, it draws on a transformational leadership style that challenges existing ways of doing things rather than a transactional leadership style. In terms of the creative leadership styles identified by Sternberg et al. (2004), service design leadership combines challenging and synthesizing existing ways of doing things. Service design leadership allows one to customize design leadership to the service economy so that strategic design management may better conceptualize and realize the design of services in shaping and effecting strategic, organizational transformation, and, indeed, success. The effect may be a leading position in the market.

Service design leadership utilize design in a strategic manner. The ‘strategic use of design’ draws on the understanding that strategy is ‘the set of actions through which an organization, by accident or design, develops resources and uses them to deliver services or products in a way which its users find valuable, while meeting the financial and other objectives and constraints imposed by key stakeholders’ (Haberberg & Rieple, 2008, p. 6). Thus, using design strategically means making conscious use of designers’ methods, skills, and approaches to create service offerings for experiences that customers value, thereby affecting the competitive position of the organization and its profitability.

Part of a service design leadership approach is based on Design Thinking. ‘Design thinking’ is a research area that includes how designers think and designerly ways of knowing (Cross, 2001; Lawson, 2006). Lately, the concept of design thinking has been extended to include ‘managing as designing’ (Boland & Collopy, 2004). This extended use of the term has been taken further by design practitioners as well as business scholars (e.g., Brown, 2009; Martin, 2009). Although this extension is discussed and criticized (Cross, 2010) by researchers and design practitioners, others see business value in the extended use of design methodology. A pioneer in this respect is Tim Brown, a professionally trained designer and CEO of IDEO, who argues that ‘thinking like a designer can transform the way you develop products, services, processes – and even strategy’ (Brown, 2008, p. 85). As a working definition in this paper, design thinking is about using the design methodology and approach to solve general problems in private or public sector, including strategy development and designing user-friendly service experiences.

The next section offers insight to the author’s road towards a service design leadership approach by synthesizing knowledge and practice from business and design, in order to develop, and deliver on, a stated user experience vision across the organization.

### *An Experience Oriented Organization*

In order to support the value of the role of service design leadership to create an experience oriented organization, I draw on my own learning journey as a design manager and design leader in a service project context; Flytoget – The airport express train. This is a deep dive into a case that may be argued to be a ‘best practice’ case for an experience oriented organization that place the user at the center while at the same time place great emphasis on return on investment (ROI). The reason for this argument

is that in April 2014 Flytoget received the highest score in customer satisfaction for the third year in a row, and with the highest score ever measured in the 20 years research period this kind of measurement has taken place in Norway. High customer satisfaction often relates to the experience a user has on both the functional and the emotional level. Service design leadership played a central role when establishing the service brand, when revitalizing the brand, and in defining the future customer experience when additional trains will be put into traffic in 2017. Worth mentioning is also that 2013 was the most profitable year for the organization, according to the managing director.

This project brought together people with competencies within design and business at the front end of the process of shaping a new and innovative transportation service that became very successful. Part of the service design leadership role was bringing in the right competencies within each relevant design discipline as well as working in close collaboration with leaders of different departments in the organization. These internal leaders were also included, when relevant, in the design strategy discussions. This enabled the design leader (the author) to take on a holistic perspective based on a synthesis of insight from external designers as well as from internal knowledge and competence. At the same time, the design leader, internal leaders, and external designers developed tacit and explicit knowledge that influenced the business strategy in the development phase and during the implementation of the strategy.

The transportation service Flytoget, launched in 1998, has created value both in terms of a positive travel experience for customers as well as financial revenue for the service provider. What lies behind this success? To partly answer this question, I concentrate on the value that the thought-worlds, knowledge, and approaches of the fields of design and strategic management brought to the process. However, first I start with a brief history, which is based on business documents as well as my notes and presentations during the service development process. The project presentation reveals my personal, and thereby biased, subjective perspective, as seen from a design manager's/design leader's perspective.

In 1992, the Norwegian Parliament decided to build a new airport as well as a new high-speed passenger train service connecting the centre of Oslo with the Oslo Airport, Gardermoen. The high-speed line was the first of its kind in Norway. The project had a difficult birth. It was politically controversial, and the media coverage was mostly negative during the building of the infrastructure. Also, the general public's expectation of

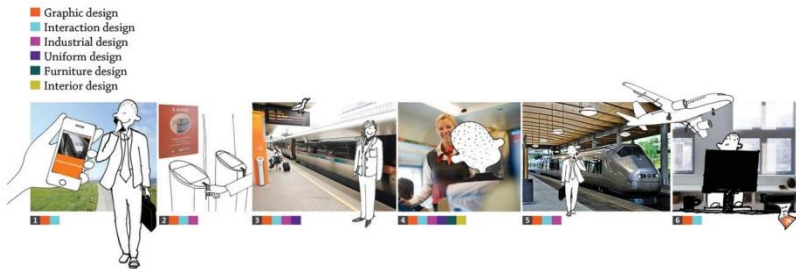
creating a new, positive railway experience was low. A new organization was established to implement the project. This organization was, however, fully owned by NSB—the Norwegian State Railway—and organized as a daughter company. The general opinion with the railway back in the 1990s was that it was inefficient, old-fashioned, and unreliable. The customers lacked trust in the service. Design of a new service brand, therefore, was essential from the new organization's point of view. Conflicts of interest arose between the owner (NSB) and the daughter company (the new organization) regarding the level of association with NSB and the new brand to be launched. The new organization wanted the brand to be perceived as an independent brand, with minimum association with the image of the railway at the time. In contrast, the strategy was that it would be associated with air travel, which at that time (1990s) had a more positive image.

Given this background, the new organization was first named NSB Gardermobanen AS. The first assignment was to build the new line. It was later decided (in 1996) that NSB Gardermobanen AS would also be responsible for operating the new service. The brand name was Flytoget (The Airport Express Train). Later there was a change of ownership from the NSB group to the Ministry of Transport and Communication in 2000. In 2004, the administration of ownership was transferred to the Ministry of Trade and Industry. Flytoget thereby has a state ownership but is run on a commercial basis. In the change of ownership process, the name of the organization was changed to Flytoget AS.

The design of the new service brand was highly influenced by the vision and strategy at every step of the innovation process. The vision was that Flytoget AS would be Norway's leading service company within the transportation industry; The Airport Express Train would be the air passengers' number one choice (to and from the airport) and a pride to the company's employees, shareholders, and the entire nation. The business concept was to be a reliable, efficient, and competitive means of transport to the new airport and to be regarded as an integral part of the airport. The brand positioning statement was 'Flytoget offers the most modern transportation alternative and is the superior, most effective, and safest way to go to and from the airport.' Also, the vision included the experience vision that the customer experience of Flytoget was to be perceived as a harmonious travel experience and as a natural part of air travel. Although an experience is always personal (Pine & Gilmore, 1999), design projects were executed with this kind of experience vision in mind.

The design manager was employed by Flytoget AS, but also had a close, formal link to the design director at NSB during the development phase. This situation led to many interesting discussions, as the design manager was also closely involved in the business and brand strategy as well as responsible for the design strategy for the new brand. The design strategy was built on the above business strategy and vision. These were the result of a range of stakeholders, including designers, working in close collaboration.

What would this strategy and vision mean in terms of design projects to be undertaken? The project encompassed a wide range of design disciplines in order to design terminals, the train, landscapes, interiors, uniforms, information systems, visual identity, and interactions (human–computer and human–human), to name some of the elements that were central to the design of the transportation service. There were no internal, or in-house, designers. As a design manager operating on a strategic level as well as on an operational level, I worked closely with the different design companies engaged for the various design projects. This involved coordinating and achieving professional design solutions efficiently and according to the Flytoget strategy. Also, to ensure that we were achieving a holistic customer experience, meetings were arranged between the various design companies, sometimes also including the architects for the train terminals and the new airport being developed. (I often felt like a spider in the role as design manager). In line with the airport design, the guidelines were to use wood, steel, glass, and stone. In addition, the guidelines included key words such as, distinctive character, coherence, environment, and aesthetics. A Design Guide acted as an inspiration for the different practitioners and other stakeholders involved in the process. At the same time, the guide established a common understanding of the identity and values of the brand Flytoget. This Design Guide, together with the joint meetings with designers and architects, ensured that the various development projects had a coherent identity. Below is a visualization of the strategy for achieving the intended customer experience at selected touchpoints before, during, and after getting to and from the airport. A range of design disciplines came into play in the process of designing the transportation service (see Figure 1).



*Figure 1 Flytoget – The Airport Express Train. The illustrations show selected touchpoints of the service journey before, during, and after making use of the transportation service. Various design disciplines that together contribute to the intended customer experience are specified at each touchpoint. Source: Gløppen, J. (2012 p. 26).*

The selected touchpoints in the illustration in Figure 1 of the Flytoget customer journey includes checking the next departure on the Flytoget App on a phone (picture 1). At the train station, the user swipes a credit card for ticketless travel (picture 2). The train leaves every 10 minutes from the train station in Oslo to the Gardermoen airport, as informed on the information signs. A service person, dressed in a well-designed uniform, welcomes you on board with a smile (picture 3). On board the train, the service person is available for questions. All seats face the luggage racks as well as an information screen notifying about possible changes in flights, the news, and other relevant information. The screen has no sound and the interior is decorated in light and delicate colours. The service person smiles and make eye contact (picture 4). Arriving at the Gardermoen airport, the traveller swipes the credit card at the turnstiles and goes by escalator or elevator directly to the check-in hall (picture 5). The receipt for the airport express train ticket is sent by e-mail and can be easily printed and included as part of one's travel expenditures (picture 6).

Designing a transportation service involves multiple design disciplines, customer- and experience centric leadership, and employee empowerment to create a service experience perceived as valuable by the user at every touchpoint during the service journey as well as from an overall perspective.

To ensure that the Flytoget experience was delivered according to the vision and strategy, a 'Flytoget Brand Academy' was set up that included brand awareness training for all employees. One important element in the training program was the attitude that keeping the trains and the terminals



clean and tidy was the responsibility of everyone working for the Flytoget organization, irrespective of their particular hierarchical position level or organizational silos.

In 2004, eight years after the design programme for Flytoget was developed and after six years of successful operation, it was decided to revitalize the brand. Success requires creativity and innovation within all the areas that together constitute a strong brand, which Flytoget had become. The desire to continue to be successful led to the decision to revitalize the brand at all levels. Design was only one part of this large revitalizing project, which included the actual service offering or service concept, the empowerment of the front-end service persons, brand values, leadership philosophy, vision, and strategy.

My role in this revitalizing project was as a project manager for the design-related projects in close cooperation with the commercial manager and the marketing manager. Unlike my first engagement with Flytoget as an employee in the development organization, in the revitalizing phase, I was hired as a consultant from the Norwegian Design Council, where I was employed after finishing my first engagement with Flytoget. Within the discourse of organization theory, these different situations for a design manager would constitute interesting further study.

The new vision became: 'We will create the ultimate Flytoget.' The values and main focus areas were effectiveness, innovation, and enthusiasm. While being aware of the value of the present visual identity to the brand, a decision was made to work with an open mind and look at several concept directions. Two groups with different competence profiles were put together. One group consisted of people who had created the original identity. The other group consisted of one graphic designer, a pair of two fashion designers, and one trend specialist. The two groups were asked to create two concepts each—one approach based on evolution and one approach based on revolution—including analysing the consequences for the brand. Taking into account the strong position of the brand, the concept based on evolution and incremental innovation was chosen. The evolution approach that was developed by the group of original designers was chosen.

The reason for focusing on this example is four-fold. First, it reveals part of my experience and practice in design management on the operational level and design leadership at the strategic level and how this has affected my pre-understanding of service design leadership (Gloppen, 2009). Second, on their 10<sup>th</sup> anniversary, Flytoget was rated Norway's best place to work in

the international 'Great Place to Work'<sup>75</sup> 2008 survey. This confirms the argument of Heskett et al. (2008) that there is a relationship between employee satisfaction and customer satisfaction. Third, it illustrates that most design disciplines are needed—and need to be consciously and coherently orchestrated by having a comprehensive overview, while at the same time being aware of the importance of the details—in order to design a service that is perceived as valuable by its users. Finally, shaping the service in the development process was influenced by a leadership approach informed by design thinking in the intersection of design and business competencies.

In line with Levitt's (1960/2004) view that organizations should see themselves in terms of broad industry orientation, from a strategy perspective, Flytoget saw themselves as in the transportation business rather than as a railroad company. The strategic choice of establishing Flytoget as an independent brand (Aaker & Joachimsthaler, 2000; Kapferer, 1998) was vital, as was the vision of a holistic visual identity (Olins, 1989) and the focus on the user experience when designing the service. The core values were about making it simple, easy, and effective for airport travellers to use the transportation service. Advocating a solution that did not make it simple, easy, and effective for the traveller would not only have conflicted with the design strategy, but also with the corporate strategy and values. The same kind of effect on the decision process did the experience value proposition have. The goal that the passenger was to have a harmonious travel experience resulted in that there is no sound from the advertising monitors in order for the passengers to relax. Another issue was to never have to worry about the luggage being stolen as all seats were facing the luggage rack, to mention just a few issues.

## Reflections

Some reflections on my practitioner experience in the role as design manager on the strategic level (design leadership) as well as on the operational level (design management) for the Flytoget transportation service includes different perspectives.

From a design perspective, the term 'service design' was not an established term when the Flytoget transportation service was designed.

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<sup>75</sup> <http://www.greatplacetowork.no/best/list-no-2008.htm>. (Accessed May 14th, 2012)

However, one can easily draw a parallel between the way of thinking when developing this new service, in terms of customer experience and value creating, and today's holistic understanding of 'service design'.

As part of corporate strategy, the use of design methodology in the process of designing a new service may influence the focus and direction of an organization, as was the case when developing the Flytoget transportation service. Part of the process of designing the holistic transportation service may be referred to as designing for service (Kimbell, 2011; Meroni & Sangiorgi, 2011). Part of the design process is about design of a service for an intended service experience.

From a design leadership perspective, a reflection is that several issues and decisions made a contribution to the success of the service project Flytoget. Two of them were the CEO's attitude towards design and the strategic decision to create a new, independent brand. The CEO of Flytoget had gained design experience from serving on the Lillehammer Olympic Organizing Committee. Although he had an engineering background and was not part of the design department or the marketing department, he had gained an understanding and knowledge about the value of design by working in an organization in which the design director enthusiastically influenced everyone involved in making the Olympic Games a success. This way, tacit knowledge (Nonaka & Konno, 1998; Nonaka & Takeuchi, 1995) was transferred. Indeed, it made the nation of Norway more conscious about the value of design (Birgit H. Jevnaker, 1995). In addition to the CEO, the human resources (HR) manager at Flytoget as well as myself, also had experience from serving on the Lillehammer Olympic Organizing Committee. At the time when the design of the Flytoget as a service brand took place, it was rather unusual in Norway to employ a design manager to perform design leadership (the strategic level) as well as making sure the design strategy was implemented according to the strategy in every detail (the operational level). (This still is unusual in Norway, as a matter of fact).

From a service design leadership perspective, the overall perspective was achieved by drawing on knowledge and approaches from both business and design and by viewing the transportation service from an overall perspective as well as zooming in on details. This formed the basis for my thinking about further developing a service design leadership approach that was informed by design thinking as a resource for the organization. Close collaboration between leaders in different departments, designers, and architects took place during the total development process until the train service was launched. This collaborative way of working was organized and

led by the design manager who adopted a service design leadership approach and who made sure that everyone understood the importance of their role in achieving the vision of an overall service experience offering that customers would value. The principles of service design were used, although the term as such was unknown to the people involved in designing the service that was launched in 1998.

In developing the service offering, design and design thinking were used on the operational and strategic levels, respectively. Professional designers and leaders in the Flytoget organization complemented one another's strength and compensated for each other's limitations. They learned from each other in their efforts to reach a common goal of developing a new transportation service. Being part of the team, my reflection is that my personal learning and what we experienced as a team was in accordance with what Senge (2006) described as a 'learning organization.' Also, as a team, we moved along a continuous knowledge spiral (Nonaka, 1991; Nonaka & Konno, 1998), which, I believe, will be an important element in the future direction of education within design and business as well as in future design-influenced leadership. In terms of service design leadership, the combination of knowledge, skills, and methods from design and business was synthesized to optimize the service offering according to the strategic foundation mentioned above.

Obtaining high scores on customer satisfaction demands continuous innovation and creativity on the individual level as well as the organizational level (Amabile, 1988, 1996). In relation to customers perceiving the Flytoget service as innovative, everyone in the service is encouraged to use their creativity. Among other things, this resulted in Flytoget being the first airport express train to introduce 'ticketless' travel; e.g., using your credit card as your ticket (as you do with your flight tickets) and then having the receipt e-mailed to you. This saves time and makes it easier to keep track of your travel expenses. Also, check-in counters are now available at the Flytoget station to save time at the airport, in accordance with the value 'effectiveness'.

The holistic customer experience (and brand experience) of Flytoget is delivered by the frequency of departure, running on time, as well as through all touchpoints between the service provider and the customer during the customer journey. These touchpoints meet both emotional and physical needs and all personnel who come into contact with the customers are encouraged and empowered to use creativity to solve problems (even those not specified in their service manual). According to the HR director at

Flytoget (recorded/filmed interview by the author on November 10, 2011), empowerment is part of the leadership philosophy in Flytoget. In addition, the back stage employees are considered to be just as important as the front stage employees for delivering the desired Flytoget experience.

The design of holistic services requires leadership and collaboration with many disciplines and competencies in addition to design disciplines. In the case of Flytoget, the situation was not that the business strategy was in place and then designers were hired to do the visual details. Designers and the design manager were part of creating the vision of what the travel experience should be and were part of the strategy process at an early stage as well as all the way through the implementation stages.

In relation to a larger organizational innovation context, part of a service design leadership approach is to examine the predominantly held attitudes inside the business. The need for relating to each other across departments (silos) and not being territorially driven becomes apparent when taking a holistic perspective on developing new or improved service offerings that place the user and the customer experience at the heart of the development process. Flytoget thereby may represent a case for 'best practice' of an experience oriented organization.

The contribution for the field of Design Management emerges as a result of insights gained from acting as an advisor for businesses regarding the strategic use of design as well as the author's personal hands-on experience with Flytoget and the Lillehammer Olympics. Reflecting on my service design leadership approach at Flytoget, I had undoubtedly developed a T-shaped knowledge platform during the Lillehammer Olympic project, which enabled me to take on a service design leadership approach by synthesizing my business background with an understanding of the value of the strategic use of design in the Flytoget project. In fact, Jevnaker (2000) stated that 'the Lillehammer Olympic design development can be seen as a kind of design-management learning laboratory' (p. 26).

### *Some Effects of Synthesizing Knowledge Domains*

Research within the field of Design Management claims that designers and managers 'think and act in diverging knowledge domains' (Borja de Mozota, 2007, p. 31). People that have not been exposed to the approach designers take to problem solving; their methods and systematic processes, do usually not understand how design is relevant in design of services. Thus, decision makers in both business and public services fail to see the value of

the strategic use of design in the context of designing services. Likewise, how design thinking may complement business knowledge and approaches.

As a non-designer, the author can identify with this lack of understanding before one has the opportunity to explore and exploit service design, particularly in a 'learning by doing' situation. However, it is an on-going iterative process, and not a skillset you learn by using a few tools. The design knowledge obtained by those who were a part of the Lillehammer Olympic Organizing Committee (LOOC) also had an impact on other large projects, such as the construction of the new airport in Oslo (Birgit H. Jevnaker, 1995) and the Flytoget project (see above). Key managers from LOOC had core roles in these projects after the Olympics. In a case where everyone becomes a champion of design, an infusion approach to managing design takes place (Dumas & Mintzberg, 1989). Dumas and Mintzberg referred to their use of the term 'infusion' as the permeation of design throughout the organization with the intention of everyone being concerned with design activities as 'silent designers' (Dumas & Mintzberg, 1991; Gorb & Dumas, 1987). Within the LOOC organization, the design department took on an infusion approach to create a shared understanding of design-based values (Birgit H. Jevnaker, 1995). This infusion included external stakeholders such as licensees and sponsors as well as the International Olympic Committee (IOC). Thus, in a proactive way, design leadership (Turner & Topalian, 2002) was promoted by creating an awareness of the value of design at strategic level as well as creating an awareness of the role of non-designers as participants in a design process.

Consequently, knowledge-creation took place regarding the value of design thinking and design management in and beyond the LOOC organization, as the infusion was extended to these later projects. From an experience oriented organization perspective, the Lillehammer Olympic Games were about the strategic use of design to create a great experience for the athletes as well as the audience, whether they were present at the venues or watching the television broadcasts.

### **Organizational Consequences**

In Norway, service design is attracting more attention. Focusing on the innovation challenges facing the service sector, the Center for Service Innovation (CSI)<sup>76</sup> was established in 2011. The CSI is financed by the Research Council of Norway in collaboration with some of Norway's largest

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<sup>76</sup> For more information: <http://csi.nhh.no/>

service organizations. The aim is to enhance the innovation capabilities of the industry partners as well as the academic and the knowledge partners (among them the Norwegian Centre for Design and Architecture, previously the Norwegian Design Council) that are part of CSI. An awareness process and knowledge building of the value of service design in innovation processes are now being undertaken by the industry partners participating in service design workshops and being exposed to service design thinking.

In several of the service organizations participating in CSI, synthesizing – or infusing – the knowledge from service design in a ‘learning by doing’ way has contributed to seeing the need for new leadership positions, such as Head of Service Design, Customer Experience Director, and Chief Customer Officers in three of the five CSI industry partners. In addition, one of the service providers has defined service design as a key capability for customer-centricity.

### **Service Design’s Journey towards Public Sector Relevance**

In the public sector there is a need to perform service design leadership to align the overall objectives of the government with a range of services with a specific, intentional experience for users of these services.

The significance of service design leadership lies in a concern to connect, explore, exploit, and integrate useful knowledge from design and organizational knowledge and strategy in order to combine and balance various requirements against each other. In the context of design of services, these various requirements are often in the form of ‘wicked problems’ (Rittel & Webber, 1973), where multiple stakeholders are involved in addressing the conscious and unconscious needs and values of people in diverse circumstances.

Governments are seeking to make a strategic impact for the society as a whole, yet the role of design in transforming public sector services is just emerging. Services and service systems are integral part of the service economy and an argument can be made that design can transform the experience and value of services, making them more relevant to the users in need of them. Also, in collaboration with public sector, and by employing professional service design leadership, service designers can with deliberate intent shape the users’ expectations and experiences and influence their actions with the aim to be independent of future help from the public sector. One such area is social housing.

In Norway, the ministers of five ministries<sup>77</sup> launched, for the first time, a joint strategy for social housing in Norway. The strategy from 2014 – 2020 was officially launched at a joint press conference in March 2014.

The primary vision for the Norwegian housing policy is adequate and secure housing for all. The Norwegian State Housing Bank (NSHB) is the government's main implementing agency for housing policy. The Norwegian Centre for Design and Architecture has been working with the NSHB over a long period of time to introduce strategic design management, design thinking, service design, system oriented design and the value of strategic use of design in designing services in general. According to our main contact person and informant in the NSHB, the organization therefore saw the value of bringing in competence in design management and designers to facilitate a common understanding of the strategy as well as to map the totality and complexity of the current situation of the social housing efforts across the five ministries, the related six directorates, and the nationwide municipalities.

To create a common understanding of the strategy, as well as the role of each organization when it comes to transforming the strategy into actions, a kick-off workshop with representatives (more than 100 persons) from the ministries, directorates, and municipalities was conducted in May 2014, facilitated by designers. This kick-off workshop included results from different working groups that had worked in close collaboration with the designers.

The strategy includes service areas located in all five ministries. Therefore, the informant stressed the fact that 'it is important to ensure ownership by the parties involved and how social housing services are created and delivered across disciplines as well as across ministries and current organizational silos.' The informant further stated that 'it is important to put the end user (the human beings in need of social housing services) in the center on the operative level when the strategy shall be put into action.'

The reaction observed by the researcher in the role of participating observer among the participants in the working groups, most of them exposed to the process designers use for the first time, is that they believe in this process and the value design can bring to the future process on the

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<sup>77</sup> Minister of Health and Care Services, Minister of Justice and Public Security, Minister of Labour and Social Affairs, Minister of Children, Equality and Social Inclusion, and Minister of Local Government and Modernisation



strategic level as well as on an operative level. Design and service design thinking are believed to contribute to create a common understanding among the key stakeholders as this approach supports the holistic perspective that the ministries consider a necessary way of thinking to succeed.

## **Conclusions**

One way non-designers can develop and optimise design leadership roles is by working in close collaboration with designers and thereby being educated in design thinking. This process of developing tacit and explicit knowledge about the value of the strategic use of design by synthesizing design methodology and approaches with business- and organizational knowledge forms the basis for a service design leadership approach, when related to the service sector. As research on design leadership by non-designers in the service sector is rather limited, a personal knowledge-building journey towards a service design leadership approach was shared to provide profound and reflective insights from a practitioner's perspective. Although limited general conclusions can be drawn from a practitioner's and researcher's personal experience, a contribution to the field of design leadership is made by contributing to new insights on the interaction between design management, design leadership, and business thinking and how this collaboration benefits organizations through a carefully managed process on the basis of a visionary and defined service experience.

When the aim is to shape service innovations, new or improved service experience offerings do not emerge by simply investing in design, but rather as the result of a strategically managed process of multi-competence collaboration, as emphasized by presenting the successful service transportation case.

Being exposed to the value of service design in private and public sector, the demand for service designers is exploding in Norway. Thus, the need for service design leadership will grow in a more mature market. Service design leadership includes developing a service experience strategy that comprises both an experience vision for the future and a plan for the organization to deliver on this defined experience across organizational silos. The public sector is a world of complexity and design methods and processes are now increasingly seen as a key to unpack the kind of complex and wicked problems the public sector is facing.

For leaders in service organizations, this includes having a deep understanding of the abductive logic behind a service design approach. It also includes selecting a multi-disciplinary team with individuals that complement each other when it comes to diversity in knowledge, skills, experience, and approaches (Amabile, 1988; Nonaka & Konno, 1998; Rieple, 2004). To bring out the very best of the designers as well as the employees in service organizations, conscious orchestration is needed in order to nurture, and benefit from, individual creativity and knowledge. This is where service design leadership comes into play to influence the leaders in service organizations to become experience oriented organizations for the benefit of the user as well as the service provider in a long term value perspective. The provided Flytoget case is an evidence of exactly that.

Further research into the area of knowledge building by ‘learning by doing’ within the areas of service design thinking and service design leadership should be explored on the individual level as well as in an organizational transformation perspective – before, during, and after being exposed to design methodologies and processes.

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**Section 5b: Public Policy and Services  
Informed by a Design Approach**

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# **Editoria: The Public Side of Design Management: Public Policy and Services Informed by a Design Approach**

Sabine JUNGINGER and Nina TERREY

Public managers and policy-makers are challenged to come up with "better, quicker and cheaper" public policies and public services that are more meaningful, relevant and helpful to communities and their citizens. And while design thinking, design methods and design practices begin to be looked to as key for public sector innovation, research into the role of design in public management and in policy-making is still in its infancy. With this track "Public policy and services informed by a design approach", we have sought to provide a forum for emerging work around concepts and challenges of design in policy and in public management. The idea was to share the latest research in design focusing on public policy and service design and to raise questions like: What evidence is there that design approaches embedded in public organizations help public leaders to succeed? How do public leaders go about co-designing effective policies and services with their communities? How do we know that co-designed public services are more relevant and meaningful to communities? How do co-designed or co-produced public policies or services contribute to cost reduction? How can design offer a fresh approach to rethinking policy, redrawing professional and organizational practices and reshaping service delivery?

To stay on target, we made the tough decision not to include papers simply because a project involved a public organization, a public hospital or a community. We also tried to keep the focus on designing as an approach to policy-making and therefore excluded papers concerned with policies for designing although we recognize and respect the value and necessity of this research. We thus ended with six papers that approach government issues; policy-making and public management through a design lens to highlight emerging issues of design and the way design management may aid public sector innovation:

Debbie Ng Li Teng explores questions of “Citizen-centric Public Policies and Services through Design” informed by the work of the Human Experience Lab at the Prime Minister’s Office in Singapore

Jhen-Yi Lin discusses “Design Capabilities in the Public Sector” and the implications of thinking of policy as a design artifact.

Alessandro Deserti and Francesca Rizzo point to the importance of managing change in public organizations in their piece “Design and Organisational change in the Public Sector.”

Sabine Junginger offers a design reflection on the understanding of “Participatory Government” by returning to one of the earliest works on citizen participation by Sherry Arnstein.

Eduardo Staszowski, Alexis Sypek and Sabine Junginger expand on the issues of design and citizen participation in “Public and Collaborative: From Participatory Design to Design for Participation”. This paper reflects on “Public & Collaborative NYC”, a research project that seeks to improve the way public services are being developed and delivered in New York City.

Finally, Christian Bason draws our attention to “Redesigning assumptions: Challenging public problem spaces”. He sheds light on the potential role of design to help public managers challenge their own current assumptions about the problems of their organizations.

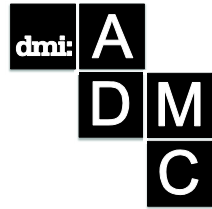
Taken together, these papers offer reflections on design in public sector innovation labs at the policy-making level; on design in city programs that involve public organizations and the services they offer as well as theoretical discussions of how design theories and design practices link to theories and practices in policy. This marks the first time design management in the public sector has received its own track at an Academic DMI conference and we are grateful to the DMI, the conference organizers and our contributing authors for making it possible to explore the public side of design management.

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## Participatory Government – A Design Perspective

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*We are in the midst of a renewed effort to understand the meaning and relevance of design in management across the private and public sectors and in different economic, social, technological and environmental contexts. Forms and manners of participation in designing and in design decision-making are relevant to each of these areas but perhaps are nowhere as consequential as in policy-making and policy implementation by democratic governments. In this exploratory paper, I trace attitudes towards participation in public planning to compare them with concepts of participation in participatory design and in design education and practice. I show that participatory approaches in all three areas have evolved from questions of power. As a consequence, participation is still viewed by many as a struggle over power with winners and losers. I argue that a human-centered design perspective on participation in policy-making and in policy implementation offers a way to sidestep power issues and to focus on actual gains that benefit citizens as much as it aids planners and public organizations. To illustrate the way everyone can win from a human-centered design approach to policy-making and policy implementation, I explain how the design of a walker for the elderly links to the design of policies.*

**Keywords:** *participatory government; participatory design; design education; policy-making and policy-implementation; human-centered design*

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## Introduction

There is renewed interest in the meaning and relevance of design in management across different sectors and in different economic, social, technological and environmental contexts. Comparatively little work has addressed questions of design and management in the public sector. The array of design projects that have sprung up in areas of healthcare, social work and within communities over the past ten years produced many hands-on examples and case studies on the value of “design thinking” and “service design” to public organizations. Many of these works have established that design theories and design practices apply to public services. However, we have still more to learn about the connections between the design of products and services and the design of policies. Research into the role and place of design in government itself will help us build the necessary foundation to understand how and where design has a role in policy-making, in policy implementation or in public management.

Initial efforts to produce insights are being made by the EU Platform for Design and Innovation, which launched in Spring 2014. This platform explicitly lists the public sector and public policy as two out of three core areas for future design and innovation.<sup>1</sup> Another EU level project, Seespace, also hosted in the UK, has begun to address issues of design and policy-making but efforts have oscillated hesitantly between *policy for design* and *design for policy*.<sup>2</sup> This distinction is necessary because *Policies for design* are generally targeted to improve the standing and the conditions of the design profession and also that of educational design institutes. Especially in the UK, *policies for design* tend to aim at securing a conducive environment for the creative industries and professions that are driving the national creative economy. In contrast, *design for policy* is no longer preoccupied with the design profession itself. Instead, it focuses on how design principles and design methods apply to problems of policy-making and policy implementation. Among other things, *Design for policy* looks at the value design thinking, design practices and design methods bring to policy. Questions here include, for example: what kind of design methods are policy-makers familiar with? What kind of design thinking do they apply and understand? What kind of design training and design awareness, what kind of a design attitude to they apply, enable or encourage? Where and how do they learn about design methods and approaches? These questions

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<sup>1</sup> See [www.designplatform.eu](http://www.designplatform.eu)

<sup>2</sup> See [www.seespace.org](http://www.seespace.org) as well as their publication series “Design for the Public Good”.

currently gain urgency, as policy-makers are pressed to develop more citizen-friendly policies with ever fewer resources. In *design for policy*, public services are a problem of policy implementation. Before policies can get implemented, policies have to be planned and designed. With this paper, I seek to contribute to a better understanding of design in government where practices and theories of design, management and organization meet in policy-making and policy implementation to achieve public sector innovation and social innovation outcomes.<sup>3</sup>

Forms and manners of participation in designing and in design decision-making are relevant to many areas of making but perhaps are nowhere as consequential as in policy-making and policy implementation by democratic governments. In this paper, I trace attitudes towards participation in public planning to compare them with concepts of participation in participatory design and in design education and practice. I begin by establishing participation as a problem for policy-makers and planners who depend on active citizens to identify and develop meaningful policies that result in useful and usable services and programs to achieve desirable outcomes. Next, I use Sherry Arnstein's Ladder of Citizen Participation to reveal that the basis for citizen participation among planners centers on issues of power. I then turn look to the origins of participatory design to see if participation here moves beyond power relationships. As a third area of investigation, I inquire into the ways in which design education and design practice have approached matters of participation. I find that all three areas originally understood participation mostly as gaining or losing power. As a consequence, participation is still viewed by many as a struggle over power with winners and losers. But the power perspective no longer serves planners, designers or public managers well. I argue that a human-centered design perspective on participation in policy-making and in policy implementation offers a way to sidestep power issues and to focus on actual gains that benefit citizens as much as it aids planners and public organizations in addressing social and organizational challenges. To illustrate the way everyone can win from a human-centered design approach to policy-making and policy implementation, I explain how the design of a walker for the elderly links to the design of policies. This illustration has

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<sup>3</sup> I have written on this in a previous conference paper "Matters of Design in Policy-Making and in Policy Implementation" for the European Academy of Design 2013, subsequently published by the Annual Review of Policy Design (<http://ojs.unbc.ca/index.php/design/article/view/542>).

been used and “tested” with policy planners in a government office and public managers pursuing an advanced degree in Public Management.

## Participation in Policy-Making & Planning

The idea of ‘citizen participation’ is not a new one to public employees, policy-makers or politicians. Citizen participation is one of the foundations on which democratic societies are built (Pateman 1970). Yet, citizen participation remains one of the most difficult problems for policy-planners and public managers. This problem has become more acute over the past years. In light of the pressures faced by the public sector around the globe, many governments depend on increased citizen engagement. The Organization for the Economic Co-operation and Development (OECD) recently acknowledged the need for “rebuilding [of] trust and innovative approaches to citizen engagement” in response to the “enormous social and economic challenges” today’s policy-makers face. In February 2013, the OECD Public Governance and Territorial Development Directorate Public Governance Committee reported that its member Centres of Governments (CoG) have identified eight key policy responses to the challenges they face. One of them points directly to the problem of citizen participation in planning and policy-making:

*The general environment for policy is more than ever characterized by uncertainty and risk; The new relationship is also affecting policymaking; an increasingly vocal and active civil society and the rise of social media have led citizens to expect greater speed from government, in both communication and action.<sup>4</sup>*

The problem of citizen participation in policy-making and in policy implementation is shaped by disagreements over the purpose and the meaning of participation or how it should work. Sherry Arnstein, an American sociologist was one of the first to offer a critical reflection of citizen participation. Influenced by the political developments in the late 1960s, she declared citizen participation to be a “categorical term for citizen power” which concerns

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<sup>4</sup> Organization for Economic Co-operation and Development: GOV/PGC/MPM/M(2012)1. Summary of the 31st Meeting of Senior Officials from Centres of Government (CoG), 22-24 October 2012, Lancaster House, London. UK



*...the redistribution of power that enables the have-not citizens, presently excluded from the political and economic processes, to be deliberately included in the future. It is the strategy by which the have-nots join in determining how information is shared, goals and policies are set, tax resources are allocated, programs are operated, and benefits like contracts and patronage are parceled out. In short, it is the means by which they can induce significant social reform which enables them to share in the benefits of the affluent society. (Arnstein 1969)*

Critical of the way the term participation was being used by contemporary planners in what she considered misleading and sometimes euphemistic ways, Arnstein identified and ranked and ordered eight different levels of citizen participation into a “Ladder of Citizen Participation.” The purpose of this ladder is to show the “critical difference between going through the empty ritual of participation and having the real power needed to affect the outcome of the process.” (Arnstein, p. 2). Accordingly, she identifies lower forms of citizen participation that are “rhetorically” misleading: Despite their participatory references, these forms of participation deny citizens an active role and merely serve as a means to “manipulate” citizens or to conduct “citizen therapy”. This, in Arnstein’s view, reveals the real intention by planners *not* to allow for participation:

*Their real objective is not to enable people to participate in planning or conducting programs, but to enable powerholders to "educate" or "cure" the participants.*

Arnstein explains that planners who view participation as a tool for citizen *manipulation* or citizen *therapy* give citizens neither a voice nor an ear. But having their ear and being able to voice concerns and questions in itself does not constitute participation either, she points out. Unless planners actually have to consider and include the views of citizens in their further planning, forms of participation are little more than tokenism. For this reason, Arnstein is critical of participation that takes the form of *informing* citizens or *consultation* with citizens. Of the eight forms of participation, she finds that only three position citizens to act or to take action. These three forms of participation are participation as *partnership*, participation as *power delegation*, or participation as *citizen power*. In all three of these participation forms, citizens enjoy some power and some control over the planning in development.

It is remarkable that the problems of citizen participation Arnstein identified more than forty years ago still echo the problems the problems of policy-makers and planners today. The observation by the OECD that citizens are "increasingly vocal and active" and "expect greater speed from government, in both communication and action," means that *manipulation* and *therapy* are no longer viable participatory strategies for planners – if they ever were. New concepts of participation are needed to overcome a longstanding distrust that has resulted from "empty rituals of participation" (ibid, p. 2). Evidence that such distrust in people who plan for citizens still exists today:

*Many planners, architects, politicians, bosses, project leaders and power-holder still dress all variety of manipulations up as 'participation in the process', 'citizen consultation' and other shades of technobable.<sup>5</sup>*

### *Participation as Power over Decision-Making*

Arnstein's ladder of citizen participation remains useful to distinguish different forms of participation. However, one cannot help but notice that her arguments are rooted in a position of competing powers. The problem of participation then becomes a struggle for power-sharing in a zero sum game. That is, someone has to lose or give up power for someone else to gain. Ideal or full citizen participation in Arnstein's ladder means to have full control over the outcome of a process. Ironically, this can be interpreted to exclude city and government planners! At both ends of the ladder then, participation is non-participatory and involves only one group of participants. At the lowest rungs, citizens are not part of the process; at the highest rung planners leave citizens alone. But while this is problematized at the lowest rung, it is considered desirable at the higher level:

*People are simply demanding that degree of power (or control) which guarantees that participants or residents can govern a program or an institution, be in full charge of policy and managerial aspects, and be able to negotiate the conditions under which "outsiders" may change them.*

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<sup>5</sup> Observation by Duncon Lithgow in 2004 who publishes a reprint of Sherry Arnstein's original paper "A Ladder of Citizen Participation" on his website.

At the time Arnstein developed her ideas about participation, power relationships were dominating politics: in Europe, students rose up against educational and institutional establishments; in the US, demonstrations against the Vietnam war and the civil rights movement all fought for changes in citizen power, just like feminists sought to increase the power of women. Today, however, the power perspective on participation is no longer serving us well. One of the reasons is that the power perspective pits people against people. It also assumes that civil servants do not want to engage with citizens. And while there is evidence that this is the case (Bason 2010), the reasons for this situation are not well understood. One possible explanation may be that in the eyes of many policy-makers and public managers, participation remains a matter of power, of giving up or of sharing power in decision-making. In my work with planners and public managers, I find that Arnstein's ladder of citizen participation is familiar to many civil servants who still find it useful to distinguish different forms of participation. But in light of today's public sector challenges, the Arnstein ladder fails us in one important area: no longer do we need to focus on powers of decision-making. Instead, we need to learn to participate actively in identifying problems and in developing innovative solutions. The challenge of participation in the public sector thus has moved away from power and is shifting towards designing, more specifically towards participatory design approaches. In consequence, we need to see what and how participatory design may contribute to a new understanding of citizen participation and participatory government.

## **Participation in Participatory Design & Design Education**

Since Arnstein's explorations into citizen participation, researchers and practitioners have also looked into matters of worker participation in workplace decisions and into questions of participation surrounding product development. I briefly present their respective origins to see how they can inform our understanding of participation in government.

### *Participatory Design in the Workplace*

Although highly relevant to design practitioners and researchers today, research into Participatory Design did not originate in design studios or in design schools. Early research into participatory design was driven by concern that machines and technologies were controlling workers, putting

them at a disadvantage. The aim of Participatory Design in this context was to include workers in workplace decision-making. With that, participatory design was an effort to empower workers within organizations. In a development that reflects user-based and experience-based design approaches today, participatory design initially sought to improve the interaction and the relationships between workers, their working tools and their work environment (cf: Ehn 1988). Like Arnstein's Ladder of Citizen Participation, early participatory design thus focused on power relations and on shifting powers. However, this focus changed in the early 1990s when principles and practices of participatory design expanded to include not only workers but employees and embraced ethnographic and contextual methods (Schuler & Namioka 1993).

US scholar Judith Gregory (2003) identified a specifically Scandinavian Approach to participatory design. She observed that three distinct principles, namely the continuous strive for democracy and democratization; the explicit discussions of value in design and the relentless imagination of futures distinguish participatory design in Scandinavia from that, for example, which emerged in the United States.<sup>6</sup> Without stating this explicitly, Gregory argues that the causes for participatory design in Scandinavia are linked to the broader concept of human rights and human dignity in society. However, while scholars have suggested that human-centered design is linked to first principles (Buchanan 2004), most participatory design discussions continue to center on methods and the role different forms of participatory design assign participants (cf: Sanders and Stappers 2008). In this sense, participatory design seems to struggle to move beyond shifting power relationships even today. For participatory government and for citizen participation, this strand of participatory design offers principles and methods as well as insights into participation from an organizational perspective.

### *Participatory Design in Design Education & Practice*

Participatory design is a fairly recent topic in design education and in design practice. Neither the Bauhaus, nor the Ulm School, for example, assigned the very people for whom a design was intended to have a significant role in its development. User research was not part of the

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<sup>6</sup> The roots of the work by Elizabeth Sanders who was among the pioneers looking into participatory design and especially into co-design and co-creation, have been in commercial applications and later on the places and roles of people in participatory design approaches (see: Sanders and Stappers 2008).

curriculum, nor was co-design or any other participatory design method. The emphasis rested on developing the technical skills, the material knowledge and the artistry or craft of the individual designer.<sup>7</sup> Even the idea of designing in teams is a fairly young phenomenon.<sup>8</sup> Ironically, this is a mirror image of the way many public managers and policy makers are trained and prepared today.

Participatory design remains a difficult subject for professionals who continue to view participation as give-and-take of power and thereby fail to understand participation as a matter of human experience. To strengthen their case (against participation), some design professionals – and more recently entrepreneurs and other innovators – like to cite successful designers like Dieter Rams or the late Steve Jobs or Henry Ford. The latter has become famous for saying: “If I had asked people, they would have wanted me to invent a faster horse.” Among those public managers who still shy away from participatory design, many echo the arguments star designers use to prevent interference: believing that ordinary people cannot possibly understand a problem enough to contribute to its solution or be imaginative enough to envision a different future (cf: Bason 2010).

But interference is a reality for policy-makers and other planners who cannot isolate themselves from politics, unions, and laws. Participatory design in the public sector often is more challenging than in the private sector. It is no coincidence that professional designers have long shied away from engaging in design matters in the public realm, where the possibilities for introducing innovation seemed limited, difficult, if not prohibitive. This has changed as shrinking public budgets have led many public organizations to call on designers to re-design products and services in an effort to reduce cost while maintaining or improving their efficiency. In addition, the rise of service design has led to a recognition that the majority of services offered by organizations today are being offered in the public sector. The public sector has emerged as a new business area for many professional designers and in this context, reopened the issue of participatory design.

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<sup>7</sup> To this day, German design professors have to provide proof of their artistic profile when they get hired (“ausgewiesene künstlerische Persönlichkeit”).

<sup>8</sup> Although most successful designers like Raymond Loewy or Henry Dreyfus had design teams around them, the star designer was heralded as an individual genius.

## Participation, Policy & Human-Centered Design

In the public realm, participation is, if not a requirement, so a necessity. More and more public organizations, national, regional and municipal governments are linking up with service designers in an effort to co-design, co-create, and co-produce new innovative solutions. One might conclude that we have finally reached the higher levels of citizen participation Arnstein has called for forty years ago as participation as *partnership*, as *power delegation* and as *citizen power* seem to take hold in public planning. Already, we are talking about *designing for citizens*, *designing with citizens* and about *designing by citizens* (cf: Fulton 2007; Leadbetter 2009). Yet, it seems still difficult to overcome the problem of power and to free participation from being a zero sum game, which demands losers and winners. But that is what the design challenges governments face today demand. These challenges are marked less by a need to obtain or secure power and more by a need to understand the implications of human experience in the planning and in the delivery of policies and services. To develop and deliver such services and policies, those involved have to have a comprehensive understanding of participation that promotes and facilitates integrated product development.

One of the problems we face in the public sector is that few policy-makers and few policy-implementers make the connection between their policies and the actual products and services that result from them. Seldom do policy-makers and policy implementers envision or understand how their policies and the very products and services that bring policies into life contribute to the everyday experience for many people— both in the positive and in the negative sense. One approach to overcome the power trap in participation is to develop bridges for policy-makers, planners and public managers from products and services to policies. This calls on design education to develop appropriate and relevant materials, case studies and projects for policy planners and public managers. I am now sharing how we may engage these two groups in questions of participation beyond power by focusing on the human experience. At first, this may sound fluffy. However, as the participants in these two seminars demonstrate, moving from the human experience to matters of policies reveals economic implications that easily get lost in the power perspective.<sup>9</sup>

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<sup>9</sup> Group 1 consisted of 20 experts in policy planning; Group 2 consisted of 25 public managers pursuing an advanced degree in public management.

It is not necessary to recall the complete two-hour seminar. Instead, I will zoom in on two images I use to discuss participation in policy-making and policy implementation from a human-centered design perspective. These two images are presented in *Picture 1* and *Picture 2* below. Each one shows a walking aid for an elderly person. At first glance, we are looking at an object, a design object, to be precise. However, I challenge policy makers and public managers to think of these two objects as design outcomes that stand in for two different design approaches to policy-making and policy implementation. After all, both walking aids are a solution for the same (policy) problem. Yet, the (policy) solution in *Picture 1* is radically different from the (policy) solution in *Picture 2*. The design thinking that went into the walker in *Picture 1* reveals a focus on minimal use of resources or materials and a concern for the physical structure of the object. The design product as a result is akin to a mechanical device that has no other function or role as to extend the physical function of the body. The design thinking that went into the design of this walker failed to consider how people move in public spaces. This walker, although a walking aid, does not provide freedom and independence for a person. It achieves the opposite as it limits a person's activity range to a rather small area, ideally indoors. It is simply too cumbersome to surmount boardwalks or cross streets with it.

In stark contrast, the walker in *Picture 2* second walker anticipates and embraces human needs, not just their physical condition: A seat anticipates the need for a break; handbrakes offer additional controls and security on uneven paths; a basket takes care of shopping items. Overall, the walker in *Picture 2* is much more inviting in its look and feel than the walking "instrument" in *Picture 1*. The second walker takes into consideration that people want to maximize their independence, not their dependence. The considerate design enables people to move around in public spaces without being stigmatized.

When I asked the planners in the first seminar and the public managers in the second seminar, which walker they would take out on a stroll, not surprisingly, all of them opted for the walker in *Picture 2*. However, they immediately pointed out that cost was a factor: although it would be nice to have a nicer walking aid, cost had to be considered and cost, so these decision-makers would force them to go for the simple "policy" version, i.e., the walker in *Picture 1* that still fulfils all criteria necessary to offer physical support for a person.

When I explained the cost in terms of participation in everyday life and listed the consequences of an elderly person being able to go to a café on

their own; to spend their retirement savings in shopping malls; to exercise their muscles, the differences in manufacturing cost all of a sudden amounted to peanuts. Studies have shown that older people sitting in isolation in their homes are more prone to depression; if they do not walk they are losing muscle strength which makes them more dependent and if they cannot visit stores, they cannot support the economy with their rightfully earned money. In the end, the cost of the walker in *Picture 1* turns out to being a much higher cost to government and society than the cost for what appears to be a luxury walker in *Picture 2*.

In my seminar, the walker in *Picture 2* stands for a form of policy-making and policy-implementation that addresses the human experience and in doing so, achieves better outcomes for less money. Moreover, it invites, engages and enables people to participate more fully in society. Participatory government here stands for more than having a seat at the decision-making table. It is not about power, it is about care: care for society, care for human living. For the policy-makers I had the opportunity to work with, this presented a significant shift in their thinking: in their struggle to understand when and where they might sensibly bring in everyday citizens into their planning, they were used to approach the problem mainly as a matter of who has power, who is allowed to have power, when and why. But the design perspective illustrated and told using the example of the two walkers clarified that the knowledge needed to create useful, usable and desirable policies that contribute to better social outcomes cannot be accessed via power.

Ian Hargraves has explored the connection between design and care (Hargraves 2013). He states that we notice the care that has gone into designing when we engage with products, services and situations. Too often, we find policy designs similarly lacking in care as the walker in *Picture 1*. Neither the walker nor a policy sets out to be bad or careless design that stigmatizes people and makes them dependent. How then can we ensure that the policy outcome matches the policy intent? Just like in the design of a walker, we need to pay attention to our design approaches and consider participation not a matter of power but a matter of cost: to the economy, to society, to the individual.





**Picture 1** A walker designed to care about cost, not people.  
Source: <http://www.overstock.com>.



**Picture 2** A walker designed with care for people and ultimately cost-saving.  
Source: <http://www.overstock.com>.

## Why is this important to Design Management?

The OECD findings confirm a need to shift beyond participation as power and to engage civil servants, public managers and planners to improve employment services, healthcare services and to strengthen communities. These developments in the public sector echo the changes we see happening in management more broadly. For example, we see a shift from understanding managing as an activity of controlling, containing and sustaining the status quo – i.e. maintaining and monitoring powers – to managing as designing, where decision-making makes room for inquiry, prototyping and co-designing (Boland & Collopy 2004).

The findings highlight an existing gap in design research in an area where design theories and design practices apply but where they are not well

understood yet. But design education in the public sector, at this point in time remains a rarity; an exception rather than a rule. The burden of understanding and applying design currently rests on a few public innovation labs that have invested resources to develop their own design understanding and their own design capabilities. Some of these public innovation labs are seeking a shift in the design attitudes of their own staff. While policy-makers and public managers have begun to turn to design (cf: Eppel et al 2011; Briggs 2011; Bason forthcoming), design research has yet to engage with the design practices, design methods and concepts employed in the public sector. More than ever, we are in need of designers who understand the problems of the public sector; who grasp the implications of policy-making, policy implementation and public management; who can explain the role of design and apply designing in each of these contexts.

Design Management, too, has been slow in embracing design issues and design challenges in the public sector. As a case in point, this 2014 conference is the first time the DMI Academic Conference offers a track on this topic. We still do not have enough insights into the roles, functions, and places of design managers in the public realm. We know little about managing design processes in the complex landscape that is far away from any manufacturer's conveyor belt, concerning products by obligation, not by choice. The design approaches chosen by public managers, policy-makers and front-line workers have organizational, social and individual consequences. For these reasons, we should have more to say about them.

## Summary & Conclusion

In this paper, I have traced attitudes towards participation in public planning and compared them with concepts of participation that dominate in participatory design, design education and practice. I have established participation as a problem for policy-makers and planners with the use of Sherry Arnstein's Ladder of Citizen Participation. Arguing that the power perspective no longer serves planners, designers or public managers well, I have shared how we may instead move from the human experience to policies to gain a different understanding of participation. In German language, a proverb states that one swallow does not make a summer. Of course, two seminars are not enough to make big claims about success or failure. However, they do offer hope, inspiration and motivation to pursue the path of human-centered design in government. Many policy-makers and

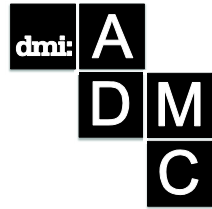
public managers today are seriously looking for alternative ways to tackle lingering social problems. Participation is but one of them. And design does have a role in it. To understand this role and to make design accessible to the very people who are responsible for shaping policies and services for millions of people is a challenge we need to embrace in design research.

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## Design and Organisational Change in the Public Sector

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*The demand of a new generation of public services is leading to a systematic exploration of what design can do for public organisations. If the rapid growth of service design practices spread the idea that design is not just focused on tangible artefacts, the effects of their introduction in public organisations are still underestimated. This article explores the ongoing trend of the adoption of design as a practice to deal with the innovation of public services through the discussion of three cases, in the light of the hypothesis that the introduction of design knowledge in public institutions should be reconnected to the management of their organisational changes. In particular in the analysis of the cases the authors discuss evidences in favour of a new interpretative framework in which the design of new artefacts (service, processes and solutions) can be described as a powerful yet implicit agent of change (Deserti and Rizzo, 2014).*

**Keywords:** *Advanced Participatory Design; Service Design; Public Sector; Organisational Changes.*

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NOTE: This work is the result of the joint effort of the authors. Nevertheless Alessandro Deserti directly edited sections 1, 2, 3 and conclusions; Francesca Rizzo directly edited sections 4, 5 and 6.

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## Introduction

Many countries still do not show clear and strong signs of recovery from the global economic downturn that started in 2008, which is causing a structural lack of resources, particularly affecting the public sector. The economic, demographic, social and environmental long-term challenges call for deep changes, questioning many of the assumptions that have underpinned public services, posing new challenges for institutions, policy makers, civil servants and communities. While austerity measures were adopted all over the world, societal challenges are intensifying: youth unemployment, elderly healthcare, immigration, social inclusion and other wicked problems press the public institutions with the contradictory request of delivering new services or restructuring the existing ones achieving a higher effectiveness with less resources.

As a few studies have pointed out (Diefenbach, 2009; Ashworth, Boyne and Delbridge, 2009), the main experimented solution – cutting budgets and trying to make the public organisations more efficient by transferring models and practices from the private sector - has shown many limits.

Research on organisational management and social studies has a long tradition of binding the competitiveness of an enterprise to its capability to continuously change its culture by overcoming organisational dogmas and pursuing innovation (Hamel and Prahalad, 1994; Drucker, 1995; Drucker, 2002; Hamel and Välikangas, 2003). While organisational change theories recognise the complexity of the phenomenon of change within organisations and therefore display a systematic and holistic attitude, the managerial practice is characterised by a large amount of models and techniques that seem to be derived from a reductionist way of thinking, thereby producing formulas that can be easily synthesised and turned into slogans and procedures applicable to a variety of situations with minimal adaptation. Even if there has been harsh criticism of the fast turnover of these managerial models and techniques that led to describe many of them as fads, the practice still seems to prosper (Miller and Hartwick, 2002; Collins, 2003).

In a more general frame, the very idea that managerial models and practices can be extracted from a context, abstracted and turned into formulas that can be transferred somehow independently from the characteristic of the receiving context has often proved wrong. This did not occur just in the shift from the private to the public sector, but in the first place in the private sector itself (Miller and Hartwick, 2002). This is especially true for public organisations, where too often the transfer of models from the private sector is tried, assuming that what worked there could be simply replicated to reduce

inefficiencies and enhance productivity. Recent studies underline how this assumption is fundamentally wrong, showing how the lack of situatedness of the new processes and the lack of involvement of people play an important role in strengthening the natural resistance to change, often leading to unsuccessful transformations (Lines, 2004; Cunningham, 2009). This phenomenon can be reconnected to many reasons, but we would notice that the entrance in the public sector of the large managerial consultancies, always in need of ready-to-use formulas, is playing a quite relevant role.

## **Proposition**

The adoption of non-situated innovation recipes is quite distant from the mainstream of the design culture: design literature strongly recognizes situatedness, human-centricity and participation as the bases for building successful innovation processes and tools (Schön, 1983; Gero, 1998; Ehn, 2008).

The aim of this article is to build a link between this design perspective and the issue of organisational change in the public sector, highlighting the dynamic relation between the operative and the strategic levels of change, as a way to overcome some of the limits and inefficiencies of the established practices.

Our proposition is that the adoption of participatory design knowledge and tools in the development of public services - an emerging trend responding to a diffused need of building a new generation of more user-centred, efficient and cost-effective services - requires (and implies) the change of the organisations that deliver them, and that the more the design practices are new to the organisations, the more the change should be relevant (Deserti and Rizzo, 2014).

Until today, the only notable investigation of this topic can be found in the work of Sabine Junginger, who connected the introduction of human-centred design practices in public bodies and in private companies and the change of organisations (Junginger, 2006, 2008; Junginger and Sangiorgi, 2009).

Even though we can document a few cases of public bodies that introduced design in their practices - e.g. the introduction of 'experience-based design' in the UK National Health Service, or the cases cited in Junginger's PhD dissertation (2006) - and the experimentations in this field now are flourishing, their focus is primarily on the change of the services, while very little reflection is being produced on the change of the organisations that are supposed to manage them. There seems to be a widespread idea that the introduction of user-centred practices will work *per se*, without the need of facing the problem of change in the hosting organisations. Most of the changes obtained through

the new practices are thus affecting the superficial level, while at deeper levels the established culture, mindset, habits and practices are still dominant. The redesign of the interface of the public services is a clear example: we may have a number of new websites, applications and touch-points redesigned according to user-centred practices, but the back-office procedures and their underpinned culture often remain untouched. This might be interpreted as a matter of time, since affecting the deeper levels can take a much longer period, but for sure there is also a question of integration and appropriation of the new practices within the organizations.

Here we should underline that, even if starting from Nonaka and Takeuchi (1996) a quite strong line of thinking looks at innovation as a problem of knowledge creation and management, most of the approaches to innovation focus on the change of the offering more than on the change of the organisations. In this respect, participatory design practices display an even stronger bias, since they draw attention on the end-users and see solutions as a result of their context of destination rather than as a result of their context of origin. This bias is opposite to that of the self-referential attitude of public organisations, and per se this could be good, since it can create a positive clash, leading to the change of an established attitude. At the same time, the focus on the exterior (citizens or end-users) and the claim for an outside-in transformation, poses the problem that little reflection is being made on how public organisations can internalize and integrate the new knowledge, and how the change process can be fostered or managed: this omission could easily lead to reject the new practices, or confine them to a cosmetic role.

We would also notice that, even if the body of knowledge on the introduction of design in organisations is quite strong, it was primarily developed with reference to private companies, with a particular emphasis on large multinational corporations that was only recently extended to the SMEs (Acklin, 2011). The interaction between the introduction of design as a new approach in public organisations and the management of their change thus appears as a relevant node that should be investigated. In our perspective, this investigation can lead not just to find ways of combining the already existing change management knowledge and practices with the already existing service design knowledge and practices, but to the construction of a new frame, where both disciplines can influence each other introducing elements of novelty for both.



## **Design and the ambidextrous organisations**

The existence of a constant tension between innovation and preservation within organisations is widely recognized in innovation studies. Literature highlights how established organisations tend to defend their status quo and how innovation must fight its way up to emerge (Ansoff, 1990; Rumelt, 1995). The reasons for this conservative attitude have been explored (Schalk, Campbell and Freese, 1998; Zeffane, 1996; Schein, 2004) and connected to many internal and external factors, that all turn into a general lack of incentive to abandon a certain present for an uncertain future, which generates a quite common situation where business-as-usual tends to overcome innovation. In this frame, innovation and change are often regarded as a last chance that most organisations embrace only when the established practices do not work anymore. Hamel and Välikangas (2003) notice that organisations should develop resilience, or else the capability to “continuously anticipate and adjust to changes that threaten their core earning power, and change before the need becomes desperately obvious” (Hamel and Välikangas, p. 52). In most cases, radical change as a last attempt to survive actually comes too late: the competitors already acquired a dominant position; the resources are too limited; the time is too short etc. In this respect, Treacy (2004) argues that breakthrough innovation should be pursued as the last growth strategy, since in the long run “radical changes usually get beaten by the slow and steady approach of the incremental innovation.” (Treacy, p. 29). Building on this, Norman and Verganti (2014) recently reconnected incremental and breakthrough innovation to two different design approaches, questioning some of the traditional assumptions on UCD.

The idea that the capacity of managing the established practices and that of innovating and changing in a reactive or proactive way can be balanced was actually discussed in organisational studies from a long time, with the introduction of the concept of ambidextrous organisation (Duncan, 1976; March, 1991). Ambidexterity can be primarily described as the balance of exploitation and exploration, which makes organisations able of relying on efficient and profitable solutions, while continuously searching for new and better ones. Even if the concept is established, , the ambidextrous organisation faces quite a few structural, cultural and operative problems in shifting from the theoretical model to its implementation.

Ambidexterity can be built by devoting a part of the organisation to innovation while keeping the rest focused on exploitation, or by introducing the attitude of innovating in a pervasive way, involving all the components of the organisation in the exploration activities. The adoption of both the solutions

must be carefully considered: the first may encounter problems of integration, since it may lead to the creation of innovation units or areas operating (or perceived) as a separate bodies; the second may encounter problems of prioritization, since the daily activities may prevail over the ones dedicated to innovation. Another relevant problem is that exploration and exploitation are bound to different thinking modes, very difficult to run simultaneously. Here is where design gets in the picture, since it is used to play in the intermediate ground between exploration, typically represented by its capacity of dealing with the chaotic front-end of innovation, and exploitation, typically represented by its capacity of dealing with new product development and engineering. According to Martin (2009), the use of a complex mix of deductive, inductive and abductive logic is a typical trait of design thinking that makes it useful not just to bring sparks of creativity in staid organisations, but to balance exploration and exploitation, overcoming the typical “bias towards reliability” (Sutton, 2004; Martin, 2009) that characterizes established organisations.

## **The introduction of design practices in the public sector**

The demand of smarter solutions for a new generation of citizen-centred services is leading to an increasingly systematic exploration of what design can do for public organisations. The rapid growth of service and experience design spread the idea that design is not just focused on tangible artefacts, but also on processes and interactions that can be effectively developed by assuming the perspective of the end-users, putting them at the centre of the projects and involving them as actors rather than as clients (Bannon, 1991), opening the way for advanced participatory practices (Ehn, 2008; Manzini and Rizzo, 2011).

In many countries public organizations are introducing design to foster innovation and change, with a particular emphasis on the development of a more user-centred approach.

In the last 10 years quite a few service design consultancies specialized in working for the public sector: Thinkpublic, Live|Work; Design Continuum, Experientia, Engine, Reboot, Snook, just to mention some of them. A big player such as IDEO now features “Public Sector” (but also “Organizational Design”) in the range of its expertise. These consultancies are involved in small service projects and in large reforms of the policies, and are helping the public organisations in assuming a new perspective, overcoming the established practices.

Governmental and NGOs such as Nesta and the Design Council in UK, or Mindlab in Denmark are also playing a relevant role in pushing the design

approach to the innovation of public services, brokering the experimentation of design-led projects and de-risking the introduction of new practices in a quite conservative sector. The strategic guidelines of the European Union on “Design for Growth and Prosperity” (Thomson and Koskinen, 2012) enforced this trajectory, underlying the importance of a human-centred perspective in the innovation of public services to build a better society. The report “Restarting Britain 2. Design and the Public Services” (UK Design Commission, 2013) emphasises the role of design in the transformation of the public service system, presenting it as a fresh approach to re-thinking policy, professional practice and service delivery.

In our view, the application of design in the public sector is being experimented in two different but complementary directions. The first can be called people-centred services: it stretches from the traditional user-centred design to the co-design methods, relying on the intensive involvement of the end-users in research, prototyping, testing and implementing the services, with the aim of improving the usability, the quality of interaction and the users’ experiences. The second can be called people-led services: it stretches from co-design to co-production and aims at developing new Public-Private-People-Partnerships to co-produce solutions with the users/citizens.

Along these two directions we can document the blooming of initiatives, professional structures, projects, programmes and recommendations. At the same time, even if there are some long-term experiences (Junginger, 2006), we have to underline that the introduction of design culture in the public sector is in its initial phases: design methods and tools are still largely unknown by public institutions and design knowledge is still far from having entered the public organisations at a large scale, affecting their daily processes and their underpinned culture. The European Commission’s public consultation (2009) pointed out that the most serious barriers to the better use of design in Europe (78% of responses) is the: “lack of awareness and understanding of the potential of design among policy makers” (p. 7). Even if much has been done, recent studies point out the difficulty of legitimating design in the new field:

*It is important to remember that for the public sector to commission design agencies to address social challenges was, and still is, a big leap in thinking. Design is not typically associated with creating social solutions within the public sector. Without the backing of key organisations like Nesta and the Design Council, and the promotion of innovation (i.e. trying new processes and methods to produce innovative results) by the Government, a design agency proposing to tackle an inadequate public service or improve a health or social inequality would have seemed*

*absurd. Even with the work of these key organisations and the innovation agenda, for many it still is. (Cook, 2011 p. 25)*

Moreover, we have to remark that the ongoing initiatives and experiments of introduction of design in the public sector are primarily focused on the direct results: there is a wide and documented interest in how design can change the public services, making them more accessible, usable, effective, participated, money-saving etc. Other than introducing generic objectives such as making the public organisations more citizen-centric or more efficient, until now there is almost no concern on how the change of the services and of the practices adopted in their development should be reconnected to that of the public institutions.

## **The introduction of design methods and tools in the redesign of public services: case studies**

In order to deepen these aspects, in the following we examine three cases of redesign of public services, in the perspective of reconnecting the introduction of new design knowledge to the change of the organisations:

- The design of new services for neighbourhood-based communities in the frame of the MyNeighbourhood European research project;
- The design of new services for active ageing, which is being conducted in Helsinki in the frame of the DAA European research project;
- The introduction of Public-Social Partnerships (PSPs) in the development of new public services in Scotland.

The three cases are representative of three different ways and levels of experimenting the introduction of design culture in public contexts through small experiments or projects for a new generation of public services. MyNeighbourhood is piloting public and collaborative services for neighbourhood-based communities experimenting a participatory approach and looking for ways to scale up the solutions. DAA is collecting evidences from already conducted experiments attempting to affect the policy level. The Public-Social Partnership Project of the Scottish Government is experimenting new forms of partnerships to deliver public services, introducing design knowledge in the construction of the networks of actors.

The three cases will be discussed to derive empirical evidences and key findings, which will be reconnected to a theoretical framework to build new knowledge and to stimulate future studies.

***Case 1. The design of new services for neighbourhood-based communities in the frame of the My Neighbourhood European project***

MyNeighbourhood is a EU-funded research project ([www.my-neighbourhood.eu](http://www.my-neighbourhood.eu)) started in January 2013 with the goal of applying service design methods and tools in four different European neighbourhoods to identify and support the establishment and the upscale of grassroots and community-based initiatives, through the adoption of a web-based service platform. The project is operating in a typical ICT research area, introducing the idea that advanced participatory design methods can foster the innovation of the public services.

At the core of the MyNeighbourhood vision there is the idea of collaborative services (Baek et alii, 2010) as those solutions that may match the need of balancing the technical “smartness” of cities with that of extending the participation through the development of softer solutions based on public-people partnerships (Rizzo and Deserti, 2014).

Through the co-design activities conducted in the four piloting sites, MyNeighbourhood developed innovative partnerships, deeply challenging the public institutions by involving them in unprecedented dialogic and interaction activities.

In Milano the project delivered two collaborative services - Quarto Food Club and Quarto Gardening - currently under experimentation in Quarto Oggiaro, one of the most run-down peripheral districts.

Quarto Food Club matches the need of delivering food to the elderly people who are not in condition to self-prepare it with that of their social inclusion. The service idea is to deliver meals to a group of elders living in the neighbourhood, creating for the occasion a kind of social space in the local hotel and catering management schools, where elderly people can enjoy the meal together, getting in touch with each other and with the students who take part in the experiment within their practical training activities.

Quarto Gardening is based on the same structure, and gives to the Municipality the possibility of exploiting the competences of the students of the local agricultural school to take care of some of the green areas in the neighbourhood. The service is made possible thanks to the agreement between the management of collective green areas (Municipality of Milano and Public Institute for Social Housing of Milano) and the local agricultural high school.

Both services also respond to the second neighbourhood issue of the young people unemployment, exploiting the involvement of the students from the

local schools, who receive credits for the practical training having at the same time the possibility of going through a real work experience.

Fostering new principles of mutual partnership, MyNeighbourhood is experimenting with the idea of providing local services creating partnerships between the public bodies and the local citizenry and operators, introducing a new rationale bound to the Public-Private-People Partnerships as results of complex participatory design processes taking place in the sphere of the public services.

Here we would underline that MyNeighbourhood is experimenting service design not only as a method to design innovative and people-centred services but also as set of competences that may trigger changes in the public organizations involved in the development and the delivery of the new services. The new processes are transferred and interiorized by the employees through a long-term process of engagement in the design experiments. The team working on the implementation of the new services is composed by researchers (the authors of this paper are among them), professional designers and employees from the Milano municipality, who worked together to turn people Wishes, Interests and Needs (WINs) in new collaborative services. The project is thus matching grassroots experimentation with the larger strategic goal of introducing a systemic perspective, where the public actors, the citizens and the local stakeholders work together in envisioning and co-producing new solutions. This perspective gives to the public actors the opportunity of interacting and dialoguing with citizens without losing contact with the real problems (bottom-up trajectory), while at the same time defining priorities and building solutions around a meaningful long-term vision beyond the acknowledgement of local needs (top-down approach), thus revealing unexplored space for democratic governance.

### *Case 2. DAA - Design-led Innovation for Active Ageing*

DAA is a EU funded research project (<http://daaproject.eu>) that aims at scaling innovative and yet sustainable solutions for elderly care, combining the expertise of care specialists with that of service designers. The project involves a network of cities acting as pilot sites where to experiment the development of new policies starting from the innovative practices.

The EU 2020 Strategy identifies demographic ageing as one of the main European long-term challenges, requiring innovative solutions and improved policies to enable better social and healthcare services with less money and fewer caretakers. In this frame, the new forms of value networks, directly involving the citizens as co-producers within a Public-Private-People Partnership

(PPPP) scheme, are seen as promising practices that could be up-scaled to obtain a systemic change (Murray, Caulier-Grice and Mulgan, 2010).

The DAA project goes one step beyond the ongoing “hands-on” experiments of designing social innovation, since its goal is not introducing new services, but learning from the already established innovative solutions, improving the innovation capacity of the city administrations and the public sector policies. The expected outputs of the project thus include 8 city implementation plans and a guidebook on the introduction of design practices in the public sector. The case of Helsinki will offer a better understanding of the overall project.

In Helsinki (one of the piloting sites) the target group are people over the age of 65 who are receiving informal care in their own homes, and regular and temporary clients of home care support services. The project aims at diffusing a new, more flexible service provision model, personal budgeting funding and operating model, creating a network of service providers to support them. With the new kind of service planning and budgeting, the elderly can organise their own support and services in a more independent way. The main goal of the project is to identify the leverage points within a complex senior care systems, i.e. policy areas and management practices within the city of Helsinki and service departments of national government, where a shift is needed for sustaining and scaling the new model. The overall objective of the design intervention in Helsinki is to make policy makers and managers on strategic level understand their importance and role in innovation process. To achieve this objective, the project aims at making changes in three different but connected layers:

- Policy and strategy making;
- Service delivery;
- People and Communities.

In the frame of the project, the interaction among actors operating in these three layers is seen as a key factor in aligning different perspectives and ways of perceiving the problems and evaluating the solutions. Since the project just started, results are still to be obtained and evaluated, but this trajectory draws attention on the construction and management of complex networks of public and private operators, which will be focused in the next case.

### ***Case 3. The Public-Social Partnership Project of the Scottish Government***

The Scottish Government is committed to ensuring that the third sector is able to play a full role in public service reform through greater involvement in

service design and delivery. To tackle this vision it has put in place the Public-Social Partnership (PSP) project (The Scottish Government, 2011b) aiming at encouraging routine use of co-production in the design of public services, supporting the development of Public-Social Partnerships.

*The purpose of the PSP Project is to select partnerships to co-plan and pilot the design of services which contribute to the delivery of national and local outcomes. These designs were intended to inform the specification for future services, which the lead public authority was expected to procure at the end of the process. (The Scottish Government, 2011a, p. 6).*

The underlined project assumption is that PSPs can enable the delivery of public services more efficiently and with more person-centred outcomes for the users of services, by putting co-production at the heart of service design.

The project is structured in three main stages:

- Third sector organisations work with public sector purchasers to design a service;
- A consortium of public sector and third sector organisations may conduct a short-term pilot, helping to refine service delivery parameters;
- The service is further developed to maximise community benefit before being competitively tendered.

A period of PSP piloting is thus meant to help experimenting with the new practices before implementing future solutions. The project successfully met its objective of selecting pilot partnerships, where the application of service design methods and tools was experimented. The project was thus turned into a structured programme, led by the Ready for Business consortium, including governmental institutions and private partners, with the aim of bringing on the experimentation to build strategic exemplar PSPs.

Besides the centrality of co-production, PSPs have the added benefit of giving all partners the opportunity to test out new service designs through piloting. This allows operational issues to be addressed and user feedback to be incorporated into the final design of the service.

The results of the experimentation conducted along the project are now being evaluated, to give feedbacks for the adoption of the PSP model in the delivery of the services at a larger scale. The lessons learnt include considerations on the question of managing organisational change in parallel with the adoption of new procedures and the construction of partnerships and



networks (Ready for Business, 2013). This must be seen as a long-term process, going far beyond the single experiments and requiring years to be implemented to the stage of full adoption and internalisation of the new knowledge, as it occurred in the following case.

## **Discussion**

The blooming initiatives concentrated on the introduction of design culture in public contexts seem primarily concentrated in obtaining more user-centred services, or else in changing the offering more than the organisations. The above-presented cases document a different attitude, based on the awareness that the introduction of design culture may not just cause implicit and unforeseen changes in the public organisations, but also require explicit processes of organisational change.

In our perspective, the initiatives and the experimentations described in the cases can be interpreted as ways of building an “ambidextrous frame” around the public organisations, creating parent structures or embedded areas meant to introduce design knowledge for the systematic exploration of new ways of doing things.

With respect to this issue, the cases show different levels of elaboration. MyNeighbourhood is developing small-scale experiments taking the risk of not affecting the overall culture of the involved municipalities due to their size, and is thus looking for ways of scaling up the solutions. DAA starts from recognising the risk described for MyNeighbourhood (and for the similar initiatives) and tries to address it by developing frameworks for interpreting experiments and transferring insights that could affect the vision and the policies of the organisation. The case of the PSPs in the Scottish government shows a strong awareness that the change of the services and that of the organisations cannot be untied, and is thus operating in a reverse way: from the policies to the experiments and back to the policies.

In our empirical experience with the MyNeighbourhood project (and with previous ones), the participated construction and the prototyping of new services at a small-scale appears as a way of triggering a process of change in the public institutions that are about to introduce them. The small-scale experimentation may produce different effects: i) bounding the change to the competences of the organisation, by situating the experiments in its specific context and culture; ii) engaging the employees in the process of change, by involving them in the development of the new solutions; iii) introducing the idea that the change strategies must become dynamic and adaptive, by

constantly informing and assessing them through the results of the on-going experimentation.

The DAA case shows the possibility of building an intermediate playground, where a participated and situated approach can be introduced through the dynamic interaction between the operative and the strategic levels of organisational change. In this frame, organisational change can be described both as a pre-condition and as an effect of the introduction of new ways of doing things.

The case of the PSPs shows the need of shifting the attention from the effectiveness of the single solutions to the possibility of pursuing a wider impact through the introduction of new policies aimed at designing and experimenting new ways of delivering services, and using the experiments to assess the policies and to foster the change of the involved organisations.

The passage from the success of the experimental projects to the review of the policies is far from being simple and automatic. Turning the new solutions in new practices seems to require a different role for design: striving for a massive change of the processes through the dynamic integration of the operative and the governance levels, i.e. informing the policies through the results of the experimentation. Within this frame, we see a major space to revise the processes of change of organisations: integrating bottom-up and top-down trajectories, breaking the borders between inside and outside, and introducing new forms of participated change management (Fig. 1).

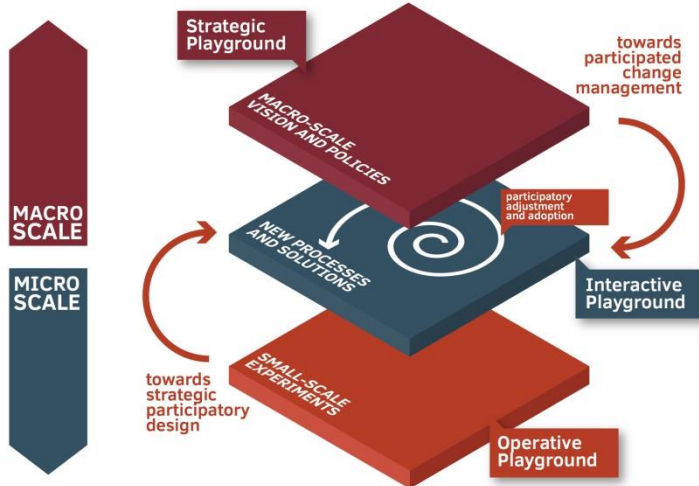


Figure 1. The participated framework of organisational change

The cases show how the conception and delivery of the new services might be bound to the creation of networks and partnerships that in turn require the development of new policies. Some of the service design tools - such as the “actors mapping”, the “stakeholders’ matrix”, the “system mapping” and the “service blueprint” (Fig. 2) - apparently put both feet in the field of organisational change without a sound understanding of its complexity.

Organisational change issues are actually unknown to most of the designers: the above-mentioned tools might guide them in defining conveniences and triggers for all the actors and stakeholders, but they seem to miss the awareness that change is not a mechanical process. Even if you might find good motivations for change, not necessarily it will be welcome by the organisations that are suppose to undertake it.

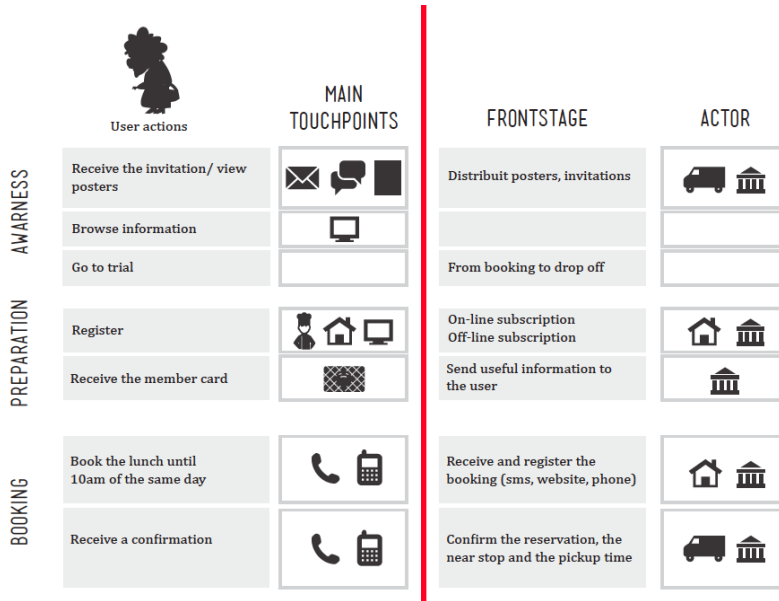


Figure 2. A caption of a service blueprint developed in the MyNeighbourhood project to configure organisational structures and processes

Another relevant point that we can draw from the cases, confirming what we already mentioned, is that the introduction of a user-centred perspective per se does not seem enough to establish adequate new practices. The DAA case clearly shows how the focus on the end-user should be balanced with the understanding that the introduction of new practices requires a continuous mediation with the already established practices. From this, we derive the idea that the very concept of participation should be revised, shifting from the traditional UCD perspective to that of “complex participatory design”, where all the actors and stakeholders should be involved as co-designers. Building on this, cases also show that when the innovation is carried on through new forms of networking the process of change should not just affect the leading public institutions. In the case of the Scottish PSPs, the ongoing evaluation (Ready for Business, 2013) highlights that joining the partnership both third sector providers and public sector organisations have to change their existing service models:

*Whilst the public and social economy sectors appear to take a favourable view of the concept of PSP, in a practice, it is apparent that there is a need for culture change within both sectors. The co-planning approach,*

*the method recommended by this evaluation, requires participants in both sectors to enter into partnership as equals. There have been times, within all three pilots, where the importance of this, and the time it takes to make this happen, has been underestimated. (McDonald, Wilson and Jack, 2012, p. 3)*

These new forms of partnership also highlight how public and private could be seen as a continuum rather than as opposites: the construction of complex partnerships calls for the capacity of change from both sides, rather than the commonplace that the public can become efficient and cost-effective only imitating the private.

The lesson learnt during the experimentation of PSPs suggests conducting an internal analysis before committing to the change journey. The evaluation of the piloting clearly identifies change management as one of the key issues, explaining that “if there currently is not the capability or capacity to properly drive through this change in your organisation, then a change management plan can be drafted (...)” (Ready for Business, 2013, p. 5). We would say, in a stronger way, that whenever a program of introduction of design knowledge takes place, a change management plan should be drafted.

## **Conclusions**

The cases have shown that embedding the practices of design in public bodies requires the management of their organisational change. If the introduction of design knowledge can trigger positive effects, there are also many issues that should be carefully considered.

The analysis of the cases shows that the trajectory of the small experiments is easier to be implemented, since it does not affect the whole organisation from the very beginning, but it could be at the same time source of major obstacles to the real integration of the new knowledge in the organisation, since it might create a binary system with potential conflicts between the new and the established culture. With respect to this risk the cases show that concurrent strategies can be implemented, like the design of an interactive playground where the results of the design projects can be managed together with the long-term visions and strategies, to be integrated in the organisational practices in the perspective of a long-term cultural change.

With this paper we want to provide a new frame for the investigation of a participated approach to organisational change, introducing an interdisciplinary perspective. Disciplines dealing with innovation should consider the interaction

between the renewal of the offering and the change of the structure and the processes, promoting the interchange of knowledge with the disciplines dealing with organisational change.

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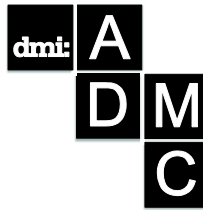
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# Redesigning Assumptions: Challenging public problem spaces

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*Managers in the public sector are increasingly looking to design to help them drive innovation in policies and services. Design is brought in from external consultancies but also established as an internal capacity through hiring designers into government departments and agencies, or by establishing innovation labs or studios. However, when design is applied in any organizational setting, a complex interplay arises between design methods and processes on the one hand (design practice), and the manager's actions and decisions on the other (management engagement with design). What characterizes these dynamics in a public sector context? Inspired by Boland & Collopy's (2004) and Michlewskis (2008, 2014) concept design attitude, this paper explores how public managers relate to design approaches as an innovation tool. In particular, the paper examines the potential role of design in allowing public managers to challenge their own current assumptions about the problems their organization is facing. Which methods and approaches seem to trigger new insights into the problem and opportunity space? How does the attitude, or engagement, of the public manager matter to the process? The research is based on data from qualitative interviews with public managers in five different countries and policy contexts.*

**Keywords:** Design; Innovation; Public services; Policy

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## Introduction

The last decade has seen a significant growth in both scholarly and practical interest in public sector innovation.

In *academia*, the governance paradigm of New Public Management has come under intense scrutiny, and attention has been drawn to the emergence of a new paradigm of 'networked' or collaborative governance (Goldsmith & Eggers, 2004; Hartley, 2005; Alford, 2009). These researchers have thus turned to the question of which new approaches to public management and leadership might be needed under such a governance model. In practice, public managers have been faced with an almost unprecedented level of turbulence and pressure for change following the 2008 global financial crisis and the ensuing austerity measures and scarcity of public resources. Coupled with other challenges in many the Western economies, such as increasing differentiation of citizens' expectations toward government, increased immigration and cross-border mobility, spiralling health costs and the rise of new networked, social and mobile technology, public managers are thus searching for 'smarter' and 'cheaper' ways of getting things done.

These developments have been associated with what appears to be an increasingly systematic exploration of what collaborative design approaches can do for public organisations. Empirically, we are seeing a period of increasing experimentation, often framed in the context of new forms of citizen involvement and collaborative innovation. According to Bourgon (2008), citizen engagement aims at opening up new avenues for empowering citizens to play an active role in service design, service delivery and in the ongoing process of service innovation.

Public sector organisations in countries such as Australia, New Zealand, Singapore, France, Denmark, the UK, Canada and the United States have to varying degrees and in different forms taken up collaborative design approaches as a tool to drive innovation and change (Parker & Heapy, 2006; Bate & Roberts, 2007; Shove et. al. 2007; Bason, 2010, 2014; Boyer et. al. 2011; Cooper & Junginger, 2011; Meroni & Sangiorgi, 2011). However, the relationships between the new design approaches to public innovation on the one hand, and the role of public managers on the other hand, are still largely unexplored. The quest for spurring public innovation may propel public managers into an engagement with design, but how is this different from their traditional roles as bureaucratic leaders or performance managers? This paper seeks to address the specific question of how design might enable public managers to view the challenges they face differently. In other words, what happens when public managers engage with design to explore public problems?

The paper is structured as follows: First, I present the key research question, methodological foundation and data material.

Second, the paper discusses different ways of thinking about the contributions of new collaborative design approaches to public management, policy and service innovation. The section highlights the particular dimension of design as a tool for opening up new perspectives on the problems facing public organisations and the managers who lead them.

Third, the paper outlines the concept of “design attitude” as a segway to understanding the potential roles of public managers in relating to design practice as it unfolds in their organisations.

Fourth, the paper presents empirical findings from a range of cases where public managers have experienced the application of design methods.

The paper is concluded with a brief discussion of perspectives for research and practice in terms of wider implications of the contribution of design.

## Methodology and research question

The research question posed in this paper is:

*As public managers engage with design approaches, to what extent are their assumptions about particular problems or opportunities challenged?*

Methodologically this study, and the wider doctoral research it draws upon, takes inspiration from Corbin and Strauss’ (2008) grounded theory approach to qualitative research. This implies amongst other things a focus on exploration, discovery, qualitative and idiographic research, empathy, judgement, social action and interaction, meanings, cognition, emotion, closeness to the empirical material and successive induction (Alvesson and Skjöldberg, 2000). The emphasis is on eliciting meaning from qualitative empirical data, discovery, identification of patterns, and establishing conceptual ‘building blocks’ that can lead to an emergent theoretical framework (Blumer, 1969; Eisenhardt, 1989; Corbin & Strauss, 2008).

Empirically I explore multiple entities where change might happen, for instance at different levels of government (national/local) and in different policy domains (such as homelessness or healthcare). The mode of change is largely constructive, as a sequence of events which emerges through “the purposeful enactment or social construction of an envisioned end state among individuals within the entity” (van de Ven, 2007: 203). This is particularly suited for exploring applied design approaches, since as Rowe (1987: 34) points out,

“the unfolding of the design process assumes a distinctly episodic structure, which we might characterize as a series of related skirmishes with various aspects of the problem at hand”. It is exactly these “skirmishes” – large and small – that are explored.

The study focuses on individual public managers who have had key responsibility for, or been engaged in, collaborative design approaches to create new solutions within public policies or services. The criterion for choosing a manager for interview has been that some combination of design approaches have been applied, usually labelled explicitly as “service design”, “co-design”, “co-creation” or “strategic design”. Multiple sources have been used to identify organisations and thereby public managers. I have engaged with the global design and public sector innovation community, essentially through a snowballing approach. Using a theoretical sampling technique implies that focus has been on deriving concepts from data during analysis, and letting the discovery of relevant concepts drive the next round of data collection (Corbin & Strauss, 2008). This fits well with the highly emergent nature of the field of study. The interviews have been largely open-ended, following a loosely structured interview guide that seeks to elicit some basic fact (actors involved, timing, main methods used, results achieved etc.), but which as its main component asks the open question: *“Please share your own story of how the design project(s) unfolded, and how this made a difference to you as a manager, if at all.”*

The number of interviews has been determined by on-going analysis of the key emerging concepts. Additional interviews have been added to the point where I have reached ‘saturation’, understood as the point where no new categories or relevant themes emerge from the material (Corbin & Strauss, 2008:148).

## **Design for exploring problem spaces**

There is no one simply way of analysing how new collaborative design approaches unfold in public organisations, or how they matter to public managers. The issue has partly to do with how we view design management, partly with the role of design practice.

### *Towards a new design management paradigm*

As design is applied as a new social technology, often for the first time, within public policy and service organisations, the resulting effects are likely to be both complex and multiple. Cooper and Junginger (2011:1) state that the

intersection of design and management has generated decades of “lively debate” in the design and business communities. What are the relationships between design and management, and between management of design and design management? As new and more collaborative approaches to innovation in the public sector come to the fore, this question is increasingly relevant to public managers. As service design, interaction design, human-centred design and strategic design approaches – in their various shapes and forms – are being applied to public problem spaces it becomes increasingly important to reflect on how managers relate to these strategies. Cooper and Junginger (2011) suggest that what we are witnessing is essentially the emergence of a new paradigm of design management, which might be termed ‘design capability’.

Table 1: Paradigms of design management. Source: Cooper & Junginger (2011)

Function	Design practice	Design management	Design capability
Adds value through...	Aesthetics, product innovation, differentiation	Interpreting the need, writing the brief, selecting the designer, managing the design and delivery process	Humanistic, comprehensive, integrative, visual approaches
Solves problems of design relating to...	Products, brands, services	All aspects of design in the organization, but principally products, brands and service	Change in environment, society, economy, politics and organizations
Develops and fosters design competency along...	Top management, board members, design leaders, design consultants, design team, cross disciplinary design teams	Top management, board members, senior management, design management consultants	Every area of the organization
Achieves objectives of...	Managing design to deliver strategic goals	Managing design to	Delivering sustainable organizations in the context of societal and global wellbeing

		deliver strategic goals	
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Cooper & Junginger argue that this paradigm is particularly salient in public sector settings, as a reflection of the social and human nature of most, if not all, public policy concerns. A global environment characterized by intractable social, economic, environmental and political challenges calls for an increased use of design-led approaches to problem-solving: “Because the skills and methods that constitute design are useful in responding to the challenges facing us today, designing is now being recognized as a general human capability. As such, it can be harnessed by organizations and apply to a wide range of organizational problems.” (2011:27).

The question then becomes not only how design approaches are in practice applied in public sector organisations to tackle public problems, but also the evolution of design capability: how public managers themselves “design” in their quest to proactively affect human and societal progress. Boland & Collopy (2004) frame the potential of design in management in their edited volume *Managing as Designing*, suggesting that:

*Managers, as designers, are thrown into situations that are not of their own making yet for which they are responsible to produce a desired outcome. They operate in a problem space with no firm basis for judging one solution as superior to another, and still they must proceed (Boland & Collopy, 2004:17).*

This indicates several interesting challenges for the public manager as designer: What kinds of situations do they find themselves “thrown into” and how do they relate to the nature of the type of problem space this entails? To what extent may this problem space be redesigned?

### *Dimensions of design practice*

Design appears to offer a different set of approaches to the task of understanding public problems. In the present research, three such overall approaches, or design dimensions, have been identified as shown in the table below:

*Table 2: Mapping design approaches and related management action by cases*

DESIGN	Exploring the problem space	Generating alternative scenarios	Enacting new practices
DIME			
N-			

## SIONS

Design appro aches	Field resear ch (text/p hoto)	Field rese arch (A/V )	Visuali sation	Idea tion	Con cept dev.	Protot yping	Use r test ing	Employe e involvem ent and impleme ntation	Busin ess cases, evalu ation
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First, design is associated with an array of highly concrete research tools, ranging from ethnographic, qualitative, user-centred research, to probing and experimentation via rapid prototyping, to visualising vast quantities of data in new and powerful ways. Drawing on elements of systems thinking and behavioural economics, design research seems well positioned to help policy makers better understand the root causes of problems and their underlying interdependencies – the “architecture of problems” (Boyer et al. 2010; Mulgan 2013). Given that many, if not almost all, demands for innovation in public policies and services are triggered by the recognition of some kind of unsolved societal “problem”, this should position design centrally in the policy makers’ toolbox.

Second, the emergent and more collaborative aspects of design suggests that alternative scenarios could be increasingly co-designed through an interplay between policy makers at different levels of the governance system, interest and lobby groups, external experts and, not least, end-users such as citizens or business representatives themselves. Graphic facilitation and the use of tangibles and visuals for service and use scenarios can provide the means for cross-cutting dialogue, mutual understanding, and collective ownership of ideas and solutions.

Third, design offers the devices – concepts, identities, interfaces, graphics, products, service templates, system maps – that can help give form and shape to public initiative in practice: The ability to create deliberate user experiences and to make services and products desirable and attractive, impacting human behaviour and outcomes, is at the heart of design practice.

The key concern of this paper is the first of these three design dimensions: Exploring the public problem space. How can design – often framed as design research, design anthropology or ethnography – provide a qualitatively different way of understanding public problems and possibly also new opportunity spaces? What characterises the ways in which public managers experience these methods, activities and processes, and how do they relate to



them? To what extent do they generate appetite for further development work and potential innovations, opening up for the generation of new ideas and concepts? This delineation means that wider research questions raised by the two additional dimensions are not addressed; for instance, the (very relevant) question of the extent to which design adds 'more' or 'better' value than other more traditional approaches to strategy and change is beyond the scope of the present paper.

## **Five dimensions of design attitude**

How might we understand ways in which managers can relate to design practice? In an exploration of what Boland and Collopy's notion of design attitude might entail, Kamil Michlewski (2008) undertook doctoral research in which he interviewed a number of design consultants and managers from firms like IDEO and Philips Design and mapped how these people viewed their roles and practices. On the basis of this study he subsequently proposed five characteristic dimensions of *design attitude*. More recently, Michlewski has developed his thesis into a book and has tested a number of the design attitude dimensions statistically through a questionnaire-based survey among nearly 240 designers and non-designers. According to Michlewski (2014) the survey showed a statistically significant difference in the attitudinal dimensions between designers and non-designers.

I will describe these attitudinal dimensions briefly in this paper, not with the intent to use them as a testable set of hypotheses for the present research, but rather as a conceptual frame that might provide a useful interpretative lens for my exploration of public managers' approaches to problem-solving by engaging with design. The design attitudes presented in Michlewski's most recent and developed (2014) work are as follows:<sup>1</sup>

*Embrace uncertainty and ambiguity.* Michlewski perceives this dimension in terms of the willingness to engage in a process that is not pre-determined or planned ahead, and where outcomes are unknown or uncertain. It is an approach to change that is open to risk and the loss of control. According to Michlewski (2014), true creative processes are 'wonky' and often stop-start.

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<sup>1</sup>The original (Michlewski, 2008) terminology on design attitudes was a little less straightforward, which perhaps reflects that his recent work is intended for a wider and also non-academic audience: 1) Embracing discontinuity and openendedness; 2) Engaging polysensorial aesthetics; 3) Engaging personal and commercial empathy; 4) Creating, bringing to life; 5) Consolidating multidimensional meanings.

The challenge for managers is to not resist, but to allow for the creative process to unfold.<sup>2</sup> One might say that this reflects an acceptance of Boland and Collopy's (2004) point that managers operate in a problem space where the basis for judging one solution as superior to another is at best questionable. Managers who embrace uncertainty and ambiguity are likely to say "why don't we just do it and see where it leads us?"

*The power of five senses.* According to Michlewski, designers have a fondness for using their aesthetic sense and judgement whilst interacting with the environment. As a dimension of design attitude, this is not only about 'making things visible', or about creating beautiful designs, but about merging form and function in ways that work well for people. Designers recognize this and are likely to work with more than one or two senses.

*Engage deep empathy.* Michlewski finds that designers intuitively "tune in" to people's needs and how they as users relate to signs, things, services and systems. What do people want, what kind of quality of life are they seeking? Using true empathy requires courage and honesty in abandoning one's mental models. Engaging personal and commercial empathy is in Michlewski's interpretation also about listening to better understand the human, emotional aspect of experiencing products and services.

*Playfully bring to life:* To Michlewski this means creating traction in an innovative process/dialogue designers truly believe in the power of humour, playfulness and bringing ideas to life.) This dimension has to do with an affinity for creating things, and bringing new solutions to life and with creatively bringing ideas to fruition. One designer in Michlewski's research describes this as the process of visualisation and rapid prototyping – a core activity of many, if not all, designers.

*Create new meaning from complexity:* Michlewski argues that what is at the heart of designers' ways of doing things is the ability to reconcile multiple, often contradicting points of view into something valuable that works – they use empathy as the gauge. This describes the designer as a person who "consolidates various meanings and 'reconciles' contradicting objectives" (Michlewski 2008: 5). This reflects an ability to view a situation from a wide variety of perspectives, essentially creating a landscape for exploring further

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<sup>2</sup>Based on email correspondence with author (February-March 2014)

problems. Michlewski defines this process, essentially of consolidating multidimensional meanings, as the managers' ability to operate in an analytical-synthetical loop in order to achieve a balance between the cohesion of the organization on the one hand and external constraints on the other.

These five dimensions were empirically derived from the design consultancy community and a significant number of the interviewees were themselves trained designers. Most public managers have a professional and experiential background that is vastly different. My aim is therefore not to test the transferability of these conceptual dimensions to the public management domain, but rather to draw, where relevant, on the interpretative prism offered by Michlewski and Boland and Collopy in a discussion of my findings.

I will thus examine how managers experience design practices that are focusing on exploring the problem space by looking at ways in which they understand and interpret "what is going on". Dealing with public challenges such as family services, work injury or care for the elderly, what is the contribution, if any, of design in helping managers understand the problem space? Given the particular nature of public problems – complex, interdependent, 'wicked' (Rittel & Webber, 1973) – how do managers relate? Are some of the insights by Kamil Michlewski (2008) concerning design attitude helpful in interpreting how the managers respond to design practice? For instance, to what extent are managers in fact able to keep an open mind about the problem at hand while working on a practically focused solution?

## **Challenging the problem space: Empirical findings**

Among the public managers interviewed, there is a recurring pattern that they systematically tend to question the assumptions on which they base their decisions.<sup>3</sup> This manifests itself in different ways, but part of it does concern the managers' ability to confront their understanding of problem space. By understanding the problem space I refer to the process of exploring the characteristics, dynamics and boundaries of the problem at hand; and making those dimensions explicit: "Formulating the mess" one might call it (Ackoff et. al., 2006: 44).

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<sup>3</sup>This section partly builds on Bason, Christian (2014) "Design Attitude as Innovation Catalyst", in Ansell and Torfing (2014, forthcoming)

In defining the notion of 'challenging assumptions', let us examine some ways in which design seems to catalyse the ability of public managers to do this, drawing on some particular examples.

### *Suspending judgement*

Carolyn Curtis is a public manager in family services in Adelaide, Australia. She conveys the process of involving end-users (at-risk families) in a design-led innovation project. For nearly eight months she conducted field work together with a sociologist and a designer from The Australian Centre for Social Innovation to explore, in-depth, how vulnerable families lived their everyday lives. To her the project had a profound effect:

*It is bottom-up, it has end-user focus, and there is no fixed structure, criteria or categories. The work has been extremely intensive. We have focused on motivation and on strengths within the families – identifying the 'positive deviances' where some families are actually thriving, even though they shouldn't be, according to the government's expectations. We have focused on finding entry points and opportunities, rather than just trying to mediate risk. It is a co-design, or co-creation approach, and it has been entirely new to me. We are ourselves experiencing the actual interactions within and amongst the families, and breaking them down to examine in detail how they might look different. It is very concrete, capturing what words they use (...) It all looks, feels and sounds different than what I did before. Taking an ethnographic approach is entirely new to me. It has helped me experience how these citizens themselves experience their lives, and has allowed me to see the barriers. I have had to suspend my professional judgement.*

In this case it is the deep dive into citizens (families) experience through ethnographic research which seems to allow this manager to shift her professional knowledge and experience to the background, and to 'suspend judgement'. A key theme here is the shift in the managers understanding of the problem from mediating risk and assessing the legal basis for taking action and removing children from families to 'finding entry points and opportunities'. In a sense, what this manager used to understand as a problem space is shifting to an opportunity space.

### *Questioning staff behaviour*

Paula Sangill is Head of Secretariat of the City of Holstebro's department for Elder Care in Denmark. Having worked with a team of service designers from

Danish design consultancy Hatch & Bloom, Sangill explains how she has increasingly come to question her staff's practices as they carry out in-home services for elderly citizens. Whereas the design project focused on the city's "meals on wheels" programme, Sangill tells of a recent situation where she challenges the entire workflow her employees carry out as they spend perhaps 15 minutes with a senior citizen in that person's apartment, delivering dinner but also helping with other personal matters:

*So when they say we cannot manage to do it, how do you assess that message, and what quality is it in fact that you will support them in being able to provide? What kind of service is it? Do you talk with them about how to get in the door, and do you talk with them about it from a service experience approach?*

What Sangill is explaining here is that by working with the design team, she has found that what matters is the citizen's entire service experience, rather than the details of the 'delivery' of professional's practices. But this is not something that is ever articulated by her staff. At a staff meeting, Sangill even engages in a bit of role-playing to challenge her staff to explain to her why there cannot be time for a personal conversation with the citizen, all the while they help that person use the toilet or as they prepare her meal. Sangill's message to her staff, she explains, is that:

*Have we talked about what our approach is, how the citizen must experience it when you have walked out of the door? Do we talk about that? No, we do not.*

This mode of challenging assumptions then very much has to do with placing the citizen's experience at the centre, insisting that the outcome of the process needs to be a better service experience. Working with the design team has sensitized this manager to the importance of the experience as viewed from a citizen perspective. And it prompts her to insist on taking up this conversation with her staff.

### *The eye-opener*

Anne Lind was until the end of 2012 the Director of the Board of Industrial Injuries (BII) in Denmark. She explains how she had the sense that something in her organization needed to change, although she could not be precise about what it was.

The Board of Industrial Injuries is a government agency in Denmark and part of the Ministry of Employment. The responsibility of BII is to handle worker's injury claims and ensure that the case management is legally correct, so that insurance settlements (which are generally paid by private insurers) accurately reflect the degree to which citizens have lost their ability to work. It has also historically been a key emphasis in the organization to ensure highly efficient case management. Tools such as lean management, team-based work and performance-based remuneration, and the introduction of digital systems in case and workflow management, have been used extensively in BII's pursuit of increased productivity.

Meanwhile, in the period 2007-2012, BII collaborated with various designers, including MindLab, a government-run innovation unit that is part of amongst others the Ministry of Employment, and *Creuna*, a private service design firm, to explore how its services are experienced by citizens. The methods included ethnographic field research (contextual citizen interviews recorded on video and audio) as well as numerous workshops with staff and management.

To Ms. Lind, leveraging design approaches to better see how her organization's services impact citizens, was "a shift in perspective". Referring to the experience of watching video-taped interviews with injured citizens who share their stories of the case management process, Lind says:

*It is an eye opener ... it is more concrete. [The design process] has made me aware that there are some things we have to look at. ... So far we have been describing a service to citizens, not giving them one.*

This quote reflects a questioning by Ms Anne Lind, the Director: What is the ultimate contribution of an organization such as the BII? What does it mean for us to provide a service? At a more fundamental level, the questions derived from this work became an issue of the mission of the agency: Is it to efficiently handle the case process to settle insurance claims and payment in accordance with legal standards, or is it to produce some kind of longer-term outcome for citizens and society? By challenging her assumptions, the Director implicitly asks questions about the underlying purpose of her organisation, and hence of key policy and governance issues that need to be addressed.

### *Design attitudes in the mix*

The types of management engagement with design that happens in the cases here focus in various ways on *challenging assumptions*. This reflects Boland & Collopy's point that "the first step in any problem-solving episode is

representing the problem, and to a large extent, that representation has the solution hidden within it.” (2004:9). In using the term ‘episode’ they may implicitly be referring to Peter Rowe (1987) who likens the solving of design problems as a process unfolding in ‘skirmishes’ or ‘episodes’. Rowe points out that the problem, as perceived by the designer, “tends to fluctuate from being rather nebulous to being more specific and well defined” (1987:35). It appears that

The examples above all address the issue of challenging and (re)framing the problem as it is understood by the manager, and in some instances also the staff. Another way of interpreting this style of thinking and questioning assumptions is to draw on Michlewski’s concept of design attitude, Embracing uncertainty and ambiguity, which reflects managers “[...] keeping an open mind while working on a practically focused solution [...]” (Michlewski, 2008: 381). So for instance the way in which Ms. Sangill, the manager of the local government elder care services, begins to explore new solutions by playing them out and by challenging her staff and her own thinking about their practices.

There are also, in the stories we hear from the managers, clear elements of engaging “deep empathy” (Michlewski, 2014), where the manager herself becomes affected. All three managers in these cases are in different ways empathising with citizens, end users: Carolyn Curtis by seeing the potential of service transformation from a risk-based approach to helping families thrive; Paula Sangill by asking questions about the whole service experience; and Anne Lind by emphasising the eye-opening fact that whereas citizens may be provided by a service they do not experience a service. And in the case of both Ms. Sangill and Ms. Lind, they allow the rich qualitative material to affect the organisation, by prompting new conversations with their staff.

## **Discussion: Design as a tool for opening public governance?**

From a broader public management perspective, what is the significance of challenging and redesigning assumptions in the ways we have seen above? Fundamentally, the design processes seem to open up questions that concern the underlying way in which public organisations carry out their missions (or, indeed a question of what that those missions are). Design not only becomes an approach that allows for the exploration of public problems; it becomes a catalyst which may drive the opening of new governance models.

To Carolin Curtis, the manager in family services in Adelaide, it becomes a governance issue of the fundamental effectiveness of her organisation’s current

efforts; the model she envisages (and has subsequently built in the form of the independent organisation *Family by Family*) is one that shifts from a focus on the legal grounds for removing children from their families, to one that focuses on what it will take to help families thrive again.

To Paula Sangill, the model she is allowed to explore is one which shifts from a professionally defined standard of efficiency and 'quality' to citizen's holistic experience of their interactions with public employees becomes. It is a model that may be built on 'quality' as defined by the citizen.

To Anne Lind she challenges the notion of her agency as the steward of a legally correct application of rules and regulations to work injury cases, and to questions of rehabilitation and of placing return to labour market as the core mission of the Board of Industrial Injuries.

The type of governance model that implicitly becomes explored through these various challenging processes might best be characterised as peer-to-peer production, or co-production. While by no means a new concept (the term was coined in the early 1970s by Nobel laureate Elinor Ostrom), what is interesting is how design approaches seem to elicit highly concrete considerations by managers which recognise that they might be able to produce...

*...public services in an equal and reciprocal relationship between professionals, people using services, their families and their neighbours. Where activities are co-produced in this way, both services and neighbourhoods become far more effective agents of change. (Boyle and Harris, 2009:11)*

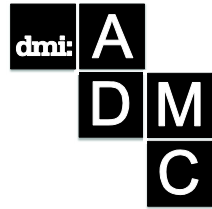
Hereby design catalyses the emergence of a new governance model, which is reflected in "the growth of new and different ways to involve users of social services as co-producers of their own and others' services." (Pestoff, 2012:15). As discussed in the initial sections of this paper, design offers approaches and methods which may enable managers to steward their staff through the process of taking the organisational consequences of these types of discovery, and of enacting the new practices that may eventually enable a shift towards co-production a de facto model of governance. Not only does design thus contribute to challenge public managers' appreciation of the problems they are facing, design might catalyse the identification of much more effective ways of dealing with them.



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## Public and Collaborative: From participatory design to design for participation

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*Current practices in design for the public sector involve collaboration with public agencies, service providers, and the public to whom they are accountable. This participatory design approach creates a unique space in which government agents and the public are teaming together to create new conditions to promote change that accounts for each others' needs. Yet despite the inclusion of multiple stakeholders in the design process, decision-making for creating services and policies ultimately lies within the public agency and is bound by policy mandates and political decisions. While much has already been discussed about the transformative nature of design as a source of innovation to the public sector, we build on this literature by suggesting the need for designers to re-focus efforts on examining and re-distributing the decision-making processes, of creating stronger, more responsive relationships with public officials by imagining new forms of participation. We call this approach designing for participation. In this paper we look at Public & Collaborative NYC<sup>1</sup>, a research program created by the Parsons DESIS Lab at the New School<sup>2</sup> to explore how co-governance, co-design, and co-production approaches can provide better public services in New York City. We examine initiatives individually and their attempts to increase participation and trust between citizens, service providers, community-based organizations, businesses, and government. We explore their unique successes, as well as ways they could further help facilitate more public participation and distributed decision-making.*

**Keywords:** public policy, public services, participatory design

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1 <http://nyc.pubcollab.org>

2 <http://newschool.edu/desis>

## Introduction

Designing for participation is an approach that seeks to re-imagine public polices and current service delivery in public agencies by transforming the relationships between designers, civil servants, and citizens and ultimately by making the process of public service design more inclusive. Increasing public demands for greater government accountability in the wake of the economic recession and emerging narratives of greater citizen engagement substantiate this type of design work. However, designing within the politicized, hierarchical world of government agencies is no small task and requires every designer involved to learn how to navigate the political arena and its complex power structures. Despite the inclusion of multiple stakeholders in participatory design processes currently championed by designers working in the public sector, decision-making for services and policies ultimately rests within the public agency and is bound by policy mandates and political decisions. Policy action is kept separate from the public. Decision-making remains concentrated within the hierarchies and bureaucracies of the political system. We believe that there is room yet for designers to more fully embed distributed decision-making between civil servants and those they serve. While participatory design methods facilitate collaboration with public agencies, service providers, and the public, we advocate that designers go a step beyond participatory methodology and actively facilitate truly collaborative situations for shared decision-making. The aim of incorporating such mechanisms within the design deliverable is to distribute powers from political actors to public and civil servants to create an environment that allows for greater empathy, more civic trust, transparency and overall accountability.

We look at “Public & Collaborative NYC”, a program of activities developed by Parsons DESIS (Design for Social Innovation and Sustainability) Lab at the New School that aims to explore how co-governance, co-design, and co-production approaches can provide better public services in New York City. Public & Collaborative NYC initiatives include:

- *Designing Services for Housing* – Undertaken with the NYC Department of Housing Preservation and Development and the nonprofit Public Policy Lab, this project aimed to enhance the affordable housing application process and to imagine how affordable housing developments can provide space for new residents and neighbors to engage in new activities and collaborations

- *Civic Service* – A platform created to encourage interagency collaboration in local government and to inspire civil servants towards creativity and intrapreneurship within the walls of government agencies
- *iZone Academy* – In partnership with the New York City Department of Education’s Innovation Zone (iZone), the DESIS lab is engaged as both research partner and design facilitator to collaboratively design and develop a multi-located district high school using partnerships with business, government, and cultural communities as the place and context for learning, blended learning and innovative use of time to allow for self-pacing and uniquely support specific learning outcomes

We examine each of these initiatives individually, and their attempts to increase participation and trust between citizens, front-line service-providers, community-based organizations and advocates, and government. We interview designers and civil servants involved in these initiatives and ask them what they believe are the unique successes of each program, as well as ways they are encouraging public participation and distributed decision-making.

In this paper we point to the risks of participatory design becoming a tool to normalize or contain citizenship discontent and we argue that design, by explicitly working towards greater participation and collaboration with the public, can in fact open up the notion of citizenship in more tangible and meaningful ways. We explore experiments of service design that attempt to challenge social and political power structures – acutely aware of the context in which they are enacted.

By political we mean in general two connected concepts: a commitment to changing an existing structure of engagement and the addressal and readressal of power. These aspects correspond to Barbara Cruikshank’s critique of citizen engagement programs, typified in what she describes as *technologies of citizenship*. Technologies of citizenship are participatory methods that:

...operate according to a political rationality for governing people in ways that promote their autonomy, self-sufficiency, and political engagement...they are intended to ‘help people help themselves.’ This is a manner of governing that relies not on institutions, organized violence or state power but on securing the voluntary compliance of citizens. I argue,

however, that the autonomy, interests, and wills of citizens are shaped as well as enlisted (1999, p. 4).

Technologies of citizenship can create an artificial sense of authentic engagement that distorts true power relations and exploitations within a political system.

We present the Public & Collaborative projects and the discussion that follows as experiments that open up the idea of citizen engagement via the methodology of participatory design. We do not claim that Public & Collaborative is reimagining political relationships in a major way – but we are incrementally hopeful. Momentum is moving towards the legitimacy of design as a powerful means of transforming relationships. Beginning with the methodologies of co-design and those of co-production, upon which each Public & Collaborative program is based, we consider public involvement and begin to conceptualize ways in which this might be taken further. However, we must be responsible and aware of the contexts in which “the public” is defined. Keeping this in mind, we explore the evolving relationships within Public & Collaborative as a snapshot along the spectrum of social/political change and the role design plays as a tool by which agencies and citizens alike engage in meaningful dialogue.

### *Public Governance and Citizen Discontent*

Over the past decade citizen discontent has increased globally. There is a sense that democracy is failing: in settings where state services are simply unavailable to the point of anarchy with NGOs claiming to fill in (for example, in Darfur and Haiti); settings where state services were available but are now being cut back in complex ways (as in much of Europe); settings where state services are offered through means-testing and partnerships with non-profit organizations (examples include the United States, Britain, Australia), and settings where state services are clogged by unresponsive and corrupt mechanisms (India for instance) or only selectively available (Brazil). Ortiz, Burke, Berrada, and Cortes (2013) studied 843 world protests in 87 different countries from January 2006 through July 2013 and found that the “overwhelming issue is the lack of real democracy, people’s awareness that policy making has not prioritized them, even when it has claimed to.” In other words, there is a growing disillusionment with governments, their policies and public service structures. Critical analysis

that has surfaced in the wake of the 2008 economic crisis echoes these sentiments. There is the sense that democracy is failing (Palma 2009: 838).

### *Design and Politics*

Derek Miller (2010), founder of the Policy Lab, an international policy design institute based in the United States, argues that design, as a social process, can transform epicenters of governance – traditionally the only true centers of action, policy formation, and decision-making – into symbiotic spaces where knowledge co-exists and informs action. For the public sector designer, knowledge refers to the needs, opinions, and ideas of citizens, front-line service providers, community-based organizations and advocates, as well as intermediary subcontractors that bridge gaps between a public agency and service delivery (such as housing developers). He argues that as of yet, there is no space in government functions for design – the chasm between knowledge and action is too wide. However, it is not the end of the road for design, because

*“the very definition of legitimacy is starting to evolve. People don’t just want a voice anymore. They don’t just want to elect people who will advance their will. They are starting to demand results” (Miller 2010, p. 4).*

People are increasingly incited to action and vocal outcry in response to government systems they perceive as failing. As demands on governments change and the systems themselves respond, it is a valuable opportunity to set a precedent in public sector reform. Going beyond participatory design and actually devising and imbedding ways for citizens to take more active roles in their governments can have long-lasting impact in the decades to come.

In this situation it is useful to look back at Hannah Arendt’s concept of politics (1958) not as a means for satisfying individual preferences and needs, but as the idea of an active form of citizenship that values civic engagement and collective deliberation. Participation in the production and delivery of services, as well as greater shared decision-making in their design and outcomes, are part of a changing ecosystem between effective service delivery, citizenship, and political objectives. David Boyle, co-director of the New Weather Institute and a fellow of the New Economics Foundation, continues,

*Most important perhaps, as we have seen, co-production relies on the idea that the users of services, and their families and neighbours, are a vast untapped resource – when the trend has been to regard them as drains on an overstretched system. Because of this, co-production represents a different pattern for the future of public services. It represents an attempt to tap into these resources and use them to reach out upstream of problems and prevent them from happening in the first place. (Boyle 2014, p.18)*

Arendt is sensitive to the need for spaces where engagement and free discussion can happen between a variety of people; so on one hand it is about active citizenship, on the other hand it is also about creating structures responsive to these needs and channeling them towards forms of stable representation. Participatory design is a framework in which the needs of the public can legitimately be brought to bear via the conduits of democratic representation.

All of this is to say, or rather situate, participatory design within a spectrum of political considerations and evolving political contexts. We understand participatory design as an opportunity to further democratic processes.

## **Generating Conditions for Change**

A lot has already been written about the challenges facing designers working in the public sector. Christian Bason, director of MindLab, the cross-ministerial innovation unit in Denmark, has recently outlined what he views as major challenges facing designers working in the public sector. He discusses the difficulties in creating authorizing environments – how to situate design as a legitimate and valuable tool within government – and the opening up of bureaucracy to co-production:

*“social and public innovation that takes a citizen-centered and value-oriented approach is ultimately disruptive to the existing public governance paradigm. It is severely challenging to the command-and-control logic of hierarchical organizations and to the linear (if unrealistic) logic of the policy-making process” (Bason, 2013).*

In other words, designing for participation necessitates specific conditions, places and processes that facilitate more civic trust. In order to



design in such a politicized space, designers and citizens still need authorization and legitimacy from the very governments and public agencies they aim to inspire. The Public & Collaborative initiatives have the support NYC agencies and civil servants, and provide an interesting look into the ways these agencies engage with citizens and other organizations around decision-making. A large unknown is the level of reluctance among the political elite when faced with service designs that decrease their level of influence.

Brenton Holmes, a senior researcher in politics and public administration in the Parliamentary Library of Australia, brings up another valuable concern regarding citizen engagement, a crucial component for successful, valuable design for participation. Not only must policy-makers come to view the public as “a distinct and legitimate voice capable of holding other sites of power accountable” – arguably a paradigm shift in itself – but it is also built on the assumption that the public will be invested, engaged, and *participate* (2011). In order for designing for greater participation to achieve legitimacy within the necessary authorizing environments, it must have tangible social and political benefits and citizens must willingly engage in order for design for participation to have an impact.

## **Public & Collaborative**

Public and Collaborative is a series of initiatives developed by Parsons DESIS Lab at the New School that aims to explore how new forms of collaboration such as co-governance, co-design, and co-production can provide better public services in New York City. Within the Public & Collaborative framework Parsons DESIS Lab has been working on projects with different New York City agencies, creating programs to inspire civil servants, educate design students, and inform the public and the design community about government processes and practices. Below we outline three Public & Collaborative initiatives. For each initiative we present a brief overview and the ways in which they have experimented with the notion of design for participation. We interviewed those involved with each project to try to better understand how design processes have pushed established relationship structures towards openness and transparency.

### *Designing Services for Housing*

The *Designing Services for Housing* initiative as part of Public and Collaborative has been discussed extensively elsewhere (see: Maudlin and

Staszowski 2013). In brief, it is a collaboration between the Public Policy Lab, a non-profit service design organization, the NYC Department of Housing Preservation and Development (HPD), and the Parsons DESIS Lab with the support of the Rockefeller Foundation. The goals of the project were to enhance user experience and touchpoints across HPD's offerings and to support community engagement in neighborhoods with major HPD investment. After intensive design research, the resulting pilot proposals included making informational materials for affordable housing lottery's applicants more accessible, supporting community housing developers, and creating HPD face-to-face "street team" outreach initiatives (See Figure 1). Ultimately *Designing Services for Housing* sought to strengthen the network between NYC citizens, HPD leadership and staff, housing developers, and housing advocates in true participatory design fashion.

We sat down with people involved in this project, one from HPD and another from the design team, and asked them to share some thoughts on the successes of design within the project.

We spoke with a project manager for HPD in charge of pilot implementation, who was encouraged by the use of participatory design workshops with housing advocates and developers. These workshops, they said, led to the realization that advocates and developers wanted better information from HPD to provide their constituents and greater transparency from the agency overall. This forced HPD to figure out what information is high priority and the best ways this information can be shared. It highlighted a previously unknown information gap: while HPD was not actively withholding information, there was a clear unawareness between what they thought they were providing and what information needed clarification. Communication between HPD and housing groups will continue to evolve through the *Designing Services for Housing* pilots as HPD continues to identify ways they can better reach more people and communicate outwards. The collaboration with DESIS and the Public Policy Lab was the launch pad for this process. Via participatory design methodology, HPD is more cognizant and open about their processes and now better understands the gaps in knowledge that exist among the different parties involved in the housing lottery process.

In addition to a better understanding of the gaps in transparency, HPD also received positive feedback from affordable housing applicants who were asked to participate in the design process. Much of the user testing was a collaborative effort between the design team and the community-based organizations in the HPD network. This way of building relationships,

the project manager noted, was beneficial and ultimately had a strengthening effect between HPD and the community-based organizations.

Ultimately HPD's experience in this project has led to greater openness and engagement by involving the public and deepened their understanding how service design can better help their constituents. While understanding the value of this openness is difficult to measure, within the agency itself it is felt to be distinctly positive. There is a hopeful sense that participatory methods are gaining traction.

From the design team's perspective, we interviewed a Public Policy Lab design fellow on the project, who was brought in on a hybrid role to integrate service design methods (such as improved interfaces) with increased participation through the design and delivery processes for co-produced and co-designed services. The fellow became a strong advocate for participatory co-production.

HPD's main role in NYC housing is primarily financing and oversight. They are limited in the ways they interact with the public and must be very careful about giving applicants an unfair advantage in the housing lottery process. A distinct challenge for the *Designing Services for Housing* design team was the sensitivity inherent in the work of HPD. HPD could not embark upon anything that pertains to counseling people on their applications, limiting the direct transformation of citizen-agency relationship in this particular case. Alternatively, most of these needs for counseling and information, as revealed during the discovery phase of the project, and are taken care of via informal channels. By reviewing the agency processes that limit these interactions, the design team identified a need for greater advocacy for community-led innovation.

The fellow noted that as the project continued, the design team began to serve as a means of legitimizing things HPD wanted to do but couldn't justify prior to the project. Because the design team were outsiders to the agency, their recommendations gave HPD permission to think and do things outside their normative behaviors. The project helped create an "authorizing environment" on its own and helped change relationship between civic servants in HPD and their approach to innovation in a really positive way. It opened up possibilities in their everyday procedures.

Finally, we asked the HPD project manager what HPD thought would be the best outcome for the *Designing Services for Housing* project. HPD would love to see a reduction of the number of people who are filing erroneous applications, thus reducing the ratio of people being rejected and making the process of applying (for those who should) more transparent. Many

people apply for public housing even if they don't qualify, or apply and don't know where their application stands, or what their chances are, or how to make best decisions for their circumstances. This facilitates a frustrating and disempowering cycle that damages people's relationships with housing developers and HPD alike. Participatory design, as a first step, can serve as a means to this end by facilitating mutually accountable relationships between HPD, community-based organizations, housing developers, and citizens.

Filling the gaps in knowledge to facilitate the lottery application is certainly helpful but one way to think about future relationships is to consider what information on housing policies themselves would look like, and how would they be presented to the public? As Sarah Schulman of InWithForward writes, "But *should* a public service's remit just be to deliver the same-old services, better? Or *should* we be redefining what constitutes a public service, and a public agency?" (2014). Design processes have opened up relationships within the public housing system in NYC, and moving forward, design can serve as a tool to involve all stakeholders in a conversation around what those relationships mean.

### *Civic Service*

Civic Service is an initiative created to facilitate civic innovation from *within* government. It is not an intervention with a typical chronology, but rather an ongoing conversation through a series of seminars, workshops, lectures, and increasingly visible support of innovation within NYC civil servants' community (See Figure 2).

We talked with one of the Civic Service co-founders to get a better sense of the motivations behind the project. Despite the prevailing attitude that consultants, designers, and external collaborators are still crucial partners for any true civic innovation, Civic Service advocates that civil servants themselves can drive real change in public agencies if there is the appropriate groundwork. Often civil servants face an atmosphere of distrust and lack of inter-departmental collaboration. In addition there is a sense of disempowerment among civil servants to identify shortcomings and improve their departments of their own initiative. There is as of yet an inadequate mindset or authorizing leadership for this kind of civic innovation to flourish. Civic Service is trying to create the foundation and infrastructure for exactly this type of innovation.

Civic Service has spent past year laying the mental groundwork. Through lecture series, workshops, and a growing network of supporters,

the goal is to re-think the way civil servants can collaborate with each other and their constituents to improve current service delivery practices and better serve NYC citizens. Civic Service has identified four steps that help achieve this goal within government:

1. Exposure to new ideas
2. Training in creative skills
3. Building foundation for collaboration
4. Rapidly prototyping public services

As discussed above, designing for participation necessitates a fundamental shift in government power structures. By encouraging the same types of collaboration among civil servants that public sector designers encourage between civil servants and citizens, there is hope that an understanding of the process and increased empathy will emerge. Civic Service recognizes both the frequency of contact citizens have with local agencies and the many programs designed to inspire citizen engagement. Civic Service, in direct redress, aims to push from the other direction and inspire civil servant engagement with citizens.

Civic Service points towards an interesting reflection for the future utility of participatory design processes. It challenges practitioners to not only consider its methodology for citizen engagement (and future conversations for what that looks like through the socio-political lens), but also for challenging the status quo for the outcomes of local agencies.

### *iZone Academy*

iZone Academy is an initiative that fundamentally re-imagines a typical public high school. A collaborative effort with the NYC Department of Education (DOE), iZone Academy will offer personalized instruction through blended learning, mastery-based assessment, and real-world learning. It is a high school based on a multi-location model where students will work with teachers, businesses, cultural communities, and local governments. Within this framework students will learn outside traditionally held school boundaries, using the city itself as a backdrop to project and challenged-based learning. The 2014-2015 will be the inaugural year for iZone Academy.

Two project managers for iZone Academy from the DOE shared their thoughts with us on the design and future hopes for the project.

According to the project managers, utilizing a design methodology to understand students and teacher needs and aspirations was a stated goal

from the outset of the project. Because iZone Academy has largely been about school processes reform and design, understanding the clarity and effectiveness of any new process and experiences from the perspective of students and teachers has been critical (See Figure 3).

Thus far in the prototyping tests the responses from teachers and students have been very positive. They have felt that their input has had a more direct impact on iZone Academy in ways that go beyond traditional school reform methods. Typically an agency has an idea, brings people in to validate that idea, then says there was participant involvement. Several participants in this project felt that their feedback helped support a refined model of original thinking and engagement that went beyond simple validation.

Because iZone Academy is a radical new way of thinking about a school, it will be difficult to compare its unique successes and accomplishments. However, having a viable school where teachers who are happy to work and a track record of confident experiences around learning are among iZone's top priorities. In addition to the tactical objectives, creating a demand to learn more about iZone Academy, increasing the number of partners who want to be a part of the school, and cultivating a waitlist and high demand among students are all secondary hopeful measures centered around community buy-in.

While the project managers note that the design process has been slow moving and iterative, there is much hope and optimism that this approach has resulted in a school that will be successful. The unique skills of designers in making the school process flexible and visual has resulted in high quality artifacts that will be effective in helping future programs learn and iterate upon the iZone model. In the long run, the hope is that this initial design process will lead to greater attention and uptake, and will make the next group of schools designed on the iZone Academy model even more effective, and innovative.

While the larger decisions about the exact shape of iZone Academy rested with the design team and DOE, involving teachers and students in the design process in such a way as to actually use their ideas at the very outset of the design process presents an exciting form of engagement.

## Conclusion

Design for participation remains a key challenge for democratic governments. What role should a citizen have? What does participation

*Public and Collaborative: From participatory design to design for participation*

mean? What are the boundaries of participation? How much participation is good? Participatory design approaches offer a new way to come to terms with this problem. However, it also presents designers and policy-makers with new questions and challenges. With this paper we seek to open up the possibility for design to go beyond consultation and to look for ways to embed decision-making among all service stakeholders.

Public & Collaborative initiatives' impact is still to be determined. The *Designing Services for Housing* pilot programs are underway, with the genuine hope that better, faster information transfers will not only make HPD's offerings more efficient, but also foster greater trust and reliance on the agency. Civic Service is championing the need for inter-governmental innovation, and among certain circles there is optimism that support for internal collaboration is not too far in the future. iZone Academy embodies unique modes of collaboration and partnership in the education sector.

The Public & Collaborative initiatives exist within a unique political, social and intellectual moment. They each encourage the participation of citizens, agencies, and organizations in the production of services and invite all parties into new conversations. In the process, relationships within the current public service paradigm are shifting. As *Designing Services for Housing*, Civic Service, and iZone Academy take root in New York City, we look forward to the future where design can help bring about new relationships and roles between people and their governments.

## Figures and Tables



Figure 1 NYC HPD Street Team pilot (May 2014)



Figure 2 Civic Service workshop on Service Design (July 2014)



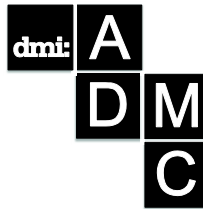
Figure 3 iZone Academy scenario building workshop (February 2014)

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# Citizen-Centric Public Policies and Services Through Design

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*The Singapore Public Service is well regarded internationally for its efficiency and effectiveness in policy and service delivery. Notwithstanding this, it faces challenges similar to public services around the world, including citizens' rising expectations and increased desire for participation on policies that impact their lives. The changing operating environment is driving many public services to develop new skills and capabilities, in order to continue delivering good policy outcomes. The Government has adopted design thinking and other tools to support its journey towards developing more citizen-centric policies and services. Importantly, this journey has provided many useful insights, particularly on the need to address several organisational issues, including the mindsets of officers and tendency of agencies to work in silos. This paper seeks to present how the design thinking has proven to be a very useful approach to overcome those barriers to create citizen centric public policies and services. To illustrate, three Singapore public agencies have been able to see issues from the citizens' perspectives and reframe their projects to better achieve both agency and citizen objectives. The officers gained a deeper understanding of citizens' needs through ethnographic methods, experimented with prototyping and co-creating solutions with end-users, and ultimately learnt valuable lessons on how public agencies can design for better outcomes.*

**Keywords:** *Public sector innovation, public service transformation, citizen centricity, silos mentality, design thinking, empathy, reframe, sense making, prototyping, co-creation*

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## **Introduction – The Call for Transformation**

In an increasingly VUCA (Volatility, Uncertainty, Complexity and Ambiguity) environment, many public sectors around the world face a common challenge of reassessing ways to deliver better public services. The expectations of many citizens are rising, and the standards upon which good service delivery is judged upon have increased. This is partly due to citizens getting used to higher service standards in the private sector. Unique to the public sector, many citizens also want a say on policies that matter to them. Ubiquitous digital connections and advances in technology, which have strongly influenced how people access information and communicate with one another, exacerbate this. As a result of these trends, citizens now expect public services to be delivered with speed, quality and personalisation.

This current state of disturbance of living in a different world today is now 'showing up in data' in Singapore (*Tan, 2004; Leicester, 2014*), where its public service is coming to terms with rapid change and wickedness of challenges. Examining recent indicators from Our Singapore Conversation survey (*Reflections of Our Singapore Conversation 2013*), scores for the ability of Government to manage the country well remained high. However, there was a dip in the softer aspects of users' trust on the Government, particularly in areas such as understanding the concerns of Singaporeans. At the Public Service Leadership Advance in 2013, Singapore's Prime Minister Lee Hsien Loong called for public service leaders to ensure citizens' needs take centre stage in their agencies' goals:

Our policies have to change with time, to keep up with changing aspirations and needs. Our organisation also has to change with time, to provide Singaporeans with a seamless, functional service. So we are adapting the structure of our Government to meet these new needs as they arise...We have to be customer-oriented. We have to see things from the perspective of those we are serving, those who are on the receiving end when we make and carry out policies.

Our operating environment has changed. The Government no longer have all the answers to all problems faced today. Changing circumstances of today requires us to adapt fast (*Tan, 2014*) and to deal with this daunting task with empathy. In an interview with *Challenge*, a bi-monthly Singapore Public Service magazine (*Chen, 2014*), Head of Civil Service Peter Ong highlighted the pluralistic nature of our citizens where people's needs are becoming more diverse, and hence the *Public Service has 'a duty to discern which needs to meet, and to do so with empathy'*.

Nevertheless, a huge challenge lies ahead to strike a balance between safeguarding national interests and managing the diverse and sometimes conflicting needs of its people, with the balance skewed towards the former today. There is a desire for a more relational mode of governance, which involves more engagement with citizens in order to build public trust. In a Conference paper by Bason, (2012) titled 'Designing Co-production: Discovering New Business Models for Public Services' and NESTA publication by Simmons and Brennan on 'Grumbles, Gripes and Grievances: Role of Complaints in Transforming Public Service' (2013), both articles highlighted the need for a rethinking and reshaping of the relationship between citizens and government. Across governments, there is a growing recognition of the need to understand citizens better and open up spaces for them to play a greater role. Doing this effectively will require new skills, competencies and mindsets among public officers.

In this respect, design holds immense potential in helping to build a public service that is more citizen-centric, i.e. capable of delivering policies and services that can meet the needs of our citizens better.

The objective of this paper is an attempt to demonstrate how public agencies can leverage design methods and mindsets in meeting citizen-centric goals. **First**, the paper will discuss the barriers that are inhibiting citizen-centricity. **Second**, we will share a citizen-centric design model adopted by The Human Experience Lab (THE Lab) at the Public Service Division, Prime Minister's Office of Singapore. **Third**, we share three stories of how officers in the Singapore Public Service have applied this human-centric model to the issues faced at their agencies. The reflections of the public officers serve as a useful account of the impact of the design approach in their agencies to achieve citizen-centricity. This paper concludes with a summary on how design can support public services in their journey towards citizen-centricity.

## Challenges towards Greater Citizen-Centricity

We begin by analysing the current barriers and potential roadblocks before exploring how design could help agencies take on a more citizen-centred approach.

### 1. Mindsets of Public Officers and Operational Rigidity

The prevailing mindsets of public officers, is first and foremost, an inertia and a major psychological shift as organisations orientate internally to

“discern, and even solicit, customers’ needs and dreams” at the heart of their mission and vision (*Gulati, 2009, p05*). Bureaucrats need to overcome a hurdle on the road to effective renewal and this barrier is the mindset of public officers as policy makers and citizens as end users (*Vigoda-Gadot, E, Shoham, A., Schiwabsky, N. & Ruvio, A. (2005)*). No wonder public officers are often perceived removed from the reality on the ground. Sometimes policymakers forget that they are citizens too. This tendency to see themselves as distinct from citizens would invariably result in a loss of the human connection in policymaking and service delivery.

While many public agencies have embraced the concept of customer-centricity, they find that it also spawns operational chaos and job confusion because public agencies are not set up to execute on the promise (*Gulati, 2009*). Large public agencies are often made up of layers and rigid structures. Bureaucracy and red tape can be inhibitive and limiting, and often prevents public officers from exercising judgement and flexibility in dealing with new or emerging issues. Putting citizens’ needs as a priority would require public officers to adapt their approaches depending on the specific needs of various citizen groups. However, they are often not equipped or empowered to exercise flexibility or make exceptions.

## 2. Silo Mentality Creates Unnecessary Barriers

Beyond cultural issues, specialisation and organisational boundaries have resulted in increasing fragmentation of mandate amongst agencies over the years. Eggers & Singh (*cited in Bason 2012*) pointed out that organisation structures in the public service are very much hierarchical, bureaucratic and highly sectorialised, which makes the possibilities and desires for cross-agency coordination less likely to be present. Agency silos have made it difficult for the public sector as a whole to adapt quickly to changing citizens’ needs. These boundaries between agencies have made navigating from one agency to another like a “revolving door”, causing interactions with the government painful and long drawn. Bason, in his conference paper (*Bason, 2011*) stated that incentives for sharing tasks and knowledge amongst the agencies are not high, resulting in a state where no one is looking at the holistic needs of the citizens completely as a whole. Where there are overlaps, “too many helping hands” only adds to the confusion experienced by the citizen.

## 2. The True Meaning of Citizen-Centricity

Gulati stated that many organisations embrace the terms customers-centricity without recognising what it takes to achieve it (Gulati, 2009). The report 'Restarting Britain 2: Design & Public Services' described how *'unfortunately the language of human-centred has been appropriated by the marketing discipline, so even when managers say they know they need their services to be citizen-centred, they don't necessary know what that means.'* Specialisation in what we do might have caused some degree of 'expert blindness' such that we might inadvertently assume that we know our citizens well.

Yet, the span of grey areas for many policies has increased, and requests for exceptions flood the inboxes of many public officers. At times, this seems that every issue that each citizen face is unique and requires special attention. The crux of the issue is: to what extent do we really understand the needs of the users at the receiving end of our services?

A deeper connection to our citizens, based on seeing them as individuals with unique needs, is often lacking. Public agencies tend to rely on demographics and digits to identify the 'average user'. Designing in this manner tends to result in one-size-fits-all policies. While this approach may seem fair in theory, it can also result in policies that do not fit anyone particularly well in practice. Designing for the 'average user' can therefore lead public agencies to deliver mismatched services. But being citizen-centric is not asking agencies to yield to the whims and fancies of every customer either. It is being able to delve deeply into the underlying needs of our citizens, even if they are not able to articulate it well, and seek new and innovative ways to design policies and services that meet both agency and citizen objectives.

#### Design as an enabler for building citizen-centricity

Design applied in the public and social sectors in innovating citizen-centric solutions and co-production of public services is not new. Several countries have set up design centers and innovation labs such as MindLab in Denmark, The Human Experience Lab in Singapore, the Design Council in the UK with its work on design for the public sector, and SITRA in Finland with its Helsinki Design Lab that champions design within the public service.

Due to its highly flexible, disruptive and iterative nature, some scepticism is common when introducing design as an approach to design better policies and services. One shortcoming is applying design in an adhoc manner and lacking sufficient follow-through in implementation, making it difficult to realise the impact and value that design can create.

In both the 'Design for Public Good report' and 'Restarting Britain 2: Design & Public Services', published for Europe's public sector, it was mentioned that '*design is key, and not as an add-on, to structuring development in the public sector*'. Design, as a discipline and approach with over 20 years of application in social, service and strategic design is now evident as a user-centred approach in public sector innovation.

#### A Public Sector Design Thinking Model

Underpinning the three stories we will be sharing, is a Design Thinking Public Sector model adapted from 'Design for Growth: a Design Thinking Tool Kit for Managers' by *Jeanne Ledtka and Tim Ogilvie (Ledtka & Ogilvie 2011)* is put together as an iterative design process unfolded into a step-by-step process and methodology in four key phases: Reframe, Empathy, Build and Evolve, and ten key questions illustrated in Figure 1: A Citizen-Centred Design Thinking Model for Public Service. The **Reframe** stage looks at scoping the right problem by considering the voices of the citizens and key stakeholders. The **Empathy** phase explores the current needs and gaps faced by the citizens using ethnographic methods. The **Build** phase envisions a new future user experience for the targeted citizens using prototyping and co-creation approaches. Lastly, the **Evolve** stage takes us to the planning phase to identify key guiding principles, communications for policies and services, as well as key shifts and new roles needed in the agencies.

## A Citizen-Centred Design Thinking Model for Public Service

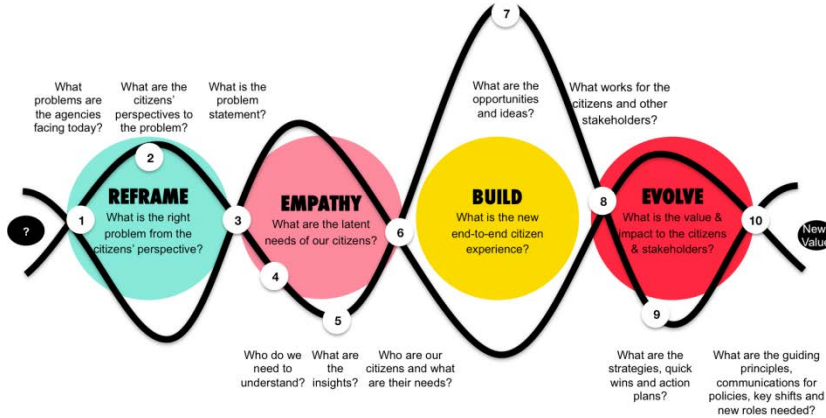


Figure 1 The four key phases and ten key questions of a Citizen-centred Design Thinking Model for Public Service. Adapted from Source: Liedtka, J., Ogilvie, T. (2011). *Designing for Growth: A Design Thinking Tool Kit for Managers*.

The narrowing and widening of the bands represent the convergent and divergent thinking of the iterative design process. While the phases appear to happen sequentially, the project may always go back to the previous phases if new insights arise during the process. All three stories in this paper cycled through all the phases but for purposes of this paper, each story has been written with a different emphasis. The first story will highlight on 'Reframe', the second story will focus on 'Empathy', while the third story will close off with 'Build phase. The Evolve phase will not be discussed at length in this paper.

### Story 1. Breaking down silos for the citizens

"Are we able to get the respective agencies to work together? Otherwise it will be very difficult. The last thing you want is to duplicate effort. This block organises a Halloween party, the other organises another Halloween party."

This was a verbatim quote from a resident in Punggol town in Singapore, who attended a co-creation session attended by over 20 fellow residents. The session was organised and run by THE Lab in partnership with staff from



the National Environment Agency (NEA), the Housing and Development Board (HDB) and the People's Association (PA), for a project that aimed to instill a greater sense of pride and ownership among Punggol residents for their living environment. The resident's quote was a reflection of how agencies seemingly worked together but in reality agencies actually talked to one another in an uncoordinated manner when dealing with similar issues that the citizens faced.

### The Challenge

Seeing things from the citizens' point of view sounds like common sense but is in fact not a common practice for many public service agencies. Public officers are often focused on their own deadlines and mandates to the extent that they found it hard to see issues from the citizens' perspectives. Each agency was a specialist in their own domain areas i.e. HDB in creating the best homes, PA in organising community bonding events or NEA in public hygiene education. No agency took the point of view of the residents, that they might desire to take greater ownership of their living environment, build closer communities and foster a deeper sense of place. **How could the agencies start to reorganise themselves to better deploy resources more effectively and work together to address residents' needs in the community in an overarching manner?**

How design helped to overcome the challenge

#### 1. Reframing the problem from inside-out to outside-in

To draw on the collective wisdom of the agencies, a committee comprising key stakeholders from the three agencies overseeing community relationships and outreach was formed. The three agencies started by reframing the project challenge. The committee members were told to remove their own respective 'agency hats', to focus on seeing the problem from the citizens' viewpoint. *What kind of challenges would the residents face with respect to the littering problem? What were their thoughts on taking the initiative to maintain the cleanliness of their living environment? What were their motivations and attitudes towards caring for the environment?*

*'Design thinking reverses the usual top-down process by allowing us to hear from our audience first, rather than telling them what we want,'* reflected Mr Brandon Low, Deputy Director, Department of Community & Outreach, NEA. By turning the lens around to see the problem holistically

from the perspective of the residents, participants were able to view the problem in a different light. What appeared to be a simple littering problem was actually a more deep-rooted issue – people generally felt apathetic about their living environment due to the lack in the sense of pride for the community and their neighbours. Certainly, NEA could have adopted measures such as fines to reduce the number of littering cases but that would not have tackled the underlying issue. Reorienting the challenge from the outside-in citizens' perspective changed the way the project was scoped, away from littering, to one that aimed to improve the living experience of Punggol so residents could take pride in and care for. This was on the premise that if people took pride in where they lived and cared for their neighbours, they would take better care of their living environment. Eventually there would be less littering cases and less complaints about the litter.

## *2. Seeing the whole picture from citizens' experiences*

With a new focus on understanding the sense of pride that people had for their neighbourhood, the committee members conducted field observations and experiments in situ throughout day and night to study people's behaviours and reactions to different scenarios of littering and cleaning in Punggol. They met with a total of 59 residents at their homes to hear their stories and living experiences on a one-to-one basis. The interview questions were designed to hear the stories and anecdotes from the residents, and they were asked to draw a journey map of their past living experience, including their highs and lows. This approach helped to elicit their thoughts and emotions where they felt pride in (or not), their attitudes on neighbours, and also their motivations in keeping their environment clean. Because there was no script in these interviews, the residents were allowed to lead the interviews with their stories and experiences while the agencies, of a maximum of three interviewing team at any time, listened out for verbal and non-verbal cues of the underlying needs, attitudes and motivations of the residents.

'My biggest takeaway is about being there hearing it first account, not through a third party or vendor where Government tend to outsource a number of things. You probably get a better sense of the angsts and feelings that citizens have', added Brandon, who shared this as his biggest takeaway. One of the key discoveries from this research was the perception that residents had with the agencies. They were confused by the episodic touchpoints different agencies had with them over similar events and

campaigns and that nobody would be the one single touchpoint that was all that the residents needed.

What is the shift and impact made?

The first step of the design approach in reframing perspectives reminded the agencies to always take a step back and to adopt a more holistic view from the citizens' perspective, especially where complex challenges such as anti-social behaviours project required multi-agency efforts. Breaking down the silo mentality to work horizontally was necessary to overcome root problems at the onset of policy development and interventions.

As a result of this new understanding about the residents' type, the agencies saw the opportunity to leverage on the natural champions amongst the residents to become advocates and be empowered by agencies to overcome the community issues on the ground. One of the key recommendations of the project was therefore for the agencies to work together as one, where officers represented themselves as friends of the residents rather than representatives from the agencies. Their roles would become that of facilitating and working with the natural champions of the community to bring about a better living experience that the community desired. Although this was an idea that needed to be further worked out for implementation, it was a paradigm shift from a multi-agency approach to a single-respondent approach as they could possibly represent the government as one service, with the goal to meet citizens' needs holistically.

Nevertheless, the path towards agencies working in a connected way centred on end users remained a challenge. Marion Blake, current chair of Association of Non-Governmental Organisations of Aotearoa (ANGOA), New Zealand, and Dave Henderson, Coordinator, ANGOA in the policy quarterly publication 'From the Outside Looking In Reactions to the Better Public Services Report' commented:

*There would always be a fear that agencies would rather achieve results individually and independently than dealing with a more complex cross-agency approach but that would totally miss the point of one public service and working to meet the needs of the citizens. (Policy Quarterly, 2012).*

Bourgon & Ryan (*cited in Khoo & Fong, 2014*) pointed out that such horizontal forms of collaboration that draw upon networks both within and outside government entails 'experimentation' and 'continual reframing' of the way complex issues are perceived and approached from the point of

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view of the citizens. As a quick win for the project, however, the committee continued to collaborate as one to conduct co-creation workshops with the residents to develop more ideas about building community ownership and pride.

## Story 2. Unleashing new citizens' insights through empathy

'People did not believe me because of my background and history. No matter how much I scream, people cannot hear my voice.'

Project \$Sense was an initiative by the Central Singapore Community Development Council (CDC) with the objective of helping low income families make better choices for financial security. The above quote from a low-income individual reflected the impression that citizens have on the government, that the government did not know what they need or even care to listen to them. Relationships between officers and the low income individuals were mostly transactional, with officers lacking the empathy in understanding the pains that the families were going through or in some cases might also have pre-conceived stereotypes about the families they served.

### The Challenge

We might indeed have been assuming too many things without truly understanding their needs and perspectives. This could have caused us to be barking up the wrong tree all this while.

Workforce Development Agency (WDA) officer Vengadesh Naidu, reflected on his journey in using design thinking to relook at the various assistance targeted to help low-income individuals. He realised that past efforts at improvements were often based on reengineering existing support mechanisms rather than stepping back to think about what the real needs of their target citizens were. These individuals were perceived to be incapable of managing their finances and hence social assistance and education programmes were mostly aimed at helping them become independent such as the financial literacy programme and to prevent them from becoming reliant on the Government in the long term. **But why were the low-income individuals unable to get out of their plight? How could the agencies**

**understand the needs of these low-income families better so as to help them better?**

How design help to overcome the challenge

1. Scoping the research around people's lives

Using the design thinking model by THE Lab, the team embarked on the Empathy phase, tapping on the methodologies of ethnography to get up close and personal with the subject of their studies – the low-income individuals and their families. The policy makers, programme officers and service managers delivering assistance to the recipients of the services did this in their own capacities without bringing in outside researchers or consultants. To begin with, the team identified the types of users that they could talk to, mostly individuals with complex situations, e.g. lived in poor housing options and health conditions that would give them greater inspiration. The research was scoped to explore the behavioural and psychographic perspective of the users' lives, beyond the social assistance programmes that were offered. They were interested to understand the citizens as a "whole" around how they lived, made choices and managed their finances, how they felt (their fears, worries and aspirations) about their low-income in securing their future, as well as how all these challenges were related to other parts of their lives e.g. raising their children.

2. Experiencing the lives of their citizens

To broaden their perspectives, the team conducted body-storming exercises with the hope to experience citizens' lives and understand their behaviours. In a body-storming exercise unorthodox to public agencies, one of the team members role-played as a low-income single mum doing her weekly grocery shopping on a limited budget and gained greater understanding of the internal struggles.

Money spent on McDonalds at the expense of more essential necessities might appear to be ostentatious for a low-income mum, but I realised that was her way to show her love and compensate her child for being born to a poor dysfunctional family. I thought back at the cases I encountered, and was humbled.

Joanna Oh, Central Singapore CDC officer, shared that she didn't know better previously but walking the shoes of the citizen allowed her to

empathise, relate and feel the emotional tussles that her users were experiencing. This exercise helped to reveal the unspoken pain point of the citizen and challenge their previous judgment that these individuals did not know any better on how to manage their expenditure. Their children and families were the sole reasons why they are alive.

What followed after this was a series of 10 immersive in-depth interviews with the families at their homes and listening to their stories. Conversations were open in nature, asking the users to ‘tell me your story about living with your income, why was this important? How did you feel?’ In contrast to more formal interviews, surveys and focus group discussions, these conversations were organic in nature with the citizens leading the conversation, forcing the interviewing team to actively listen and continuously explore what was happening in the minds of the users.

The officers thought there were many “welfare shoppers” and that identifying themselves as Government officers might simply open up a floodgate of requests for assistances, but they were surprised at the honest and intimate sharing. One citizen shared the fear of trusting others, and in fact turned to the Government as a last resort. She said this: *“I tell my kids, don’t cry if I die. Get my insurance and call a social worker.”* Society to them had become unforgiving and unemotional, and there was this realisation that at the end of the day, they could only depend on themselves to make things work. Not all the low-income individuals had wanted to depend on the Government if they had a choice.

### 3. Synthesising insights and needs to develop personas

The team then went through a sense making phase where these interviews were transcribed for synthesis, which they clustered into themes, insights and needs that framed the personas of the low-income individuals. Unlike how they used to pigeonhole target users of their policies based on demographics such as income levels, they discovered eight personality types that described the personas of low-income individuals. For example, a persona named “Let-me-die” was someone who needed to feel a sense of dignity by being independent versus a “Rock of the family” who played the role of a mother reaching to give her best for her children. Personas based on real people with real motivations, pain points and needs, gave added meaning in customising solutions that would better cater to different citizens’ type for more effective outcomes.

What is the shift and impact made?

Instead of conducting surveys and close-ended interviews that asked people directly what they want, listening to people's stories and seeing the world through their lens actually helped officers to gain empathy on who they are serving beyond the practical needs and from the social and emotional angles. It was so critical to understand the 'whole person' not just what they do, but how they felt and how their needs were linked to other parts of their life. The impact it made to the team as a result of this project was to always keep an open mind and not to presume they-know-it-all. For some, the experience gave renewed meaning to their work too. *'The design thinking journey has allowed me to find new meaning to my work'*, shared Vickie Yeo, another Central Singapore CDC officer.

Through this story, it demonstrated how design using ethnographic research methods clarified the true meaning of citizen-centricity. Geoff Mulgan, CEO of NESTA made a statement in his paper titled 'Design In Public And Social Innovation: What Works And What Could Work Better' that summarized the need to hunt for answers even in the most efficient public sector systems:

Serious engagement with end users of any kind brings new insights to the surface, showing how apparently well-designed systems often fail to take account for the fine grain of daily life. (Mulgan, 2014)

In a blog 'Design is a powerful approach: so why isn't everyone doing it?' by Alex Roberts of the previously set up Australia's DesignGov, he described that *'policy makers can be relatively removed from those they are seeking to have an impact on'* and *'their connections with the lives of citizens rather remote'* (Roberts, 2014). Design could lead public servants to where they needed to be with its focus on people and how it would be so important to do so in creating citizen-centric policies and services. We tend to adopt quantitative surveys and focus groups that informed us about the 'whats' – symptoms of the problem but might be inadequate to inform us on the 'whys' – root causes of the problem. Looking deeper, beyond what we see from the surface, even in the smallest yet critical details revolving around citizens' lives would shed light on the root of the issues and important in overcoming our barriers in understanding our citizens' needs better.

Story 3. Creating shared value: From top-down to mutuality

Design has change the way I look at things, basically to unlearn whatever that we knew before. Even in the little things we do, we start to see them differently in the office and the environment around us by looking from the users' point of view. When we do our own work, we also start to look at issues from a different perspective.

In a predominantly engineering heavy culture, moving from a top-down command and control structure to one that is more fluid and flexible in meeting the transport needs of its citizens, the Land Transport Authority, renowned for its world-class public transport system globally, faced an uphill task. As Lynnette, Assistant Manager for its Transformation Office, described, a fair amount of effort in “unlearning” was required in a situation where the “standard operating procedures” and operational excellence were no longer effective strategies in the current situation where citizens yearned to become active agents and owners of their own lives.

## The challenge

This was the challenge for the LTA team involved in Project Smart Move, in which LTA hoped to delight motorists by using an in-vehicle technology to better suit their lifestyle needs. Regardless of the sophistication of the technology implemented, sentiments amongst the motorists were negative as many still experienced the heavy traffic during peak hours. Instead of designing a technology that nobody wants, how could LTA move from providing all the solutions to co-designing solutions with their citizens so that the public would better accept the new initiative?

### *How design help to overcome the challenge*

#### **1. Prototyping ideas to communicate better**

After a series of observational exercises in which team members shadowed drivers, and carried out in-depth interviews, the team adopted an exploratory and experimental prototyping and co-creation approach in engaging the motorists early in the development process. Rough prototypes, visuals, and storyboards describing a new end-to-end experience revolving around an in-vehicle technology named ‘Personal Secretary’ that would function like a smart device including downloadable applications for motorists were conceptualised. Tapping on the engineering expertise of the core team, less than a day was spent to put together these low-costs and tangible prototypes of the new concept.



This was somewhat a misfit for an organisation with a culture of perfectionism. Pilot trials and focus groups were no strangers to LTA as the mechanism for public consultation on new policies and ideas but these were sometimes done quite late in the planning stage where most. Any changes would have been incremental.

On the mark, get set, go! Everything used to be done perfectly in our organisation before it is rolled out. As a child, we learn through playing. By doing what is work, we think we are learning. But especially as policy makers and decisions makers, to make things better for the public and fellow citizens, it's all the more important to test things early. Each step as we go we learn new things.

This was a comment made by Audrey Ow, Manager, Corporate Transformation Office who saw the merits and significance in using prototyping approaches for learning and testing ideas quickly and early. Building prototype models in low-fidelity was not a norm in LTA, and hardly a common practice to engage users early in the policy process. It was challenging at first for a team of engineering experts to withhold their professional knowledge to seek comments early from the motorists. However, they invited a selected group of motorists, some of which included people they had interviewed, and key stakeholders whom they needed to get their buy-in from, to share their new concept and co-create their ideas with. The team members put together a rough skit, using the storyboards and prototypes to story tell the new experience to the audience. Surprisingly, the approach made it significantly easier to facilitate a meaningful conversation with the audience, as they were able to grasp the abstract ideas presented easily.

## **2. Co-creation with citizens builds trust and improves relationships**

I found the prototypes childish at first because it feels like toy. I was afraid we would look frivolous. But their (citizens) willingness to come up with their feedback actually surprise me, they took us seriously, they were very honest with their feedback and their insights were very useful. It was very heartening.

Lynnette reflected at the journey, and was glad that they have engaged the citizens openly. Citizens appreciated the sincerity and openness of the team in hearing their honest opinions and in turn felt a sense of contribution and ownership to refine the ideas. Priceless insights and learning points were gathered for the team to go back and iterate their ideas before any

significant investments were injected. The team thought back at the significance of co-creation and was glad to have involved the users and stakeholders early. The idea of an in-vehicle device that worked like a personal secretary was not quite well received and needed changes. It was something that could have been achieved by the private sector and that the motorists wouldn't expect the government to do so. *'Our first idea was totally dumped by our users. If we were to roll out the idea without users' feedback, I couldn't imagine the negative consequences.'* shared Audrey.

### **What is the shift and impact made?**

Methods such as prototyping and users co-creation, tools commonly used by designers, has helped LTA reconciled between what the agencies want versus what the citizens want and to involve citizens in a meaningful manner. Citizens no longer want to be passive recipients of public services. This form of user engagement builds trust between officers and citizens, and improved the relationships from one that is top-down to a reciprocity relationship based on mutuality. Botero et. Al (cited in Bason, 2012) claimed that changes are taking place in the role of how citizens feel responsible and want to have a voice in shaping their own experiences. In another paper by Katz, Farrer & Baumann (Katz, A. Farrer, R. & Baumann, M. 2011): Prototyping Public Services: 'An Introduction to Using Prototyping in the Development of Public Services', the authors stated that prototyping helped stakeholders and users, who may not possess the domain knowledge or know the jargons used by professionals, to contribute meaningfully. Indeed, this experience has definitely influence LTA officers to rethink about their relationships with their citizens and how they would involve their users in the future.

Getting users' feedback early in this manner is important, though not commonly practiced in the public sector, to minimize the risks involved in a new initiative that might not be welcomed by the public. There are genuine challenges extending it into a mainstream approach to public engagement such as structural and cultural shifts. A paper by Boyle, Slay and Stephen, (Boyle, D., Slay, J. & Stephens, L. (2010)) Public Services Inside-Out: Putting Co-Production Into Practice', stated that a model of co-production facilitates a much more equal partnership between citizens and government and in doing so shifts the balance of responsibility so that it is more evenly shared rather than a top-down service delivery. Yet this shift is not supported by the management structures and regulatory regimes in which public sector staff work.

The key obstacle will be red tape, shared Audrey, who thought about the potential obstacles in moving from a culture from delivering things to enabling people to build ideas together. *'We are the public sector and we are so structured that it chills us. This process (design thinking) challenges us to return to thinking for humanity instead of following rigidity.'*

## Conclusion

As Geoff Mulgan, CEO of Nesta concluded in his paper titled 'Design in Public and Social Innovation: What Works and What could be Better' (2014):

*At their best design methods and design thinking catalyse people to see issues and possibilities in a fresh way. They spark creativity and help us to spot the possible connections between things, which so often become obscured by the silos of daily life which dominate governments and businesses alike.*

In conclusion, design might not be a panacea for all public service issues. It can serve to mitigate many of the obstacles and complement the efforts towards citizen centricity that many in the public service are pursuing to:

- **Break down silos by seeing things from citizens' perspectives:** Design brings the focus of public service back to the people that they are creating their policies and services for. Design methods allow us to break down organizational silos for a more coherent and joined-up government.
- **Provide a new process and approach to deepen understanding and sense make citizens needs:** To truly understand our citizens' needs, it is vital for us to develop a deeper sense of empathy, to see them as unique individuals, understand their struggles, feel how they feel and discern what their needs are. Design methods influenced by anthropology and ethnography opened up new avenues for us to step into the world of our citizens and draw new insights that would be critical in our policy decisions.
- **Shift the relationship between state and citizens from transactional to a relational one:** The whole concept of governance is shifting from a provider delivering solutions, governments are also becoming facilitators who builds reciprocal relationships between governments, users of public services, communities, social groups, families and neighbours. Given the magnitude of the

wickedness and interconnectedness of problems, the government does not have all the answers anymore, and neither do the citizens alone. A public service model facilitated through prototyping and co-creation can yield joint ownership of policy outcomes that could meet both national objectives and citizens' interests.

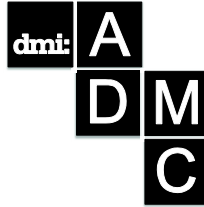
And we are not doing this without first understanding and connecting emotionally with the people we serve. The design process enables us to build stronger trust: that the government truly cares for people and are designing policies with their needs in mind. Design has never been more appropriate and timely as ever in helping the public sector create greater public value. And as inspired by the Head of Civil Service, Mr Peter Ong, the success of the public service is only when the citizens are convinced by what we do and not because of anything we say internally.

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## Design Capabilities in the Public Sector

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*People who study design and political science are interested in change. Thus, there is potential for both groups to work together to advance social causes. This paper examines the current practice of embracing design values in the public sector from the conceptual framework of public policy as design artifact. Both public policy and design artifact exist within constraints and boundaries, form their task structures hierarchically, rely heavily on negotiation between process and incommensurability, and synthesize their outcomes from components and resources. This paper also points out that in order to implement public policy and deliver public service effectively, it is important to cultivate design capabilities within government agencies at the individual and organizational levels. This paper is a reflection from literature review and sets as a stepping-stone for future research goal the merging of organizational structure redesign and communication design to inform long-term effectiveness in public policy planning, implementation, and public service delivery.*

**Keywords:** *Design capabilities, design artifact, public administration, public policy, long-term effectiveness, system thinking*

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## **Crises create opportunities for change**

Recently, many crises have occurred in our interdependent networks, such as the worldwide financial crisis from 2008 to 2012, Hurricane Sandy hitting New York City in 2012, the earthquake and tsunami disaster in Japan in 2011, and the sea level elevation and environmental refugee issues currently faced by Kiribati, an island country in the Pacific Ocean (Goldberg, 2013). These crises have all occurred within a very short period of time, and the chain reactions followed by the multitude of secondary crises led to greater tensions among individuals, societies, and nations, which in turn has created more pressure than the current political, social, economic, and environmental systems can afford. The scale of these crises was so overwhelming that it is imperative for governments to play a major role in generating effective and responsive solutions. However, the existing government organizational capacity does not meet these needs efficiently enough to deal with current issues. Thus, the vicious cycle of rising tensions and the exhaustion of existing government organizational capacity inevitably cause long-term ineffectiveness. Nonetheless, it should not be forgotten that crisis creates opportunities to change, too. For example, New York City has focused on post-Sandy infrastructure redesign to make the city more resilient in the future. Crises cannot be controlled, but lessons can be learned from.

In light of current discussion in public administration paradigm and design paradigm, this paper draws from a literature review perspective to examine the opportunity of introducing design capabilities into political system through the synthesis of system thinking (Senge, 1990; Forrester, 1998; Meadow, 2008), design thinking (Jones, 1992; Buchanan, 1992), and design capabilities (Simon, 1996; Dilnot 2013) from individual and organizational levels.

## **Literature review**

### **System Thinking**

Jay Forrester (1998), the founder of System Dynamics once said,

All social systems have been designed. Corporate policies, computer systems, organization charts, and laws constitute partial designs of social systems. Governments pass laws after debate. Laws redesign political and economic systems. Such redesigns are experiments using a country as a laboratory. (Forrester, 1998, p.6)

However, because of the changing nature and the scale of social systems, the social system designer is not an individual or a solo hero but a group of talents. Forrester (1998) used aircraft pilots and aircraft designers as examples to point out that a safe and efficient flight experience requires a pilot, but more importantly, it requires a team of designers and engineers to build the aircraft structure from the inside out. Though it has been decades since the launch of System Dynamics, studying the rules of human behavior and decision-making in an interdependent network is still viable today. This is an existing path for rethinking the essence of design, extracting the capacities of design, and adopting design methodology in a public sector context. This is the inspiration for developing the following four virtues that public policy and other design artifacts share.

Revisiting the influential book *The Fifth Discipline*, Peter Senge (1990) articulated system thinking as the cornerstone for building organizational capabilities. System thinking is especially crucial in a large-scale organization like government because sometimes the public policy implementation and the consequences happen neither at the same time, nor at the same place (Tushman & O'Reilly, 1997). Thinking the system as a whole, it is seeing not only the visible, short-term events that affect human behaviors, but also the intangible organizational structure, working process, and information about resources, incentives, and consequences (Meadow, 2008) that actually governs and forms consistent patterns of human behaviors in a longer period of time.

#### Public Administration Paradigm

From a literature review perspective, researchers studying public administration consistently examine organizational legitimacy, efficiency, and effectiveness. However, as the changing environment and challenges evolve over time, as Laurence Lynn states, 'If there is a transcendent issue, it is the relationship between bureaucracy and democracy, between administrators and the people, between managerial responsibility and popular sovereignty and the rule of law' (Lynn, 2007, p.45). Pluralistic societies and democratic systems create opportunities for the majority of people within those systems to express their opinions, and technological advancement has created different interfaces that enable citizens to participate in the public policy dialogues and to access public service more easily. However, because social planning issues are essentially "wicked problems" (Rittel & Webber, 1973) for which there are no definite solutions, the freedom of expression by people who might hold different incommensurable values and priorities will take considerable time to



reconcile. The long negotiation process between stakeholders, power wrestling in the political system, and corruptive political figures are all elements tangled together that have frustrated citizens and stakeholders, resulting in the loss of trust in government organizations. Consequently, the most likely method of building connection among government agencies, citizens, and stakeholders is to prioritize and deliver short-term effective and visible policy implementations and events, rather than long-term organizational capabilities building (Tushman & O'Reilly, 1997).

Organizational capacity is based on organizational structure and process (Christensen, 2011; Tushman & O'Reilly, 1997), yet government structures are 'designed to perform reliably, not to adapt to changing circumstances' (Partnership for Public Service & IDEO, 2011). The scale of stakeholders' network in the public policy making process create a governmental system that needs to be highly controllable and stable in order to be accountable and reliable. Revisiting the previous paragraph of system thinking, the information about resources, incentives, and consequences (Meadow, 2008) does take time to flow within governmental structure and working processes, and delayed may happen. However, rather than be discouraged by this lengthy and bureaucratic process, as citizens, if we can recognize these time-consuming processes and see the larger social system as a whole, decision makers, public administrators, as well as citizens will be able to modify expectations toward a long-term achievement than short-term symptomatic cures (Senge, 1990). Thus, there's a potential of making the negotiation process visible in order to rebuild the trust; and this visibility is one kind of task that design community can help facilitating.

### *Design Management Paradigm*

Design can be understood from three perspectives, and these three aspects jointly shape the capabilities of design. First, as a noun, design refers to "artifact," which exists in human and object networks and mediate human interactions (Latour, 2005; Verbeek, 2005) and the form of the artifact can be tangible or intangible. Second, as a verb, design can be perceived through Herbert Simon's notion of actions: 'Everyone designs who devises courses of action aimed at changing existing situations into preferred ones' (Simon, 1996). Third, the role of the designer is to take design actions to create design artifacts to obtain better or new solutions for existing problems or underserved needs, and sometimes, designers take design actions to open up discussions, or to build consensus on certain issues.

In the successful case of the Australian Taxation Office (ATO), John Body (2008) implemented design methods and articulated how to embed design within organizational change. The points of reform ranged from ways to work with complexity to changing the way the ATO thinks about design and design capabilities, as well as the values of prototyping and the importance of user research. Two aspects of this implementation are of particular interest. The first is the process of negotiating and communicating a new design vision across the tax service agencies and service system; and the second is how design as a management strategy as well as capabilities changed the everyday work processes of the employees of the ATO (Garvin, 1998; Junginger & Sangiorgi, 2011). Toward the end of this three-year implementation, it was concluded that implementation of the design process relies more on the reception of the staff in the government agency and less on the work of external consultants.

Because the meaning of design has changed from creating an artifact itself to further utilize the artifact in broader behavioral change and social context (Yelavich, 2014), now is a critical milestone for the design management paradigm to shift from traditional design practices within the professional designer community to further cultivating design capabilities in the non-designer realm (Junginger & Cooper, 2011). The same tendency was also brought up by UK Governor Chris Wormald, head of policy in the UK government and Permanent Secretary at the Department for Education in October 2013: 'If there's one set of skills departments lack it's not policymaking, it's designing' (Olliff-Cooper, 2013). This is a co-sensing; co-creating, and mind set reshaping process.

## **Making the public sector adaptive to changing environment**

This paper examines the current practice of embracing design values and capabilities in the public sector through the lens of system thinking. By drawing a conceptual framework of public policy as design artifact, both public administrator and design community will be able to jointly cultivate adaptive capabilities to changing environment and manage crises. Given the scale of public policy and other design artifacts is different, they both exist within constraints and boundaries, form their task structures hierarchically, rely on negotiation between process and incommensurability, and synthesize their outcomes from components and resources. And among all these similarities, human is the central factor; not only end users and

citizens, but also the talents of product design and public administrators of the public policy design process.

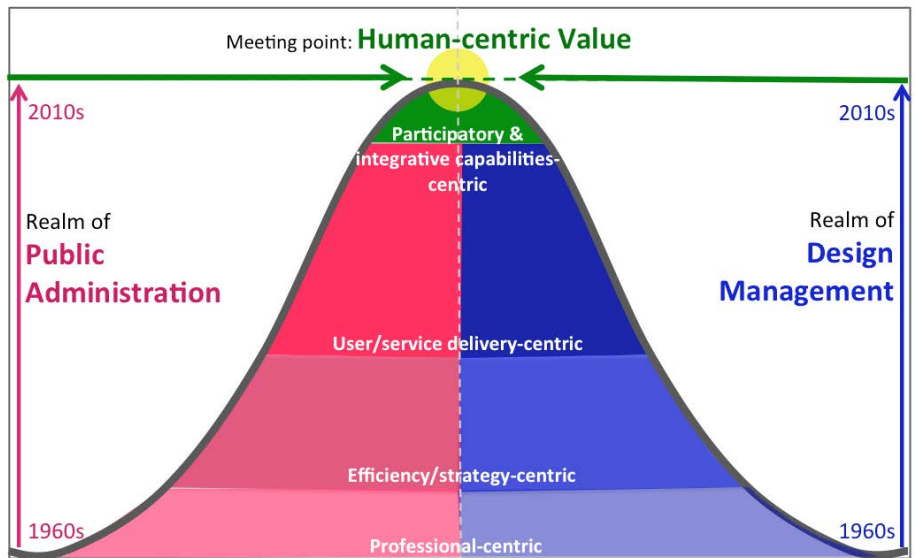


Figure 1 Conceptual framework of public administration and design management paradigm shifts. Source: Illustrated by Author Jhen-Yi Lin and literature referenced from Green 1998 & Junginger & Cooper, 2011.

#### Public policy as design artifact

The phrase “design artifact” often directs a person intuitively to think about tangible objects such as cups, chairs, graphics, clothes, architecture, or cars, but in fact, it can also be intangible objects such as organization, process, strategizing methods, or service (Senge, 1990; Jones, 1992; Buchanan, 1992). Viewing public policy as a design artifact is viewing public policy makers as craftsman of intangible and evolving objects (Simon, 1996).

The artifact has external identification, which is the form and context, and an internal structure, which is the composition of the components (Dilnot, 2014). It is a visible form that can be easily understood and is thus approachable. Herbert Simon (1996) provided a thorough definition of artifact that is positioned as a starting point to look into the internal structure of an artifact. This is fertile ground that creates a new avenue to analyze public policy as a design artifact in political systems; therefore, invite designers to work on public policy issues and build up design capabilities in the public sector. As he put it in *The Science of the Artificial*,

*Artifacts can be thought of a meeting point—an ‘interface’ in today’s term—between an ‘inner’ environment, the substance and organization of the artifact itself, and an ‘outer’ environment, the surroundings in which it operates. If the inner environment is appropriate to the outer environment, or vice versa, the artifact will serve this intended purpose...This way of viewing artifacts applies equally well to many things that are not man-made—to all things in fact that can be regarded as adapted to some situations; and in particular it applies to the living systems that have evolved through the forces of organic evolution. (Simon, 1996, p. 6)*

By the same token, William Jenkins (as cited in Howlett & Ramesh, 2003) provides a definition of public policy that indicates public policy planning and implementation is a process that involves a series of decisions on a daily basis. He stated that public policy is:

*A set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a specified situation where those decisions should, in principle, be within the power of those actors to achieve. (Howlett & Ramesh, 2003, p. 6)*

The keyword that bridges the design and public policy discipline is “situation”. In essence, they are both context-specific tasks and context can be approached from two perspectives: external reality and internal structure. The scale and influence of public policy lead to greater complexity, uncertainty, and conflicting values during the course of actions. But if one can look into the internal structure of public policy and the process of public policy making, it is possible to identify the virtues that public policy and other design artifacts and tasks share. Reflecting on the public policy and design artifacts, there are four virtues that they share:

1. They both work within constraints and boundaries

Every organization starts from a shared vision or a purpose. A vision is a situation that a person or a group feels happy about, and would like to work toward. A vision for a family might be quality time spent together every night, a vision for a business might be becoming publicly listed; and a vision for a city might be the citizens living safe and sound. A vision does not exist in a vacuum; rather, organizational resources and stakeholder consensus must support it.

Any design starts with the context because the context provides the 'source of change' (Thackara, 1989; Dilnot, 2013). For example, an architecture project starts with a design brief from the clients. The design brief maps out the goal, the budget, time constraints, and users (Jones, 1992; Bobrow & Dryzek, 1987). The design team follows the design brief with environmental research, the internal building structure and systems, materials, contractors, the site, and the building ecology. From planning and design to construction to use and evaluation, the process takes place within an existing framework and stays as compatible as possible. From this standpoint, public policy is the same.

For public policy, the external environment is the given reality. It includes direct and indirect stakeholders, citizens, time, budget, and risks. While the internal environment is comprised of the actors and organizational structures, including decision makers, policy analysts, and administrators, implicit and explicit goals, and selection of certain methodologies. The adoption of a particular methodology depends on the capabilities of the actor and the organization structure. This is the realm in which public policy analysis is working.

## 2. Their task structure is formed hierarchically

In a large scale but fluid and high-controlled environment, if the subjects of public policy mandates are to be accountable, there needs to be a management mechanism (i.e., hierarchy) to govern the actors' interactions within the planning and implementation process and manage complex tasks (Jones, 1992; Simon, 1996; Lock, 2003; Ferlie, Lynn, & Pollitt, 2007).

Both public policy making and traditional design practices are structured to accommodate several components or different values. For example, for an information graphic that consists of lines, photos, text, tables, colors, and charts in one narrative, a graphic designer (or narrator) must arrange these components to meet the purpose of communication in a clear form. In graphic design, the information hierarchy and the layers function coherently to meet the purpose of communication. It is the final presentation form that is different, not the creation and management structure.

On the other hand, we can find an example that shares same task structure in the laws and regulations of political systems, which are design artifacts, too. For example, the U.S. Constitution (Simon, 1996) can be divided into three clear sections: the preamble, the articles, and the amendments. Each section holds the goal to map out guiding principles and national values, citizens' rights and obligations, authoritative power structures, and historical changes and milestones. This approach may be an

over-simplification of the structure of the U.S. Constitution, but one can see from a bird's-eye view that conventional design artifacts and political artifacts share the same internal structure.

3. Their process relies heavily on negotiation between incommensurability

An artifact is an interface that works between inner and the outer environment (Simon, 1996), and the final presentation is the result of negotiation between different values or worldviews. For instance, borrowing from Philip Sargent's paper (1994) in designing an automobile, the clients' design brief might request speed and safety at the same time (Sargent, 1994). But how can these conflicting values co-exist in one artifact? The task for the car designer is to figure out the material, the weight, or the equipment needed to meet the clients' and the customers' requirements for a car; simultaneously, the automobile industry will also reach a consensus with government agencies on a standard measurement system to complement the market and safety demands.

This negotiation happens not only among the components of design artifacts, but also between different artifacts and their external context to reach a dynamic equilibrium (Meadow, 2008). If we look at the U.S. Constitution again, we can see that the separation of powers and checks and balances are also embedded in its structure. This suggests that the U.S. Constitution as an artifact also contains value negotiation and compromise to meet the goal of societal cohesion.

4. Their outcomes are the synthesis of components and resources

An artifact mediates human behavior and exists in an interconnected network. 'The actions of human beings shape the ways in which they realize their existence, while the form of that existence, in turn, shapes human actions' (Verbeek, 2005). Take architectural and interior design, for example. A functional housing unit requires building materials, plumbing systems, heating and cooling systems, electrical power, windows, furniture, and appliances, to all function collectively to provide a good quality of life for the users, human and/or pet. An architect and an interior designer work together to build an artifact by bringing different items together to arrange them in accordance with a client's demands and needs (Miller, 1995), as well as guiding users' behavior and circulation in the space.

Social planning tasks also consist of various human and non-human components. For example, traffic safety as a desired goal also requires different components—including traffic lights, road design, vehicle design,

direction signs, speed reminders, speed bumps, slow zones, police officers, and education for drivers and pedestrians—to work together to improve the safety of the driving, walking, or biking environment.

Given the large scale of public policy, when the central value is to deliver evidence-based outcomes (Bobrow & Dryzek, 1987; Bason, 2014) to solve or resolve problems (Rittel & Weber, 1973), the task must be pared down to components and concrete tasks that are actionable, manageable, and tractable. In the realm of problem solving, the public policymaking process is similar to the project management process, which includes problem recognition, proposals for solutions, the choice of solution, putting the solution into effect, and monitoring the results (Lasswell, 1971; Howlett, 2003).

#### Building design capabilities in the public sector

In 2012, the McKinsey Center for Government published a report (Gebre, Minukas, O'Brien, & Hallman, 2012) showing that 48% among 974 public-sector leaders think that “capabilities and culture” is the most important driver of successful organizational transformation, followed by 31% reporting execution and 21% citing structure and alignment (Gebre et al., 2012). From 2008 to 2013, case studies and organizations (Body, 2008; Terry, 2012; Manzini & Staszowski, 2013; Design for Social Innovation & Sustainability (DESIS) Network, 2013) and government agencies such as the European Design Innovation Initiative, the UK Cabinet Office Policy Lab, and Denmark MindLab revealed the imperative to build internal government design capabilities through a systemic approach to regain the faith of stakeholders and raise overall effectiveness (Body, 2008; Olliff-Cooper, 2013; Farrell & Goodman, 2013; Coletti, 2013; Landry, 2012).

Articulated by Clive Dilnot (2013), design capabilities include those relating to organizing and planning such as programming and scenarios; those to do with mediating and attuning relations like negotiation and resonance; those to do with moving from existing to preferred situations such as translation and reconfiguration; and those involving in bringing something new into the world like propositions and discovery. In the public sector, design capabilities exist in different levels to drive organizational change and it should be paired with leadership and organizational culture to drive the transformation. This paper proposes that cultivating design capabilities within the public sector is a starting point that needs to be re-examined at the individual and organizational levels. This paper does not aim to map an exhaustive list of tasks, but to start with a fundamental

understanding of the essence of design for opening up the discussions for policy makers to rethink design and its capabilities.

### *1. Organization redesign: reframing organizational value and process*

When an organization manager wants to deliver a desired outcome, he or she needs to think about the process of how to transform resources into goods and services of greater value (Christensen, 2011; Meadow, 2008), so the organizational capabilities 'lie in its resources, its process, and its value' (Christensen, 2011; Tushman & O'Reilly, 1997). Although public organizations are created for a country or a city to maintain a stable status, the information flow in public organizations is constantly changing. Thus, there's a dilemma to balance between structural and regulation rigidity and information and situation is changing at a fast pace. The judgment and decision making requires experience, context-specific knowledge, and communication skill. Human beings can learn to adapt to changing information quickly, but the organization's process and structure remains the same (Lasswell, 1971). As Clayton Christensen (2011), the world's foremost expert on disruptive innovation, pointed out:

*The reason why innovation often seems to be so difficult for established firms is that they employ highly capable people, and then set them to work within processes and values that weren't designed to facilitate success with the task at hand. Ensuring that capable people are ensconced in capable organizations is a major management responsibility in an age such as ours, when the ability to cope with accelerating change has become so critical. (p. 208)*

Government is in the same position as established firms that need to reframe working processes to enable change to happen. Design is an intentional activity; every step that a designer takes involves his or her purpose to guide the user or actor in the design context. Leaders who can create organizational artifacts such as a task force collaboration platform, brainstorming meetings, or a best practice sharing mechanism to facilitate the working process in the public sector are designers, too (Senge, 1990).

### *Communication design: making the invisible interactions and processes visible*

Recalling common and informal conversations when mentioning government or politics, most people tends to respond intuitively with, 'Oh!



Politics is too complicated to understand', or 'Well... the less to do with government, the better!' Similar conversations happen frequently and indicate that people tend to avoid contacting with the government and politics; but they exist invisibly everywhere. When one turns on the light, government regulates the electricity system; when one turns on the faucet to wash one's hands, it is the sewage system built by the government that is working. Too often, one takes familiar things and system functioning for granted and even does not realize their existence. Only when they fail does one start to blame the government's ineffectiveness. Designers are trained to sketch, build models, and prototype for trial and error along with the planning process. However, when borrowing the capabilities of the designer, the point is not just about training government employees to employ physical prototypes or pilot programs. Rather, it is to be accountable to citizens by rebuilding mutual trust and making the problem-solving process visible, and thus accessible for all stakeholders. Adopting the practices of the designer is to promote transparency in the working process, not just in the final results or data.

Drawing from the earlier movement of new public management (NPM) that addressed the public sector's efficiency and efficacy through the private sector's market methodology, management, and measurement (Ferlie, Fitzgerald, & Pettigrew, 1996), the lens of design helps to map out the process and address the paradigm shifts toward more transparent environment of data and working processes. In *21st century political science: A reference handbook*, John Fisher (2010) uses political scientists Almond and Coleman (1960) and David Easton's (1950) political system approach, which provides a framework to understand political systems through seven functions:

*Political socialization, interest articulation, interest aggregation, political communication, rulemaking, rule application, and rule adjudication. The first four belong to the input side of a system's functioning, and the last three to its policy outputs. Political communication links inputs and outputs in a way that provides the function of a feedback loop. (Fisher, 2010, p. 76)*

The goal of building capabilities in the public sector might not be a task that can be delivered within one electoral term; it might take up to decades to accomplish. Thus, mutual trust between government agencies and citizens is the foundation to embark this long-term journey.

## 2. *Being reflective: from information to insights*

In the public sector, each agency has its area of focus and priority; thus, agency-specific expertise also impacts an individual on whether he or she has the chance to see the whole picture in the government, and sometimes, the scale of the public policy planning and implementation can sometimes be overwhelming for an individual.

Though the scale of conventional design solutions and design artifacts creation are different from public policy. But we understand from previous political virtues in design, designers also deal with pressure from clients, supervisors, and the fast changing market, too. Designers have to deliver effective and profitable solutions, too. However, what keeps designers motivated is the habit of exploration and curiosity about the unknown, and one more crucial step is that they reflect these insights in their lives back to the everyday work. The breakthrough or eureka moment does not happen every day, but when the habit of observation and curiosity becomes intuitive, information has much more potential to become insights. That is what designers and creative people are good at finding. A large number of government employees are true experts in specific issues. They are invaluable resources and assets for government agencies as well as citizens and the country.

## Future Research

Currently, in the public sectors' and social innovations' discussions of design thinking, ethnography, the co-creating process, and prototyping play major roles in the practical methodology of design ('Forums & Discussions', 2013-2014). However, in fact, these methods are not designer-exclusive methods. They are iterative problem solving and resources integration processes (Buchanan, 1992; Dorst, 2011) that can take place under an open and shared-knowledge organization environment. Revisiting Herbert Simon's (1996) notion of design from devising actions to driving existing situations into preferred ones:

*The intellectual activity that produces material artifacts is no different fundamentally from the one that prescribes remedies for a sick patient or the one that devises a new sales plan for a company or a social welfare policy for a state. Design, so construed, is the core of all professional training; it is the principal mark that distinguishes the professions from the sciences. Schools of engineering, as well as schools of architecture, business, education, law, and medicine, are*

*all centrally concerned with the process of design. (Simon, 1996, p. 111)*

All professions are trained to deal with specific problems in a field. Given the specificity in certain professions, they essentially share the skill of evaluating situations and problems, planning strategies to deal with identified problems, arranging and configuring resources for the strategies, and implementing strategies and gaining feedback (Dilnot, 2013). It is not necessarily a one-time occurrence, nor is it a linear process. Starting from this conceptual framework, this paper suggests that by seeing public policy planning and implementation process via a system lens, one might also find that the points of intervention lie in counterintuitive thinking and observation.

Elevating political system capacity to be adaptive to changing environment relies on mindset changing to see the political system structure, map out the implicit and explicit goals and processes, and individual and team reflections. The future research will use a case study approach to examine how government structural design influences actors' behavior and public policy outcomes.

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**Section 5c: Measuring the Impact of Design –  
and Design Thinking – in an Era of Disruption**

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# Editorial: Measuring the Impact of Design – and Design Thinking – in an Era of Disruption

Brigitte BORJA DE MOZOTA, Jeanne LIEDTKA and Fabiane WOLFF

Contemporary Design Management and Design Thinking challenges academics and managers to seek new research approaches to understand, explain, and predict strategies on the impact of design in business. Measuring Design is fundamental for the domain of Design Management.

We are happy to note that measuring the impact of design is being studied in different countries as our 15 papers suggest. From Europe (UK, Denmark, Italy and Sweden) and USA to South Korea, Brazil and Australia researchers are focusing their efforts on understanding how design can be measured and valued.

## *About the papers: approaches and insights*

As our track is organized in four sessions, readers and participants will find groups of papers exploring the impact of design and of design thinking. The studies take a wide variety of perspectives:

Some deal with outcomes at a general level. Mortati, Villari and Stefano look broadly at design capabilities for value creation. Carlgren, Elmquist, and Rauth advocate for a legitimacy perspective as they examine the broader challenges of evaluating design thinking programs in three large companies. Badding, Leigh and Williams examine how the components of design thinking are evaluated through selected models based on inclusion of key constructs, characteristics, factors, or attributes.

Product evaluation is the focus of Chen and Joo while Wynn focuses on the consumer products environment and design's influence on competitive positioning and profits. Doherty, Wrigley, Matthews and Bucolo identify the changes experienced in the shift from a product focus towards a strategic focus for design.

Other takes a more localized inquiry. Two studies examine Brazilian firms: Borba and Specht examine the role design plays in innovative Brazilian firms and Dutra and Wolff look at design results in large firms. Burns, Rowe and Snell explore impact through seating design.

Some examine very specific impacts. Malmberg and Holmlid look at the effects of approach and anchoring in the public sectors. Moore, Zhang,

Liedtka and King look at design's ability to produce positive affect. Bolton and Perez Garcia examine how even the vocabulary around the word 'idea' aids adoption and use of design in a manufacturing context.

Several papers look closely at the human impact of design. Straker and Wrigley look at its ability to drive change; mutual understanding between designers and managers is the focus in Storgaard, Rind Christensen, Jensen, and Storvang's paper.

Service design is another popular focus. Sangiorgi and Prendiville present a theoretical framework that maps and evaluates service design practices and outcomes. Holmlid also examines design's value and the logic of service.

Across the papers, references on Design value models are developed as well as a new global framework on service design value. These models are useful for business but also for the assessment of design support programs especially design research programs.

If this design process view of design value is the goal, there remains a long way to go, as some of our field studies demonstrate that even innovative companies still see design value only as a sales development tool or through patent registration . If so, one paper argues what shall we say of design value in non-commercial sector such as the public sector?

But other studies enlarge the debates demonstrating design influence on profit through a "desirability " model of product strategy positioning , the value of "design award" for measuring design impact and the value of design in the "global value chain" of emerging economies.

New and interesting insights cover a wide range of findings around four themes:

A design capability view of design value:

- a value matrix model matrix of design capabilities and classification of innovations linking design capabilities and knowledge capital
- how using a psychological framework on competencies , a study demonstrates that some designers skills -such as their technical and social skills
- are easier to measure in business sense that cognitive and sensitive skills.

An innovation management view of design impact

- the importance of idea generation as a new way to sell design to business and hence a classification of design value as research driven value , strategy driven value, organizational change value

- Service design is also seen as a new resource for integration of the value of co-creation in companies.
- the focus on design intangible outcomes linking design impact with organizational culture through the concept of “design innovation catalyst “ showing design indirect effect , as shift from “short term” to” long term” view of design integration in the customer value proposition
- The value of design for organizational change: facilitating communication, permission to think creatively, impact on teaching and learning and for cultural change

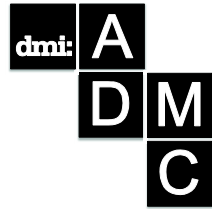
#### New insights on Design Thinking (DT)

DT seen as a tool for management innovation through its impact on shifting behaviors and affect through DT workshops and the power of visualization tools.

- DT demonstrates its usefulness through cultural adaptation convincing through experience and the importance of ambassador networks.

Design value measured by consumer benefits through “form superiority” during the consumer’s selection process according to consumers expertise and to the evaluation context.

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# The Role of Design in Innovation Processes in Innovative Companies in Brazil

Gustavo BORBA\* and Marina SPECHT

*In the Brazilian context, the lack of studies to assess the importance of design to the innovative process in an integrated manner is a fact. This study aims to analyze the role of design in innovation processes in companies recognized nationally as innovative. The research was based on the quantitative method through survey and on qualitative in-depth interviews with three companies comprising the ranking “As Mais Inovadoras do Brasil da Revista Época Negócios de 2011”. It can be identified, from the relationship between innovation and design, an emphasis on the management of the innovation processes with design being considered a strategic requirement, but used in a restricted way. As for the qualitative study, it is understood that two organizations are driven by design. In such cases, the design is present in all stages of the innovation process, contributing to the development of a systemic view that sees beyond the product, the communication and the experience.*

**Keywords:** Innovation; design-driven innovation; strategic design

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## Introduction

The economy growth and the need for constant changes stimulate the organizations of the contemporary world to consider the development of innovation as an essential process (Tidd, Bessant, & Pavitt, 2008). However, there are challenges inherent to this process, and companies are constantly seeking the best solutions to overcome them. It is important that it occurs continuously, providing the sustainable growth of the organization in the market. Converging to this idea, Fetterhoff and Voelkel (2006), Van der Meer (2007) and Schumpeter (1934) expose that innovation should generate competitive advantage and economic development and, consequently, bring monetary results and perceived value related to products and services.

Organizations are seeking knowledge, expertise, methodologies and practices that can assist in generating innovation (Kelley, 2001). As an advance in relation to current practices, less linear methods have appeared, with the purpose of integrating the design to the organizational practices, so that it operates as an element interrelated to the traditional processes already established. In this context, Mozota (2006) describes a value model for design considering four different roles: Design as differentiator, integrator, transformer and good business. This research presented a new perspective to understand design, considering the importance of a strategic role, and not just design as style or process.

Besides that, we highlight the strategic design methodology which, according to Zurlo (2006), aims to perform activities of projection, whose object is the set of integrated products, services and communication (product-system).

Although the relevance of the subject innovation is present in numerous publications (Ardayfio, 2000; Utterback, 2007; Verganti, 2008), it is understood, based on a search analyzing studies found in the database EBSCOhost, through the key words innovation and design, that there is a gap in the Brazilian context of studies that evaluate the importance of design to the innovation process in an integrated way. In the light of these theories the research problem is established: what is the role of design in innovation processes in innovative companies in Brazil? To seek evidence on the issue, the present study has as its general objective to analyze the role of design in innovation processes in companies recognized nationally as innovative.

In order to achieve the objective a quantitative research through an online survey was developed, applied to the managers of the innovation area in seventeen companies present in the technological parks Tecnosinos and Tecnopuc, referred in the ranking "As Mais Inovadoras do Brasil da Revista



Época Negócios de 2011”, and in the Fórum da Inovação da Fundação Getúlio Vargas (FGV). Then there was a qualitative study with three companies ranked among the five most innovative in the ranking cited.

The study, motivated by a research project in the area, aims to contribute to further discussion and theorizing in the field of design-driven innovation, expanding the vision focused on a single organization for a broader perspective. This perspective considers that the diagnostic of the design role in innovation processes can support the construction of organizational networks and increase the competitiveness of different regions.

Besides this introduction, the paper is divided into seven parts. The first refers to the critical literature review and consists of three sections: Organizational Innovation, Innovation and Design and Conceptual Schema of Research. The following section explains the research methodology and how the data was collected and analysed. The next section corresponds to the description and analysis of results. Finally, it presents the main conclusions of the study.

## **Organizational Innovation**

The changes and the market dynamism, characteristics relevant to the global economic scenario, arouse competitiveness and the need for companies to thrive, making organizations choose the initiative of innovation. From the economist Schumpeter's legacy, the concept of innovation can be understood as creative destruction that generates spontaneous and discontinuous changes, causing the disruption of the balance achieved in the circular flow of the economic system (Costa, 2006). Thus, innovation is the development or improvement of a product (good or service) and an internal or external process in the organization (Oslo Manual, 2007), generating competitive advantage and monetary value for companies (Van Der Meer, 2007).

In the view of Martin and Morich (2011), the new consumer has a different pattern of behavior. The ease in obtaining information as a result of market dynamism suggests that consumers can easily compare, for example, information about competitors in the market. This fact implies in a higher level of demand and consumer expectations regarding products or services. Therefore, the unmet need of the society and existing technology are the basic conditions that drive innovation (Fetterhoff and Voelkel, 2006).

Understanding the concept of innovation can be deeply based on the approaches of Kelley (2001), which relates this process to leverage of

creativity, creating value through new products, services and businesses. About this perspective, he recommends setting up a culture for innovation, outlining the path that will be followed in the context of each company. Among the different barriers and opportunities to innovate, it recognizes the role of initiative, of creativity and the commitment of employees, intrinsic to the organizational culture. Moreover, the strategy, the structure and the environment are highlighted as drivers of development of this culture, which appears as a determinant factor in the creation of a climate conducive to innovation (Acosta, Ramos, Del Rio, & Morejón, 2012).

The activity of innovation, according to the Oslo Manual (2007), corresponds to four different typologies, understood as: product innovations, which relate to significant changes in the potential of existing or completely new goods and services; process innovations that represent significant changes in methods of production and distribution; organizational innovations, which involve the use of new methods, such as changes in business practices; market innovations through the implementation of new marketing methods, which include changes in the design of the product and packaging, promotion of the product and its marketing.

Finally, aiming to leverage the innovation process in the actual context, methods oriented by design have arisen, which propose that companies meet the demands of the society through the development of innovations with languages, messages and different meanings to consumers. It explains, then, the importance of the act of designing as an element interrelated to the innovation processes.

## **Innovation and Design**

Innovation and design are practices that have an interrelation justified to the extent that the design converges with problems of a complex nature, ill-defined (Cross, 1982). The same author also states that the designer has specific knowledge that is directly related to the way of operating theory and practice, seeking a better definition of the problems treated. Corroborating this idea, Martin (2005) shows that the connection between theory and practice occurs through the projects. The existent culture of projects felt the need to be structured in order to contribute more effectively in the project, in the development and in the implementation of new strategies, essential to face the scenarios of the globalization and of the knowledge economy (Nonaka and Takeuchi, 1995).

The design can spread its "projective thinking" (design thinking), proposing the project as a new paradigm of innovation (Brown, 2010). In a broader

definition, design means the activity to innovate in a product-service system to provide solutions perceived by consumers (Zurlo, 2006).

### *Mapping Theory*

The relationship between innovation and design has been broadly discussed in the literature (Brown, 2010; Kelley, 2001; Verganti, 2008; Vieira, 2009), through studies that present a state of the art mapping in reference to the subject design-driven innovation.

However, it is understood that there is a requirement to identify papers that present design as a driving element to innovative processes. Accordingly, a theoretical mapping of the major papers consolidated in the database EBSCOhost was built, which has some relation to the theme. The survey considered publications between the years 2008 to 2012. The materials found were classified according to some factors regarding the objectives of the study.

The search in the database EBSCO (2012) was performed based on the following keywords: design and innovation; 48 related articles were found, but eleven, predominant to the theme, were chosen to be analysed. The selected and classified articles are presented in Table 1.

*Table 1 - Analysis and classification of paper in the period 2008-2012*

Author	Journal	Year	Innovation	Design	Process	Project	Dev. of New Prod.	R&D	Technology	Creativity	market Orientation
Acklin	<i>The Design Management Institute</i>	2010	X	X	X	X	X	X	X	X	X
Na; Boulton	<i>The Design Management Institute</i>	2010	X	X	X			X			X
NAKATA; IM	<i>Journal Of Product Innovation Management</i>	2010	X	X	X	X	X	X	X		X
Kelley	<i>Journal Of Product Innovation Management</i>	2009	X	X	X	X	X		X	X	X
Carbonell; Rodríguez-Escudero; Pujari	<i>Journal Of Product Innovation Management</i>	2009	X	X	X	X	X		X		X
Athaide; Klink	<i>Journal Of Product Innovation Management</i>	2009	X		X		X		X		

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Chiva; Alegre	<i>Journal Of Product Innovation Management</i>	2009	X	X	X		X		X	X	
Zhong; Ozdemir	<i>Industrial &amp; Corporate Change</i>	2010	X		X		X		X		X
Flight; D'Souza; Allaway	<i>Journal Of Product &amp; Brand Management</i>	2011	X	X	X		X		X		X
Armbruster; Bikfalvi; Steffen; Lay	<i>Science Direct</i>	2008	X		X		X	X	X		
Verganti	<i>Journal Of Product Innovation Management</i>	2008	X	X	X	X					X X
Verganti	<i>Journal Of Product Innovation Management</i>	2011	X	X	X	X	X	X	X		

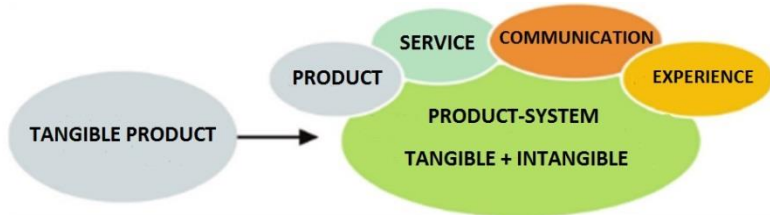
Analyzing the articles identified in the mapping theory, it is clear that different theories are discussed with respect to innovation and design. The theme innovation is present in all studies pertaining to the mapping, being, in some cases, restricted to the measurement of organizational innovation through scales developed for this purpose (Armbruster, Bikfalvi, Kinkel, & Lay, 2008; Flight, D'Souza, & Allaway, 2011; Zhong and Ozdemir, 2010), innovation and teams in the development of new products (Na and Boulton, 2010; Nakata and Im, 2010), integration of consumers towards the innovative process in the technology and marketing way (Athaide and Klink, 2009; Carbonell, Rodríguez-Escudero, & Pujari, 2009) and innovation related with the strategy (Acklin, 2010; Chiva and Gay, 2009; Kelley, 2009; Verganti, 2008; 2009). The representation of the design is understood through the analysis of articles (Athaide and Klink, 2009; Carbonell et al., 2009; Na and Boulton, 2010; Nakata and Im, 2010) that address the role of enhancing the formation of multidisciplinary teams and consumer involvement in the development of new products. In a narrower sense, the design is also specifically related to the form (style) of the product (Flight et al., 2011).

Although there is a relationship among the papers addressing the theme design, the study is restricted to the papers that follow the design-driven innovation approach (Acklin, 2010; Kelley, 2009; Chiva and Gay, 2009; Verganti, 2009; 2011). It is understandable, therefore, the lack of studies that present, in an integrated manner, the design as a driver for innovation. In this context, the next section takes care of presenting the critical literature to the subject design-driven innovation.

### **Design-driven Innovation**

The design must provide the various stages involved in the development of a new product or service. The companies find in design a means for differentiation and success, achieving significant competitive outcomes by adopting this strategy (Ardayfio, 2000; Utterback, 2007).

The designer develops artifacts thinking beyond the object, but based on a delivery system known as "product-system" (see in figure 1). According to Mozota (2003), the design is a macro process that, in the corporate structure, impacts on the operational level (the project), on the organizational level (department), on the strategic level (mission) and on different existing areas, making it a relevant resource to organizational management (Walton, 2000).



*Figure 1 – Product – system. Source: VIERA (2009).*

Conducting projects' activities, in which the object is an integrated set of products, services and communication (Figure 1), permeates the companies' presentation to the market, their placement in society and the formation of the strategy itself, being defined as strategic design (Zurlo, 2006). Based on this approach, the relevance of design driven organizations is understood. This methodology proposes an improvement to the models of innovation, market-pull (pulled by the market) and technology-push (pushed by technology), as proposed by Verganti (2009), in Figure 2.

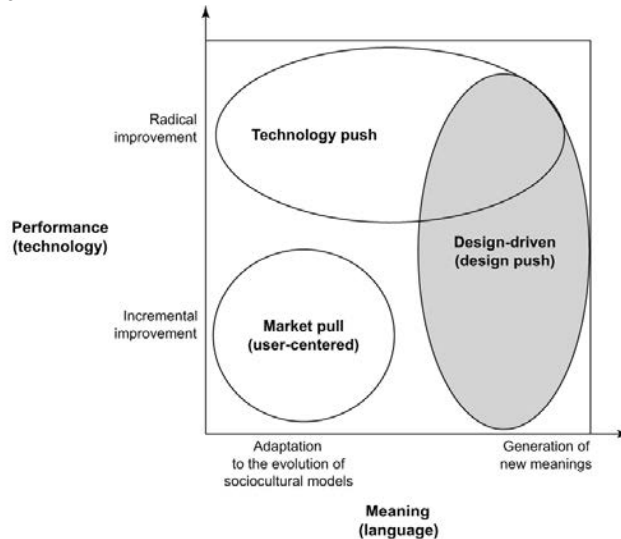


Figure 2 – Innovation by design. Source: VERGANTI, 2009.

It seems, when analyzing the figure, that the innovation by design permeates the classification of radical and incremental and is directly related to the generation of new meanings. For the author, there are three types of innovation:

a) innovation pushed by technology – it is a process that results of technological research.

b) Innovation pushed by the market - part of the analysis of user needs, which later turns to technological and language research that can actually satisfy you.

c) Innovation by design - starting from the understanding of subtle and intangible aspects present in the sociocultural context, resulting in new products-services with radical languages and meanings. It is characterized as: i) an investigation into network; ii) embracing, acting outside the bounds of the company; iii) based on knowledge sharing (sociocultural models, meanings and languages); iv) influential and modifier of the sociocultural system.

Accordingly, firms practicing design-drive innovation, should be aware that the main difference is that innovations are designed to provide a consumer experience to end customers (Verganti, 2009). Humans consume by strong emotional, psychological and sociocultural reasons. Therefore, organizations and individuals may have different ways of relating to innovation (Hippel,

2009 apud Hall and Rosenberg, 2010). Considering that the consumer has stopped granting the highest level of satisfaction to the aesthetic and functional characteristics for delivering meaning.

A critical review of the literature presented was constructed to pervade the discussion about organizational innovation and innovation and design, serving as a foundation for the research proposed in this study. It concluded that innovation is a key factor for companies to evolve and to differentiate regarding their competitors. In order to pursue different strategies for the generation of innovations, it highlights design as an element to be integrated into innovative processes. In order to synthesize the concepts presented so far, the next section presents a theoretical framework. Furthermore, as a basis for understanding the role of design in innovation processes in a practical way, a model of design-driven innovation spiral is exposed.

## **Conceptual Scheme of Research**

Considering the importance of the discussions held about the issues organizational innovation and innovation and design, a theoretical framework was developed (see in Table 2). The report presents a synthesis of the theories discussed, classifying them in the variables that will be guiding the next steps of the study.

The survey includes companies with different characteristics and realities. Thus, it is important to define the variables that will guide the analyzes relevant to the practical study. Because these analyzes pervade the discussion of the innovation process and the impact of the design in this process, it was decided to adopt the Franzato model (2011), which proposes a spiral for design-driven innovation, as seen in Figure 3.

The model adopted assists in the analysis and discussion of concepts and variables relevant to this study because it considers the analysis of the design process with innovation as the center of this process, thus allowing us to evaluate if the organization works with design driven innovation; if the companies work with a culture of innovation that has the central role in the development of new products or processes and, in addition, if design projects that go through the four key stages to reach innovation are adopted in practice, generating a continuous cycle, and working with innovation and design in an associated way.

Table 2 – Theoretical synthesis of the research

Section	Concept	Variable	Principal Authors
1 – ORGANIZATIONAL INNOVATION	Attributes for the construction of an innovative organization	- Management of the innovation process	Martin and Morich (2011); Tidd, Bessant and Pavitt (2008); Manual de Oslo (OECD, 2007); Van Der Meer (2007); Fetterhoff and Voelkel (2006).
	Classification and types of innovation	-Incremental -Radical -Product -Process	Manual de Oslo (OECD, 2007); Henderson and Clark (1990).
	Consolidation of innovation culture	-Culture of innovation -Culture of Creativity	Acosta, et al. (2012); Barbieri and Álvares (2003); Kelley (2001).
2 – INNOVATION AND DESIGN	Representation of the design	- The role of design	Martin (2005); Mozota (2003); Walton (2000); Cross (1982).
	Strategic Design	- Product-system	Viera (2009); Zurlo (2006);
	Design thinking	-External partnership	Brown (2010).
	Design-driven innovatio	-Relationship between innovation and design -Stages of the innovation process using design -Project of design in the innovation process	Franzato (2011); Hippel (2009 apud Hall; Rosenberg, 2010); Verganti (2009) and (2008); Utterback (2007); Ardayfio (2000).



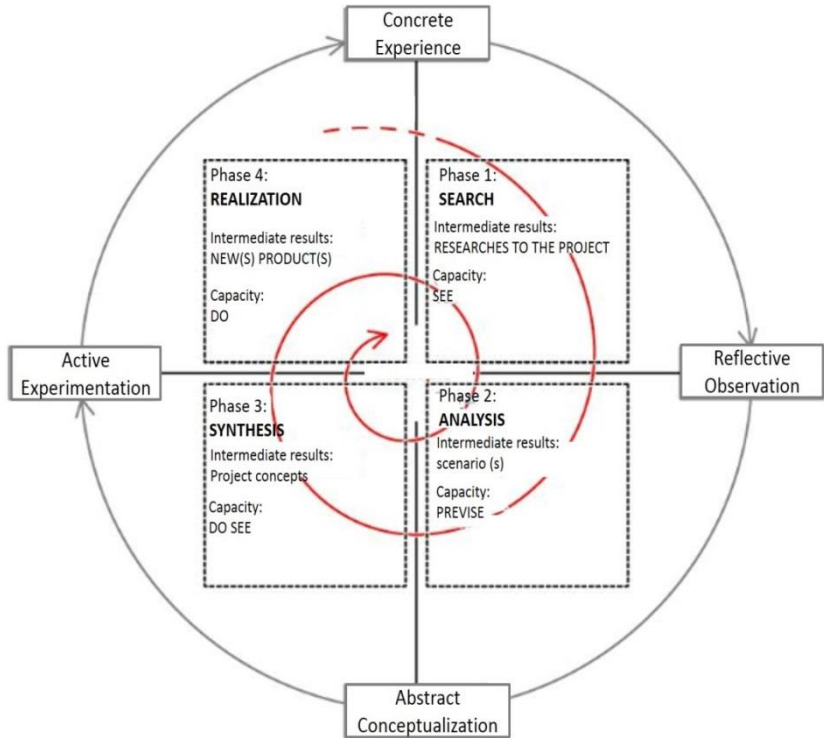


Figure 3 –Analysis model for qualitative research: Spiral design-driven innovation.  
Source: FRANZATO, 2011.

## Methodology

The objective of this paper is to analyze the role of design in innovation processes in companies recognized nationally as innovative, so the study is characterized as exploratory, the most appropriate type of research, because it allows the exploration and the search for understanding some phenomena underexplored and it is characterized by flexibility and versatility with respect to methods (Aaker, Kumar, & Day, 2007). The research was divided into five phases (Figure 4).

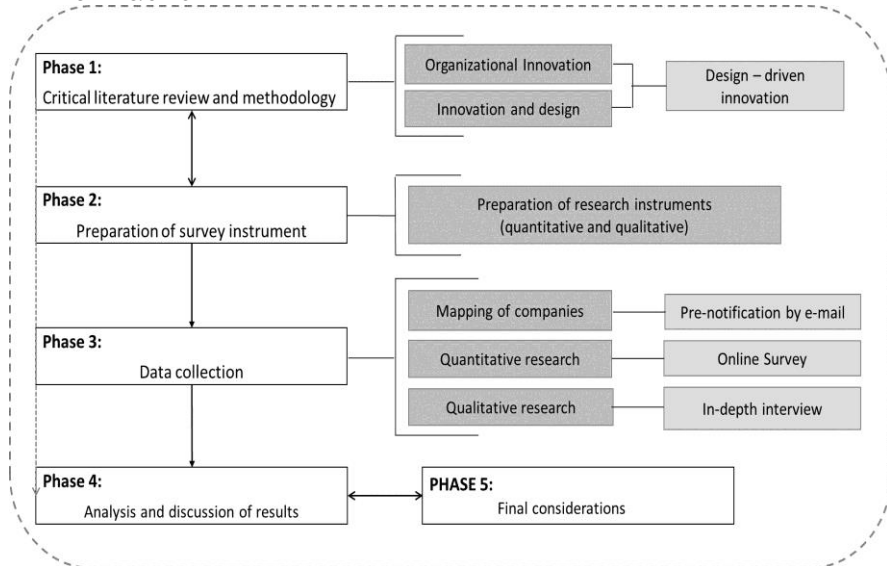


Figure 4 – Research Methodology

Phase 1 aimed to conduct a critical review of the literature, addressing the themes organizational innovation and innovation and design. At this stage, the methodological definitions were made.

Phase 2 is the development of the research instruments to be used during data collection. Regarding the quantitative instrument, it was adopted an interview script, present in the Viera's study (2009) developed after an analysis of scales proposed by the Fundação Getúlio Vargas (FGV), Fundação Nacional da Qualidade (2008) and Manual do Oslo – FINEP (2004). A theoretical mapping of scales for measuring design was also performed. Based on the analyzes and theories presented, the questionnaire developed uses ordinal scales (Likert), composed of an odd number of categories, so that companies could choose the central position in certain issues (Babin, Hair, Money, & Samouel, 2005). At this stage, a semi-structured questionnaire for the qualitative study was also developed.

Phase 3 corresponds to data collection and is divided into three stages. First, a mapping of the organizations to be addressed was conducted. Institutions present in technological parks in the south of Brazil, Tecnosinos and Tecnopuc, in the ranking "As Mais Inovadoras do Brasil da Revista Época Negócios de 2011" and in the Fórum de Inovação (FGV) were sought. An online survey was applied through the software qualtrics with the companies

selected in the non-probabilistic manner, in the four bases mentioned (Babin et al., 2005). Proceeded by a pre-notification by e-mail, about the research, seventeen respondents were obtained, after a collection period of three weeks. It is noteworthy that among the seventeen respondents, four belong to the ranking “As Mais Inovadoras do Brasil da Revista Época Negócios de 2011”, and the others are present in the Fórum de Inovação (FGV) or in technological parks such as Tecnosinos and Tecnopuc. At this phase we focus on R&D.

In the context of this study, a qualitative research was applied, because it brings together different interpretative techniques which seek to delineate and decode meanings that make up a complex environment. In-depth interviews were conducted (unstructured, direct and personal) (Malhotra, 2006). The three interviews held with the managers of the innovation area with the firms present in the ranking “As Mais Inovadoras do Brasil da Revista Época Negócio de 2011”, were face to face and took an average of one hour. The collection period was one week, and for the definition of the organizations approached, one of the determinant factors was the availability to participate in the study. The interviews were recorded and transcribed for later analysis. The respondents are people from the innovation department of these companies.

Phase 4, consisted of the analysis and discussion of the results. For the statistical analysis of the quantitative research, we used the Statistical Package for the Social Sciences (SPSS16) with conducting descriptive analysis of frequency and correlation analysis (crosstab).

The results from the in-depth interviews were transcribed and analyzed from comparable units categorization and registration methods (encoding) (Babin et al., 2005). These data came to the researcher in the rough, demanding processing to facilitate the work of understanding, interpretation and inference (Moraes, 1999). The subsequent section presents the description and analysis of the results.

## **Description and Analysis of the Results**

The companies included in the study were classified into industry, activity and size. According to the Comissão Nacional de Classificação (CONCLA), among the organizations surveyed, nine belong to the sector of informatics (I.T.), eight work with software and one with computers and accessories. One organization belongs to the service sector, present in the advertising activity and seven companies belong to the industry sector, developing different

activities, including chemical, energy, electrical equipment, appliances and aerospace. Regarding the size, considering the variable revenues rank among them, ten are large companies, three are medium and three are small companies. One organization did not disclose this information.

To advance the results from these analyzes, it was necessary to apply a qualitative research, encompassing three organizations of the ranking "As mais Inovadoras do Brasil da Revista Época Negócio de 2011" that had participated in the previous stages of the research. The companies work with the activities of appliance, chemicals and electrical equipment (technology), are considered large regarding the companies' size and have their Brazilian headquarters in Sao Paulo. Due to the information obtained from the contact made, the companies requested that their real names were not disclosed. Therefore, we used fictitious names as Alfa S.A., Beta S.A. and Delta S.A.

### *Quantitative Research*

The quantitative survey covered several topics that discuss the relationship between innovation and design. It was also attempted to understand if companies develop innovation and what kind of innovation is present in each one of them. Regarding the design, the analysis was based on the comprehension of the concept, the understanding, the use and the role of design in the organization.

The organizations evaluated the relevance of various aspects related to the innovation process. Analyzing the overall response of the seventeen companies, there is no question, as described below, of what was classified as totally irrelevant or irrelevant, according to Table 3.

It is apparent, according to the results, that the main aspect for generating innovation consists of a culture for innovation and creativity to culture. Providing leverage of creativity, it is believed that the culture for innovation is considered a key element in companies (Barbieri, & Álvares, 2003; KELLEY, 2001).

We sought to understand, based on specific questions, the existence of relevant activities to the innovation process. First, 64,7% (N=11) of the companies, when questioned as to the field of patents, revealed that they have patents, while 35,3% (N=6) did not have them. Regarding the development of new services or significant improvements in existing ones, 88,2% (N=15) attributed yes to this answer. It should be noted that among the companies that develop improvements, 82,3% (N=14) reinforced the relationship with other partners in the development of innovation.

Table 3 – Single Frequency: relevance of specific aspects in the innovation process

INNOVATION PROCESS						
Assess the relevance of the following aspects in the innovation process						
	Totally irrelevant	Irrelevant	Indifferent	Relevant	Totally Relevant	Total
<b>Strong management of the innovation process</b>			5,9% (N=1)	47,05% (N=8)	47,05% (N=8)	100% (N=17)
<b>Culture for innovation and creativity</b>				29,4% (N=5)	70,6% (N=12)	100% (N=17)
<b>Market analysis and understanding of the needs</b>				41,2% (N=7)	58,8% (N=10)	100% (N=17)
<b>Development (R&amp;D)</b>				47,1% (N=8)	52,9% (N=9)	100% (N=17)
<b>Participation of various areas/sectors</b>			5,9% (N=1)	47,05% (N=8)	47,05% (N=8)	100% (N=17)
<b>External support and partnership</b>			23,5% (N=4)	29,4% (N=5)	47,1% (N=8)	100% (N=17)
<b>Participation of the end customer</b>			5,9% (N=1)	41,2% (N=7)	52,9% (N=9)	100% (N=17)

Complementing the study, the types of innovation developed, we sought to understand the reality of the organizations related to the innovation process (Table 4).

Most companies consider that the innovation process occurs in the development of products or services tailored to the clients. Chase (2007) presented that the ability of organizations to innovate is strongly related to the ability of generating new products, so it is necessary to market them in order to provide a new value to consumers (Fetterhoff and Voelkel, 2006).

Table 4 – Single Frequency: process innovation

	Yes	No	Not answered	Total
<b>Significant or new improvements in the methods of manufacturing and production</b>	58,8% (N=10)	29,4% (N=5)	11,8% (N=2)	100% (N=17)
<b>Significant or new improvements in the logistics and distribution process</b>	47,05% (N=8)	47,05% (N=8)	5,9% (N=1)	100% (N=17)
<b>Significant or new improvements in the support activities as maintenance system, purchasing activity, accounting etc.</b>	55,9% (N=9)	41,2% (N=7)	5,9% (N=1)	100% (N=17)
<b>Development of export markets</b>	35,3% (N=6)	58,8% (N=10)	5,9% (N=1)	100% (N=17)
<b>Development of products and services tailored to customers</b>	82,3% (N=14)	17,7% (N=3)	0% (N=0)	100% (N=17)

One of the issues with the highest level of relevance in the present study sought to identify how companies perceive the design in their innovation process. The majority, 76,5% (N=13), believe that the design is directly related to the form of the product (style). This perception consists in a limited concept of the use of design. However, it should be noted that the same percentage of respondents realize the importance of design as an element to the business strategy, while 58,8% (N=10) believe that it is the fundamental space for the development of a creative thinking process. This perception was reinforced by the responses regarding the role of design in organizations, in which 58,8% (N=10) consider it fundamental or significant to the organizational context.

In order to understand the relationship between innovation and design, it was questioned what was the percentage of products launched that, in the last two years, incorporated design project. The result establishes itself in the realization that, for 47,1% (N=8) of respondents, over 40% of the products launched in the past two years has incorporated aspects of project design. The last block of questions related to the tools used for the design of a product/service, as can be observed in Table 5.

Table 5 – Single Frequency: tools used for the design of a product / service

	Yes	Not answered	Total
<b>Questionnaires applied to users</b>	23,5% (N=4)	76,5% (N=13)	100%(N=17)
<b>Analysis of customer needs</b>	64,7% (N=11)	35,3% (N=6)	100%(N=17)
<b>Information of suppliers of equipment, materials, components and software</b>	41,2% (N=7)	58,8% (N=10)	100%(N=17)
<b>Comments and suggestions from users</b>	64,7% (N=11)	35,3% (N=6)	100%(N=17)
<b>Research of competing products</b>	58,8% (N=10)	41,2% (N=7)	100%(N=17)
<b>Consulting services</b>	52,9% (N=9)	47,1% (N=8)	100%(N=17)
<b>Access to scientific publications</b>	17,7% (N=3)	82,3% (N=14)	100%(N=17)
<b>Consultations the industrial patents</b>	17,7% (N=3)	82,3% (N=14)	100%(N=17)
<b>Participation of investors</b>	0% (N=0)	100% (N=17)	100%(N=17)
<b>Courses and training in company hired</b>	23,5% (N=4)	76,5% (N=13)	100%(N=17)
<b>Partnerships with universities</b>	41,2% (N=7)	58,8% (N=10)	100%(N=17)
<b>Market research and commercial viability</b>	52,9% (N=9)	47,1% (N=8)	100%(N=17)
<b>Research and technological analysis</b>	64,7% (N=11)	35,3% (N=6)	100%(N=17)
<b>Analysis of the socio-cultural context</b>	17,7% (N=3)	82,3% (N=14)	100%(N=17)
<b>Research about emotional aspects of users</b>	23,5% (N=4)	76,5%(N=13)	100%(N=17)
<b>Evaluation of the significance of products</b>	35,3% (N=6)	64,7%(N=11)	100%(N=17)

According to the data presented, it is possible to understand that, among the most used tools for the design of a product or service one can find the analysis of customer needs and, with the same level of relevance, research and technological analysis. Contextualized theoretically, one of the tools cited by Verganti (2008), discusses the importance of considering the need of consumers as a stage prior to the development of the products.

In face of the correlation among the variables existent in the survey, it is possible to emphasize that, for companies that develop innovations, 58,8% classify the design as fundamental or significant, providing the understanding that design plays an important role in the context of these organizations (Table 6).

Table 6 – Correlation between variables: the role of design in your company and the development of innovation

<b>The role of design in your company * Develop innovation</b>				
		<b>Develop innovation</b>		<b>Total</b>
		<b>Yes</b>	<b>No</b>	
<b>The role of design in your company</b>	Fundamental	5	0	5
	Significant	5	0	5
	Limited	5	1	6
	Not important	0	1	1
	<b>Total</b>	<b>15</b>	<b>2</b>	<b>17</b>

We also sought to identify the relationship between design and strategy. Referring to the twelve respondents, 41,2% (N=7) classify the design as a strategic tool for business (for differentiation), but operate from the standard model of product in the market (Table 7). It is possible to interpret, in this sense, that organizations use design as a propellant for incremental innovations.

Table 7 – Correlation between variables: a strategic tool for business (for differentiation) and design in your company

<b>A strategic tool for business (for differentiation) * The design in your company</b>				
		<b>Design in your company</b>		<b>Total</b>
		<b>Rompe market standards</b>	<b>Operates from standard model of product in the market</b>	
<b>A strategic tool for business (for differentiation)</b>	Yes	5	7	12
	<b>Total</b>	<b>5</b>	<b>7</b>	<b>12</b>

The framework then evaluates the relationship between the importance given to the culture of innovation and creativity and the perception of design in the organization. It can be seen that among the nine companies that



consider the culture for innovation totally relevant, 55,6% (N=5) operate from the standard model of product in the market. This issue reinforces the distance between the speech of the importance of innovation culture and the actions developed in practice Table 8.

*Table 8 – Correlation between variables: culture for innovation and creativity and design in your company*

<b>Culture for innovation and creativity * Design in your company</b>				
		<b>Design in your company</b>		<b>Total</b>
		<b>Rompe market standards</b>	<b>Operates from standard model of product in the market</b>	
<b>Culture for innovation and creativity</b>	Relevant	2	4	6
	Totally relevant	4	5	9
	Total	6	9	15

According to the representativeness of this analysis for the development of the next stage of the study, the radar of innovation and design (Figure 5) was constituted, in order to easily recognize the guidance level of the companies regarding innovation and design. It provides an overview of the maturity of the seventeen organizations to innovation, design and design-driven innovation. It is highlighted that the result considered for the generation of the radar was the percentage of respondents for each question.

The representativeness of innovation indicates that the organizations in the study have a higher drive to the innovation and, at lower levels, to the design. It is significant, however, that the number of companies that innovate and consider design as a relevant element to the organizational strategy, in practical terms, still use it in a restricted way. It denotes that the level of guidance of the companies to design-driven innovation questions is not relevant.

This section aims to describe the role of design and how it translates action into practice, regarding the innovative processes. Accordingly, the next section was developed in order to present the data obtained from the qualitative research, done to analyze the existence of design-driven innovation in the context of specific organizations.

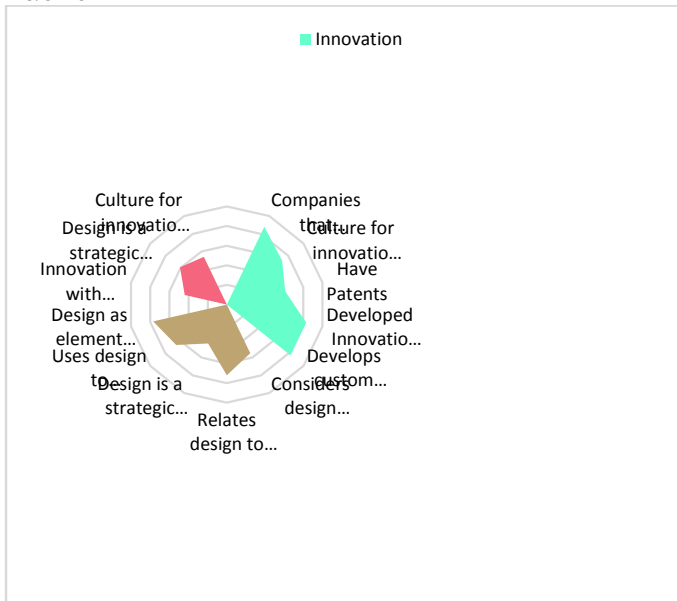


Figure 5 – Radar innovation and design

### *Qualitative Research*

The qualitative research was necessary because of the goal to deepen the results obtained on the previous stage. With this next stage, there was the possibility to deepen the concepts of design oriented innovations in the practical context of the companies. For this, we brought up topics such as the building of an innovative organization, culture for innovation, types of innovation and innovation and design, as described below.

## **Attributes for the building of an innovative organization**

The process of innovation management differs in some aspects when the cases of each company studied are analyzed separately. However, they have a continuous innovation process, in which principles of open innovation are used – through partnerships with universities, providers and others – to internal channels involving workers, so as to the ideas to be spread.

Alpha structured the innovation process in the year 2000, supported by Strategos, a global consulting company. The focus of the adopted methodology consisted on the “diamond thinking”, which involves a process of diverging to converge and reach the best ideas. There are three criteria that guide the process (consumer and brand, being unique in the market and generating value for stockholders); it is also measured by the result, through previously defined metrics and goals. We must highlight that the Design Thinking process, proposed by Brown (2010), preconizes that the process of diverging and converging is the main form for the use of design oriented innovation methodologies.

Beta company presents a similar process of innovation management, following the logic of a funnel of ideas. Several activities are proposed to promote the creation of ideas, which go through a prioritizing process that defines the ones that are going to be developed.

A global level structure for the innovation process is used by Delta organization. As a result, no unity of business works alone, for there is a continuous innovation process that involves many departments and areas. Every year, the amount of projects in R&D that will be developed on a global level is defined. However, the unities have the autonomy to admit other R&D projects.

Regarding the existence of specific programs that allow the participation of the internal workers and external agents on the innovation process, the three companies have programs for the creation of ideas. At Beta, it is believed that the creation of programs, tools and events that allow the participation of everyone in the creative process is extremely relevant. An annual event is held with the aim to bring up several ideas. The complete process consists on a first screening of ideas, e-mail voting, ideas fair and inquiries with the end users. The ideas which are ready to be implemented become projects that go to the stage-gate, a tool for innovation management.

Like Beta, Delta also works with formal programs for the internal workers to generate ideas. They have the liberty to give suggestions that may refer to different aspects, such as the improvement of the processes and the development of products.

Adopting a different strategy, Alpha does not have formal programs for the creation of ideas. It is believed that, on the current context, a traditional model would not add value to develop the chosen strategy. According to the interview,

*From the moment I have my strategic direction, I know which are the challenges of the company for the next years [...], I start a whole*

*innovation process, which lasts for months [...]. During the stages of this process, people are invited to contribute and give their ideas, but on that established context [...]. Therefore, I guarantee the idea will be finished.*

In most cases, the workers that had their ideas accepted and used received an extra payment.

Alpha, Beta and Delta companies all have a channel with universities. With Alpha, it is through an innovation award based on engineering and design competitions. Beta also develops an innovation competition, which happens every year and involves architects, young décor and architecture professionals and young students. Delta, on the other hand, had an online competition, in which consumers talked about their dreams for the future, and this was the input for the development of a new product. Next, we present a synthesis of the analysis of the innovation process regarding the three studied organizations (Table 9).

*Table 9 – Synthesis of the Analysis of the Innovation Process*

<b>Company</b>	<b>Alpha</b>	<b>Beta</b>	<b>Delta</b>
<b>Variable of analysis (management of the innovation process)</b>	<ul style="list-style-type: none"> <li>-The process was structured in 2000;</li> <li>- Fully established process - funnel of ideas and stage-gate;</li> <li>- Holds a differentiated program for the creation of ideas;</li> <li>- Has partnerships with external agents.</li> </ul>	<ul style="list-style-type: none"> <li>- Fully established process - funnel of ideas and stage-gate;</li> <li>- Holds a program for the creation of ideas;</li> <li>- Promotes internal events for the creation of innovation;</li> <li>- Has partnerships with external agents.</li> </ul>	<ul style="list-style-type: none"> <li>- Has a global level innovation process;</li> <li>- Holds a program for the creation of ideas;</li> <li>- Has partnerships with external agents.</li> </ul>

## **Culture for Innovation**

According to Barbieri and Álvares (2003), the culture for innovation is one of the elements that constitutes an innovative organization. Regarding the investment in innovation, Delta company invests 5% of its billing for that purpose. Beta invests 7%, which is estimated in the market in 630 million, as published by *Época Negócios* magazine in 2011. Alpha does not authorize the disclosure of the percentage. It is understood that, as for 2011, 22% of Beta's billing came from innovative products. For Alpha, the amount was of one third of the billing.

Alpha and Delta organizations are quite similar, once they consider they work with a culture for innovation not only for the awards in the area, but also for the fact that innovation is part of the personal goals of the executives. For Archer and Walczyk (2006), there are different forms to build a culture for innovation, regarding the learning process and the individual as the focus.

The companies we studied believe in the importance of obtaining patents. In 2011, Alpha obtained the command of 200 new patents. Beta, around the same year, had a total of 3,183 (*Inspiração para inovar – Época negócio*, 2011). As for Delta company, according to the interview with the innovation area, they had accumulated 53,300 patents on a global level until 2011.

The organizations we analyzed have a formal area for innovation, designed to help this process to happen on a practical level. Delta organization works with technology, and the innovation area is formed by an engineer or a R&D manager in each unity of the company. However, there is also the technology and innovation area, which helps these managers in terms of searching for fomentation, developing business plans and projects to get resources through edicts and specific partnerships to certain demands.

For Alpha and Beta, innovation is market driven and it is formed by teams with different backgrounds, such as designers, advertising people and administrators. According to Beta's interview, "what we do today is to centralize the leadership of the new innovation projects and put a person of each area involved in the development of each project". Corroborating this idea, the innovation manager of the organization also says:

*I use to say that, if you try to explain our area by metaphors, we would be the conductors that would say 'now is the time to play this instrument, that one, that other one and, at the end, this is the music, a merit of everyone, that happens in the group.*

There is an area for innovation at Alpha, which is the base for the development of the innovative process. This is an area dedicated to thinking about the processes, the result, the mindset and the culture for innovation.

According to the responsible for this area, “we do not implement innovation, we just incite it. But it happens in areas such as product development and new businesses”.

Different authors reinforce that the building of a design oriented innovation process is born from the building of interdisciplinary teams (Brown, 2010; Kelley, 2001; Verganti, 2009). Thus, working with teams with different backgrounds has a positive impact when implementing a design oriented innovation process. Finally, the results of this section are described in Table 10.

Table 10 – Síntese individual

Company	Alfa	Beta	Delta
<b>Variable of analysis (culture for innovation; culture for creativity)</b>	<ul style="list-style-type: none"> <li>-1/3 of the revenue comes from innovative products;</li> <li>- Executives have one innovative goal per year;</li> <li>- Has a market oriented innovation area;</li> <li>- 200 new patents in 2011.</li> </ul>	<ul style="list-style-type: none"> <li>-22% of the revenue comes from innovative products;</li> <li>- Has a market oriented innovation area;</li> <li>- Has 3,183 patents.</li> </ul>	<ul style="list-style-type: none"> <li>- Executives have one innovative goal per year;</li> <li>- Has an innovation area responsible to find resources for the projects;</li> <li>- Has 58,600 patents.</li> </ul>

## Types and Classification of Innovation

From the research, it is possible to notice that the development of improvement innovation is more frequent. The relevance of developing radical innovation is seen under different perspectives. The only company that responds for annual goals, regarding the development of the two types of innovation, is Alpha, while Beta and Delta choose to develop the radical ideas naturally, believing that the ideal is for them to arise without the necessity to respond to established goals. The responsible for the innovation area in Delta says:

*We believe that radical innovation comes with the innovation culture. It is not possible to say, for instance, ‘next month we will make a radical innovation’ [...]. Thus, developing a rupture is not so uneventful, even because, in most radical innovations, the costs and the risks are higher.*

For Alpha, there are annual goals to be accomplished regarding both types of innovation. As said in the interview, many radical innovations happen in the process, including the necessity to come up with new business models. For instance, the organization needed to look for blue oceans, considered by Kim and Maubogne (2005) as a way to out-top actual competition to a level in which competition becomes irrelevant. The company developed a new product, similar to the already existing one, but a new business model was created, as well as a convenience for clients, as the responsible for the innovation area points out: “Nowadays, we sell convenience for the clients. The products are ours; therefore, the client, when acquiring them, buys the convenience of having our product and our service when necessary, paying a monthly fee”.

At Delta, there is a person responsible for a program called Delta Production Systems (DPS). The complete production line and the administrative processes are analyzed, and a Trimap is made to identify possible improvements. This process helps in the development of innovation for the production and administrative areas. Finally, on Exhibit 16, we present the individual concepts regarding the types of innovation of each company studied.

*Table 11 – Síntese individual*

<b>Company</b>	<b>Alpha</b>	<b>Beta</b>	<b>Delta</b>
<b>Variable of analysis (improving; radical; product; process)</b>	- Product, service, channel and business;  - Imprvement and radical innovation (based on goals).	- Product, service, channel and business;  - Improvement (on a higher level) and radical innovation.	-Product and process;  - Improvement (on a higher level) and radical innovation.

## **Innovation and Design**

The companies present different perceptions about innovation and design. The ones that invest in design highlight that the way of thinking of the

professionals of this area allows the improvement of the product considering market matters, reaching directly the end users. In the 1990s, an innovative approach of design started to be developed and, ever since, the concept of “strategic design” has been disseminated (Zurlo, 2006).

Beta company works with design mostly because it believes that there are design methodologies, like design thinking, which are forms of creating ideas and developing innovation thinking about the process as a whole. The organization believes that design is relevant to help the innovative process regarding market issues of the products. In other words, the design professionals are concerned about aspects that the engineers and technicians in general put aside, as these are not part of their area.

Opposing the presented concepts, Delta believes that, due to the fact that the company sells energy and technology related projects, design is not directly associated with innovation. Only some sectors in which the organization acts work with design concepts, but it is not the case of the unity considered in this study.

As analyzed, the studied companies believe design is a tool responsible for supporting the innovation process. When asked about how design oriented innovation happens on a practical level, Alpha and Beta believe that design is an influence for the creation of ideas, the improvement of these ideas and the concern about the development process of the complete product. For example, Beta makes the horizontal management of its projects, meaning there is a responsible person of each area for every project, which allows the focus of the product not to be only about technical aspects.

Alpha mentions that designers think differently from people who work with technology, because they abandon the technological look in favor of a more market driven work. They believe technology is only a solution; therefore, in the innovation area, there is always space for the design projects. As the interviewee says, “innovation is linked to design. Our focus is what we deliver to the consumer, and design goes along with this atmosphere. We start from the consumer and technology helps us turn the ideas into something concrete”.

To bring context to this way of working, which values, besides the technological aspects, a humanistic approach to the development of innovation, we found the following example of innovation commercialized by Alpha. “Alpha Independent” is a product line developed after representatives of the innovation and design area followed the daily routine of people with physical disabilities, visual and hearing impairment. They comprehended the main difficulties in handling household appliances. This served as an input for



the creation. The goal was for the users to have a better interaction with the appliances.

The organization uses the design thinking approach to develop innovation in partnership with the consumers. The user is placed at the center when the validation of some prototypes is held.

The synthesis of these concepts is as follows (Table 12).

*Table 12 – Síntese individual*

<b>Company</b>	<b>A</b>	<b>B</b>	<b>C</b>
<b>Variable of analysis (design role; system-product; external partnership (consumer); relation between innovation and design; stages of the innovation process which use design; design project on the innovation process.)</b>	<ul style="list-style-type: none"> <li>- Design helps innovation considering market issues of the products;</li> <li>- Has design projects in the innovation process;</li> <li>- Works with system-product;</li> <li>- Uses design thinking.</li> </ul>	<ul style="list-style-type: none"> <li>- Design helps innovation considering market issues of the products;</li> <li>- Has design projects in the innovation process;</li> <li>- Works with system-product;</li> <li>- Uses design thinking.</li> </ul>	<ul style="list-style-type: none"> <li>- The company works this concept only in some unities, which are not included in the study;</li> <li>- Pushed by technology.</li> </ul>

The analysis developed considered four relevant variables for the comprehension of the role of design in innovation processes at the organizations. The aim was to evaluate, first, aspects regarding the organizational innovation, beginning with the understanding of how these matters are structured in the context of these three companies, so, from the analysis, it would be possible to go on to the innovation and design approach.

Based on the results presented, we emphasize that the organizations of this study can be classified according to figure 2, presented in the subchapter 3.2. Companies Alpha and Beta are driven by design (innovation by design), while Delta creates innovation pushed by technology, fact brought up during the analysis of the results, as presented in the next subsection.

### *Global Analysis*

Summarizing the results obtained during the qualitative research, we comprehend that most companies see the design directly related to the form of the product (style), which indicates a limited perception as for the use of design in the innovation process. However, there is a comprehension regarding the importance of design as an element for the business strategy, influencing on the development of a creative thinking process.

The organizations consider that design has a fundamental or significant role; eight companies responded that more than 40% of the products released in the last two years incorporated design projects. It is also noteworthy that the analysis of the clients' necessities is seen as a fundamental tool for the design of a product/service, which is related to the results we got during the qualitative research, pointing out that consumers are considered the center of the innovation process. Considering the qualitative analysis, Exhibit 18 summarizes the process of individual innovation of the organizations studied and the role of design in each stage of this process.

The Role of Design in Innovation Processes in Innovative Companies in Brazil

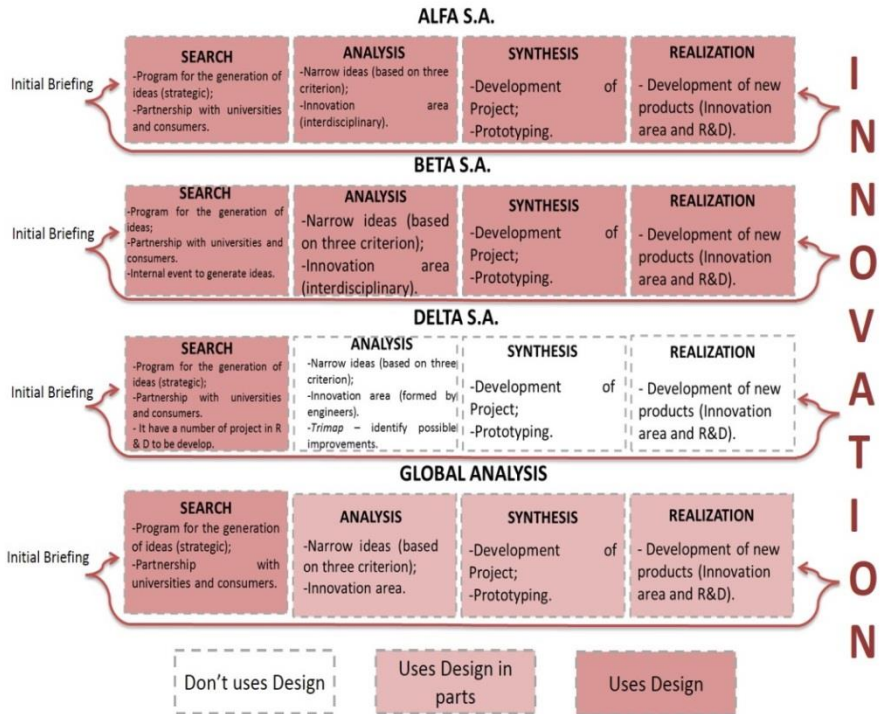


Figure 6 – Synthesis of individual and global innovation processes and design level used

## Final Remarks

The main goal of this study was to identify the role of design in the innovation process of the companies, using quantitative and qualitative research methods, which are justifiable once the first gave a broad vision of the theme, deepened by the second method. We would like to highlight that in the quantitative phase seventeen companies were researched; four belong to the ranking “As Mais Inovadoras do Brasil da Revista Época Negócios de 2011” and the others are present in the Fórum de Inovação (FGV) or in technological parks, such as Tecnosinos Tecnopuc; in the qualitative phase three interviews were held with firms present in the ranking “As Mais Inovadoras do Brasil da Revista Época Negócio de 2011”.

The research contributed theoretically for the studies of Verganti (2008), directed to the comprehension of the design oriented innovation methodology, in which design has a fundamental role considering the

attribution of meanings, languages and messages to the innovations. It is noticed that companies, while searching for strategies to help creating innovation, use design as part of the process.

The organizations considered in the quantitative study are located in technological parks or appear in innovation rankings. Therefore, they are already guided towards innovation. As for design, the organizations believe it is strategic and use it as a tool for differentiation. But, in most cases, it is operated based on an already established market standard, being translated into actions mainly on the development or improvement of innovation. Furthermore, on a practical level, some companies relate design only to the form of the product (style), restricting its use as part of the innovation process.

Regarding the qualitative analysis, it is believed that, due to the fact that the organizations researched are large companies, which appear in the ranking of the most innovative ones in Brazil, they intrinsically have the culture for innovation. Mozota, Klöpsch and Costa (2011) says that the creative process of design presents characteristics similar to the ones of the innovation process. So, innovation and design cannot be dissociated. Design must be present in every stage of the innovation process, contributing to add value to products and services. It is noteworthy in the three companies considered that two of them develop design oriented innovation, while the other focus on the market driven development of technologies.

A limitation for this study was the fact that the companies we studied are located in the state of São Paulo and, because of that, they were visited only once, for the interviews. Besides, we used some documents about the studied context. The focus on companies located at technological parks or appearing on innovation rankings can also be considered a limitation, for, even though they are from different areas and have different scales, they naturally present an orientation for innovation. In this aspect, we suggest that in the future, this study might be conducted with another focus, for a possible comparison of results.

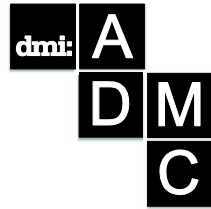
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# A Theoretical Framework for Studying Service Design Practices: First steps to a mature field

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*Drawing on literature from three main perspectives on service, design and innovation - Perspectives on Service Innovation (Service Innovation and New Service Development studies), Perspectives on Service (Service Science and Service Research frameworks on services), and Perspectives on Design (Design Anthropology) - this paper presents a theoretical framework, to systematically study, position and interpret Service Design practices and outcomes. The research is the first-phase of an on-going 6-months Art and Humanities Research Council (AHRC) funded scoping study into the contribution of Design for Service Innovation and Development. The creation of the theoretical framework, drawn from a literature review is a first step to a Service Design priori knowledge, to conduct and produce six case studies from the public, commercial and digital sectors. This paper will present the initial formulation of the theoretical framework as part of the case study methodology to guide the on-going data collection and analysis of the six Service Design projects; leading to and supporting the survey study of Service Design innovation practices from a wider sample of design studios and designers working in the UK and internationally.*

**Keywords:** Design for Service, Service Innovation, New Service Development

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## **Introduction**

Service Design is a young discipline started in the 90s when a certain group of informed scholars in Italy, USA, UK and Germany (Hollins & Hollins, 1991; Buchanan, 1992; Manzini, 1993; Erlhoff, Mager & Manzini, 1997) started to describe it as a new design agenda. Since 2000 Service Design has emerged as a profession, with the first Service Design studios opening in London (Livework and Engine). Since then the interest in this field has grown across the international design research, education and professional community. In UK the number of studios working for services has increased representing an exemplar for the international scenery, but still counting for only 1% of UK design industry (Design Council, 2010).

Initial studies into Service Design have explored motivations for the emergence of this field (Pacenti, 1998; Sangiorgi, 2004). Further research has been experimenting with individual Service Design methods (Morelli, 2002; Clatworthy, 2011) or approaches such as co-design (Steen et al., 2011; Kankainen et al., 2011). Further studies have looked into specific dimensions of Service Design, i.e. service system design (Patrício, Fisk, Cunha & Constantine, 2011), service interaction design (Holmlid, 2007), service experience design (Bate & Robert, 2007), or into specific typologies of services, i.e. collaborative or relational services (Meroni, 2007; Cipolla & Manzini, 2009).

However, systematic studies on how Service Design agencies operate in practice and how they contribute to service innovation are limited. Examples of research work into Service Design practices are mostly focused on the commercial sector (Kimbell, 2011; Zomerdijk & Voss, 2009; Stigliani & Fayard, 2010). These studies have described Service Design as adopting a constructivist approach to service innovation (Kimbell, 2011), and as centred around the practice of understanding, mapping and communicating customer experiences (Stigliani & Fayard, 2010). With a wider perspective Meroni and Sangiorgi (2011) have mapped application areas and approaches of Service Design based on a collection of 17 case studies.

Few researchers have questioned and investigated the implementation and impact of Service Design projects. Significant exceptions are the studies on the implementation and impact of Experience Based Co-Design methodology in healthcare (Bate & Robert, 2007 and 2006; Tsianakas, Maben, Robert, Richardson, Dale & Wiseman, 2012). Isolated research has reported the processes and challenges of embedding design capabilities within public sector organization (Bailey, 2012). Freire and Sangiorgi (2009)

have discussed the successes and limitations of four Service Design projects in the application of the co-production principles in healthcare in UK.

Recently designers have been critiqued for their supposed “lack of attention to economics – ensuring that ideas are cost effective – and lack of attention to organizational issues and cultures, condemns ideas to staying on the drawing board” (Mulgan, 2013). The Design Commission report also states how Designers need to “uplift and upscale if they are to deliver design-led innovation effectively to public sector clients” (Design Commission, 2013: 19). An on-going AHRC funded networking project ([www.servicedesignresearch.com/uk](http://www.servicedesignresearch.com/uk)) into Service Design Research in UK, has similarly suggested the need to conduct research into how Service Design projects can be better implemented, embedded, measured or scaled up. There is agreement that to survive and develop Service Design as a discipline needs to develop ‘legitimacy’, meaning the “acceptance of the technical competence of the profession and the spread of knowledge about it” (Thether & Stigliani, 2013), and a culture of assessment (Maffei, Mager & Sangiorgi, 2013).

Finally the growth of Service Design towards a mature field of research and practice also requires a comparison and positioning within existing studies of service innovation, New Service Development and the wider international and multidisciplinary field of Service Science and Service Research. “Enhancing Service Design” has been mentioned as one of the research priorities for the Science of Services (Ostrom et al., 2010), with an emphasis on the need to integrate design thinking and performing and visual arts into service innovation. Notwithstanding this recognition, very few interdisciplinary research collaborations are developing within Service Research with a common aim to legitimate and position Service Design’s contribution: i.e. comparing Service Dominant Logic with Design Thinking and Service Design (Wetter Edman, 2009; Wetter Edman et al., 2013), or the conceptualization of user involvement in Service Design and Service Management (Wetter Edman, 2011). Interest in Design comes also from the New Service Development literature, aiming to understand how to better integrate customer experiences in service development (Edvardsson, Tronvoll & Gruber, 2011), but demonstrating a still limited understanding of Design practices and approaches.

Drawing on literature from three main perspectives on service, design and innovation - Perspectives on Service Innovation (Service Innovation and New Service Development studies), Perspectives on Service (Service Science and Service Research frameworks), and Perspectives on Design (Design

*A Theoretical Framework for Studying Service Design Practices: First steps to a mature field Anthropology* - this paper presents a theoretical framework and propositions, to systematically study, position and interpret Service Design practices and outcomes. The research is the first-phase of an on-going 6-months Art and Humanities Research Council (AHRC) funded scoping study into the contribution of Design to Service Innovation and Development. The creation of the initial theoretical framework drawn from literature is a first step to Service Design priori knowledge, to conduct and produce six case studies from the public, commercial and digital sectors. This paper will present the formulation of the theoretical framework as part of the case study methodology to guide the on-going data collection and analysis of the six Service Design projects; leading to and supporting the survey study of Service Design innovation practices from a wider sample of design studios and designers working in the UK and internationally.

## **Perspectives on Service Innovation**

### *Defining Service Innovation*

Generally innovation is described as 1) doing something new, and 2) developing this new so that it becomes accepted and applied in an organisation, market, or in society (National Audit Office, 2006). Studies into the specificities of Service Innovation are recent, moving away from an initial consideration of service organisations as laggards and appliers of manufacturing innovation. The journey from a manufacturing centred approach to recent accounts on services, is reflected in the emergence of four perspectives generally described as technologist, assimilation, demarcation, and synthesis (Droege, Hildebrand, & Forcada, 2009). A technologist approach focuses on the introduction and use of technology (e.g. purchase of a technological equipment) as a main source of innovation in the processes and practices of service provision, as a reverse cycle to traditional manufacturing innovation (Barras, 1989); similarly to the technologist approach the assimilation approach considers service innovation using manufacturing models and metrics, not acknowledging how most of service innovations are 'non-technological' in their forms and sources (Gallouji & Weinstein, 1997); the demarcation approach instead has been highlighting the idiosyncrasies of service innovation activities, acknowledging for example the 'interactive character' of service innovation (Gallouji & Weinstein, 1997, p. 135). Finally the synthesis approach instead recognises how the learning from studying service companies, could

illuminate aspects and dimensions of innovation happening within manufacturing, that have been mostly neglected and not measured so far.

This scoping study will adopt an extended understanding of innovation and aims to recognise both the 'hard' (traditional technological driven innovation practices) and 'soft' dimensions of innovation, acknowledging how in services "innovation is more likely to be linked to change in disembodied, non-technological innovative processes, organisational arrangements and markets" (Howells, 2007, p. 11). What is generally defined as non-technological innovation includes many other forms of innovation e.g. "social innovations, organisational innovations, methodological innovations, marketing innovations, innovations involving intangible products or services" (Djellal & Gallouj, 2010, p. 7). Furthermore we recognise the "multidimensional character of innovation", and the difficulty to artificially separate goods from services, considering how increasingly organisations are developing "bundling of services and manufactured goods into 'solutions'" (Howells, 2007, p. 15). Also organisations often work in complex networks, as part of "a set of interrelated activities" (ibid).

Finally innovation within service organisations has been qualified for its 'interactive character' (Djellal & Gallouj, 2001), and for what has been called 'invisible innovation'; this is a kind of innovation that is not captured by traditional innovation metrics focusing on scientific and technological innovation happening mostly in R&D departments. Gallouj and Weinstein (1997, p. 549) for example report: "Ad hoc innovation can be defined in general terms as the interactive (social) construction of a solution to a particular problem posed by a given client". In contrast with a common understanding of innovation as something intentional that can be replicated, ad hoc innovation describes an emergent process that can lead to more consolidated practices and new knowledge.

Similarly Fulgsang (2010) describes different levels of innovation practices considering their level of intentionality: 1) Innovation as an intentional activity (e.g. as a result of a new policy), 2) innovation as a semi-intentional activity (e.g. a project team working on an emergent problem), and 3) innovation as 'bricolage' (as conducted by staff to adjust to emerging problematic situations).

As summarised by Droege et al. (2009) there have been different proposals of service innovation frameworks that point to different innovation dimensions, classifying where innovation happens in services.

Djellal & Gallouj (2001) consider four main dimensions: 1) product/service innovation (both tangible and intangible); 2) process innovation (e.g. technical systems or consultants methods); 3) (internal) organisational innovation (structure in which activities take place); 4) external relational innovation. In this paper though we agree with Den Hertog (2000) on the interrelated character of innovation in services, where change in one dimension (e.g. new technology), will have necessarily impact on other aspects of service (e.g. new knowledge, skills and processes); while it is useful to identify a dominant innovation dimension, it is also useful to look at innovation as a combination of different changes.

To acknowledge this multidimensional nature of service innovation and to go beyond a distinction between manufacturing and service organisations, we consider Gallouji and Weinstein (1997) description of innovation as the combination of changes in factors such as service characteristics, service provider competences, service provider technology (tangible or intangible such as models), and client competencies (including co-production abilities). In addition DeVries (2006) recognises also the increasing role of providers' networks and clients themselves, with their own competences and technologies, contributing to the co-creation of the final solution. The combination of changes in these factors can generate different kinds and levels of innovation described as: radical, incremental, improvement, combinatory (architectural), formalisation, and ad hoc innovations (Gallouji & Weinstein, 1997; DeVries, 2006).

Finally when reflecting on the issues about measurement and performance in services Djellal and Gallouj (2010) debate on how performance can't be just measured in terms of productivity as services performance can be related again to its multiple dimensions: e.g. "technical performance, commercial performance, civic performance (equity, equal treatment, social cohesion, respect for the environment..), and relational performance (interpersonal relations, empathy, trust, etc.)" (p. 10).

### *Knowledge Intensive Business Services*

This research project is also looking at another kind of service innovation called 'innovation through services' that describes the work of Knowledge-Intensive Business Services (KIBS) for and with their clients (Den Hertog, 2000). Service Design agencies are a particular kind of KIBS, belonging to the 'Design' consultancy services as indicated by Miles et al. (1995). KIBS are described as service organisations that are heavily based on professional knowledge, that are the direct source of knowledge (e.g. training) or that

create intermediary products using their own knowledge (e.g. design services) for their clients (Miles et al., 1995).

There is a recognition that KIBS “function as facilitator, carrier or source of innovation, and through their almost symbiotic relationship with client firms, some KIBS function as co-producers of innovation” (Den Hertog, 2000, p. 491). The quality of this co-production relies heavily on the quality of interaction between the KIBS and their client, which generates reciprocal learning (interactive learning). In this research project we suggest how looking at the dynamic nature of knowledge conversion processes (from tacit to explicit, disembodied to embodied, tangible or intangible) facilitated by design agencies could unveil fundamental roles played by these consultancies (see Nonaka & Takeuchi, 1995).

### *New Service Development*

Similarly with studies in innovation, research that was originally focused on New Product Development started to look closely at the differences when developing services and what general principles and factors enhance success (Edgett, 1994; Zomerdijk & Voss, 2011). Within these studies service design is generally described as a phase within New Service Development (NSD) characterised by a set of activities, tools and competences (Goldstein, Johnston, Duffy & Rao, 2002; Johnson, Menor, Roth & Chase, 2000). The term ‘service design’ has been introduced and described as “a form of architecture that involves processes rather than bricks and mortar” (Edvardsson, 1997, p. 31). This study is instead focusing primarily on Service Design as a professional practice to position it within existing innovation and organisational existing service design practices.

In an initial comparison between NSD studies and Service Design research, Yu and Sangiorgi (2014) distinguish three main research areas Service Design could relate to: research into NSD processes (where and how Service Design practitioners contribute to NSD processes and practices); research into NSD objects and outcomes (what is the focus and object of Service Design professional practice); and research into the facilitators of effective and successful NSD (in which way Service Design professionals facilitate service innovation and development).

The NSD process has been described using different kinds of models, initially following a similar structure as New Product Development as a linear sequence of steps from strategy development to commercialization (Booz & Hamilton, 1982). Recently more open and iterative models have been suggested representing the recursive nature of service innovation, not necessarily happening within traditional R&D offices, but as part of service

*A Theoretical Framework for Studying Service Design Practices: First steps to a mature field* development and improvement day-to-day activities. In particular Johnson et al. (2000) proposed an iterative, cyclic and nonlinear NSD process model consisting of four basic phases—design, analysis, development and launch—that embrace diverse sub-phases proposed by other models.

NSD objects relate to the development of the ‘prerequisites’ that can be planned and designed to increase the potential for quality in the final service delivery (Edvardsson & Olsson, 1996). Following the phases of NSD, Yu and Sangiorgi (2014) identify two main elements of New Service Development: the Service Concept and the Service Delivery System. Service design is considered as developing service concepts that should provide all the necessary information to inform the development of the service idea into a business and effective service performance. Clark, Johnston & Shulver (2000) describe the service concept as made of key components: value, form and function, experience and outcomes. The service delivery system is instead built upon the service concept and specifications. This has been summarised in Yu & Sangiorgi (2014) in three main aspects: the structure (physical, technical and environmental resources), the infrastructure (people), and processes (a set of activities that use the structural and infrastructural resources to deliver services) (Goldstein et al., 2002; Roth & Menor, 2003). Finally NSD is enhanced by ‘facilitators’ such as methods and tools, staff and user engagement, and organizational dimensions (Yu & Sangiorgi, 2014).

## **Perspectives on Service**

Previous sections have looked at service innovation research studying its characteristics, dimensions and processes; this section takes a higher perspective considering what do we actually mean with ‘service’ and how this understanding has been changing and developing lately. Using and discussing this meta-level framework can inform the nature and future development of designing for service itself.

According to Edvardsson, Gustafsson and Roos (2005), there are essentially two different approaches in service research: one perceives “service as a category of market offerings,” whereas the other describes “service as a perspective on value creation” (p. 118). Furthermore Grönroos (2008) suggests a third approach, which describes “service as a perspective on the provider’s activities (business logic)” (p. 300). The first perspective has been guiding the so-called ‘demarcation’ studies, aiming to look at the specific properties of services and service organisations in their key differences from physical good and manufacturing. The second and

third perspectives are instead adopting a 'synthesis' or 'integrative' perspective as they focus more on value creation, instead of physical goods or services; this view is the result of a general shift in the conception of value from considering value as embedded into tangible goods toward conceiving value as co-created among various economic and social actors (Vargo & Lush, 2008), reviving original studies of customers as co-producers (Eiglier & Langeard, 1975; Grönroos, 1978). In this growing perspective, value is not in the object or person, but "resides [...] in the actions and interactions which the acquired resource makes possible or supports" (Vargo & Lush, 2008, p. 51). Value is described as co-created in social contexts through customers' value-creating practices or even individually created by the customer (Edvardsson et al., 2011),

Following this consideration, if value is associated with use and context, the focus necessarily shifts from the units of output to the interactions. A service, therefore, represents "the process of doing something beneficial for and in conjunction with some entity, rather than units of outputs—immaterial goods— as implied by the plural 'services'" (Vargo & Lush 2008, p. 26). Goods become aids to the service-provision (Norman & Ramirez, 1989), while a service is considered as the common denominator in exchange and not as some special form of exchange (Vargo & Lush, 2004). As Gummesson describes it "activities render service; things render service" (1995, p. 250).

As a result of these considerations services are then proposed as "a conceptual framework within which to think in a different way of value creation and does not entail a distinct set of activities" (Ramirez 1999, p. 54). The original dichotomy between products and services is resolved by proposing a higher-order concept of service. Vargo & Lusch (2004) describe this shift with the concept of a Service Dominant Logic as opposed to a Goods Dominant Logic, where the focus was on tangible goods and resources, embedded value and discrete transactions. Key elements of this novel Service Dominant Logic paradigm are *resources*, in particular *actant resources* (people and their competences), and the *integration of available resources* in specific value co-creation activities and *contexts*, within *service systems*, which are the entity where value creation takes place. Grönroos (2008) further elaborates this paradigm in his *Service Logic Revisited* article, describing a supplier service logic (as distinguished from a customer service logic) as "a perspective on how, by adopting a service approach, firms can adjust their business strategies and marketing to customers' service consumption-based value creation." (p. 302). In this sense the focus is not on what the firm produces as an output but how it can better serve



*A Theoretical Framework for Studying Service Design Practices: First steps to a mature field* customers and support their own value-generating processes (Lusch, Vargo & O'Brien, 2007).

When aiming to position Service Design research and practice within the Service Logic paradigm, there have been questions of what designers are actually doing then when designing for services. Wetter Edman has suggested how 'design practice using designerly tools and methods might be a way to realize a service logic for the organization' (2011, p. 100). Sangiorgi has similarly suggested how designers can apply a Service Logic "to support organizations to explore, understand and work with more relational and softer aspects of a service, helping them to reframe their businesses and provision around customers' own processes of value co-creation." (2011, p. 103).

## **Perspectives on Design(ing)**

To assist in the theoretical framing to evaluate Service Design practices, in this section two anthropology perspectives are presented; the emerging area that is design anthropology and the proposal by Blomberg and Darrah's of an Anthropology of Services (2014). As the concept of design expands to areas such as service design, a field that is extending its methods and practices to the ideation of new service configurations, business models and organizational and social change (Sangiorgi & Prendiville, 2014), the frame for evaluating service innovation also needs to expand. For the purpose of this research, anthropology's focus on what it means to be human situates innovation within a human centred lens, capturing and illuminating the incidental and embodied practices that can easily be overlooked in innovation discourses. Design anthropology also provides a frame for considering the institutionalization of insights and how they are made tangible and how deliverables are mapped (Rabinow & Marcus, 2008). According to Gunn and Donovan (2012, p. 11) design anthropology focuses on different ways of designing and different ways of thinking about designing.

Literature from design anthropology offers the potential for new insights to frame and evaluate service design's role in service innovation. For Lenskjold (2011) design anthropology has something more to offer than the already familiar ethnographic methods subsumed into design practice and design's role of going beyond the future with its imagining. Here "design provocations offer a mediation of ethnographic accounts and anthropological knowledge to broaden the scope of the design process"(p.7). Petersen et al. (2001) define design anthropology as a

'piercing together' or a 'bricolage of its own' to explain the relationship between anthropology and design. Their focus is anthropology *in design* where its purpose is to make sense of what is there, with remaking what is there into something new (p.41).

From an institutional perspective, Jacoby (1990, cited in Gunn & Donovan 2012, p. 71) distinguishes between exogenous and endogenous institutions. "Exogenous are those institutions that affect people and organisations from outside, external bodies such as government that enforce laws and regulations" (p. 71). In contrast endogenous institutions more commonly "affect and evolve within communities". Endogenous institutions are the "local procedures and traditions the how we do things round here' approach" (Gunn & Donovan, 2012, p. 72). The authors also note how endogenous institutions may also change as a result of learning within the communities and how they also respond to exogenous institutions. For Gunn and Donovan (2012) the tendency to explore innovation practice from a Science and Technology and Innovation (STI) mode means that the role of local learning is not typically captured in these formal variables (p. 72).

Blomberg and Darrah (2014) propose an anthropology of services that have lessons for service design and service science. Noting the challenges facing service design through their characteristics of uncertainty in outcome and "the limits of intentionality in design", the paper presents services from a broader anthropological perspective, one that is intrinsic to the human condition that have existed long before the arrival of formal services. Most importantly Blomberg and Darrah (2014) make the connection between the human condition and the way in which humans adapt by providing services to one another. For the author services are never bounded as they are entangled in social institutions and broader practices of society that can be difficult to distinguish; social systems have always been material and immaterial and they are therefore by nature entangled.

This messier view of services raises questions regarding the current conceptualization of service value and the overly neat way in which services are conceptualized; there is an appreciation for the need of the service systems metaphor to suggest that services can be engineered but equally this omits "the openness and emergent quality of social life". Instead anthropology of services presents directions to improve service design and service innovation that is based on a longer-term more historical view of services as part of the human condition. Furthermore the paper identifies the need for anthropologists to focus on the work processes of the designer

*A Theoretical Framework for Studying Service Design Practices: First steps to a mature field* not just about the people whom they are designing but also the institutional and relational structures that support the designing of services. Most importantly Blomberg and Darrah (ibid) suggest that the conceptualization of service value from a business and information technology perspective limits the focus of design, predetermines the skills and knowledge considered necessary for the design of services and fails to acknowledge the costs and benefits that are distributed and absorbed by different members of society.

This section presents the emerging discussions on anthropology's role within service design and service innovation. Challenging the more common conceptualization of services and opening up the dialogue for a messier, human and socially framed view of service innovation, this expansion of service design considers Blomberg and Darrah's view of services as "less designed and more assembled from fragments of practices, institutions, lifestyles and networks" (p.127).

## **Theoretical framework**

This study will conduct six case studies into service design agencies work in UK. The unit of analysis for each of the case studies will be a Service Design project chosen by the agency that best represents their approach to delivering and implementing a client project. To support the data collection and analysis, a theoretical framework is here introduced as emerging from the literature review to guide semi-structured interviews with the service design agencies and the client organisation. Collection and analysis of design materials and evidence from their design processes and outcomes will complement the qualitative interviews.

In particular the previous sections have summarised perspectives on Service Innovation, Service and Design as a background for the development of this theoretical framework. These three levels of research - marked on the diagram (see Figure 1) - have been chosen to consider different levels of data gathering: 1) Innovation processes and activities; 2) Innovation dimensions and patterns; 3) Service and Design theories and frameworks. As illustrated in Figure 1, these levels will inform different kinds of questions, and will address the two main aims of our research work:

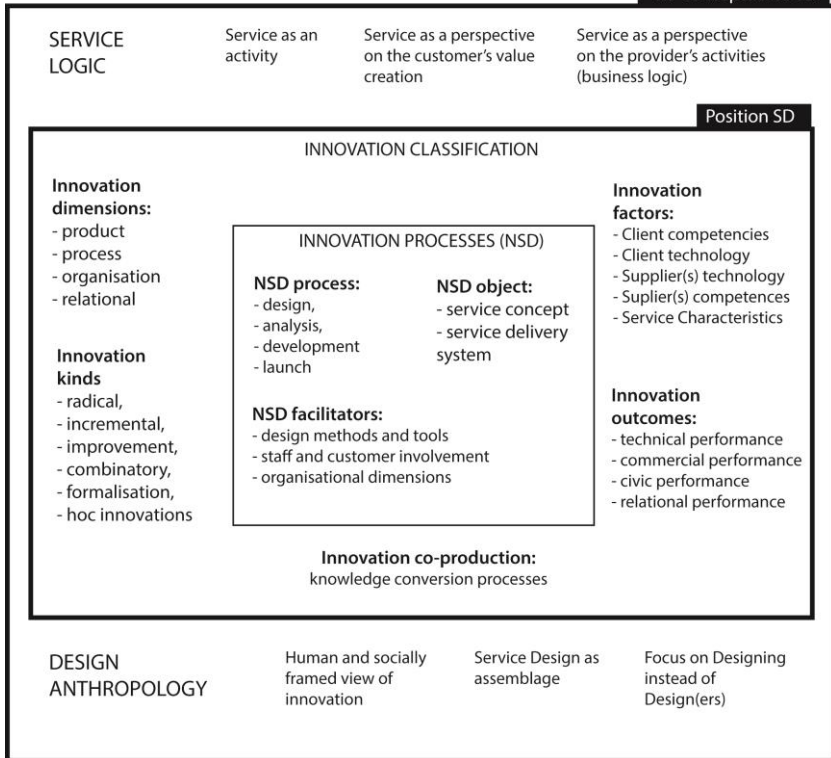


Figure 1. Initial theoretical framework to inform study of Design for Service Innovation and Development

1. Positioning Design for Service Innovation and Development: this scoping study aims to position Service Design practice within existing theories of NSD and Service Innovation, to initiate and facilitate a dialogue across disciplines; this means investigating service design case studies looking at innovation processes, dimensions and outcomes to identify and discuss designers contributions, qualities and limitations also in relation to general descriptions of KIBS' work;

2. Reconceptualising Design for Service Innovation and Development: on another level our aim is to re-interpret these innovation practices acknowledging recent theorisations of Design and Services. These theories suggest an expanded understanding of both Design, interpreted as an

*A Theoretical Framework for Studying Service Design Practices: First steps to a mature field assemblage rather than a design; and of Service, described more as a business perspective (service marketing perspective) or as a socially and culturally framed human activity (anthropological perspective) then as a market category.*

## Conclusions

When aiming to position and discuss Design role and contribution within and for service innovation and new service development theories, there are inevitable contradictions that lie at the core of studies of service innovation and of service itself. The aim to measure and classify service innovation as well as to describe, and formalise its processes, is in contrast with the awareness of its interactive and intangible nature that can emerge from intentional as well as unintentional and 'ad hoc' processes, that are often the result of evolution, revolution, disappearance, appearance, association mechanisms (Gallouji & Weinstein, 1997). Similarly the need to capture the specific role of designers for and within service innovation practices, is now in contrast with a general reflection on a wider understanding of service and design itself.

In addition most of the studies of service innovation are strongly anchored to traditional organisational settings, while service design projects might navigate beyond organisational boundaries (e.g. social change projects), generating different kinds of innovations and innovation practices that do require a different language for their description or classification.

In order to acknowledge these contradictions and study requirement we have decided to integrate in the same framework, the different perspectives (Service logic framework, Design Anthropology, service innovation classification and NSD processes) and use different lenses when collecting and interpreting case study data. We will then use emerging contradictions across these perspectives as materials for reflection to inform, question and develop our understanding and reconceptualization of Design for Service Innovation and Development. Finally this initial framework will be tested and further developed considering its fit for purpose and the contextual specificities of each innovation project.

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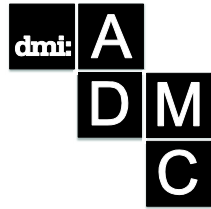
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## Models of Thinking: Assessing the components of the design thinking process

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*Organizations seeking to increase competitive advantage have recognized the importance of creativity in solving business challenges. Embracing the concept of design thinking as a process inviting deep analyses and thinking outside the box, organizations recognized for their creativity utilize two factors unique to the design thinking construct - discovery and visualization. Transformation of the traditional business model - problem identification and solution - to one in which design thinking is employed challenges organizations unfamiliar with the design thinking process to implement the process fully. In this examination, components of design thinking are evaluated through selected models based on inclusion of key constructs, characteristics, factors, or attributes. Locating the stages of discovery and visualization brings clarity to the design thinking process for organizations seeking to implement the process. Finally, deriving a common linguistic meaning from these models of thinking from other disciplines aids in enhancing a deepened understanding of factors attributable to design thinking and invites the opportunity to create quantitative measures evaluating the outcomes of design thinking desired by organizational leaders. This abstract includes 184 words.*

**Keywords:** Design Thinking, measures, evaluation of models

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## Introduction

According to the Design Management Institute (DMI) design-led organizations outperform other organizations by 93%, validating the critical nature and impact of design thinking on performance and productivity (2013). DMI's recent research efforts have focused on the value and merit of the design thinking process using a scorecard methodology to locate the level of accomplishment relative to design thinking that an organization has achieved. The scorecard is a continuum illustrating the key growth drivers that lead to the development and delivery of strategic business performance. However, design thinking as a construct remains intangible for many individuals and organizations due to the multiplicity of definitions and diversity of implementation processes. To establish measures assessing the value of the components in the design thinking process, this paper seeks to inform design managers about the value of discovery and visualization (Owen, 2006). Not found in business/non-design problem solving processes these two components are unique to the creative problem solving process, and influential to innovation in design thinking outcomes (Borja de Mozota, 2006; Junginger, 2009). This examination of the literature also considers the impact potential of discovery and visualization when directed at improving ROI in terms of organizational performance and more specifically the development of creative strategy.<sup>92</sup> The design thinking literature suggests using integrative performance measurements to evaluate the success of ROI; however, personal communications with experts in the field indicate quantitative assessment focused on measuring design thinking components is absent in existing process evaluations or implementations (R. Martin, personal communication, August 29, 2013; D. Kelley, personal communication, September 17, 2013). This paper examines components employed by selected models addressing design thinking constructs (e.g., creativity, knowledge creation, values) to construct an expanded model of design thinking factors and attributes. The development of an expanded model allows for an increase in organizational understanding and implementation, and enables assessment of the components of design thinking using quantitative measures to add value to empirical discovery and meet the needs of today's business leaders.

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<sup>92</sup> Inclusion on recognition lists based on creativity or innovation (e.g., IDEO, Red Dot)

### ***Design Thinking in the Literature***

Design thinking as a construct evolved in the 80s, increasing its depth of application and understanding through to today's implementation of the process; prior to this time frame however, models for the design process and related stages emerged with Wallas' (1926) four stage model. Recently, paralleling the development of design thinking across different design disciplines, academics representing diverse design professions (e.g., architecture, industrial design, interior design) have explored the design process (Aspelund, 2010; Poldma, 2009). In this process, stages included problem seeking and discovery, and subsequently problem solving and visualization of first, alternatives, then expansion of a selected approach to problem resolution. During the design process, design research introduced in the 60s occurs during initial client needs assessment (programming) and at the close of a project during post occupancy evaluation (POE). Design research encompasses a user-centered process in which solutions are proposed based on observed or experienced phenomena related to the problem of space; the process is iterative and cyclical until a design solution is identified, followed by prototyping and testing (Curedale, 2013a; 2013b; Maier, 2010).

During the 70s and 80s concepts related to design thinking appear in the literature as "visual thinking," "mind mapping," and "human-centered design" (Curedale, 2013a, 2013b). Rowe (1987), first to use design thinking in the literature, emphasized the idea of problem solving and the "complex texture of decision making" (p. 2), recognizing the design process as not restricted by an idealized step-by-step process, and stressing the ways in which designers approach creative problem solving. Through the 90s and into 21st, the term design thinking has evolved with numerous meanings. In an examination of selected design thinking literature (Table 1) published in the past 10 years over a dozen commonly used definitions emerge.

Word frequency analysis of employed language revealed the following common factors:

- |              |                 |
|--------------|-----------------|
| • Design     | • Discovery     |
| • Innovation | • Strategy      |
| • Business   | • Visualization |
| • Process    | • Management    |
| • Problem    | • Thinking      |
| • Solving    | • Approach      |

Table 1. *Definitions of Design Thinking Located in the Literature (2006-2013)*

Researcher	Definition of Design Thinking
Liedtka, King & Bennett, 2013	"...it is an approach to problem solving that is distinguished by...discovery in advance of solution generation using market research approaches...expands boundaries of both our problem definitions and our solutions...is enthusiastic...[and] committed to conducting real-world experiments...it is capable of reliably producing new and better ways of creatively solving a host of organizational problems" (p. 2).
Curedale, 2013a, 2013b	"A people centered way of solving difficult problems. It follows a collaborative team based cross-disciplinary process. It uses a toolkit of methods and can be applied by anyone from the most seasoned corporate designers and executives to schoolchildren. Design Thinking is an approach that seeks practical and innovative solutions to problems. It can be used to develop products, services, experiences and strategy...Design Thinking combines empathy for people and their context with tools to discover insights. It drives business values" (p. 13).
Cross, 2011	"Something inherent within human cognition; it is a key part of what makes us human" (p. 3).
Ambrose & Harris, 2010	"...a subject that includes many terms relating to technical or creative concepts" (p. 177).
Acklin, 2010	"...acts as a bridge between the reactive and the proactive notions of design management by establishing a sustainable culture for design in a company" (p. 55).
Rylander, 2009	"...is composed of two ambiguous words that defy straightforward definition...[existing definitions] call attention to the two components that are addressed in...literature – that design problems are somehow different and that the way they are addressed by designers is somehow different" (p. 10).
Lockwood, 2009	"... is essentially a human-centered innovation process that emphasizes observation, collaboration, fast learning, visualization of ideas, rapid concept prototyping, and concurrent business analysis, which ultimately influences innovation and business strategy. The objective is to involve consumers, designers, and business people in an integrative process, which can be applied to product, service, or even business design" (p. xi).

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Cooper, Junginger, & Lockwood, 2009	"...offers opportunities to distinguish among particular design methods and design principles as they involve different foci...design thinking applied to a business strategy and business transformation involves the visualization of concepts and the actual delivery of new products and services" (p. 48).
Martin, 2009	"Design thinking [is] the wider application of a design perspective beyond just product aesthetics, as a potential source of sustainable competitive advantage...to be a 'design thinking' organization...requires gaining the ability to strike a better balance between exploration and exploitation of the innovation process than is typical of most organizations today" (p. 37).
Brown, 2008	"A methodology that imbues the full spectrum of innovation activities with a human-centered design ethos" (p. 1).
Owens, 2006	"...is in many ways the obverse of scientific thinking. Where the scientist sifts facts to discover patterns and insights, the designer invents new patterns and concepts to address facts and possibilities" (p. 17).
Dunne & Martin, 2006	"Approaching management problems as designers approach design problems..." (p. 512).

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The diversity of terms and language found in this examination of the design thinking literature creates confusion when attempting to identify common application, similar to challenges found in conducting meta analyse research (Hunter, Bedell, & Mumford, 2007). Many definitions are useful when connecting the idea to similar research areas; but the lack of a universal definition and common language becomes problematic for organizations looking to implement the construct and develop consistency for comparison with other organizational performance indicators. We propose through the various definitions using the term "design thinking," models with components included in the construct encompassing creativity, knowledge absorption, business strategy, and problem solving inform the context of the process.

### *Characteristics and Factors of Design Thinking*

The design thinking literature suggests visualization of concepts and delivery of novel services (Cooper, Junginger, & Lockwood,

2009) are strategic, leading to new forms of value (Brown, 2008) and discovery of unmet needs. Design thinking is directed at solving ‘wicked problems’ (Lockwood, 2009) or problems too complex to approach in a simple manner, promoting a long-term organizational survival through improved performance (Martin, 2010) and creative strategy. Design thinking, as the key driving force in an organizations ability to increase competitive advantage (Martin, 2010) and return on investment (ROI), creates the need to understanding its value in the work place (Sermon, 2014). The implementation of design thinking in the workplace can be as small as changes made to the packing of a product to increase sales (Sermon, 2014), or as large as influencing strategic decisions (Brown, 2008; Lockwood, 2009).

Design thinking remains intangible for many organizations, in part due to the absence of common language and interpretation of its application. With common definition and common construct inclusions, it is hypothesised that quantitative measures assessing comparative value of factors in the design thinking process (e.g., current return on investment of design thinking) can be applied to organizational strategic processes. To begin to assemble factors to support a common language and create a foundation model of the design thinking process as embedded in the larger context of the design process, this paper explores models of thinking utilizing relevant discipline contributions to define factors that can be evaluated for application to organizational problem identification and problem solution (Table 2).

*Table 2. Characteristics of Knowledge, Culture, Work Environment, Strategy, Maturity, and Use of Design within Organizations*

Characteristics					
Knowledge <sup>93</sup>	Culture <sup>94</sup>	Work Environment <sup>95</sup>	Strategy within Organizations <sup>96</sup>	Maturity of Organization <sup>97</sup>	Use of design within Organizations <sup>98</sup>

<sup>93</sup> Cohen & Levinthal, 1989, 1990; Zahara & George, 2002

<sup>94</sup> Amabile, Conti, Coon, Lazenby & Herron, 1996; Csikszentmihalyi, 1996

<sup>95</sup> Amabile, Conti, Coon, Lazenby & Herron, 1996; Csikszentmihalyi, 1996; Fraser, 2009

<sup>96</sup> Borja de Mozota, 2006; Csikszentmihalyi, 1996; Fraser, 2009; Martin, 2009

<sup>97</sup> Design Management Institute, 2013; Junginger, 2009

<sup>98</sup> Design Management Institute, 2013; Junginger, 2009



*Models of Thinking: Assessing the components of the design thinking process*

Key Factors	Key Factors	Key Factors	Key Factors	Key Factors	Key Factors
-Creative Thinking	-Clear Goal	-Acceptance of Failure	-Business Design	-Design Maturity	-
-discovery	Integratio	-Adequate Resources	-finance	-Ad hoc	-Existing on
-invention	n	-Autotelic Resources	perspective	Repeatable	Periphery
-Potential	Encourage	-Merging of Action and Awareness	-process	-Managed	-
Knowledg	-	-Challenging Work	perspective	-	Influential
e	ment of	-Disappearance of self-	-Codifying	Optimized	,
-	Creativity	Consciousnes	Operations	-Stages of	Integrate
acquisitio		-Distraction-free	-Customer Focus	Maturity: -design	d,
n		-Immediate Feedback	-	plays	Integral
-		-Lose Sense of Time	empathy	no role	to
assimilati		-Pressures	-deep	-relevant	Organizati
on		Organization	understand	in	on
-Realized		and	-	style	-Within
Knowledg		Supervisory	ing	-design	Multiple
e		Encouragem	-Learning	part	
-		nt	Perspective	of	Departme
transfor-		-freedom	-Market	develop-	nts
mational			-	ment	-Within
-			Visualizatio	-design	one
exploitati			n	key	
on				to	Departme
				strategy	nt

### *Model Contributions to Design Thinking*

Nine models in this analysis present factors informing definitions of design thinking; these models were selected based on factor inclusion. Factors that emerge from these models invite transformative thinking in developing the foundation model for the construct of design thinking using common language to expand understanding of each component

#### **Componential Model for Creativity and Innovation within Organizations (Amabile, Conti, Coon, Lazenby, & Herron, 1996)**

Amabile et al.'s model integrated empirical findings from earlier workplace climate studies (e.g., the Work Environment Inventory/WEI, Amabile & Grysiewicz, 1989) surrounding creative work environments and produced assessment tools focusing on individual perceptions and the influence of those perceptions on creativity in the work environment (p. 1157). Earlier theoretical models addressed three broad factors: (1) organizational motivation to innovate, (2) resources, and (3) management support. The componential model addressed five broad conceptual categories impacting creative behavior within organizations:

- *Encouragement of creativity*: generation and development of novel ideas exist at three major levels - organizational, supervisory, and work group;
- *Autonomy/freedom*: a common factor where creative output is ample; individuals are likely to produce more creative work when they perceive a choice in day-to-day activities;
- *Resources*: access to necessary information, supplies, etc.;
- *Pressures*: Amabile suggests workload pressure can hamper workplace creativity, with finding pressures in the workplace enhancing creativity when project are perceived as urgent and/or intellectually challenging (Amabile, 1988; Amabile & Grysiewicz, 1989); and
- *Impediments to creativity*: critical-incident studies (Amabile, 1988; Amabile & Grysiewicz, 1989) suggest internal strife, and rigid and formal management structures impede creativity.

These five constructs and numerous factors contributed to the development of KEYS, an instrument measuring organizational work environment on attributes influencing the generation and development of creativity. Since its creation, the KEYS survey has been tested on over twelve thousand individuals and continues to add to the database of the Center for

Creative Leadership. The contribution this model makes in supporting a common language and foundational model for design thinking is the identification of creative attributes in the work environment.

### **Balanced Score Card (Borja de Mozota, 2006)**

Borja de Mozota's model and instrumentation measures the impact of design value in organizations and is commonly used in business management and identified as the Balanced Score Card; the scorecard is utilized to implement organizational design strategies. Four ways of using design can be located in the Balanced Score Card the - the four powers of design (Borja de Mozota, 2005, 2006):

- *Design as differentiator*, providing competitive advantage through avenues including consumers, market, and price;
- *Design as integrator*, improving product development (encompassing teams using visualization as a tool);
- *Design as transformer*, development of new business opportunities aiding organizations in adjusting to change; and
- *Design as good business*, supporting sustainable business affecting the bottom line, value, market share, and an organization's ROI (Borja de Mozota, 2006, p. 45).

When the score card is implemented within organizations, outcomes impact organizational vision and strategy (Borja de Mozota, 2005). The score card tool has been tested in organizations worldwide (e.g., Steelcase, Decathlon) and used as an indicator of organizational performance and value placed on performance (Borja de Mozota, 2006). The Balanced Score Card links design strategies to value, and offers an approach to quantitative measurement of factors.

### **Flow (Csikszentmihalyi, 1996)**

When an activity includes elements of novelty and discovery, flow – an autotelic, effortless, and highly focused state of consciousness is experienced. When asked about this experience, individuals from diverse disciplines, from varying ethnicities, genders, and races described the experience of flow with similar words and phrases. In these descriptions, nine main elements can be identified (Csikszentmihalyi, 1996):

- *Clear goals*: an individual always know what needs to be accomplished next;
- *Immediate feedback*: actions produce immediate feedback to signal how well an individual is doing;
- *Balance between challenges and skills*: abilities are well matched to opportunities for action;
- *Action and awareness merged*: concentration is focused on the action;
- *Distractions excluded from consciousness*: as a result of intense concentration, the individual is aware only of what is immediately relevant to the task at hand;
- *Little concern for failure*: clarity in what needs to be done; skills are matched appropriately with challenges and fear of failure does not exist;
- *Self-consciousness disappears*: involvement absorbs one with the project at hand;
- *Sense of time becomes distorted*: perception of how much time has passed depends on enjoyment of the task; and
- *Activity becomes autotelic*: the task or activity has an end or purpose in itself and is worth doing for an individual's own sake.

Conditions for flow engage when the process of creating something new or discovery of novel experiences creating enjoyment occurs. Csikszentmihalyi's (1996) factors suggest common language describing creative problem finding and solving.

### **Design Value Scorecard (DMI, 2013)**

DMI's recent research project investigating the value and merit of the design thinking process locates business performance and key growth drivers in the development and delivery of improved performance (DMI, 2013; Westcott, et al., 2013). The Design Value Scorecard consists of best-practice "zones" reflecting the path organizations today implement to drive business value. Moving horizontally on a continuum across the design scorecard, zones include:

- *Development and delivery (Zone 1)*, has tangible ROI impact through methods such as the redesign and/or other aesthetic and functional product attributes. Delivery, service, and customer communication attributes also appear here.

- *Organization (Zone 2)*, this type of design-led shift requires re-thinking of the organization and stresses design value be defined in metrics such as conversion, customer value, loyalty and market share.
- *Strategy (Zone 3)*, reserved for organizations that have made design a core competency. The move to incorporate design into strategy can be studied in organizations through structure, operations, profit margin and even stock performance.

Five levels of design maturity move vertically on the scorecard: initial/ad hoc (level 1); repeatable (level 2); defined (level 3); managed (level 4); optimized (level 5). Optimized is the most established level of maturity with the greatest productivity, with initial/ad hoc the least established level of maturity, characterized by low quality and high levels of risk and waste (DMI, 2014; Westcott et al., 2013). The contribution of DMI's (2013) Value Scorecard contributes to further language refinement through common language makes possible identification and improvements to the design thinking processes in organizations.

### **Three Gears of Business Design (Fraser, as cited in Lockwood, 2009)**

The Three Gears of Business Design draws upon tools in both design and business venues, creating a framework that integrates user needs, powerful ideas, and enterprise success (Lockwood, 2009).

- *Gear one*, aims to achieve deep user understanding and establish a context for innovation and value creation. Through exploration of new opportunities, organizations are able to gain context – what users do and how they feel;
- *Gear two*, focuses on concept visualization as the goal. Gear two implements tools during the strategic planning process to explore a broad set of solutions. Creative tools, such as prototyping and ideation, enrich and generate novel solutions.
- *Gear three*, identifies through analysis which strategies will drive success, prioritizes activities in delivering those strategies, and defines how strategies fit together strategically, operationally, and economically (Lockwood, 2009). Through this, “broad concepts [align] with future realities through strategy formulation and design of the business model itself” (p. 40).

The cycle of gears provides feedback loops inviting new concepts back into an organization's operating system. Ideally, the three gears work together in solving user problems expediently recreating a strengthened strategic business model. This model clarifies factors and attributes empathizing with user needs to visualize strategies driving success and prioritizing activities.

### **Bubble Model (Junginger, 2009)**

Bubbles used as a visualization tool suggest four "archetypical" locations where design thinking and design methods happen or can be found in an organization.

- *Add-on, design at the organization's periphery*, not central to an organization with no defined role; design is an external resource without continuous presence, and often is limited to classic design problems of communication and function;
- *Design as part of the organization*, a component of a few teams within the organization, with gaps remaining between teams and the remainder of the organization; design remains limited to traditional products and services; *Design at the core of the organization*, exceedingly visible and demonstrates access to organizational leadership; design is linked directly to strategy with the power to make significant impacts on the organization and its identity; and
- *Design as integral to all aspects of the organization*, questioned, formed and shaped by ongoing design-oriented inquiries; the process of designing or creative problem identification and solving involves a wide variety of complex situations uncovering and changing beliefs, values, and norms within the organization.

These bubbles generate conversations about how and where design could be used in the organization, as few organizations actually know where their design practices "are" at any given point in time. The bubble model links the "how" to "what" and "why" in terms of design and problem solving approaches (Junginger, 2009). This model engages design described through commonly understood language.

### **Knowledge Funnel (Martin, 2010)**

Martin suggests an organization's competitive advantage hinges on the balance between exploration (search, risk-taking, experimentation, and discovery) and exploitation (refinement, selection, efficiency, and implementation) during the innovation process (Leavy, 2010; Martin, 2010). The knowledge funnel depicts value creation in achieving this balance (Martin, 2009, 2010). The three steps of the knowledge funnel, referred to by Martin as points of view, aid in advancement of knowledge and capture value within the organization by pinpointing market opportunity, devising a product offering to that selected market, and codifying business operations (Martin, 2010, p. 37; Martin, 2009).

The funnel visually represents an organization's advancement in knowledge acquisition, narrowing as the organization becomes increasingly more informed and aware as increased knowledge simplifies complexities, becomes more refined, and ultimately increases success in performance (Martin 2009, 2010). The knowledge funnel's points of view require reconciliation with concepts surrounding the organizations acquired knowledge. The first point of view stems from strategy constructed by the collection of rigorous quantitative data. Through the analytical thinking process, judgments, bias, and variations are removed. The second point of view, in contrast with the first, suggests intuitive thinking is centered on the primacy of creativity and innovation. Martin (2010) posits the combinations of these points of view are the foundations to the knowledge funnel. Organizations mastering the combination of these two points of view gain long-term competitive advantage through a third point of view, the knowledge funnel – the methodology of design thinking. Design thinking builds an organizations' knowledge base aiding in the movement from mystery to heuristic to algorithm and back again more easily and consistently (Leavy, 2010, p. 8). The Knowledge Funnel constructs the equilibrium between exploration and exploitation during the innovation process thereby enhancing knowledge value in organizations.

### **Two-domain Creativity Model (Owen, 2006)**

Owen's model expresses the dichotomies existing in the way creative people think. The first type called "finders" work and think practicing their creativity through discovery of scholarly/scientific understanding. The second type, the "makers" express their creativity through invention. Typically, makers bring novel perspectives through new arrangements and patterns (Antonelli & Martin, 2013; Owen, 2006). The two-domain creativity

model is the first step in Owen's (2006) quest to define the nature of knowledge creation within the discipline of design (Antonelli & Martin, 2013; Owen, 2006).

### **Absorptive Capacity (ACAP; Zahra & George, 2002)**

The ability to acquire, transform, and utilize new sources of knowledge is critical to organizational survival. The theory and model of Absorptive Capacity (ACAP) utilizes organizational routines to "acquire, assimilate, transform, and exploit knowledge" (p. 186) to increase an organization's capacity for innovation and success (Cohen & Levinthal 1989; Cohen & Levinthal 1990; Zahra & George, 2002). The ACAP model encompasses the factors of potential capacity and realized.

- *Potential capacity*, contains acquisition and assimilation of knowledge, as attributes, and speaks of the organization's ability to identify and acquire externally generated knowledge. This knowledge must then be analyzed, processed, and interpreted in order to be useful to an organization.
- *Realized capacity*, encompasses transformation and exploitation of knowledge, as attributes, and is the action of combining existing knowledge with newly acquired knowledge. The newly acquired knowledge is then transformed into the functional operations of an organization.

Within the ACAP model, new knowledge becomes utilized and ROI (in knowledge) is recognized impacting the organization's outcomes (Cohen & Levinthal 1989; Cohen & Levinthal 1990; Zahra & George, 2002). The Absorptive Capacity model supports design thinking by visualizing how to transform new knowledge into a source for increased organizational innovation and success.

### *Analyses of Factors Common to Models of Thinking*

Critical elements revealed from the analysis of these nine models create the framework for an expanded model of design thinking to increase organizational understanding and implementation. The expanded model (Figure 1) illustrates the components of design thinking, enabling individual and organization understanding of creativity in decision-making within organizations. Furthermore, the expanded model illuminates the integration of the conceptual ideas framing each of the models examined.



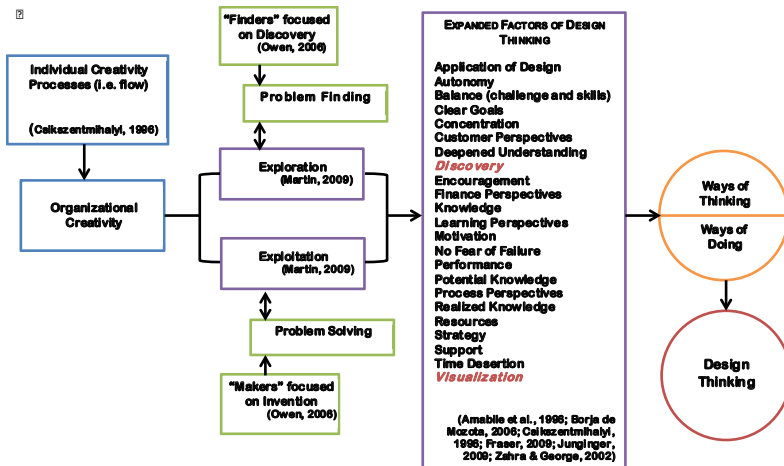


Figure 1. Expanded model of design thinking increasing organizational understanding and implementation

Figure 1 increases organization understanding and implementation as the individual and/or organization move from left to right through the model. The model begins with *individual creativity processes (i.e. flow)*. Initially, individuals within the organization experience novelty as they discover solutions to organizational problems through attributes found during Flow (Csikszentmihalyi, 1996). Next, individual solutions are brought to the organizational whole, increasing creativity and the knowledge of problem solution opportunities. This solution process is represented as *organizational creativity*. An increase in knowledge to the organization through *exploration* and *exploitation* enhances the value of the innovation processes (Martin, 2009). As the organization strikes a balance between the *exploration* and *exploitation* of added knowledge, a separation of two different types of minds appear from the individuals present inside the organization. These two different mind-types influence how people work and think. Individuals focused through *problem finding (finders)* practice creativity through discovery (Owen, 2006). Individuals who prefer *problem solving (makers)* emerge from the group to express their creativity through invention. Both of these individual mind-types are needed to influence and inform a problem solution to move forward (Owen, 2006).

The model thus offers an expanded section of design thinking factors and attributes to organizations seeking to enhance creativity. This section of the model recognizes that numerous influences affect the progress of the creative organization. Recognizing and allowing various factors (e.g., application of design, autonomy, balance, clear goals) to influence and potentially alter the creative problem solving process offers the organization unique and powerful tools to implement customized creative processes (Amabile et al., 1996; Borja de Mozota, 2006; Csikszentmihalyi, 1996; Fraser, 2009; Junginger, 2009; Zahra & George, 2002).

After the expanded section of design thinking factors and attributes, *ways of thinking* and *ways of doing* represent a culmination of factors relevant to critical problem solving processes. The models reviewed in this paper integrate the conceptual ideas stemming from the examination of both design (ways of thinking) and non-design models (ways of doing). The integrated approach provides the user of this model with a diversity of factors and attributes. These factors and attributes give way to numerous opportunities for solutions through new methods of thinking about problems solving and new methods of implementing/doing problem solutions in the creative organization. The model concludes with *design thinking*. At this point in the model, novel approaches to the doing and thinking of problem solution in the creative organization lead to the implementation of design thinking in organizations. Design thinking builds on organization knowledge of problem solutions thereby increasing organizational knowledge and success rate in the implementation of novel ideas to solve business problems.

Of special interest in Figure 1 are the factors of visualization and discovery (highlighted). These factors are located in the expanded portion of the model, and are available to the organization during the creative problem solving process stemming from the ways of thinking. These two factors are not found in business/non-design problem solving processes; but influence innovation in design thinking outcomes, emerging from Borja de Mozota's (2006) and Junginger's (2009) problem solving processes. Farson (2008) suggests design is capable of solving the world's social problems through the use of the design process; however, linking this process to business has been elusive; this model attempts to solve this. Although external discipline models (Amabile et al., 1996; Csikszentmihalyi, 1996; Fraser, 2009; Martin, 2009; Owen, 2006; Zahra & George, 2002) create an understanding of how the implementation of design thinking can be informed through creative

strategy, organizational creativity and innovation, and enhanced competitive advantages; implementation of these external approaches require clarification and reality checks. Clarification and reality checks invite the participation of organizations with little understanding of the design thinking process to work on implementation in their business practice.

### *Contributions to Design Thinking*

Three outcomes can be defined from the development of an expanded model of design thinking to increase organizational understanding and implementation: (1) integration of business and design models; (2) application of common language to the creative problem solving process; and (3) identification of factors for evaluation of the creative organization when examining competitive advantage.

First, the integration of business and design models informs factors and attributes critical to the creative organization in the identification and formation of solutions to problems, previously not studied together. Numerous options are available to organizations encountering the problem solving stage, yielding numerous opportunities for creative solutions by using new methods of thinking. These new methods of thinking, that consider alternative solutions, allow for diversity and a greater ease in the understanding and application of design thinking in an organization, regardless of industry.

Next, the development and application of a common language to the creative problem solving process avoids potential confusion caused by the many definitions of factors during the implementation of the design thinking process. A model offering an expanded section of design thinking factors and attributes address the diverse language and uniqueness of the process, allowing for organizations seeking to enhance creativity to choose an implementation process that is best for their needs.

The clarification of factor and attribute language, within the context of the design thinking literature, allows for the intended uses of those factors and attributes to become more comprehensible to individuals and organizations. This understanding thereby makes the concept of design thinking increasingly tangible for the organization to potentially increase its chance for success in producing creative outcomes.

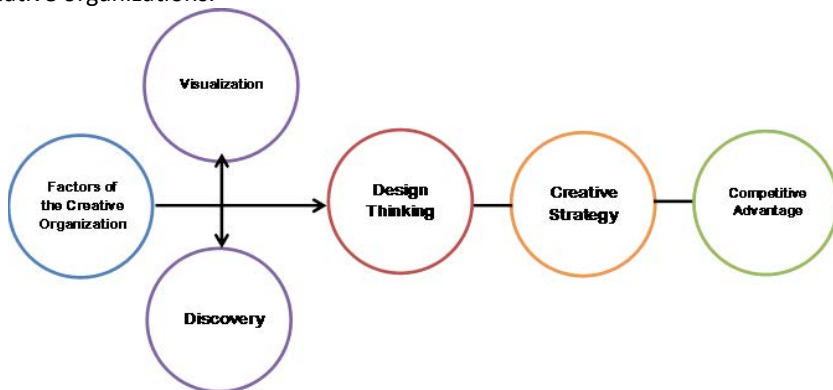
Lastly, the identification of factors for evaluation makes possible the establishment of quantitative measures assessing the value of components in the design thinking process; quantitative empirical discovery would add

value in providing the type of meaningful measures sought by organizational leaders when implementing a design thinking approach.

### *Future Thoughts Toward the Next Step*

This analysis identifies characteristics, factors, and attributes present in varied models of thinking, utilizing contributions to define design thinking from non-business disciplines. Applications of the design thinking processes in the problem identification and solution stages within an organization would assist in the clarification of a common language unique to the design thinking process, and influence creative outcomes including performance impacts on organizational ROI. An expanded model of design thinking increases organizational understanding and implementation by integrating conceptual ideas which frame each of the models examined. Creative strategy emerges from the literature as a major construct critical to the implementation of design thinking in organizations. Of special interest, visualization and discovery emerged in the literature as tools used to enhance the effects of design thinking, setting the process apart from classic problem solving methods.

The implication of visualization and discovery on the creative organization should be tested. Figure 2 isolates visualization and discovery as factors most interesting to design thinking. More research is planned to measure the impacts of visualization and discovery as they inform the application of design thinking in enhancing creative strategy and to evaluate the extent to which these factors influence competitive advantage among creative organizations.



*Figure 2. Influence of visualization and discovery on design thinking enhancing the development of creative strategies to achieve competitive advantage*

In addition to this analysis of factors, examination of pertinent surveys should be conducted to develop a language common to creative problem solving. Emerging language from the surveys should be compared to language identified in the design thinking literature; similarities in key characteristics would then be noted.

These key characteristics emerging from the models and surveys can create quantitative assessment measures informing value creation from the factors identified in Figure 1 thus improving creative strategy and in turn impacting the increase in competitive advantage. It is suggested that integrating qualitatively driven design methods with newly constructed quantitative measures creates a powerful approach for organizations to discover unknown and unmet needs and desires (Lockwood, 2007; Seemann, 2012).

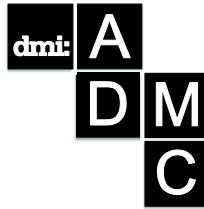
Designers and researchers have utilized qualitative methods to introduce innovative ideas; however, business executives and managers value quantitative measurement outcomes to describe organizational performance (Lockwood, 2009). Combining quantitative and qualitative approaches would allow organizations to make discoveries impacting new business markets, and ultimately to stay ahead of the competition (Martin, 2009) but would require reframing of organizational thinking regarding outputs.

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# Desirability Competitive Positioning Model: A model for identifying where design can have the greatest influence on profit within a highly competitive consumer product environment

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*This paper sets out to provide a model for analysing specific consumer product markets and identifying where there is the greatest opportunity for exploiting the value of design. Design and product desirability are often perceived as secondary to focusing on cost during product development, and while in many markets this is a valid approach, there is an opportunity to provide a model that identifies where there are market dynamics that indicate an increased focus on design would deliver greater return on investment. The aim was to create a matrix model for positioning competing products in the context of desirability, cost and price. This desirability competitive positioning matrix provides the basis for a series of techniques that deliver insights into a particular competitive environment and can place design at the forefront of value creation.*

**Keywords:** *Desirability, Design, Competitive environment, Consumer, Price, Cost*

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Marketing and Engineering often see design as a cost rather than an investment. If something is seen as an investment with a good return you look for ways to increase that investment, if it is seen as a cost you only look for ways to reduce it.

*“The engineers tended to think of design as something added to a product. Less of it, surely, would reduce cost of an entry level vehicle.” - Jerry Hirshberg, Nissan Design International – The Creative Priority 1998.*

Value engineering is frequently treated as a process of cost removal, rather than a process of identifying where value can be added. This misunderstanding of value engineering compounds the view that design is an additional expense. Delivering desirability and value is where wealth is created, whereas reducing costs only releases wealth and offers a finite opportunity. Adding desirability and value without adding cost is where design can make a significant contribution and enables increased margin while continuing to build brand loyalty. Design is not a cost, it's an opportunity to invest in the future of a business by differentiating a company's products and the desirability matrix model sets out to visualise the competitive landscape. The matrix identifies the markets where desirability has the largest impact and consequently the markets where design needs to be placed at the forefront of product development. The matrix is intended for use in established markets rather than new technology emergent markets, and as a tool for designers to gain insights into the dynamics of customer perceptions of desirability.

## **Background**

The desirability matrix was born from the need to understand the changing priority accorded to the aesthetic considerations of product design within a large corporation moving from a predominantly commodity market towards a more consumer orientated market. The corporation had a vast amount of expertise in balancing functionality and cost to offer a value proposition that enabled a purchase decision purely from a specification sheet and price quote. In essence, the classic price / performance analysis which are frequently used as a validation to focus on engineering and specification enhancement in preference to the more subjective aspects of product experience that design addresses. This was a commodity based business to business market, with subjective aspects such as desirability only

being relevant in a tie break situation against a competitor product offering. Where user centred design did have a significant role to play in improving the products was in delivering ongoing operability benefits to users in the post-sale environment. While recognised as contributing to the brand strength through this role it was not seen as self-evident that design could have a significant and growing role in competitive positioning within the more consumer orientated market.

The creation of the matrix was not in itself an exercise in defining what constitutes desirability, rather it was an attempt at visualising a comparative analysis of desirability between competitor's products. Highlighting to internal decision makers that different market segments require a re-assessment of the role of design. This was shown to be particularly relevant to the more subjective decision processes that customers go through within a consumer environment compared to the more logical processes employed in a commodity environment.

## Research process

For the purposes of this exercise the start point was a review of the Customer Value Map (Gale. B, 1994) methodology. The value map methodology plots customer perceived value against price to identify competitive position in relationship to a fair value line. The strength of this approach is its emphasis on qualitative customer perceptions and relative competitive strength, and not simply on a calculation of price to performance measured quantitatively. However, it was felt that there was need to focus on desirability as a specific component in the perceived value of a product, as this was the area where design was accepted as having the greatest impact. By isolating desirability it was hoped that its relevance in consumer versus commodity markets could be explored in more detail and provide insights into the role of design. It was also felt that there would be value in a screening process using regression analysis to establish in which type of market a correlation between price and desirability is strongest.

The process to arrive at a working model was as follows:

- Define the aim of the project: 'create a model that could be applied in market analysis which would identify the role of desirability within specific market segments'
- Create a prototype model and analysis process for comparative

competitor analysis with regard to desirability against price. Specifically identifying how desirability relates to the differing dynamics of consumer, commodity and luxury markets.

- Define 'desirability' for the purpose of the experiment, and in such a way that it can be communicated to respondents to deliver a consistent frame of reference.
- Carry out a controlled experiment using a common consumer product which all respondents would be familiar with, in this case a kettle.
- The results from the controlled experiment were then analysed using the prototype desirability matrix model and potential refinements to the model were identified. The potential of the model was then assessed by trials within the sponsoring organisation.
- Create cost/price regression lines against desirability to identify the significance of relative competitive position on product margin.

## **The Desirability Matrix – overview**

The model consists of a scatter graph showing the relative position of competing products against the axis of desirability and price. This space is divided into a matrix of four quadrants identifying the market dynamic categories of Commodity, Consumer, Luxury and Failing, see figure 1.0. The relationship between desirability and price defines which type of market a group of competing products reside in. The premise being that in luxury markets price is less relevant than desirability (if you have to ask the price you can't afford it), and in commodity markets the price is more relevant than desirability. The challenging area for design is in the consumer markets where, while price is relevant, customers can be persuaded to pay more if the desirability is sufficient. It is important to know which market you are operating in to identify the tipping point at which a design focus on desirability will shift the market in your favour. The model works best when tracking competing product offerings over time where shifting market dynamics can be observed and products approaches changed accordingly.

### *Quadrant characteristics:*

**Commodity** – Pure cost and no design focus, low price and low desirability, products in this quadrant are undifferentiated, chosen based entirely on price and customers either have insufficient capital to move up market or place very little importance on desirability. Margins are small and high volumes are needed to make a profit. Companies operating in this market usually see design as a cost to be reduced and emphasise engineering as the way to protect margins.

**Consumer** – Pure design combined with cost focus, low price and high desirability, products in this quadrant are likely to be in a highly volatile and contested market place where customers are making purchase decisions based on perceived value and a belief that the value warrants the price being asked. Product margins rely on great design and engineering working together to create higher perceived value while reducing cost. Design is seen as important, but often only as a necessary evil rather than a positive investment.

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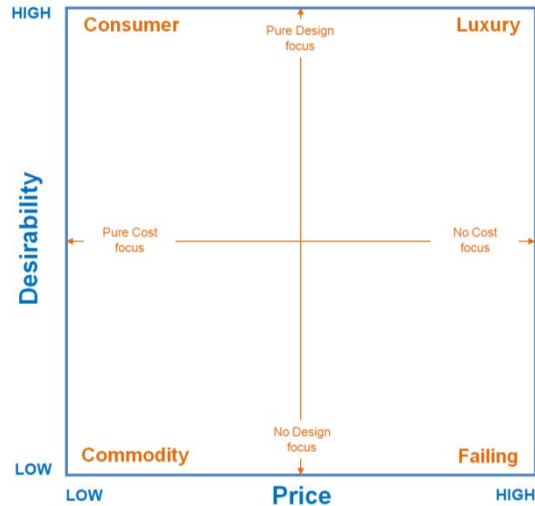


Figure 1.0 The Desirability Matrix

**Luxury** – Pure design and no cost focus, high price and high desirability, products in this category are purchased almost entirely based on desirability, and in some instances it is the high price that actually makes the product more desirable, particularly if it can be used as part of the brand proposition. Product margins are high and low volumes are expected.

**Failing** – No design and no cost focus, low desirability and high price. Companies operating in this market can only survive if they have a monopoly position. Design is not considered of any relevance and engineering is focused on protecting the monopoly position through creating intellectual property. The danger point for companies in this market is at the point the monopoly is lost and the company is ill equipped to compete.

Plotting products on the matrix defines the position that your own products have in relation to competitor products. If a product category is very broad it will span from commodity right through to luxury, as with the car market where there are low end commodity cars such as the Tata Nano and also luxury cars such as Ferrari and Rolls Royce. If we were to plot a regression line through this type of broad market it would need to be a polynomial rather than linear regression, see figure 2.1. However, there is little point in comparing your own product with a product in a different quadrant, as the purchasing decisions are likely be significantly different. A more practical and heuristic approach is to first identify which broad

category of market dynamic, i.e. which quadrant, your products sit within and then employ linear regression to establish if there is a correlation between desirability and price and therefore if analysis using the desirability model is valid, see figure 2.2.



Figure 2.1 Broad market plot.



Figure 2.2 Market segmentation.

Each quadrant is subdivided as having high end, low end and differentiated areas, see figure 3.0. By positioning your own products on the matrix and those of competitors it is possible to assess the potential threat they pose, or indeed the potential opportunity to increase price at low risk if you are shown to be in a position of strength. If the regression indicates a correlation between desirability and price then competing products will lie on, or be close to, the regression line. However, it is any potential outliers that need to be assessed in more detail, particularly those that are towards the top left of the matrix, as the position of greatest strength is in the high desirability and low price quadrant.

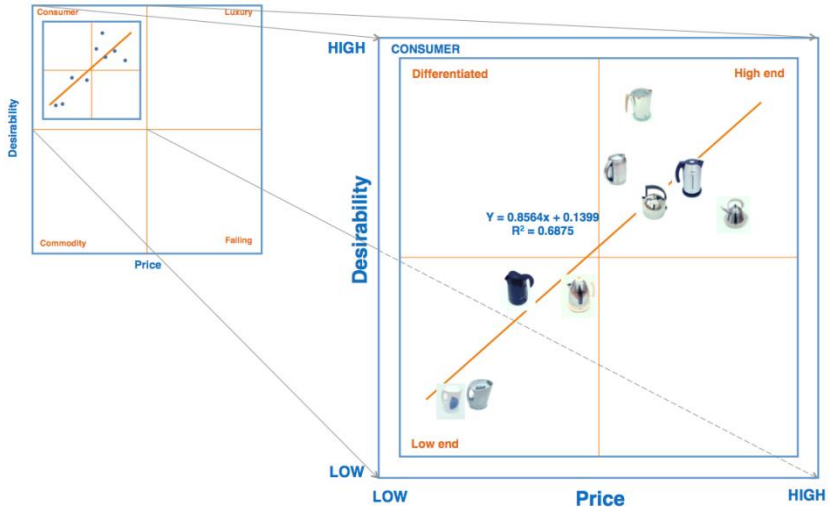


Figure 3.0 Quadrant subdivided for use in linear regression.

Good design can increase desirability at the expense of price and if the goal is to move the product position towards the high end of the market this a valid approach. However, this may not increase market share, as high end does not mean it is more competitive, it merely targets a different customer priority at the expense of another. Likewise good cost engineering can decrease price at the expense of desirability, moving the product position towards the low end. One of the main goals of great design is to move products into the differentiated area within the desirability matrix quadrant, increasing desirability while reducing cost, providing the competitive edge in crowded markets, see figure 4.0. Great design only happens when engineering and design work together with mutual respect and an understanding that product development does not have to be zero sum game where you can only focus on design by ignoring engineering, or focus on engineering by ignoring design.

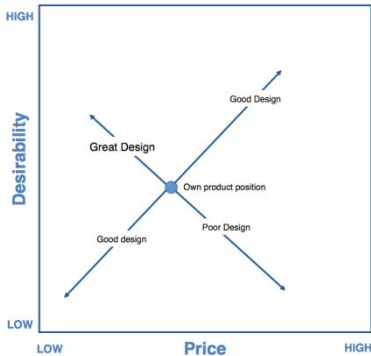


Figure 4.0 The role of great design.

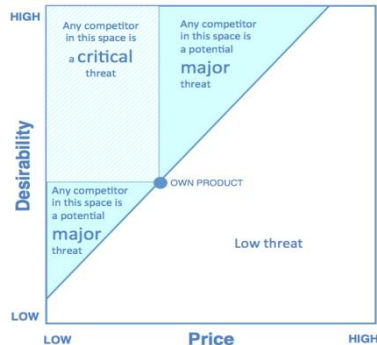


Figure 5.0 Competitive threat.

It is the position of competitors on the matrix in relation to each other that defines if they are a major or potentially critical threat. Drawing a line that passes through your own product at the angle of the regression line, and defining the area which denotes competitor products which are both lower price and more desirable, divides the matrix in such a way as to highlight the relative levels of threat, see figure 5.0. Any product with a smaller area of critical threat, i.e. closer to high desirability / low cost, is in a much stronger position than other products in the market. Great design is how companies can create products with the minimum area of critical threat.

## Using and Interpreting the Model

To populate the desirability matrix model involves eight basic steps from data gathering through market positioning and ending with a map of relative competitive strengths, see figure 6.0. It is not always possible to carry out the price / cost analysis described in step 7 due to the prohibitive expense involved in purchasing all competitor products and undertaking a complete cost breakdown investigation. It is recommended that rather than reducing the number of competitors in the study it is better to forgo the product margin analysis as without a significant number of competitor products the validity of any regression analysis is compromised.



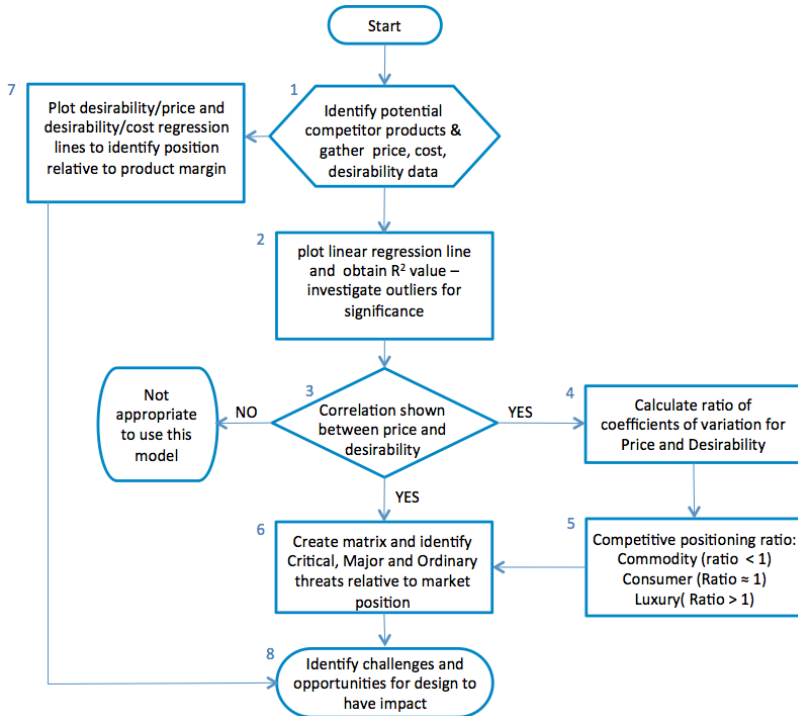


Figure 6.0 Steps in creating a desirability matrix

### Step 1 - Data gathering.

The data gathering consists of first identifying potential competing products. A minimum of 15 is recommended due to the subjective nature of desirability. The competing products are ranked for desirability by a minimum of 30 respondents, the scores being added and then normalised by taking the ranked total score subtracting the average of the total scores and dividing by the standard deviation of those ranked scores, see table 1.1. Retail prices are then also normalised, see table 1.2. Cost values are calculated by the normal cost engineering techniques of product disassembly and assessment based on component materials, weight, volumes and manufacturing location, plus assembly and packaging costs.

Table 1.1 Example of desirability ranking data

	Respondent 1 prod ranking	Respondent 2 prod ranking	Respondent 3 prod ranking	Respondent 4 prod ranking	Rank scores	Normalized score = Rank score – Average of rank score Standard deviation of rank scores
Product A	1	2	2	2	7	0.63
Product B	3	3	4	3	13	-0.63
Product C	2	1	1	1	5	1.05
Product D	4	4	3	4	15	-1.05

Table 1.2 Example of price data

	Price	Normalized price = Price – Average of price Standard deviation of price
Product A	183	0.09
Product B	203	-0.43
Product C	135	1.34
Product D	225	-1.00

**Step 2 - Linear regression.**

Linear regression is carried out using the normalised scores for desirability and price. As with any linear regression the value of  $R^2$  provides a good indication of the strength of the correlation between desirability and price, see figure 7.0 as an illustration using data from tables 1.1 and 1.2. The closer to 1.0 the stronger the correlation, with anything above 0.7 considered a very strong indication that variance in desirability will affect the price. If there is a correlation shown we do not know for sure that it is desirability affecting price or if price is affecting desirability, however, for price to affect desirability it is assumed that other factors are involved, such as the kudos associated with exclusivity within a luxury market.

In figure 7.0 the  $R^2$  is 0.87, which would indicate a very strong correlation between desirability and price. Due to the subjective nature of the desirability ranking it is suggested that anything above 0.65 would be an acceptable indication that there is some validation for using the desirability matrix and worth proceeding to step 4. If the  $R^2$  proves to be less than 0.65 it would not be advisable to proceed, as there is little or no evidence that desirability is affecting price. This is most likely to be the case in a commodity market.

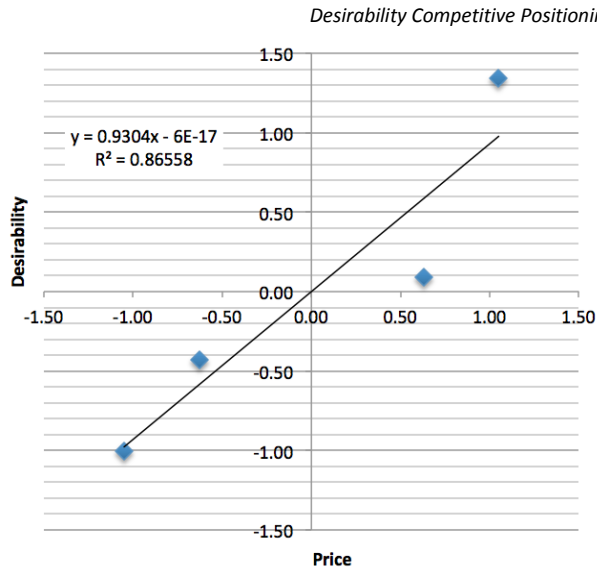


Figure 7.0 Linear regression example

### *Step 3 – Assessment of correlation.*

Although the  $R^2$  value may not pass the correlation criteria at first it is important to review the outliers and assess if removal of obvious anomalies would have a significant impact on the  $R^2$  value. Indeed, it is precisely where removal of one or more outliers brings the  $R^2$  significantly closer to 1.0 that those outliers are likely to be either significant threats to the status quo and worthy of detail investigation, or may be identified as inappropriate for inclusion.

### *Step 4 - Calculate the competitive positioning ratio.*

The relationship between desirability and price is assessed by using the coefficients of variation of the data gathered for desirability and price; see figure 8.0. As a normalised measure of dispersion the coefficients of variability enable us to arrive at a competitive position ratio between price and desirability; see figure 9.0. It is important that this competitive position ratio should not be confused with the  $R^2$  value.

$$C_v \text{ Price} = \frac{\text{standard deviation of prices}}{\text{average of prices}}$$

$$C_v \text{ Desirability} = \frac{\text{standard deviation of desirability scores}}{\text{average of desirability scores}}$$

Figure 8.0 Calculating the coefficients of variation.

$$\text{Competitive positioning ratio} = \frac{C_v \text{ Price}}{C_v \text{ Desirability}}$$

Figure 9.0 Calculating the competitive positioning ratio.

**Step 5 – Identifying market position.**

The competitive positioning ratio describes the relationship in terms of the distribution of price to desirability and in so doing indicates the spread of data points. This indicates within which quadrant the competitive environment sits. The closer that the competitive positioning ratio of  $C_v$  Price:  $C_v$  desirability is to 1 the more the environment sits within the consumer quadrant of the matrix, see figure 10.1. This is where the variation in the spread of prices is as broad as the variation in the spread of spread of perceived desirability. A ratio significantly <1 places the environment in the commodity quadrant, and shows the variation in the spread of price is significantly less than the spread of desirability, see figure 10.2. As the ratio approaches zero the more fiercely price is contested.

Desirability Competitive Positioning Model

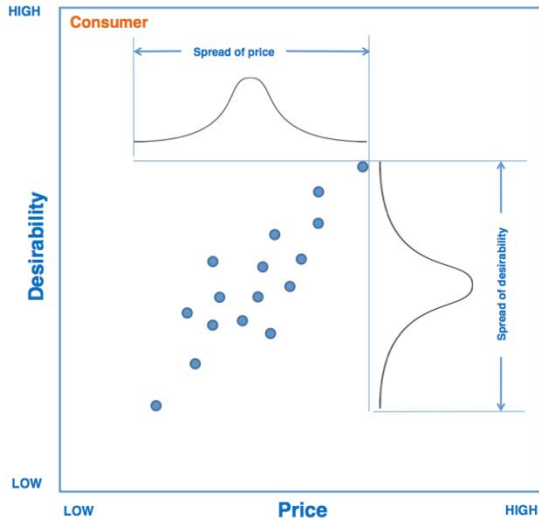


Figure 10.1 Consumer quadrant

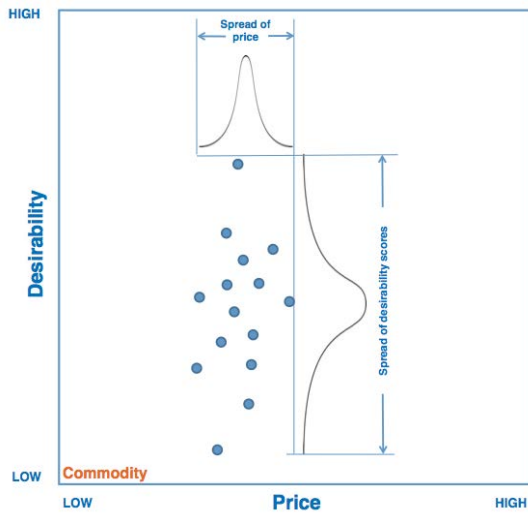


Figure 10.2 Commodity quadrant

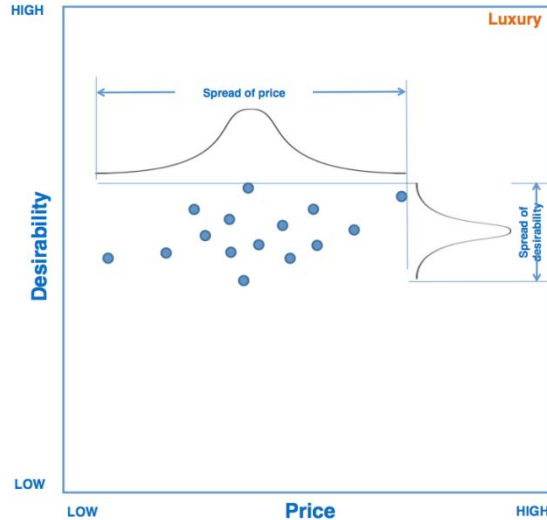


Figure 10.3 Luxury quadrant

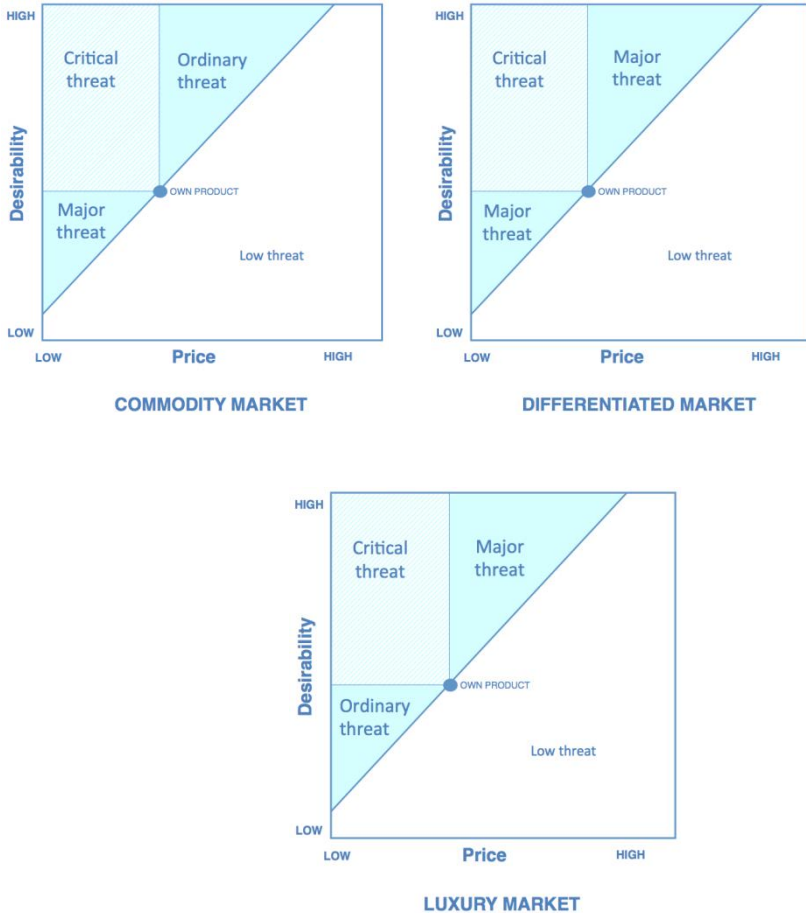
A ratio significantly  $>1$  places the environment in the luxury quadrant where the spread of price is much greater than the spread of perceived value, see figure 10.3. The closer the products are to the luxury end of the market the greater opportunity for increased margin. Desirability is fiercely contested, whereas price is not considered a primary decision criterion for purchase. The greater the ratio is than 1 the more fiercely is desirability contested.

### Step 6 - Threat analysis – CMO.

Once the specific quadrant is known it is possible carry out the threat analysis to identify where competitor products sit in relation to your own. Dependent on which quadrant your market sits the level of threat outside the critical area will be slightly different, see figure 11.0. For example if the markets sits within the commodity market there is a higher threat from companies who are lower priced than those which have higher desirability.

Figure 12.0 shows an example of a populated matrix highlighting the areas of threat. Product A is a major threat to 'own product', as are D and B, however it is product E that is the critical threat to both 'own product' and all other products.

*Desirability Competitive Positioning Model*



*Figure 11.0 Differing competitor threat areas dependant on market quadrant.*

Product E is almost as desirable as high end product B and yet is only the second highest priced product in the market. Product E is in a strong position to increase its price to at least the level of product D. In this example the own product position is not strong as there is a critical threat from product E along with major threats from all other products in the market, with the exception of product C

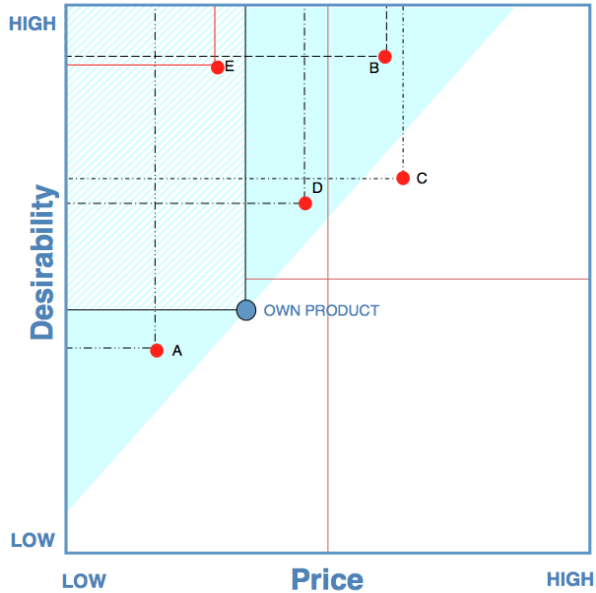


Figure 12.0 – Threat analysis

The surest way to increase return on sales is to improve the desirability of your products and services relative to your competition while still having the flexibility to defend your position on price. The most cost effective way to increase desirability is to engage design early in the development process. Desirability at low cost is achieved more by making the right choices at the right time, than by adding additional elements late in the development cycle or post launch. It is very hard to move the position of a product already on the matrix without major design changes. A good designer has an intuitive understanding of the need to build in desirability, and when the designer is brought in late there often emerges a voice for changing the direction of the development. This will invariably lead to increased development costs, hence reinforcing the myth that design costs money.

### *Step 7 - Cost/price analysis*

For the purposes of this analysis 'price' refers to the purchase price an end customer would expect to pay, and 'cost' refers to the cost of manufacture, product margin is the price minus the cost.



Desirability Competitive Positioning Model

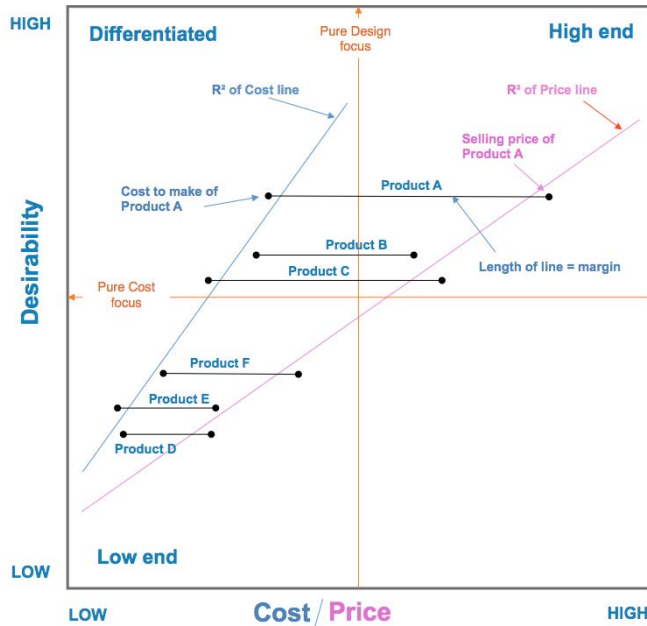


Figure 13.0 Cost / Price analysis

Unlike the regression for the competitive market analysis the data is not normalised, so that when plotted on the same graph the lines will be comparable. A regression line is plotted for desirability to price, and also desirability to cost. These lines give a clear indication where profit margin is greatest and it is generally found that the margin tends towards being greatest as desirability increases, see figure 13.0. This shows that a focus on desirability through design delivers an ever-increasing return on investment, whereas a focus on cost at the expense of desirability can only provide a diminishing return to the point where the price that can be charged provides zero or negative profit margin.

A company pursuing a cost agenda beyond all else in order to maintain profit may well believe it is doing well, up to the point where the desirability of its products is brought into equilibrium with the rest of the market and plummets. In this situation a company is unwittingly spending its brand equity, and if desirability was being falsely maintained by brand strength that desirability can evaporate when customers lose trust in the brand.

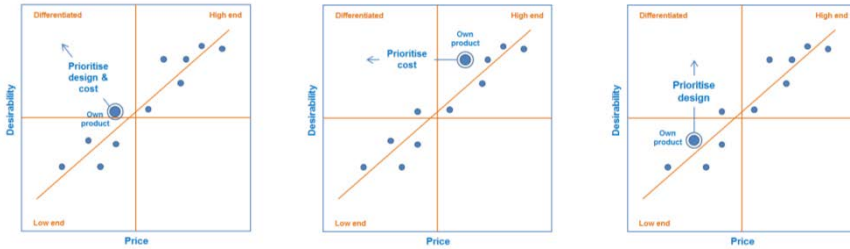


Figure 14.0 Prioritisation of activity focus.

### Step 8 – Opportunity identification.

Desirability and design’s contribution is most important if ‘own product’ sits towards the low end of the regression line. This is where the only way into the differentiated quadrant is by increasing desirability and offers the greatest opportunity for design to have an impact. By moving the ‘own product’ in this direction the cost/price analysis will show the opportunity in terms of increased margin. If ‘own product’ sits towards the high end then a cost focus is needed to move towards the differentiated quadrant. Figure 14.0 shows the activity prioritisation dependent on position on the regression line. Unfortunately there is a tendency to move along the line, delivering desirability while increasing cost, or reducing cost by impacting quality and desirability.

Once the critical and major threats are identified more traditional desirability analysis can be employed to understand why these particular competitors are considered more desirable within the particular market context.

### Experimental assessment of the model.

The aim of the experiment was to evaluate the desirability matrix and its potential in analysing the relationship between desirability, cost, and price, and the competitive position of products within a given market. A kettle was chosen as a ubiquitous appliance that all respondents would be familiar with and have experienced, and whose functionality and operation would be comparable. The kettles selected ranged from low to high priced examples, see figure 15.0.



Figure 15.0 Kettles used in the experiment.

### Method

43 respondents were chosen from an available pool of 226 to represent a cross section of people it was believed would at some point in their lives have been a potential customer for a domestic appliance such as a kettle.

The respondents were shown the 10 kettles that had been selected to represent a broad range of prices. The respondents were asked to rank these kettles in regard to their desirability. They were given 10 cards printed from 1 to 10 and asked to place one card against each kettle, 1 against the least desirable up to 10 for the most desirable. For the purpose of this exercise the respondents were not allowed to touch or use the kettles. This ranking exercise gave a desirability ranking score for each of the 10 kettles. The desirability rank score being the sum of the individual rank scores for each kettle. The theoretical maximum score for any individual kettle was 430, and a minimum of 43.

Desirability was defined for the respondents as being the kettle they would most like to own. A set of 5 words was also used to frame the meaning of desirability for the respondents. The words were Appealing, Attractive, Pleasing, Preferred, and Wanted. These words had been derived using a set of 20 reaction cards (Benedek and Miner 2004), each card printed with a word describing 'desirability'. From these 20 cards a hundred respondents were asked to choose the top 5 words they felt most closely represented desirability. The results are represented in the word hierarchy shown in figure 16.0.



Figure: 16.0 Word hierarchies for desirability semantics.











The true cost to manufacture was calculated using established product cost engineering techniques carried out by trained cost analysts from HCL Technology Ltd. This included disassembly, assessment of individual component materials, manufacturing processes, number of assembly operations and based on lowest cost manufacturing locations. The standard deviation and coefficient of variation for price and desirability could then be calculated. The desirability scores and prices were then normalised, giving the results shown in table 2. These results were then used to create the desirability matrix for the 10 kettles.

### Results

The resulting regression plot is shown in figure 17.0, and indicates there is a correlation between desirability and price for the group of kettles used in the experiment. The initial regression plot using all of the kettles did have an  $R^2$  of 0.52 and it was only after investigating the outliers that kettle C was identified as significantly skewing the analysis and was removed. This was considered acceptable, as it was likely that this particular kettle was aimed at a different market segment, it being a stovetop product rather than electric. Review of the verbatim comments from respondents also revealed such comments as:

*"Why is there a cooker top one (referring to kettle C), that's like going to a car showroom and being asked to judge a motor bike."*

*Desirability Competitive Positioning Model*

		COST		PRICE			DESIRABILITY			
		Cost to make £	Retail price £	Standard deviation for price	Coefficient of variation for price	Normalised price	Desirability ranking score	Standard deviation for desirability ranking score	Coefficient of variation for desirability	Normalised desirability score
A		30	80	39.6	0.60	0.36	323	57.3	0.24	1.51
B		8	5			-1.53	152			-1.48
C		30	100			0.87	207			-0.52
D		35	70			0.11	286			0.86
E		5	10			-1.40	153			-1.46
F		20	55			-0.27	217			-0.34
G		30	100			0.87	283			0.81
H		10	30			-0.90	215			-0.38
I		25	86			0.52	269			0.57
J		40	120			1.37	260			0.41

The other outlier that was examined was kettle A and removal of this did raise the  $R^2$  to 0.78, however it was clearly in the same market and therefore not removed. Rather, it was seen as worthy of examination as the strongest product, particularly towards the high end. Kettle H was shown to be particularly strong towards the low end. Kettle H also had a very low manufacturing cost so in light of its position there may be the opportunity to widen the profit margin by having its price increased with little risk of impacting sales.

The ratio of the coefficients of variation between desirability and price proved to be  $0.24:0.60 = 0.4$ , which would indicate the market sits close to being in the commodity market, tipping towards consumer. Looking at the groupings there appears to be 3 groups, the ultra-low end, the middle ground and the high end. As anticipated the high end products have the highest profit margins and the low end that has the lowest margins. There is a low end product that appears to be in negative margin, this may be due to discounting of an ultimately undesirable product.

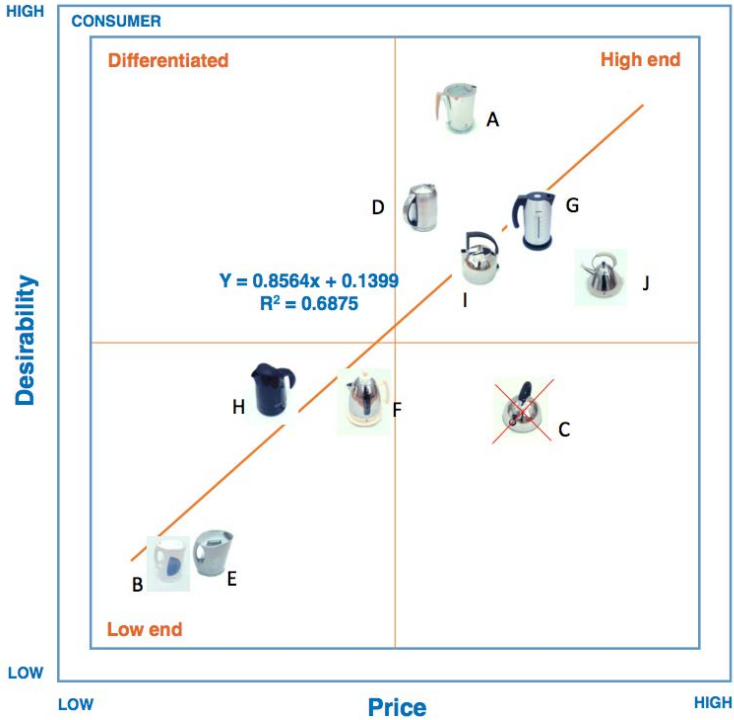


Figure 17.0 Desirability matrix for the kettle market experiment

## Real life example – small office printers

Since the experiment was completed the matrix has been utilised to analyse the small to medium size office printer market in the UK and USA, see figure 18.0. With the Xerox product as 'own product', the market was shown to be a commodity market but tending towards consumer, and identified HP as the critical threat, Dell as a major threat, and Samsung posing an ordinary to major level threat. The analysis was not considered a strong validation of the matrix as there was not sufficient competitive products investigated, however, it did highlight that desirability was increasingly important with the HP and Samsung products having a larger market share than the others in the group.

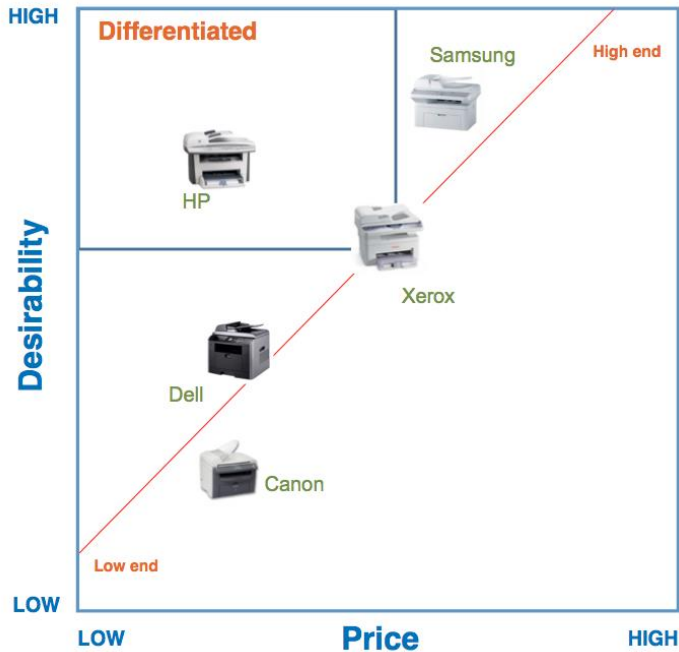


Figure 18.0 Small to Medium size printer desirability matrix

## Limitation of the model

A major limitation of the model is that it relies on the accuracy of the measurement method for desirability, which is itself a complex concept, with multiple factors such as brand and pre-conceptions introducing noise into the data. Also, the experiment was very narrow in its focus on desirability as a measure of aesthetic appeal, and there may be an opportunity to use the methodology to incorporate broader aspects of design and desirability such as full product experience, or to assess perceived brand value against price.

The use of linear rather than polynomial regression is convenient as a heuristic approach to gain an overall feel for the market being examined; however there is a possibility that a relationship is assumed not to exist that may indeed be present. For the experimental exercise it was found that if a polynomial regression was carried out the  $R^2$  value was 0.86 when the obvious outlier was removed. It is suggested that before a correlation is dismissed that alternative analysis methods are used on the available data

set. The approach within this paper is not intended to set out a process for detailed statistical analysis; it is only to provide a broad framework aimed at providing insights to designers and development organisations. There is however the potential to use the data collected for a more in depth analysis.

## Conclusions

The study has emphasised the need to explore alternative priorities when developing products for a market with different dynamics. As anticipated the matrix does show that in a commodity market the correlation between desirability and price is likely to be weak, however, as the market shifts to being a consumer market the role of desirability starts to have an increasingly important impact on the price that a company can demand for its product. Unsurprisingly the model is of most use in the consumer market where customers are making value judgements and purchase decisions are complex. As with the commodity market the luxury market appears to show less correlation between desirability and price and this is the market where the model is weakest. This is the market that is the most unpredictable as it relies almost entirely on desirability, which is much harder to measure reliably than the more quantifiable factor of price.

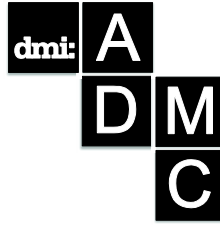
The matrix was successful in highlighting the increased role that desirability and design has in the consumer market compared to the commodity markets. In the case of the corporation whose behaviours were locked into a commodity view of the world the model has proved valuable in showing that design and its role in creating desirability should be re-assessed. It showed that as cost reaches its lowest point the only way to be competitive is to change the rules of the game and start to drive the market out of being a commodity. There has been a conscious shift from a focus on cost to a focus on value and desirability, and on bringing design in earlier in the new product development process.

Perhaps the most useful aspect of the model was in the visualisation of a subjective element of product development in a way that speaks the language of engineering and marketing. The act of creating a matrix that placed desirability against price and cost alone proved useful in opening a dialogue with departments outside design, particularly were those departments were actively involved in the act of data gathering.



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## Design Capabilities for Value Creation

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Politecnico di Milano

*Design is undergoing a moment of disruptive change/transformation: skills, education, and its link with innovation are evolving as fast as is the context of the socio-economical crisis. One of the fundamental issues to discuss and reflect upon to meaningfully direct the transformation at hand is the connection and role of design within the future of innovation. Reflecting on this, the paper looks at the capabilities of design to explore the role of design innovation in business and society (for example, production, distribution, public services, etc.). It proposes a discussion that could potentially contribute to provide wider evidences on the impact of design for growth and prosperity, arguing for a design thinking mindset, and design leadership stronger sector. Moreover, the paper proposes a model based on business narratives emerged through qualitative research that could help orienteer a wiser and wider development of design policies. The main question that the paper addresses is: which capabilities matter to give design the chance to contribute meaningfully to the innovation path, and to reinforce the key players in the socio-economical system (e.g. governments, intermediaries, businesses, universities, policymakers, and people)? Finally, the paper proposes a narrative on how design capabilities are manifested, evaluated, and supported for addressing innovation effectively.*

**Keywords:** *Design capabilities; design value; measuring design; design policy.*

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## **Introduction**

In the last few years, the importance of design as a lever for growth and prosperity has been accompanied by the acknowledgement that innovation goes beyond technology to include concerns on quality of life and social wellbeing. Europe is investing in shaping a larger idea of competitiveness that encompasses design as strategic asset for SMEs, the public sector and citizens to tackle problems in a more efficient way. Recent budget cuts in public spending have influenced governments and decision makers in redefining an idea of development and investment. Design can contribute to promote the idea of a 'radical efficiency' (Nesta, 2010) according to which organizations should look at challenges through: new insights, which means looking for a distributed knowledge exchange approach; new customers which means understanding people as community rather than customers; new suppliers which include users and 'mini-tribes' as co-producers; new resources aiming at reusing, recycling and reducing consumption.

The European Design Leadership Board has also recognised design as a top capability that differentiates the European socio-economical system from other competitor countries. However, only few sectors are leveraging on design values, and much of design culture still needs to be developed for the 21<sup>st</sup> century. In particular, this means to invest for development of design capabilities both in companies and for a new educational system, as well as to reinforce the public sector, governments, and citizens' participation in civic life.

In the design management literature, we are currently undergoing the third paradigm, which considers design as a general capability and human undertaking (Cooper, et. al., 2011). In this context, the impact of design on business performance is recognised as widespread at all levels and functions. However, in a time of disruptive transformation and heavily reduced budgets it is considered extremely important to pinpoint and identify clearly the value that this general capability brings to companies and the society. Accordingly, the interest around measuring design value is growing into more official channels. For example, the recent European Action Plan for Design-Driven Innovation reinforces the importance to promote understanding of design's impact on innovation by '... measuring the economic impact of design and its role alongside other intangible assets in value creation' (EC, 2013, p. 7). The accent is on the absence of statistical evidence to demonstrate the economic value of design.

Therefore, the main challenges concerning design management and the measurement of design value can be listed as follows:

- To identify a framework to read and measure design capabilities in companies;
- To define appropriate metrics to demonstrate the impact of design on business performance;
- To translate these metrics into tools for measuring design as knowledge capital.

This paper discusses the concept of design capabilities in relation to the third paradigm of design management. It seeks to define a framework to read the existing literature and tools to map design within businesses. Furthermore, it describes one of the results of a two-years European co-funded research [[DeEP Design in European Policy – www.designpolicy.eu](http://www.designpolicy.eu)] to suggest a narrative to measure design capabilities in companies.

It concludes by proposing a discussion around limits and constraints of the topic in design management research.

## **An overview on design capabilities**

The paper builds a framework to define the field of design capabilities by tracing the drivers and authors who influenced the development of this topic. Scholars and references have been selected because of the explicit reference to design capabilities, and the attempt to identify them in a business context. Therefore, authors mentioning design capabilities without a dedicated description are not included, as the objective is to attempt to acknowledge a common definition.

Moreover, the use of design capabilities as a concept to identify design in a business context is often present in surveys and reports built through on-field investigation. These refer both to strategic recommendations for economic development (e.g. the reinforcement of design capabilities is considered crucial to improve a sector), and to analysis of data to read the effects/value of design (e.g. a specific investment has increased design mature companies of a certain percentage).

Few tools exist that try to audit design in enterprises in terms of capabilities. These are also mapped and described when the concept of design capabilities is made explicit.

In the following paragraphs design capabilities are explored both in the design management literature and in the projects and publish reports that apply this idea to real contexts.

### *Design capabilities in theory*

The concept of capability is a multi-disciplinary and multi-faceted one. It is used in diverse fields of the literature, to recognise innovation capabilities (Tschirky & Koruna, 1998; Meier, Fadel et al., 2004; Pleschak, 1996 cited in Buergin, 2006, p. 456), dynamic capabilities (Henderson & Cockburn, 1994; Verona & Ravasi, 2003; Teece et al., 1997; Zahra & George, 2002), firm capabilities (Teece, et al., 1997; Leonard-Barton, 1992), organisational capabilities (Acklin, 2013a, 2013b), and design capabilities with different and intertwined meanings (Leonard-Barton, 1992; Jevkaner, 1998; Swan, et al., 2005).

In general, capability can be intended as an integration of knowledge, skills, personal qualities and understanding used appropriately and effectively (Stephenson, 1998).

The term was initially conceived in the 1980s as an approach to welfare economics. Here, Amartya Sen connected a range of ideas that were excluded from traditional approaches to the economics of welfare. The author proposed an idea of capability described by what individuals are able to do that means what they are capable of. 'The capability approach is an intellectual discipline that gives a central role to the evaluation of a person's achievements and freedoms in terms of his or her actual ability to do the different things a person has reason to value doing or being' (Sen 2009, p. 16).

After Sen, other scholars have developed the approach. In particular, Nussbaum has described it as an achievement that is central to people both in quantity and quality, as they cannot be considered merely as numerical scales (Nussbaum, 2011). Further, the idea of capabilities has been applied to wider entities, such as departments, organizations, and systems, to describe the way in which these achieve their objectives in relation to their overall mission.

In the design management literature, the term capability is often associated to firms rather than individuals, and is used as synonymous with skills, capacity, and resources. Acklin (2013a, 2013b) proposes an interesting analysis on how firm capabilities are treated in design management recognizing the difference between the notions of core competencies, resources, capabilities, capacities and skills resources. Core competences are essential assets for the survival of the firm in the long term and are a mix of skills, resources and processes (Tampoe, 1994). Firm resources are all assets, capabilities, processes, attributes, knowledge that enable the company to implement its strategy (Barney, 1991). Building on this definition, Amit and

Schoenmaker's (1993) distinguish resources from capabilities. The last are the ability of the company to use resources effectively for their ends. Unlike resources, capabilities are the result of knowledge exchange processes through the firm's human capital. Capacities are '... the ability to perform a task in at least a minimally acceptable manner' (Helfat et al., 2007 cited in Acklin, 2013a, p. 13). Even if capacity and capabilities are often used as synonymous, capacities need to be well-structured and recurring behaviours to classify as capabilities. This implies reacting purposefully to new inputs and situations also involving a certain degree of strategic decision-making.

In terms of performance, the same concept is described as dynamic capability (Helfat et al. 2007; Teece, et al., 1997) or the ability to build and integrate resources in order to innovative and anticipate changes in the market. Dynamic capabilities are tangible and intangible assets, in terms of knowledge and processes needed for recognizing new business opportunities and orchestrating resources (Teece et al., 1997; Zahra and George, 2002).

When related to design, the majority of authors have enquired capabilities in terms of design management skills indicating the inclusion of design management from basic skills (e.g. managing the design process), to specialised and strategic skills (e.g. managing specific parts of the design process more in depth). Diverse sets of design capabilities are listed by different scholars that mainly change according to the context in which they are investigated (e.g. small company vs big company, design-driven enterprise vs other types of companies).

Borja de Mozota (2002) proposes a literature review to identify the diverse ways in which design creates value within the organisation. In particular, she mentions the following characteristics and authors:

- Sensemaking and aesthetic features of products (Schmidt, 1999; Floch, 1994; Lebahar, 1994 cited in Mozota, 2002, p. 92);
- User analysis and understanding (Bitner, 1992; Damak, 1996; Dano, 1996; Swift, 1997 cited in in Mozota, 2002, p. 92).

Design is described as a valuable management asset in terms of: facilitator, integrator of knowledge, differentiator of products, communicator, coordinating function for innovation.

Jevnaker (1998) articulates design management in six component capabilities:

- Resourcing capability, the ability to acquire and manage effective design resources;

- Combinative capability, consisting of: the ability to configure design resources in the appropriate business departments, the ability to identify the best design resources for the company, the ability to create relationships between design resources;
- Organizational learning capability, the ability to diffuse a design culture in the organization;
- Innovation capability, the ability to stimulate creative activities;
- Design strategic capability, the ability to connect design strategy and business strategy;
- Protecting capability, the ability to protect commercial results of a product.

As emerged from the brief excursus proposed, the field of design capabilities is still under explored. Partly, this is due to the multi-faceted nature of the concept of capability, and the difficulty to define clearly the subject and context of the investigation. For example, design capabilities could and should be studied at many different levels: designers working in organisations, organisations as complex systems, wider eco-systems as the interaction between organisations and the environment. The basic unit of investigation used throughout this paper to propose a set of design capabilities is the enterprise, as one of the main subjects where both designers and managers connect. Capabilities are thus referred to the way design creates value and transforms a business context when integrated in its culture.

### *Design capabilities in practice*

In 2012 the idea of design capabilities has been included explicitly in the strategic agenda of the European Commission to support design innovation. As a first action to raise awareness of non-technological innovation a European Design Leadership Board (EDLB) has been created to deliver a set of recommendations to policy makers to include design as a lever for European growth. The report *Design for Growth and Prosperity* (Thomson & Koskinen, 2012) lists six distinctive European design innovation capabilities to direct the future investments for developing ‘... attractive, desirable and sustainable products and services that can compete on the global stage’ (Thomson & Koskinen, 2012, p.19).

In particular, the design capabilities identified are: European Design on the global stage; Design in Europe’s innovation system; Design in Europe’s enterprises, Design in Europe’s public sector; Design in Europe’s research system; Design in Europe’s education system. These are recognised as main

assets to support design driven innovation in Europe. Nevertheless, when looking at the reality of different Member States, the awareness about the role of design in innovation is not homogeneous. Nations and regions, companies, organizations and institutions differ in adopting design and planning for its support. The fragmentation in the practical development of design policies across Europe is due to few main limitations: the lack of consistent and comprehensive data to prove the value of design, the absence of tools to analyse these evidences, and the difficulty to clearly pinpoint the contribution of design to business performance (AA.VV, 2014). One of the European leaders that has developed a best practice to begin solving these issues is Denmark. The Danish Design Centre (DDC) has developed the idea of a Design Ladder (Ramlau & Melander, 2004) as a framework to measure the level of design maturity in national businesses. This is based on four hierarchical stages: no design, design as styling, design as a process, and design as strategy. The first two steps describe a basic contribution of design in new product and service development mainly as an aesthetic attribute. The second two levels measure design as a process able to produce solutions starting from user needs and adopting multidisciplinary approaches. The highest level of maturity refers to the integration of design in the top level management and company's functions.

Recently, this model has been further validated through a survey conducted by Statistics Denmark on 5000 enterprises (Valle, 2014). This has collected data on a two-years period 2010-2012 showing that, of the companies interviewed, one out of four includes design as an innovation activity: for solving problems, to develop new products and services, as a strategic policy within the company, to establish multidisciplinary collaborations, to create new concepts and business models. The Design Ladder plays a crucial role in Europe as the most widely adopted tool to justify the recognition of design capabilities for improving innovation performance. This is supported by studies conducted by different design centres in Europe. The British Design Council is particularly active in this area and has recently published two reports looking at design capabilities in the private and public sectors.

The first report is 'Leading Business by Design' (Micheli, 2014) developed by Warwick Business School. This is based on a research aimed at analysing how leaders in design create value. The report describes three main findings emerging from the observation of organizational processes and strategic actions: design is customer-centred; design is most powerful when culturally embedded; design can add value to any organisation independently of size



or sector. Further, the report outlines that design can be used in different ways: as a internal function when designers play a technical role, as a key perspective for innovation when designers are fully involved in the innovation process, as a strategic perspective when design plays a key role in defining the business strategy. Finally, the research stresses the idea that design is a capability to solve users' problems, and a pervasive way of thinking.

Another report is 'Design for Public Good' (AA.VV., 2013) co-authored by Design Council, Danish Design Centre, Aalto University and Design Wales and looking at the public sector. This describes a series of case studies and tools to discuss the role of design in public sector innovation. Specifically, a Public Sector Design Ladder is proposed to recognise the adoption and the diffusion of design thinking in public services. The model uses three levels of maturity: design for discrete problems, design as capability, design for policy. As for the Design Ladder, the model refers the lowest level to a sporadic use of design in specific situations; the second level to the ability to not only work with designers, but to actively include design thinking methods in all functions; the highest level to a structured collaboration between policymakers and designers to deliver policies and initiatives.

Besides reports and studies two tools are worth noting that have been proposed by design associations to recognize and analyse the presence of design capabilities on the field. One such reference is the Design Management Staircase (Kootstra, 2009) that describes the different roles that design management can have in firms. The tool is structured into four levels called design management capabilities and connected to five factors (awareness, planning, resources, expertise, process). Following the Design Ladder model, the four levels are: *no design management* in which design has no role in the business objectives; *design management as a project* in which the role of design is limited to adding value to existing products through aesthetics; *design management as a function* in which design is a lever for innovation and multidisciplinary collaborations; *design management as a culture* in which design is an important asset to differentiate the business strategy and is considered an integral part of the innovation process.

Also in this case, the model proposes a hierarchical position of design management capabilities from a technical function to a strategic asset of the business strategy.

The other reference is the Design Atlas, developed by the Design Council. This provides a systematic review of key drivers for design implementation

within businesses. The tool describes a model to conduct design audit and analyse design capabilities in the organisation. In particular, a framework is described through five areas: *planning for design* investigates the presence of strategic plans for design; *process for design* aims at understanding the awareness management and tools used for design; *resources for design* investigates the presence of a budget for design; *people for design* describes how design skills are organized and the related networks of competences; *culture for design* refers to the general widespread of a design culture in the company. The Design Atlas does not describe a ladder, but allows companies to conduct a systematic review of key design resources, and to identify the more relevant areas for future improvement of design capabilities.

## **A narrative to measure design capabilities in companies**

The issue of design capabilities has been one of the crucial points researched and developed by the authors in a European co-funded research lasted for two years (DeEP Design in European Policy). This has investigated and promoted design and an evaluation culture into European innovation policies by reinforcing: the link between design and innovation; the awareness of design innovation policies; and the promotion of a policy evaluation culture. The research has prototyped a scenario for tools and strategies with which to orientate policy makers in the implementation of design policy. In this framework, it has considered design capabilities the central concept to measure the effects of design in innovation processes directly on beneficiaries, and in particular SMEs. The approach proposed is an original one, as policies are generally measured at the level of larger systems (nations). The starting hypothesis has defined design as a set of capabilities that enable people-centred innovation. Further it has proposed a capability approach to measure the transformation of the use/skills for design in companies. Design capabilities in SMEs have thus been investigated through analysing design policy beneficiaries after their participation in the program. Companies have been interviewed considering 5 design policies in 4 European countries.

In particular, the design policy considered have been:

- Un Designer per le Imprese (*A designer for enterprises*, Italy – Lombardy Region), aimed at promoting a stronger perception of the relevance of design to beneficiary SMEs, and at increasing the use of

innovative materials in medium-sized firms based in the Lombardy Region;

- DEA | Design e Artigianato per il Trentino (*Design for Craft*, Italy – Trentino Alto Adige Region), aimed at promoting a closer connection between design and craft in the local area of the Trentino Region as a potential source of new growth;
- Designing Demand (UK), seeking to build design capabilities in British SMEs by helping them to understand how to use design strategically and effectively and how to embed design tools, techniques and management to build new skills and capabilities;
- Design som Utvecklingskraft (*Design as a Development Force*, Sweden), aimed at increasing the number of ‘design-mature’ companies in Sweden, thus reinforcing their understanding of design and their link with design professionals;
- Design your Profit (Poland), aimed at creating a professional business environment to support the cooperation between Polish entrepreneurs and designers.

Considering each of these policies, a total of 16 companies have been contacted and analysed as part of the research through semi-structured interviews. In particular, the format used has enquired:

- The type of support received, the level of satisfaction, and the results achieved;
- The effects of the policy and the design activities integrated in the innovation process of the beneficiary;
- The level of awareness and integration of design in the business after the policy.

The enterprises interviewed have not been selected following precise criteria, as the intent was to select more strictly the policies and understand what type of beneficiaries and benefits these had received. The landscape emerged after the investigation has revealed a quite homogeneous picture:

- The totality of the sample is made of SMEs;
- The majority of the businesses have low awareness of design, its tools and processes;
- The sample is quite variegated in terms of sector, as the policies analysed were not directed at specific industrial areas.

Table 1 List of companies interviewed

Company	Country and Policy	Main activities
1. Sonnomedica	Italy   Un designer per le imprese	It is a private Sleep Medicine Center in Milan. It offers treatments tailored to every single patient thanks to the cooperation between physicians and psychologists using the most advanced diagnostic and therapeutic equipment.
2. A4A Design	Italy   Un designer per le imprese	It produces design objects and furniture in honeycomb recycled and reusable cardboard, including stage settings, installations for exhibitions and commercial areas, and for refreshment and recreational areas for adults and children.
3. Leone 1947	Italy   Un designer per le imprese	It is a sporting goods company, leader in the production of box-related articles since 1947.
4. Merlini Marmi	Italy   Un designer per le imprese	It is a small company operating in the sector of marble objects.
5. Tucano Urbano	Italy   Un designer per le imprese	It is specialized in clothing and accessories for urban motor bikers, including jackets, vests, gloves and hats.
6. Lizard	Italy, DeA   Design and Craft	It is the Italian leader in this sector, specifically of sportive sandals. Its collections are mainly dedicated to marine, outdoor, and travel, and include boots, moccasins, technical and sportive sandals.
7. Rustiklegno	Italy, DeA   Design and Craft	It produces home furniture in wood, from interiors to self-supporting architectures.
8. Sartori Ambiente	Italy, DeA   Design and Craft	It deals with logistics and transport of goods, while also including in its core business the import and distribution of products for home composting.

*Design Capabilities for Value Creation*

9. Arcoma	Sweden, Design som Utvecklingskraft   <i>Design as a development force</i>	It produces and develops X-ray stands for the international market. Arcoma has positioned themselves as a company that works on ergonomics, technology and flexibility.
10. Camp Scandinavia	Sweden, Design som Utvecklingskraft   <i>Design as a development force</i>	It is a family-owned corporate group that develops, produces and sells products for orthopaedic rehabilitation in 50-60 countries. It also acts as a distributor for many major companies in orthotics and prosthetics.
11. Perimed	Sweden, Design som Utvecklingskraft   <i>Design as a development force</i>	It provides instruments, software and expertise for precise and convenient measurement of vascular function and diseases. It develops, manufactures and markets state-of-the-art equipment for micro vascular diagnosis
12. Permobil	Sweden, Design som Utvecklingskraft   <i>Design as a development force</i>	It is one of the world leading distributors of electric wheelchairs.
13. Asimpex	Poland, Design your Profit	It is a furniture manufacturer. It supplies a wide range of pharmacy, office and hotel furniture and offers complex interior design and consulting services.
14. Marmorin	Poland, Design your Profit	It produces bathroom sinks, kitchen sinks and shower trays mainly for export, putting the customers' needs at the centre of their offer.
15. Mode:lina Architekci	Poland, Design your Profit	It is an architectural firm that creates interiors starting from a close investigation of people's needs.
16. Soul&Mind	Poland, Design your Profit	It is a brand consultancy that helps other businesses improve their coordinated image on the

### *Results of the analysis: Design Capabilities described*

The analysis conducted has shown that design activities have impacted on the overall innovation processes and culture of the companies. All enterprises interviewed have demonstrated a renovated understanding of the value of design, and of the impact of design processes on business performance. Moreover, companies affirmed that their renewed perception of design has fostered an enhancement in their mind-set and future vision. These responses, and the analysis in the literature previously conducted have been the main basis to define three main design capabilities.

#### **Design leadership**

This capability has been evident only in few of the companies interviewed, as it implies the presence of a design driven innovation strategy that is embedded in all enterprise functions. This means that the company uses processes and resources to ensure the adoption of consistent design strategies, tools and procedures to promote design driven innovation. Design Leadership relates to the presence of a multi-faceted understanding of design inside the organisation and a clear focus on the user to define the offer system as well as the production and distribution process. This capability can be perceived when design participates in determining the strategic choices available to a firm or organisation.

Referring to the classification of the 21 variables of design management identified by Borja de Mozota (2013), design leadership can be further articulated as:

- The creation of a competitive advantage through design;
- The absorption of design as a core competence of the whole company, and as one of the main ingredients of the enterprise culture;
- The development of a unique selling proposition through design values that is more difficult to imitate by competitors because of its intangible characteristics.

#### **Design management**

This capability describes the effective management of all the firm's assets, including processes for organizational learning, design resources, offering system, the collaborations and business relationships, from both internal and external perspectives. Design management includes the idea of:

resourcing design expertise and embedding them at all levels of the firm; managing the overall firm portfolio (products/services); accessing design collaborations (in terms of people, money, facilities) for the success of the firm. It is the ability to manage design resources – in terms of human resources; design processes and creativity; and economic resources.

Following the previously mentioned variables (Borja de Mozota, 2011), the capability of design management can be further described as:

- The improvement of the coordination of the diverse functions of the company, and in particular research, production, and marketing;
- The inclusion of the user perspective and the improvement of customer relationships throughout all innovation processes;
- The development of more strategic and efficient external relationships with suppliers and other professionals, as part of the innovation strategy.

### **Design execution**

This capability describes few technical skills that design contributes to companies: enabling product/service innovation, introducing a people centred approach in the innovation process, adopting new technologies, using visualisation and prototyping as fundamental tools to reduce risks and start the creative process. This type of advantage refers in particular to small and incremental innovations that can improve the company portfolio by design, and help enter new markets.

Design Execution involves the presence of human resources with technical skills, design technologies and infrastructures, investments in the new product development process. In Borja de Mozota (2011) words:

- The improvement of the ability to reach new international markets;
- The change of the value of the offer system, in particular for the perception of users;
- The introduction of new technologies to strengthen and regenerate the innovation process and increase the aesthetic and functional value of products;
- The reduction of the time to market and costs of production for new concepts.

## The narrative in practice

The design capabilities described can be applied to companies more concretely by defining narratives and models of best practice that can show the practical value of design for business innovation. This is useful to underpin to companies the reasons why investment in design is a strategic lever for development. The task is a crucial one for designers and design associations, as companies need to understand in practical ways and through real stories how design tools and methods can apply to their daily practice. For example, the Design Council uses this approach to advocate design both by publishing reports, and sharing stories at peer-to-peer and knowledge exchange events. The above mentioned report 'Leading Business by Design' identifies 12 stories of companies that use design strategically in very diverse sectors (banks, manufacturing companies of several types of goods, consultancies of brands, companies producing food and drinks, fashion and accessories, and service companies). This collection is useful to showcase the impact of design on world-renowned leaders that have used it to differentiate product development strategies, to define new niche markets, to regenerate services and brand portfolio, to create new user needs.

The authors propose narratives with a two-fold purpose:

- To describe design capabilities in practice, the extent of transformation that design can generate, and how it can create socio-economical value in SMEs;
- To support the understanding of wide audiences through interpretive narratives describing real profiles.

Narratives are archetypical scenarios emerged through analysing the case studies and data gathered through the research ([DeEP Design in European Policy](#)). They were developed on the basis of the policy cases described above. Data collected were interpreted qualitatively to identify the relevant combination of one or more capability in a business profile. For example, companies that show a capability only in design execution have a different profile compared to companies that show capabilities in design execution and management. Therefore the presence of design capabilities has been matched to the profile of firms interviewed to read their awareness of design. The result is described in the table below, as a list of *firm outlines* or profiles. These last are described in general terms, and are exemplified using the previously listed case studies.



Our findings show 6 narratives that describe 6 different ways to use and integrate design capabilities in business innovation processes. These are:

- Design Beginner, where design capabilities are only used implicitly;
- Design Adopter, where design capabilities are mainly connected to technical aspects of product/service development (main presence of design execution);
- Design Expert, that uses design capabilities explicitly for managing processes and developing new products and services (presence of design execution and design management);
- Design Explorer, that despite the absence of a strong management component uses design as the main tool to explore and develop new ideas as well as to give the company a strategic direction (presence of design leadership and design execution);
- Design Enabler, that embeds design explicitly in all processes and functions, while investing highly in brand reputation and in training all employees on the companies' values (presence of design leadership and design management);
- Design Advocate, that identifies the recognised leaders of design innovation. These use design widely throughout business processes, making it the main differentiator of their offer, production, distribution, and communication systems.

Table 2 Description of firm outlines

Firms outlines description	Examples *All examples of firms used have been interviewed directly in the context of the case studies developed in the research.
Design Beginner Firms with little or no design capabilities, but nevertheless interested in acquiring and experiencing design capability (in terms of tools and approaches) throughout the product/service development process.	<b>Perimed:</b> Participant in Design som Utvecklingskraft, Sweden. <b>Perimed</b> emerged as a design beginner, a champion in its own field but still unclear how design could benefit its activities. As a result of participation Perimed were able to integrate design in the <i>softer</i> side of product development, e.g. user interfaces, software, web development, and aesthetics.

<p>Design Adopter Firms with a core concentration of design capabilities at execution level. Design is used as a technical skill supporting the processes of ideation, production, and distribution of products and services.</p>	<p><b>White Logistics*</b>: Participant in Designing Demand (Design Leadership), UK. Participation transformed <b>White Logistic</b> into a exemplar for best practice for the use of design within their organisation, where design has contributed to their business growth through focussing long term strategies; and to developing a more consistent brand, from company uniform to drivers' attitudes. *This company was not interview directly, but the data are available online as part of a best practice in Designing Demand, one of the design policies studied in the project</p>
<p>Design Expert Firms with a structured approach to design at all levels and functions, including planning, managing, and organising design resources. Capabilities in product development, customer experience and communication are strong, including prototyping and the involvement of external designers.</p>	<p><b>Tucano Urbano</b>: Participant in Un designer per le imprese, Italy. <b>Tucano Urbano</b> have strengthened collaboration with external designers including transforming previously functional products into 'cool urban wear', and projecting brand recognition in Italy and abroad. They are also exploring possible collaborations with research centres and universities specialising in design.</p>
<p>Design Explorer Firms using design capabilities to strategically orientate innovation processes. Developing new and emerging business scenarios, this approach to innovation comes from a consistent drive to experiment with new materials and technologies, extending capabilities to the implicit aspects of</p>	<p><b>Lizard Footwear</b>: Participant in DeA – Design for Arts and Crafts, Italy. Participation has reinforced <b>Lizard Footwear's</b> cooperation with external designers through designing new products, and contributed to the effectiveness of its in-house design function through the acquisition of additional management and new product development skills.</p>

<p>design e.g. co-design processes.</p>	
<p><b>Design Enabler</b> Firms concentrate design capabilities e.g. in communicating a product or service and engaging the user in brand value. This includes a high capacity of managing external resources and relationships for design and production. These firms use design throughout the organisation with standard and clear procedures for all, with high investments in training for design.</p>	<p><b>Marmorin:</b> Participant in Design Your Profit, Poland Participation provided support for know-how building and skills for brief preparation. However <b>Marmorin</b> already used design a driver of innovation as a constant push to experiment with new materials and technologies. They employ design both as internal and external functions and invest in promoting design activities also at international level.</p>
<p><b>Design Advocate</b> Firms with a design-driven approach to innovation. These firms are acknowledged leaders and exemplars for the use of design. They promote a design-driven vision and culture that can engage and stimulate communities, firms, regions, even nations.</p>	<p>Generally, these companies are successful and well acknowledged by users. As an example of Design advocates, internationally known organisations such as <b>Alessi, Freitag, Ittala and Brompton</b> employ best practices showing design as a cultural asset that integrates functional, emotional, and socio-economical utilities. Design Advocates are champions in co-creative processes with users, as their products are part of a wider value constellation of product-service systems.</p>

## Discussion: limits and constraints on measuring design capabilities

Firm outlines provide a conceptual narrative of firm profiles. However, this model includes further challenges for validation that are important to be stressed as they could foster debate and advancement in the design management research community.

The main purpose of the model is to propose a simple and straightforward storytelling to sustain companies understanding and justifying their investments in design, thus learning to involve it more steadily into their strategies and innovation processes. This model helps on the one side designers, managers and policy makers to justify investments in design, on the other it can be used by researchers to interpret research results and as a tool to explain practically how design management is a value for companies.

Few main limits and constraints are thus proposed in this paragraph hoping to advance the debate on the topic. In particular, three main areas of limits can be recognised:

- Limits linked to the research conducted and the sample of enterprises used:
- The profiles proposed have been created out of a limited number of business cases (especially those studied in the examples of design policies developed in the research). This represents an important limitation, as a wider sample of cases should be included to fully justify the model, which would also help refine descriptions and justify them with richer details.
- Limits linked to the model proposed and to its application in concrete terms;
- The profiles proposed are not totally separable from one another. There is overlap as the methods and metrics to differentiate the use of design within businesses is quite rich and complex.
- The profiles do not represent a hierarchy. Currently, they express and justify different ways of including design within business operations and strategies. Each of these could be translated in a very good use of design for the firms' purposes and sector. For example, a small firm focused on manufacturing excellence might not want to be a design advocate, but might make the best use of design for its characteristics just being a design expert.
- Another important limitation is linked to the necessity of simplifying extremely a very rich and nuanced picture, linked to the use of design in firms. In order to engage peer learning, for example, firms would need to find valid samples in terms of similarities. These would span from the sector and size of the firm, the characteristics of the contexts in which it operates, the life and history of the firm, and even the main traits of the entrepreneur, thus making the interpretative model much more complex.

- The main challenge is to transform this model in a tool to support firms, designers and design associations in general to learn and advocate for design-driven innovation as a crucial lever in innovation for future growth.
- Limits connected to the existing literature, and the need for further debate and empirical inquiry to agree widely on a definition of design capabilities.
- Despite the increasing interest on the topic of design capabilities, the definitions, descriptions, and research provided by scholars are still limited. These hardly define the concept through practical evidences, and are often centred on analysing the role of design and designers when/if embedded in organisations. Further, design management literature often concentrates on how managers use or could use design for the benefits of the enterprise, leaving design at the margins of the picture. The authors believe that more research is needed from a design perspective, to integrate more comprehensively the management perspective that is already well acknowledged in the reference literature. This could be crucial to begin answering to some of the latest principal concerns linking design to innovation and policy more in general, where the European Commission is investing greatly on advocating design capabilities in the policy system, the enterprise system, and the public sector.

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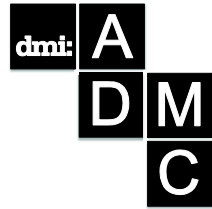
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## When and to Whom Form-Superior Products are Evaluated More Favorably?

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*We borrow from psychological research and hypothesize that design evaluation is not consistent but depends on two variables: evaluation mode and knowledge level. We conducted two experiments to test our hypotheses. We found in study 1 that participants evaluated form-superior products more favorably in joint evaluation than in separate evaluation. We found in study 2 that this was found only among novice participants. Expert participants favored function-superior products in joint evaluation. We discuss the academic contributions and managerial implications of our findings.*

**Keywords:** *evaluation mode; form; function; knowledge*

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## Introduction

Academic researchers in the marketing area have paid much attention to consumer behavior toward product design (e.g., Bloch, 1995; Hoegg & Alba, 2005; Chitturi et al., 2007; Noseworthy & Trudel, 2011). In general, they have found that when the design of a product is good, consumers increase their purchase intention or their willingness to pay for the product. However, little attention has been given to how consumers evaluate whether a product design is good or bad. In particular, it has been little discussed whether consumers are able to make design evaluation consistently. As such, this paper aims to test whether consumers evaluate design differently depending on context. Among a wide variety of contextual variables, we choose two variables, evaluation mode (separate evaluation mode vs. joint evaluation mode) and knowledge (expert vs. novice), and borrow from the established psychological findings on these topics to generate two hypotheses.

First, we hypothesize that design evaluation is influenced by evaluation mode. For instance, they may not favor a product with an appealing form when it is presented alone (separate evaluation mode) but may favor it when it is presented together with another product with a less appealing form (joint evaluation mode). If this is the case, the product with an appealing form may win customers' favor in the joint evaluation mode more easily than in the separate evaluation mode. Second, their context-dependent design evaluation can be observed only when they have limited knowledge of products (i.e., novice). When they develop expertise on the functional benefits of a product, they may decrease their attention its form, suggesting that experts may not favor the product with an appealing form when it is presented together with another less-appealing product. In sum, we hypothesize that consumers' evaluation of an identical product is not consistent but differs depending on the evaluation mode and level of knowledge.

This paper is organized as follows. First, it reviews briefly the existing literature on form and function as well as on evaluation modes, to generate our first hypothesis. Second, it reviews the literature on novices and experts to develop our second hypothesis. Next, it introduces two studies to test our two hypotheses and concludes with the academic contributions and managerial implications of our findings in design research.

## **Literature Review**

### *Form and function*

Many products have trade-off relationships, especially between form and function. For instance, some have appealing forms and others have good functions. Therefore, consumer behavior researchers have shown extensive interest in understanding how consumers evaluate two key attributes of a product: form and function. In general, form is viewed as a visual result, as a whole, created by putting all relevant factors together, including shape, tempo, scale, proportion, materials, reflectiveness, color, ornamentation, and texture (Bloch, 1995). On the other hand, function is the desired behavior of a part in itself and in conjunction with other parts to fulfill the consumer's requirements (Mukherjee & Liu, 1997) and is "a central tenet by which it is defined and evaluated" (DiSalvo, 2006, pg. 43).

Researchers generally consider form and function critical and mutually independent attributes of a product. Form is an attribute related to the appearance of a product where its functions remain the same (Bloch, 1995; Liang & Murray, 2009). Function is also viewed an attribute independent of form. Independence between form and function led contemporary consumer behavior researchers to investigate how consumers evaluate and/or choose between two product options when they encounter a conflict between form and function (Chitturi et. al., 2007; Hoegg et. al., 2010). Studies show that consumers place different weight on form and function depending on contextual variables including evaluation mode.

### *Evaluation mode*

It has been much replicated among psychologists and consumer behavior researchers that an identical set of two products is evaluated differently depending on evaluation mode, that is, whether each product is evaluated alone (namely "separate evaluation") or two products are evaluated comparatively at one time (namely "joint evaluation") (Hsee, 1995; Hsee & Leclerc, 1998; Hsee et al., 1999; Hsee & Zhang, 2010).

Hsee (1999) provided clean evidence on the discrepancy between separate evaluation and joint evaluation. In his study, participants were asked to evaluate two dictionaries. One dictionary has no defect but 10,000 entries and the other one has a defect but 20,000 entries. Therefore, participants had to make a trade-off between defect and entries. He found that the dictionary that has no defect was favored in separate evaluation, whereas the dictionary with more entries was favored in joint evaluation.

To account for the discrepancy, Hsee (1996) proposes Evaluability Hypothesis (EH) theory. An intuition behind his theory is that the “evaluability” of an attribute and its importance varies in two different evaluation modes. More specifically, one attribute that is difficult to evaluate alone and less important in separate evaluation can become easier to evaluate and more important in joint evaluation. Suppose that people evaluate two products, X and Y, both of which have two attributes, a and b, respectively. Attribute a is easy to evaluate (i.e., the evaluator knows how good a given value on the attribute is without comparisons), and attribute b is difficult to evaluate (i.e., the evaluator does NOT know how good a given value on the attribute is without comparisons). In separate evaluation, the difficult-to-evaluate attribute (attribute b) makes no difference in distinguishing the evaluations of the two products and, therefore, the easy-to-evaluate attribute (attribute a) dominates people’s evaluation. However, when people compare the two products in joint evaluation, the difficult-to-evaluate attribute (attribute b) becomes easier to evaluate and becomes the main determinant of people’s evaluation.

Hsee’s findings (1999) can be explained by the EH theory. In his study, defect was easy to evaluate whereas the number of entries was difficult to evaluate. He explained that, “even without a direct comparison, most people would find a defective dictionary unattractive and, a like-new dictionary attractive.” He added, “without something to compare with, most students would not know how good a dictionary with 10,000 entries (or with 20,000 entries) is” (Hsee 1999, pg. 249). Therefore, in separate evaluation, participants placed more weight on defect, the easy-to-evaluate attribute, and favored the dictionary without defect. In the joint evaluation, however, they compared two dictionaries and increased the weight of the number of entries, thus favoring the defective dictionary with greater entries.

Later, Hsee’s work later inspired other researchers. For instance, a recent study showed that the utilitarian yogurt advertising was favored in separate evaluation, whereas the hedonic one was favored in joint evaluation (Roy & Ng, 2012). These findings suggest that hedonic attributes (vs. utilitarian attributes) tend to be difficult to evaluate independently and thus unimportant in separate evaluation. However, they can become easier to evaluate and important in joint evaluation. Since form (function) is a hedonic (utilitarian) attribute, we expect that form is difficult to evaluate independently and ignored in separate evaluation. In joint evaluation, however, it can be weighted heavily, suggesting that form-superior products are more likely to be favored in joint evaluation than in separate evaluation.

*Hypothesis 1: People evaluate a form-superior product higher in joint evaluation than in separate evaluation.*

### *Knowledge*

Expertise is defined as the ability to perform product-relevant tasks successfully (Alba & Hutchinson, 1985), and people are classified as novices and experts on the basis of their product knowledge (Alba & Hutchinson, 1985; Mitchell & Dacin, 1996).

According to research, experts can determine the product quality according to its attributes, while novices choose products based on external features (Rao & Moroe, 1988). Experts use many attributes to assess products. They focus on the performance of products and reduce their cognitive efforts, so they may be more capable of avoiding confusion with other information. In contrast, novices are more likely to follow the choices made by others (Brucks, 1985) and favor nonfunctional attributes (Park & Lessig, 1981). Novices are less capable of understanding the importance, implications, and determinacy of information, making them more likely to give high evaluations of attributes that are easily understandable (Mitchell & Dacin, 1996).

This suggests that when evaluating products, novices are more likely to rely on form than experts. Since form is as an external feature of a product, people who are unfamiliar with function cannot help but use form in making evaluations. In general, experts have a better capability to compare attributes amongst different products and more knowledge about how to compare products of the same class based on the attributes, leading them to discount form and pay more attention to function. However, novices who have limited knowledge relating to products have difficulty making such a comparison, leading them to consider form heavily.

*Hypothesis 2-1: Novices evaluate a form-superior product higher in joint evaluation than in separate evaluation.*

*Hypothesis 2-2: Experts do not evaluate a form-superior product higher in joint evaluation than in separate evaluation.*

## Study

### Study 1

*A pre-test and a main study.* First, we conducted a pre-test to generate choice sets of USB drives, in particular, to identify their form attributes and its functional attributes. We recruited 20 undergraduate students at a Chinese university. They were educated about form and function (Chitturi et al., 2007) and then asked to list as many form attributes and functional attributes of USB drives as they could. The responses revealed that that size (14) and shape (7) are the two most frequently answered form attributes and storage space (15) and ease in carrying it (9) are the two most frequently answered functional attributes. Therefore, we selected size as a form attribute and storage space as a functional attribute to create a trade-off between two USB drives. One USB drive (form-superior product) was small (30 mm in length and 3 mm thick) and had less storage space (8GB) and the other USB drive (function-superior product) was large (50 mm in length and 9 mm thick) and had more storage space (16GB). When we presented to the participants (N=30) two USB drives using the text descriptions from the responses and asked them to indicate the attractiveness and the perceived performance, they answered that the form-superior USB drive was less functional ( $M_{\text{form}} = 3.50$  vs.  $M_{\text{function}} = 5.27$ ,  $t(29) = 6.445$ ,  $p < 0.001$ ) and more beautiful ( $M_{\text{form}} = 5.10$  vs.  $M_{\text{function}} = 3.50$ ,  $t(29) = 4.997$ ,  $p < 0.001$ ). The findings suggest that our choice set was generated as intended.

Next, we conducted a main study employing a 3 between-subjects design (evaluation mode: separate A vs. separate B vs. joint). In the separate evaluation condition (A or B), the participants were provided with one USB drive and evaluated it on a seven-point Likert-scale (1= do not like it at all vs. 7 = like it very much). In the joint evaluation condition, the participants were provided with two USB drives and evaluated them together by answering the identical two questions.

*Findings.* In total, 80 undergraduate students at a university in China participated in this study. We conducted an ANOVA (Analysis of Variance) to examine whether the evaluation mode affected the evaluations. When each USB drive was evaluated separately, the evaluation scores between the two USB drives did not differ ( $M_{\text{form}} = 4.05$  vs.  $M_{\text{function}} = 3.95$ ,  $t(38) = 0.244$ ,  $p = .809$ ). When the two USB drives were evaluated together, the evaluation score of the function-superior USB drive did not change ( $M_{\text{separate}} = 3.95$  vs.  $M_{\text{joint}} = 3.50$ ,  $t(19) = 1.371$ ,  $p = .186$ ), but the evaluation score of the form-

superior USB drive dramatically increased ( $M_{\text{separate}} = 4.05$  vs.  $M_{\text{joint}} = 4.78$ ,  $t(19) = 2.970$ ,  $p = .008$ ), leading to the discrepant evaluations between the form-superior USB drive and the function-superior USB drive in joint evaluation ( $M_{\text{form}} = 4.78$  vs.  $M_{\text{function}} = 3.50$ ,  $t(39) = 4.987$ ,  $p < .001$ ). That is, participants weighted size (a form attribute of the USB drive) more heavily and favored the form-superior product in joint evaluation than in separate evaluation.

*Discussion.* The findings support hypothesis 1, that people increase their evaluation of a form-superior product when they evaluate it with another product (joint evaluation) compared to when they evaluate it alone (separate evaluation). Note that participants did not evaluate two products differently in separate evaluation and that they showed a significant discrepancy in joint evaluation only. However, we suspect that when people develop expertise on function, they are not influenced by evaluation mode. We tested this additional hypothesis in study 2.

## *Study 2*

*A pretest and a main study.* First, we conducted a pre-test by recruiting 20 undergraduate students at the same Chinese university. As in study 1, we provided them with the definitions of form and function and asked them to list as many form attributes and functional attributes of basketball shoes as they could. We found that the most frequently answered form attribute was color (15) followed by design concept (9), shape (8), material (5), logo (4), sole thickness (4), and shoestrings (3). The most frequently answered functional attribute was comfort (13), followed by shock absorption (10), breathability (7), protection (7), and weight (5). Thus, we selected color as a form attribute and comfort as a functional attribute and then generated a choice set by creating a trade-off relationship between two pairs of basketball shoes. One pair of shoes (form-superior product) had a highly appealing color (blue body with red shoestrings) but provided poor comfort (artificial leather and fabric vamp), and the other pair of shoes (function-superior product) had a less appealing color (yellow body with grey shoestrings) but provided better comfort (“combining integrated hyperfuse structure and Kevlar fiber materials: dual-density structure” (excerpted from a sports shoes website)). We conducted a manipulation check by asking 20 undergraduate students at the same Chinese university regarding the attractiveness of the color and the perceived performance of comfort description. We found that the color of the form-superior basketball shoes was more attractive than the color of the function-superior basketball shoes

( $M_{\text{form}} = 5.45$  vs.  $M_{\text{function}} = 3.50$ ,  $t(19) = 3.676$ ,  $p = 0.002$ ) and that the comfort of the form-superior basketball shoes was worse than the comfort of the function-superior basketball shoes ( $M_{\text{form}} = 3.70$  vs.  $M_{\text{function}} = 5.55$ ,  $t(19) = 3.670$ ,  $p = 0.002$ ). The findings suggest that our choice set was generated as intended.

Next, We conducted a 2 (Knowledge: high vs. low) between-subjects design study. Note that we did not manipulate the evaluation mode but the whole participants evaluated the two pairs of shoes together (joint evaluation) because we aimed to test whether novices showed a discrepancy but experts did not in joint evaluation. We measured knowledge using a questionnaire generated by the authors. We referred to academic papers and professional interviews on basketball shoes and created a knowledge quiz of 16 questions to identify how knowledgeable a participant was regarding basketball shoes.

*Findings.* We recruited 101 participants at a library and at a basketball court at a university in China. First, the mean score on the knowledge quiz was 8.49, and its standard deviation was 3.913. We split the participants into experts and novices; the mean score for the experts ( $M_{\text{experts}} = 11.94$ ) was significantly higher than the mean score for the novices ( $M_{\text{novices}} = 5.48$ ,  $t(99) = 14.629$ ,  $P < 0.001$ ). Second, we conducted an ANOVA and found that knowledge affected evaluation ( $F(1, 99) = 6.721$ ,  $p = 0.011$ ). The novice participants favored the form-superior basketball shoes over the function-superior ones ( $M_{\text{form}} = 4.93$  vs.  $M_{\text{function}} = 4.02$ ,  $t(99) = 2.605$ ,  $p = 0.011$ ). However, experts favored the function-superior basketball shoes over the form-superior ones ( $M_{\text{form}} = 4.17$  vs.  $M_{\text{function}} = 4.83$ ,  $t(99) = 2.382$ ,  $p = 0.018$ ).

*Discussion.* The findings support hypothesis 2, that when evaluations were made jointly, novices placed weight on form, whereas experts placed weight on function. Note that our findings about experts in study 2 are not consistent with the findings obtained in study 1. This suggests that knowledge plays a moderating role in the effect of evaluation mode on evaluation.

### *General Discussion*

Our findings obtained from the two carefully designed experimental studies provide important theoretical contributions and interesting managerial implications for design researchers and design practitioners.

Concerning the theoretical contributions, the findings suggest that people generally increase their evaluation of form-superior products in joint evaluation compared to separate evaluation (study 1). However, this effect



*When and to Whom Form-Superior Products are Evaluated More Favorably?*

may be reversed among experts so that they decrease their evaluation in joint evaluation compared to separate evaluation (study 2). These findings extend our knowledge of the topics in the sense that design, as a difficult-to-evaluate attribute, critically and differently affects the evaluations made by the general public and design experts.

Concerning the managerial implications, we revisit the strategic decisions about design activities in a competitive market situation. When designers are unable to achieve excellent form and excellent function together and must sacrifice one attribute, they should take into account which evaluation mode customers tend to face. If customers evaluate each product alone (e.g., on a TV home shopping program or at an exclusive retailer), designers should strive for functional excellence. However, when customers have ample opportunities to compare multiple products (e.g., at an online shopping store or at a category killer store), designers should consider pursuing form excellence. Designers should also consider how knowledgeable customers are; if customers have extensive knowledge, pursuing functional excellence will be better off. In sum, designers should strive for form excellence only when novice customers are making comparisons. In other cases, they should strive for functional excellence.

Every research has its own limitations and this one is not exceptional. First, we borrowed the definitions of form and function from marketing literature. In the future, we incorporate different definitions available in other areas (e.g., design science) and conduct a more rigorous experiment. Second, we considered only functional knowledge in study 2. In the future, we investigate the effect of form knowledge (e.g., design knowledge) on evaluation. Third, since the participants in study 2 were recruited from the two locations (library and basketball court), location might have influenced effect. In the future, we recruit participants from one location to avoid bias and eliminate any potential confounding effect. Finally, we used only two stimuli. In the future, we add more stimuli with more attributes to extend our findings to other product categories.

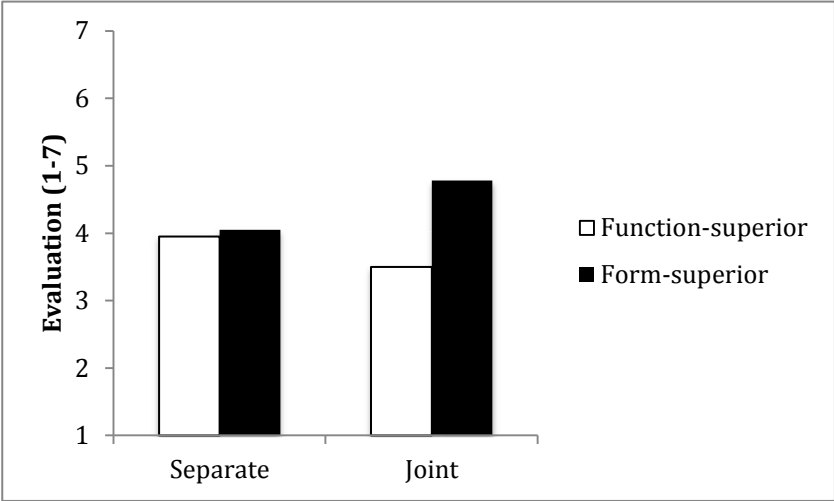


Figure 1. Evaluation as a function of evaluation mode (study 1)



Function-superior basketball shoes

Form-superior basketball shoes

Figure 2. Stimuli (study 2)

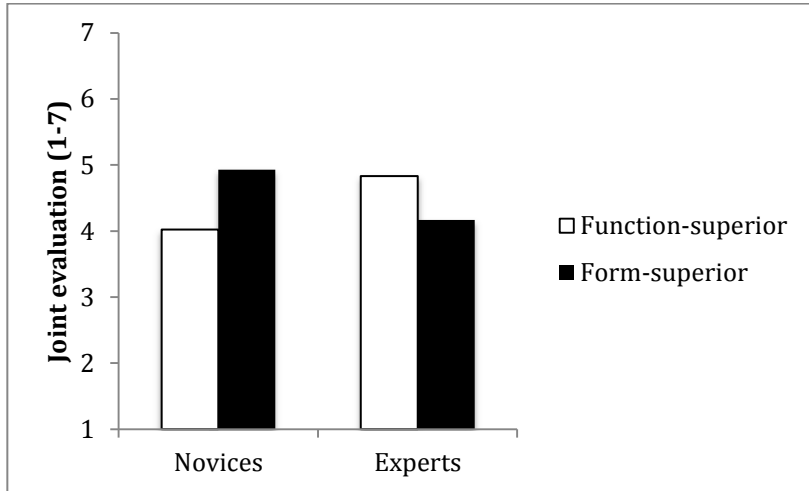
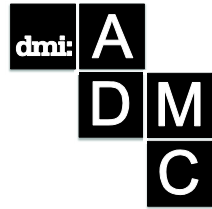


Figure 3. Joint evaluation as a function of knowledge (study 2)

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# The Impact of ‘Idea’ as a Keyword in Accelerating the Adoption and Use of Design within Business: Exploratory manufacturing based study

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*This exploratory paper investigates the central question of: If ideas are a resource for companies, how do we address the lack of adoption and use of design in business despite the continual evidence that supports its link to success? This study aims to contextualize and explain the growing importance of ideas to business success and the role of design in this process. It will concentrate on how this phenomenon can provide the opportunity to potentially rethink an idea-driven vocabulary that design and business can use to achieve common values. It will share an exploratory scoping study that explores, within a manufacturing context, the value and significance of ideas and design to business success. It examines which vocabulary (ideas or design) is perceived to have most currency and its impact on the adoption of design-driven innovation within those businesses. The paper concludes by providing a series of preliminary insights and starting points for future research into the importance of ‘Ideas as a potential future currency’ in accelerating the potential adoption of design within a manufacturing context.*

**Keywords:** ideas, business success, design adoption, vocabulary, innovation

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## Introduction

Innovation has the capacity to raise levels of uncertainty (Rich and Tracy, 2004) and the importance of a shared vocabulary within design driven innovation is not new (Koen et al, 2001) but it has not yet been fully addressed. These points highlight the potential significance of establishing a shared vocabulary for Design and Business to help reduce uncertainty and to maximise design's capacity to innovate.

This scoping paper explores the principle: are we using the right vocabulary to express the shared meaning and value of design to business and business to design? This then helps lead us to explore the central question of the paper, which focuses on investigating the potential impact that having a shared vocabulary may have on accelerating the adoption and use of design within manufacturing businesses. It does not set out to attempt to create or advocate an Esperanto type auxiliary language. It aims to explore how a shared vocabulary could be used as a potential tool to help bridge the functions of design and business. We define 'vocabulary' as a 'set of words within a language that are familiar to a person or a group of people' and the key word within vocabulary is 'idea'.

This paper adopts the premises that Design is crucial to realising ideas that deliver business success and that it is a key mechanism for businesses to use to turn insights into ideas and transform ideas into a tangible outcome. Therefore we have adopted the Cox's Review Report (2005:2) definition of design: "Design is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for user or customers. Design may be described as creativity *deployed to a specific end.*" However, undertones exist that suggest that ideas have more perceived value than design. Exploring these emerging weak signals has been central to this exploratory scoping study.

The following two sections (The Importance of ideas and Value of design) aim to contextualize and explain the growing importance of ideas to business success and the role of design in this process. The exploratory scoping study explores, within a manufacturing context, the value and significance of ideas and design to business success. It sets out to examine which vocabulary (ideas or design based) is perceived to have most currency and its impact on the adoption of design-driven innovation within those businesses. The paper concludes by providing a series of preliminary insights and starting points for future research into the importance of 'Ideas as a potential future currency' in accelerating the adoption of design within a manufacturing context.

## **The Importance of Ideas**

Ideas have the power to change the way we understand products, systems, processes, services, even our lives and from a business point of view, they drive entire markets. Ideas are considered to be the crucial trigger for innovation and business success (Bono, 2007). Barczak et al (2009) have highlighted the importance of ideas to business success in their 10-year review of The Product Development & Management Association (PDMA). Their study established that organisations are increasingly adopting more systematic approaches to their product development activities but that this has resulted in companies generating less innovative outcomes (ideas) in their Front End of Innovation (FEI) activities. Barczak et al (2009) recommended that there will be a growing need to manage ideas more effectively and strategically over the next decade. These insights have helped kick-start this research.

The importance of ideas has been recognized as a core issue within the innovation processes (Fraser, 2009). Koc and Ceylan (2007) also claim ideas “are the starting point to all innovations” and consequently, organisations with an effective idea management process are enhancing their idea pipelines and New Product Development process radically.

Failures in management practices are currently attributed to a lack of good quality ideas (Boland and Collopy, 2004). Boland and Collopy (2004) suggest that business value does not come from new financial analysis but from good ideas that fulfil human needs. Professor Mark J. Perry (School of Management University of Michigan) compared the Fortune 500 in 1959 to 2009 and found that 86% of companies from 1959 had either gone bankrupt, merged, gone private or had fallen from the top 500 companies. Perry's review highlights, how organization that fail to maintain developing innovative ideas that connect with real needs fail to survive. Major players in industry, such as Procter & Gamble, Apple, 3M, Nike and Nestle, have attempted to address these failures by establishing idea management processes within their organisations. They achieve results by generating, evaluating and selecting quality ideas that fulfil real needs and that align to their business objectives resulting in commercially successful products and services (Sowrey, 1990; Hutson and Sakkab, 2006; Chesbrough, 2003). Authors such as Cooper (1998) have historically supported this argument by claiming that most organizations that are proficient in managing their Front-End activities also excel at innovation. Therefore, organisations investing in

innovation not only invest in ideas, they are known by investing in design thinking (Wong, 2009) to drive their idea management process.

Traditional approaches to the ways in which organizations generate ideas are radically changing (Sowrey, 1990). These changes are being driven by an increased interest in aligning ideas to business objectives, focussing on delivering novel (Dean et al, 2006) and feasible (Rietzschel et al., 2007) ideas. There has also been a change in attitude and approach in judging success in Idea Generation sessions, traditionally, the model has been quantity versus quality (Osborn, 1979; Chohan 1979), what research is now suggesting is that quality over quantity is more effective (Ulrich and Eppinger, 2000). Although idea quality is a key aim in innovation processes it has been often undervalued (Björk and Magnusson, 2009) and some organisations still encourage employees to generate a large number of ideas (Majaro, 1992; Reitzig, 2011) without a clear focus, resulting in large amounts of random ideas that do not lead to innovation (Vandenbosch et al., 2006).

Organisations that value creativity are more willing to invest in ideas (Mainemelis, 2010). It is also very important to create an innovation culture within the organization to pursue ideas. According to Stobbeleir (2011) the creative performance of an organisation can be enhanced by creating a proactive culture that encourages "active feedback" within the work environment. This approach has the potential to aid an individual's creativity through affirmative input from colleagues and managers that can result in a person being able to enhance their self-efficacy and improve their ability to manage their creative behaviours within the innovation process.

Baer (2012) suggests how a systematic idea management process within organisations can enhance employee's creativity and has a significant improvement of team members' innovation performance and quality of ideas. Barczak et al (2009), in their ten-year review of The Product Development & Management Association (PDMA), contradict this by highlighting how organisations are increasingly adopting very systematic idea generation approaches, but these approaches are negatively impacting on the levels of creative outcomes in Front End Innovation (FEI). This suggests the need to balance systematic approaches with reflective practices as a means of maximising the potential of both approaches, as suggested by Bolton (2014).

Although organisations understand the importance of the idea generation process, many of them still struggle to generate a flow of high quality ideas (Fraser, 2009) that move beyond incremental and me-too



offerings (Christensen, 1997; Ahuja and Lampert, 2001) and have trouble in both implementing them and turning them into successfully commercial product innovation (Levitt, 1963; Staw, 1990; Koc and Ceylan, 2007).

## **The Value of Design**

Many authors have demonstrated the benefits of design (Brown, 2009; Buchanan, 1992; Borja de Mozota, 2011; Lockwood, 2010; Martin, 2009) and its impact on business success; this then reinforces the question of why design is not being universally adopted? Nevertheless, some major key players such as P&G, 3M and IDEO have embraced Design to help them build strategic business success. Ulrich and Eppinger (2000) have consistently argued that achieving business success is often about building strong relationships (internally and externally) and identifying ways to solve problems that deliver benefit to both parties. There are many factors (Posselt and Forst, 2013) that contribute to success but this paper focuses on investigating the potential impact that achieving a shared vocabulary could have on conflating the value and benefit to both design and business functions.

Design has been seen as a key component for market leadership and a valuable resource for managers to enable to combine inductive, deductive and abductive reasoning for problem solving, facilitating enlightened organisations to aspire and become design leaders (Dunne and Martin, 2006). Hatchuel (2001) previously advocated the importance of design as a crucial discipline for innovation and value creation. Although Design Thinking has not been universally adopted there are significant examples of success from organisations (P&G, IDEO, 3M) that have embraced Design Thinking to help them build future strategies. Clark and Smith (2008) suggest that Design Thinking has the potential to educate and embed itself as a key aptitude in managers. Its benefit is in its ability to encourage more holistic approaches to problem solving (Simon, 1996; Boland and Collopy, 2004) and enhance business decision-making (Herstatt et al, 2003).

Interest in design is not new. Design as a distinct discipline, gathered pace in the 1960s. Simon (1996) wrote one of the first definitions of design in which he explained design as a process that encompasses holistic knowledge that combines management and engineering. He argued that it is a process that explores "what ought to be" instead of "what is". However, it has been criticised in upcoming years by other authors who consider that this

definition does not take into account social contingencies (Schön, 1983; Suchman, 1987; Hautchel, 2001).

The dilemma with Design is that it has many definitions. It can be seen as: (1) an intellectual and practical resource that comprises the process of inspiration, ideation and implementation of ideas (Brown and Wyatt, 2010), predicated on intuition, pattern recognition and the ability to express in other ways than just words; (2) a creative approach that can be put to use with a clear objective, that seeks to develop and enhance ideas by behaving as the link between creativity and innovation. (Cox, 2005); and (3) as a way of visualizing strategic thinking to help communicate complex issues more effectively (Dziersk 2007).

Design, in line with the expansion of its meaning, has started to encompass other functions, rather than the traditional craft process of drawing and sketching to a strategic thinking approach to pursue innovation. Designers have traditionally been seen as being able to bring a new lens to the process of looking at wicked problems. Buchanan (1992) has consistently claimed that design thinking is an intellectual approach that embeds the social side of design, by which designers are able to look at problems in such a unique way that is easier for them to find a solution. This has widened the discipline by encouraging individuals that do not need to have a pure design background to contribute to design thinking. For instance, some new concepts have influenced employee's way of thinking in areas such as organizational design and strategy (Kimbell, 2009) and have encouraged them to adopt a design attitude (Boland and Collopy, 2004), moving from a 'manager mind set' to a 'designer behaviour' (Dunne and Martin, 2006).

Within a business context, specific design practices have been addressed from multiple perspectives: (a) Sketching and drawing (Cross, 2006); (b) Objects and experience prototyping (Kelley, 2001); (c) Brainstorming (Sutton and Hargadon, 1996); and (d) tearing up a drawing of a possible solution (Boland and Collopy, 2004). Nevertheless, many of these practices are embedded both in Idea Management processes and Front End Innovation, which link these practices and processes together.

The evolution of the concept of design and the emergence of the term design thinking in the 1990's has led to it being intensely studied and analysed (Currie 2009; Nussbaum 2009; Collopy 2009; Brown 2009). Since 2000 at least three different ways in which to classify design value have started to emerge: research driven design (Jelinek et al, 2008), strategy driven design (Brown, 2008, Dunne and Martin 2006) and organizational

change driven design (Boland and Collopy, 2004). However, in terms of a universal definition, Design Thinking is not a consistent term (Kimbell, 2009). There is currently no coherent agreement between authors on what design thinking signifies to businesses, unveiling a potential opportunity gap to reconsider the vocabulary and language that design uses to achieve greater adoption of design within business. For instance, Krippendorff (2006: 209) defines design thinking as *'a systematic collection of accounts of successful design practices, design methods, and their lessons, however abstract, codified, or theorized, whose continuous rearticulation and evaluation within the design community amounts to a self-reflective reproduction of the design profession. (...) Its aim is to keep design discourse viable and productive.'* The plurality of researchers striving to robustly define the meaning of Design and Design Thinking, so that it can be more widely adopted within business, suggests the potential of relooking at this dilemma from an alternative perspective. This awareness has helped us evolve the central question of the paper, that of investigating the potential impact that having a shared vocabulary may have on accelerating the adoption and use of design within business, particularly manufacturing based organisations.

Tschimmel (2012) suggests an alternative approach for embedding design thinking into business through cross-training employees, by providing business and management support to designers and training engineers, marketers and managers in design. It could be argued that the central premise of Tschimmel's (2012) proposal is currently at the heart of many design management programs and MBA modules in business schools. As a penultimate point to this section, Tschimmel's (2012) underlying approach aligns with our objective of achieving greater adoption of design and we support the notion of greater involvement of Design Thinking within business education and Business thinking within Design Education.

In exploring the importance of ideas and the value of design three themes have emerged:

- There has been an identifiable shift in attitude in organisations' from: (a) generating large quantity of ideas in order to increase the chances to find a good one to (b) generating a lower quantity of quality ideas aligned to business objectives, focusing on their novelty and feasibility.
- There is a growing acceptance of the importance of ideas within innovation processes and the acknowledgment of the contribution that innovative ideas have to business growth.

- There is increasing evidence from research that ideas have a shared value for both design and business practices.

Bringing together our learning's from undertaking a systematic literature review and our extensive experience of running applied research based projects, we were able to establish potential ways in which 'ideas' could be used as a shared vocabulary in order to help better connect design within business and visa versa business within design. Our next step was to undertake an exploratory scoping study to explore, test and gain a preliminary understanding of what might be possible.

## **Preliminary Perceptions In Industry**

The following information discusses the exploratory scoping study, undertaken with the aim to help inform what might be possible. This section explores, within a manufacturing context, the value and significance of ideas and design to business success to pilot companies. It attempts to examine which vocabulary (idea or design based) is perceived to have most currency and its impact on the adoption of design-driven innovation within those businesses.

### *Methodology*

Working with small and medium and multinational companies over the last five years we had observed examples of dysfunction between design and business functions which where attributed, in part, to a lack of a shared vocabulary. This observation helped initiate a comprehensive literature review, undertaken prior to starting this exploratory scoping study, to help underpin and verify the initial insights derived from our extensive applied research projects (Shields and Rangarjan, 2013). We had frequently observed, both functions (design and business) trying to achieve the same goals but often finding it difficult to find a common understanding due to a lack of a shared vocabulary. This scenario frequently led to miss understandings and at worst a breakdown of communication within projects.

The in-depth literature review helped established present best practices and gaps in current thinking. Combined with our in depth practitioner knowledge, this helped frame the nature and scope of the exploratory questionnaire. The questionnaire adopts a blended approach (Bolton, 2014) that brings together quantitative and qualitative questions in order to help

understand how we might establish an idea-driven vocabulary that can ultimately assist in linking design and business practices more effectively.

A structured interview questionnaire methodology (Lindorf and Taylor (2002) has been chosen to provide a multi-perspective examination (Brewer and Hunter, 1989) on three core themes: (a) the value of Design and Ideas for business success; (b) the nature of the process SMEs/MNCs typically use to generate ideas and drive innovation within their organisations and (c) the factors SMEs/MNCs typically use to evaluate the quality of ideas.

The exploratory scoping interviews adopted a triangulation methodology (Denzin, 1978) by implementing three specific evaluative metrics: importance, frequency and effectiveness. We have adopted this approach previously in order to help to eliminate the potential problems of a respondent indicating an issue to be important, but then realising that the findings significance is either offset and or impacted upon by the fact the respondent either infrequently engages with it (the factor being discussed) and or when they do so it is ineffective. This triangulation methodology enables us to understand issues of importance, effectiveness and frequency of use more effectively.

For this exploratory scoping study, companies were selected from a sample of 6 companies based on their continuous involvement in New Product Development (NPD) activities and their involvement within high-end product markets (see table 1). The NPD criteria was used because product development activities typically embrace the generation and use of ideas within a business context. Both companies operate in different product and market sectors within the manufacturing industry, but have a common underlying theme of delivering high-end products. The chosen interviewees within each company were senior managers with a close relationship with design and the business innovation processes.

A secondary reason for choosing these two organisations was to consider the impact of size (from having 50 employees to 2500 employees) on identification of common issues and to understand how scale and resources might impact on their attitudes and approaches when dealing with design-driven innovation processes. This method has enabled a limited preliminary comparison to be made between small and large organisations.

The chosen method, described previously, has been of a descriptive nature and has focussed on summarising the emergent trends in attitudes and perceptions (Denzin and Lincoln, 2005) from this small exploratory sample. We have adopted a systematic approach to unlock the emerging

issues, highlighted by the literature review, in order to attempt to address the central theme of the study, that of a lack of adoption of design within business innovation.

Our adopted methodology has helped us to robustly establish a series of insights from a multi-method perspective (Brewer and Hunter, 1989). This has been achieved by exploring each question through the three key parameters: effectiveness, frequency and importance.

Profile	Company A	Company B
Area of activity	Design & Manufacturing of High-end Products	Manufacturing of High-end Consumer Durables
Size of company	Medium Enterprise	Large Enterprise
Turnover	£4.5M	£250 M
Number of Employees	50	2500
Product range	1 brand with three product ranges.	14 Brands with multiple product ranges each.
In-house design team	2 designers, 1 product development.	40 staff
External design team	None	Multiple Industrial Design and Research Agencies.
% Profit derived from products introduced to the market during the last 3 years	8%	Main brand: 70%

Table 1: Company Profiles

The use of a multimethodology questionnaire approach (Creswell, 2004) has provided a series of in-depth responses due to the combination of quantitative (type of data) and qualitative questions (type of data). The adoption of qualitative questions has helped gather an in-depth

understanding of the practitioners' perceptions and the reasons that influence their organisations' practices.

### *Analysis*

The companies involved in this exploratory scoping study are both design-led organisations (i.e. design is a critical part of their business in terms of their product design offer) in the manufacturing and new product development sector. Both of them work nationally and internationally in high-end product sectors. They are both manufacturing based and both have a clearly defined New Product Development process. The data was collected through the use of structured exploratory scoping interviews administered via a questionnaire. As stated previously, the interviewees are senior people within the organization (managing director and marketing director respectively) who are actively engaged with product development, communications and design development teams on their daily basis. The importance of this parameter is that they have an operational understanding of how design and ideas are managed within the corporation and extensive knowledge of innovation practices.

The following information highlights four nascent areas that emerged from the exploratory scoping study: business growth, idea generation, idea quality and nature of the process used. These four areas have been unpacked in order to identify the emergent commonalities and differences between the two organisations.

*Business Growth:* There was common agreement that both design and ideas are very important for business growth. However, both sample companies also agreed that Design is often seen as a 'constrained and focused activity' within the New Product Development process, rather than a holistic tool for business innovation within manufacturing based companies. Distinct differences also started to emerge when defining the value of design. For example, the smaller company did not differentiate between the concepts of Design and Ideas. When explaining the importance of Design they directly jumped into the significance of ideas for business success rather than conceiving Design as an independent approach to achieve business growth. This perspective reinforced the 'constrained and focused activity' of design within their business context. They then confirmed one of our previously identified undertones, by suggesting that ideas have more perceived value than design, through articulating how they saw ideas at the core of innovation and business success (not mentioning

design). This was despite the fact they had earlier agreed how important Design is for business growth. On the other hand, the larger company was able to articulate the intrinsic value of design independently from the value of ideas. They claimed Design is a necessary 'tactical tool' to stimulate new product development and, therefore, business growth.

*Idea Generation:* Both companies perceive idea generation to be extremely important to activate future idea pipelines and fulfill specific present New Product Development project objectives. However, there were distinct differences in practices relating to size and available resources, as one might anticipate. Company B typically attempts to trigger the Idea Generation process by identifying an insight and then testing it via online research with their consumer understanding team. Once an opportunity has been spotted and preliminarily verified, they activate an idea generation planning process. Company A adopts a more informal approach of free thinking based around bespoke practices (Buur and Matthews, 2008). Research indicates that when SMEs adopt this type of approach for idea generation and selection they often rely too heavily on top managers 'gut feel' (Murphy and Kumar, 1997). But when applied effectively it can foster an open innovation culture where ideas can flow from anywhere within the organization or from external sources (Chesbrough, 2003).

*Nature of the Processes Used:* The findings align with the Barczak *et al* (2009) study, with both pilot sample companies adopting a structured NPD process with strict prioritizing processes and clearly defined stage gates. Both companies perceived the adoption of a structured approach to have a positive impact on the ability of their concept development process to deliver success (effectiveness). They typically attempt to offset any unstructured processes of generating ideas by adopting a clear structured idea evaluation process, which rapidly aims to identify good quality ideas and remove the bad ones. It is at these potential points of idea evaluation where the adoption of an idea-driven vocabulary could be instrumental in building shared values and therefore accelerating the long term adoption of design.

*Quality of ideas:* In terms of how the sample companies define idea quality, agreement was unanimous that alignment to business objectives/strategy and fulfilling user needs/insights were key parameters in defining the quality of an idea. This confirmed Brun *et al* (2010) theory on the intrinsic interrelationship between design and business. When evaluating factors for idea success none of the organisations articulated novelty of ideas as an important factor, which contradicts with the arguments of MacCrimmon and Wagner (1994), Dean *et al.* (2006) and



Nelson et al. (2009) who all claim that novelty is a key criterion for idea evaluation. Both sample organisations prioritised their Idea Generation sessions to develop one very good idea. Their common goal was to establish an idea that they could move forward, that represented a clear market opportunity rather than generating a large amount of ideas that could not be taken to market. This approach contradicts authors such as Majaro (1992) and Reitzig (2011) who encourage employees to generate a large number of ideas.

## **Discussion/Conclusion**

This exploratory scoping study aimed to answer two questions: (a) how can we address the lack of adoption and use of design in business despite the continual evidence that supports its link to success; and (b) are we using the right vocabulary to deploy the intrinsic benefits of design for business success.

The systematic literature review helped to frame each question, highlighting the increasing importance of ideas and how design is perceived to be very valuable to business success. It also highlighted a lack of an universally clarified and adopted definition of design thinking. These insights have acted as a catalyst for understanding the potential importance of establishing a shared vocabulary between design and business.

The exploratory case study assisted in helping us to understand, in more detail, how the sample organisations perceived the role ideas and design in helping them achieve business success by asking two related questions: (1) How important is investing in ideas for business growth; and (2) How important is investing in design for business growth. The responses suggest that ideas appear to have more currency than design within business. They both articulated the strategic importance of idea quality on achieving success and both saw design as a tactical process that can be deployed to help generate better quality ideas. This conflicts with Martin's (2009) view that design has shifted from a craft discipline to a solving problem intellectual approach.

This change impacts on the implementation of design within organisations by attributing very different tasks, responsibilities, skills and practices to design employees that have moved beyond sketching. The exploratory case study findings do not align with Brown & Wyatt's (2010) definition of design as a human social activity. Company A defined design as the 'process and activities that link' product design, advertising and crafting,

while Company B have a clear understanding of the holistic meaning of design. Although their main focus for business success relates to ideas that can trigger breakthrough innovations rather than the creation of intellectual activities.

A key point that emerged from the exploratory scoping interviews is that the size of organisations appears not to be an issue when discussing the value of ideas in design driven companies. It confirmed how ideas are very important for business success (Bono, 2007; Koc and Ceylan, 2007; Fraser, 2009; Bolton and Chinneck, 2013). Both Company A and B emphasized the importance of ideas being generated across the business and representing the seed for future products and innovations towards their business objectives. This confirms Koc and Ceylan (2007) point of view that ideas are the starting point to all innovations. The larger corporation, Company B confirmed the growing importance to them of establishing an Idea Management process to generate quality ideas in order to help them to lead the market. However, as a consequence of this stated perception, ideas appear to be perceived to be more valuable than design, while design seems to be seen as an operational tool within the New Product Development process, Ideas are seen as strategic tool across the organization for business growth. This insight starts to confirm that ideas are considered the engine of innovation (Bono, 2007; Fraser, 2009). This exploratory scoping pilot study has identified potential emerging signals that suggest that ideas are the potential currency for innovation. If this idea-driven innovation approach is adopted, design has an opportunity to become a key actor in this process. Therefore, if Ideas are considered the crucial instrument for business success, could not design be a strategic instrument to help generate better quality ideas?

The central contribution of this study is the identification that the sample companies perceive ideas to have more currency than design. This issue has a critical importance due to the fact that the corporations involved in the pilot case study are design-driven organisations, and therefore familiar with design processes and its potential to impact on business growth.

The second key point to emerge underpins the first point, that design is perceived as an operational tool. This helps to answer the second research question regarding the impact of vocabulary on design adoption. If design-led organisations are considering design as an operational tool rather than a strategic approach for business growth and innovation, it is not surprising, in spite of design claimed benefits, that design has not been universally adopted.

The exploratory scoping interviews helped recognize both strengths and weaknesses in systematic and reflective approaches in helping to accelerate idea generation flows: The preliminary findings suggest that: (1) the use of systematic and structured idea generation practices can help encourage an innovation culture within the organization (Staw, 1990) but can lower their creativity levels (Boeddrieh, 2004); and (2) that non systematic idea management process typically generate multiple ideas that happen by serendipity or managers choice (Murphy and Kumar, 1997; Desouza et al., 2009).

To conclude, this exploratory scoping study has established that ideas appear to have more currency than design and that ideas-driven vocabulary has the potential to stimulate greater design adoption within a business context.

There is sufficient evidence that suggests that ideas have a shared value for both Design and Business activities. The value of ideas for business success must therefore start to become central to establishing a common vocabulary between design and business. A key recommendation for the design management area is to more proactively integrate idea management tools, practices and methods into our core activities in order to enhance the adoption of design within a business context, resulting in the objective of designers being perceived as Idea Managers within business.

## **Future Research Opportunities**

This scoping research study has initially compared two different sized organisations from the same industry. There are three main areas for future research: (1) to expand the number of companies; (2) to explore several industries to determine the scalability and repeatability of the preliminary findings, and (3) to compare both design-driven non design-driven based manufacturing companies.

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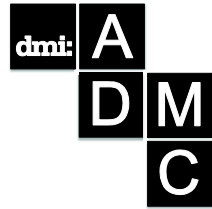
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## About the Measurement of Design results in Large Companies: A case study in Brazil

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*Design management is increasingly being understood as a competitive strategy; there is much research showing positive results through surveys and case studies in companies, such as presented by Bedford (2006), Hertenstein and Platt (2006), Desbarats (2006), Daniels (2006), Philips (2006), Paul (2000), Best (2006; 2012); Borja de Mozota (2011) and Mrazek (et al. (2011). However, papers that specify Design Metrics and how to use them are rare and not very precise, such as Dutra and Wolff's (2012) article. The goal of this paper is to understand how companies measure their design actions, which metrics and tools they use and how they communicate and manage their knowledge, shown through the reality of five large Brazilian companies. A qualitative research was done, based on semi-structured in-depth interviews with these companies design teams. Thus, this paper offers a counterpoint to the previous publications in which SMEs are approached, such as the ones from Borja de Mozota (2003). The results of this research reflects the designer's understanding of metrics, the relationship with the company goals as a whole and their positioning about the way their action's results have been perceived and measured. Among the emerging points of this research are: the designer's apathy in deeply understanding their role in their companies, an understanding of their companies' goals, and the manager's lack of recognition of design as an investment or as an intangible asset in a way that it is possible to isolate its contributions and clarify its results.*

**Keywords:** Design Metrics; Design Management; Designer's metrics Understanding

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## Introduction

Companies that invest in design and its results are objects of study of many researchers (Borja de Mozota, 2002; 2009; 2011, Best, 2006; 2012, Vargas-Hernandez et al., 2010, Hertenstein et al., 2001, Bedford, 2006, Hertenstein and Platt, 2006, Desbarats, 2006, Phillips, 2006, Wallace, 2006; Hsiao et al., 2012; Guo, 2010; Liedtka, 2010, Lockwood, 2007). This means that there is a growing interest in establishing adequate metrics for measuring design's results in reaching companies' goals.

Among these authors, there is an understanding that the design manager should know not only ornament, but also design management. Once a professional enters a company, it will begin a questioning process about what kind of results design could (or should) provide to the organization. The link between design and metrics arise from this questioning process that requires conceptualization and contextualization, recognizing the links that usually go unnoticed.

In most companies, the measuring tools refer to the ones used to demonstrate financial results from formulas and computation that consider labor, inputs, deadlines, return on investment, revenue and profit. All of these are easily measured aspects (Mrazek et al, 2011). These authors believe that many organizations already realized that it is harder to quantify design and innovations than certain sectors in a company, such as acquisitions, operations and finance.

This paper's main goal is to analyze whether the results derived from investments and activities in design are being measured in large companies. In order to achieve this goal, it was conducted an in-depth qualitative research with professionals from design teams of different companies in southern Brazil, searching to establish a relationship with the current theoretical background.

## Background

According to Flick (2009), qualitative research is the most appropriate to the development of this kind of paper, since this method allows to analyze individual or group experiences, to examine interactions and communications, and to explore documents. In this research's first phase, there is a theoretical review in order to identify the state of the art regarding design management studies. A qualitative research, which is an "unstructured research, exploratory, based on small samples that provide insights and understanding of the problem" (MALHOTRA, 2001, p.155), was

made in the second phase. In-depth interviews were conducted because they provide to the researcher a straight access to what the interviewees think (KVALE, 1996), helping them expose their points of view about a certain matter. Kvale (1996) says the interview's role in qualitative research is to build knowledge.

Five professionals that either coordinate or participate in their companies' design teams were chosen to participate in this study. This was done in order to understand these teams' view of the design process in their own companies and their relationship to other teams, in addition to figuring out whether the strategy is being considered in this process; whether the design is being valued; and degree of the design team's importance in their company.

To achieve this goal, semi-structured interviews were conducted considering the theoretical background. The last phase is related to the data analysis, in which the categorization of the participant companies is presented, and a comparison is made considering its results. A content analysis was conducted to which Bardin says "In other words, the content analysis of messages that should apply - with more or less ease, it is true - all forms of communication, whatever the nature of their support [...] has two functions, which in practice may or may not dissociate: a heuristic function and a function of "taking of evidence." (Bardin, p. 30, 1977)

The conclusions and final considerations of this study show the outcome of the discussion of results, comparing what was found between the theoretical state of the art to the reality of the companies.

## **The Designer's Business Perception**

This qualitative research considered companies that either rely on internal design departments or hire external design services, in which each respondent responsible for the design department of the respective company responded according to their approach and perception of the area in relation to the company.

In order to classify the companies according to their sizes it used BNDES's (National Development Bank) references. Thus, Table 1 shows the participant companies classified according to their size in terms of revenue and number of employees according to BNDES.

Table 1 – Companies' profiles

Company	Interviewed Position	#People in the Design Team	Company Size (BNDES)
A	Design Manager	3	Large
B	Design Coordinator	150	Large
C	Design Coordinator	4	Large
D	Design Director	4	Large
E	Design Coordinator	4	Large

Among the results of the interviews, a few points merit attention, such as the companies' positioning in the market segment and how it internally and externally communicates it; the design team's understanding of the company and its objectives; the use of performance indicators; the access to performance indicators by the design team; and whether the design awards are being valued by the company. These points, among others, are described in detail in the following section. The results regarding the companies were analyzed following Bardin's (1977) procedure of categorizing. In total, there are four categories: 1) companies' profiles; 2) Design as a strategy; 3) companies' metrics and 4) Design awards

### *Companies' Profile*

Company A is a family business that belongs to a group that is a market leader in their segment. Each company within this group works with its own design department. Company A's design department is subordinated to the marketing department and it is divided in three large groups: Design and innovation, Product management and Market strategy. Each of them has their own working patterns, primarily due to their market segment and product type. The interviewee said they do not invest in research or in media for product disclosure. What this company does is effectively observe the market, their consumers and its competitors' movement.

According to the interviewee, the market leadership achieved several years ago left them in a comfortable position, which made them become more reactive than innovative. However, they have been noticing gradual changes in their market performance, and are therefore initiating a renewal process by hiring external advisors to implement the innovation culture. The interviewee also sees design as the only way to achieve differentiation from other competitors.

Company B is the world leader in its segment, which allows it to create other brands or sub-brands to compete with each other. The Design department has approximately 150 workers. The Design director participates in every important decision together with other professionals from the top of the organization. According to the interviewee, design is considered the company's core business, which differentiates it from other competitors, and in her opinion, it impacts the consumer purchasing behavior. The company sees its customers as

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fashion consumers, and they consider other fashion products such as handbags, belts as their competitors as well.

The company has an established hierarchy for all employees. The Design team is multidisciplinary and it is segmented by product lines.

Company C is part of a family business group, and it is subordinated to a single board, now consisting of an advisory board composed of family members, which in the future should be replaced by a CEO. However, each unit has its own management and engineering, while areas such as IT (Information Technology) and HR (Human Resources) are central. The current organizational chart also has a coordinating unit, and just below, are the areas' coordinators: engineering, factory and trading at the same level. The product engineering coordinator is also responsible for marketing and technical assistance. Under his direction are product development, portfolio management, trading, product improvement and customer service.

Company D is also a family business and it is the market leader in its main segments. It has a total of ten plants, and it works with an external design team. The design team reports to the trading and engineering directors, who represent the highest level of the hierarchy. The designer focus is the development of new products and their packaging. According to her, the manufacturer also hires other companies to perform product development due to high volume production.

Company E is more than 50 years old. The professional interviewed said it has always been involved with design issues and nothing is created or launched into the market without some aspect of innovation. In the opinion of the interviewee, the brand inspires confidence and product quality.

In order to define his position in the company, the designer presents himself as the department manager and product development coordinator. Company E's hierarchy is not formally established.

### *Design as a business strategy*

The respondent from company A says that the Design department is regarded with great importance because even without new product launches, the company invests in training and retaining staff that either graduated in Design or has market experience in the area. These professionals act according to the company's needs, such as product development or the organization of the department itself, aligning the activities of the area with the goals of the company as a whole.

This department works closely with the engineering, marketing and sales departments. According to the interviewee, currently it is not possible to develop prototyping within the plant, as this would cause the production area to stop their daily production, resulting in a decline in manufacturing metrics.

Company B's positioning regards design as a strategy, relating it to the business department as it brings market's information and its needs. The idea for creating products starts on the clipboard with hand-made drawings, so it can be transferred to the computer.

Due to great demand, Company B partners with external design firms and as an innovation strategy, it decided to establish partnerships with renowned designers. The main quality of the design department employees is the ability to translate their ideas into drawings, communicating them clearly so everyone can understand them and turn them into products. According to the interviewee, the design team understands the design activity as a problem-solver.

According to the coordinator of Company C, most of their product line is consumed by impulse or by a decision taken at the moment. Therefore, he believes that design is the main differentiator, which means the company recognizes that design is a tool that drives sales and that it is necessary to be aggregated to the product. According to him, there is one specific product that features the company and is best known in the retail market.

The interviewee of Company D believes that their product's distinction is its perceived quality in its main market segment. The factory faces design as a mean to differentiate it from its competitors, and especially regarding the communication of news before others, which it is perceived as strategic for the business. This generates a job recognition, leading to a satisfied team. The firm understands that it must work with freedom, but with responsibility and commitment to work, colleagues and clients. Delays in project delivery are not accepted.

The company E, in the opinion of the interviewee, sees the design in a different way. One of the company founders understood design as a tool that would build a better product and that would best serve the needs of the user. For decades, he had noticed that among the companies that stood out in the market, one common element was the design being used as a competitive tool. Since then, a partnership was sealed with two designers from Southern Brazil that lasted 40 years and even after this ended, the company still believes in design and in the quality of their products.

Table 2 shows the characteristics of the companies' design departments with respect to their degree of understanding of the incorporation of that department to the strategic level.

*Table 2 – Design participation in the business strategy*

Company	Degree of importance of the Design department perceived by the team	Design's role	Design representation in strategic level
A	High	Strategic	None
B	High	Strategic	Design Director

*About the Measurement of Design results in Large Companies: A case study in Brazil*

C	High	Differentiator	None
D	High	Strategic and Differentiator	None
E	High	Integrative	None

Table 2 shows that design teams perceive their activity as one of high importance to the companies, due to investments made in the area and to maintenance of a department specifically for the design activity.

Borja de Mozota (2006) sets the four powers of design as: design as differentiator (a source of competitive advantage in the marketplace); design as an integrator (source of improvements in the product development process); design as a modifier (source of creating new business opportunities) and design as a good deal (source of sales volume growth and higher margins, greater market share and higher return on investment). Thus, according to the information given by the interviewees, the role of design in each of the companies was consistent with the author's definition. Thus, professionals mostly believe that design is strategic for the company, although the representation of the design department at the strategic level is still small.

### *Companies' metrics*

General performance indicators of Company A do not include the design department, and there are no specific indicators that measure its results. The one piece of information that this department has access to is a report that shows the market share for each product type. In the current configuration of the company, the interviewee sees a developmental thinking process more directed to measuring the value of design in the near future. Until now, the only tool used to measure the result of design are sales.

The details of performance indicators of company B do not reach the coordinators and other employees of the design department, but rather, the design director, who works directly with the top of the organization. The area receives a sales report. Based on information given at meetings, the designer believes that the company has general performance indicators, but not specific to design. When it comes to a big investment, such as an acquisition of a device using innovative technology, it will require an approval. The expected profits on such investment will be measured, and according to the interviewee, it will only be authorized if proven a return on investment, translated into product sales.

Company C, in general, works with metrics, according to the perception of the professional. The example used by him was the participation of the ISO program, which is not specifically metrics, but a pattern of technical standards, on which some units are audited monthly, but not all are certified.

The sales of new products and the market share are considered important indicators by the product engineering team. The design coordinator knows BSC and ROI metrics, and he affirms they use them both. One of the BSC indicators is the return of sales of new products. The product engineering department constantly analyzes the metrics of product attributes and is in search of its possible improvements. The coordinator said, however, that through the sales figures they cannot measure the design's impact, since the financial results from new products in the market can be affected by a cost reduction policy or other factors that does not specifically include Design.

The interviewee of company D is aware that its plants measure sales volume and market share. She has no knowledge about other performance indicators. The monitoring of the design team is made monthly by sales volume. It is not clear enough to the interviewee if there is a specific budget for product development and packaging, or if the plant includes these costs to the final product, however, there is a value intended for the design activity. There is an official budget for the product development area in Company E. It includes hiring professionals, updating courses, research, trade shows, trips and prototypes. However, this is not a static budget, and may be revised at any time provided that there is a justified request.

The respondent of company E also understands the standards of ISO 9000 as metrics. According to him, the company was the first in its segment in Latin America to have ISO certification, and the only one to receive ISO 9001. What is done today is from the unit cost, in which the number of parts that can be produced in a month are calculated, estimating the return over investment. The high command of the company will tell whether the new product is going to be launched after these analysis. In addition there are a number of projects executed in the year, but not all follow through for reasons that go beyond the pay back.

Table 3 shows how Design teams perceive the topic of metrics in general and specific to Design.

*Table 3 – Metrics in the companies*



Company	General indicators information	Metrics understanding	Design metrics
A	None	Production goals	Sales
B	None	Pertaining to the top of the organization	Sales
C	None	Confusion with ISO standards. There is knowledge about ROI e BSC	Sales
D	None	Factories measure market share	Sales
E	None	It is informed about market share and pay back. Confusion with ISO standards	Patent Registration

Table 3 shows that designers generally do not have information on indicators in business and demonstrate some confusion between metric and ISO standards. Among the interviewees, a majority of them believe that this type of information (metrics, measurement systems and performance indicators) is relevant to other departments and to the top of the organization. Additionally, it shows that these professionals assume that sales volume is a performance indicator assigned to activities and investments in design.

### *Design Awards in these companies*

Company A makes no investments to compete for design awards. The interviewee thinks it is not possible to have a really important innovation in a standardized product. According to her, the company does not clarify the purpose of its products to consumers, does not invest in communication channels, or make clear its mode of use in its own labels.

Company B has won numerous awards for product design, and is currently competing for another, and appreciates the awards won, for which investments are made. The company works with fashion products and it is considered a model in its segment. It recognizes the awards in design as a business card, mainly for the external market.

Company C won an award five years ago. According to the coordinator, the company is not yet innovative enough to present a revolutionary product in its segment.

For the interviewee of Company D, which has won a couple of prizes, there is no longer interest in competing for an award. She felt no actual return after conquering the prize, although it required extensive development work, in addition to financial investment. In the interviewee's opinion, those who recognize design awards are the designers, and their intention is to sell products to consumers.

According to the interviewee, there may have been a miscommunication when they won the prizes. In her opinion, besides the failure to communicate, the rules of the competitions are also impediments, as they require a set of specific characteristics that hinder the development of the work and are unnecessary. She reported that there was no demand from new customers due to winning prizes in design, and that the factory did not sell more or less due to the prizes. These factors therefore influenced the decision to not participate in any more competitions.

Company E already won some awards, like the House gift and IF Design. However, since it does not invest in media, little is known about the awards.

Table 4 shows a summary of the item: Design Awards, so that all companies can be seen together.

*Table 4 – Design Awards*

Company	Already have one?	Is there a guidance to participate in these Awards?	Do you perceive as a differentiator?
A	Yes	No. It is related to innovation, and the company's products are not innovated.	No
B	Yes	Yes. It is a great communication mean with the market.	Yes
C	Yes	No. He does not believe the company's products are innovative enough.	Yes
D	Yes	There was in the past, but they did not see any results and decided not to invest anymore.	No
E	Yes	They received important awards, but the company has no policy to publicize such achievements	No

In summary, although some companies have won awards in design in the past, currently they do not intend to participate in new contests. The reasons to not participate include organizational culture; low development of new customers, low increase in sales volume, and a high degree of required staff and financial investment.

## **Discussion**

Through the literature review which considered studies and research conducted to identify and improve design metrics, as well as design management and its responsibilities, authors such as Borja de Mozota (2002; 2006; 2011), Lockwood (2007), Borja de Mozota e Kim (2009), Guo (2010), Viladàs (2011), Mrazek *et al.* (2011), among others portray an ongoing effort to prove the importance of metrics in design and thus make it easier to measure its results. However, with regard to the reality of companies, it is perceived through the in-depth research made, a position somewhat distinct from those results.

Based on the answers provided by the respondents, there is an assumption of "task executors", by engaging more on the new product development process through the demands of other departments such as marketing, sales, management, than through the company's business as a whole.

Among the contributions found in publications, they all have the same approach regarding the importance of performance metrics and the tools available for this analysis. Authors such as Hertenstein *et al.* (2001), Guo (2010), Viladàs (2011) and Whicher (2011) have developed studies on a relevant aspect regarding the well-known measurement tool Return on Investment (ROI). The authors raise the question of why it is so hard to find the equivalent of the ROD (Return on Design) or ROID (Return on Investments in Design), addressing how the design is considered in the companies as well as the investments made in this area.

Company C states that they use ROI as a performance indicator. However, designers do not have access to the information generated by the tool. Professionals from all companies interviewed know that the ROI is measured in a certain sector of the company and that there is someone responsible for the development and analysis of this indicator, but they do not follow this process in their companies.

Among the performance measures, measurement systems and performance indicators, there is frequently reference to the Balanced Scorecard (BSC), for which Borja de Mozota (2006) drew a parallel of the four BSC's perspectives with the four powers of Design. The BSC, in the opinion of authors such as Lockwood (2007), Borja de Mozota (2006, 2011) and Mrazek et al. (2011), can assist in various aspects of business management even if it needs some adaptation due to the intangibility of Design or to generate better qualitative data.

Regarding the BSC and/or ROI, the respondents did not know which department was in charge of them, or how and what information these tools actually provided. Regarding the four powers of design, the respondents most strongly associated with design as a differentiator. When they were asked directly about the differentiation, the group considers this factor as a win-win because it attracts the buyers' attention, resulting in sales growth.

The study realized two different positions among the professionals interviewed regarding measures of performance: the first relates to those who are not interested in understanding more deeply the question, because it is information that is not included in job responsibilities; and the second, to the professionals that cannot really understand these measurements due to their own professional training that does not include management studies.

The design awards refer to another form of measure considered of great relevance at the international level, according to Guo (2010), Borja de Mozota (2003) and Desbarats (2006). The professional from company B believes the awards are considered a strong performance indicator that can bring differentiation and profits to the company, especially worldwide. The one from company E sees the awards as an important indicator, but the company he works for does not share the same perspective. As for the remaining respondents, they give little importance to the awards, just like their respective companies, for not bringing any financial return or new customers.

Another recurring approach in selected publications is the importance given to the difficulty in isolating design activities, stated by Bedford (2006); Borja de Mozota and Kim (2009); Guo (2010), Viladàs (2011) and Whicher (2011). Once isolated one variable, forms of quantification and appropriate performance indicators could be developed. Viladàs (2011) points out as one of the reasons for the difficulty in isolating the results of Design is how companies treat investments in the area. Hertenstein and Platt (2006)

contribute to Viladàs (2011) idea, arguing that investments in innovation, research and development can be considered as expenses. However, with regard to the reality of companies, no respondent stated that Design is seen as an expense. Yet, from the respondents' perceptions, there isn't a method to identify the best classification or the best investment for design activities.

The perception of the group of professionals interviewed is that design plays an important role in the companies where they work, receiving, in some cases, its own budget, as in companies B and D. According to the organizational chart informed by the interviewees, these companies either has Design as an independent department or subordinated to other areas, such as marketing, product engineering or research and development.

When questioned how they felt at work, there are some respondents that do not feel valued as they think they should be. However, they are unwilling to abandon their sectors or departments in order to understand a bit more about the companies where they work. Authors like Hertenstein et al. (2001), Guo (2010), Borja de Mozota, (2011), Viladàs (2011) and Whicher (2011) are devoted to study and research the role of design, showing positive results from the design activity, attempting to identify ways to measure its impact in the whole business.

Finally, some authors are developing studies, such as Hertenstein et al. (2001), Guo (2010), Borja de Mozota, (2011), Viladàs (2011) and Whicher (2011), among others, which are intended to align designers' goals to the companies', providing better conditions unite their efforts, searching for ways to show the real contribution that design offers to organizations. The legitimacy of such contributions is the responsibility of the Design Management. However, the reality of companies shows that they respond passively to the development of the Design Management area. These days the design activity has an even greater focus on product development, lacking the figure of a design manager that should make the connection among the management, the design indicators, and the product designers.

## **Concluding remarks**

In order to analyze if the performance of investments in Design has been measured in the companies of Rio Grande do Sul, a qualitative research was developed with five large companies in southern Brazil. For this study, the theoretical background was built under the state of the art about Metrics for Design. It was sought important research published from well-known authors in this field of study.

It is possible to establish, from this study, that design metrics should be part of the everyday routine in companies that work and invest in design activities in order to measure the results of these investments. However, it is understood that these metrics are difficult to develop due to the challenge in isolating them from other variables that also affect the company's business.

In all companies interviewed in this study, we found that not one has specific performance indicators for Design, and also that there is no effort in developing such indicators in the near future. The reason for this attitude is that sales (the amount of units sold in a period of time) are considered the most important indicator for a company, which is an idea also supported by the designers interviewed. Sales is indeed an important indicator for companies and their survival in the market, however, it does not include an indicator that can easily show the contribution of the activity of design.

Regarding the relationship between designers and management actions of general performance, there is an inefficient communication and a difficulty in understanding what are the performance indicators. However, these professionals showed no intention to seek further information on the issue. One reason that might justify this attitude is the lack of management disciplines in the Design Schools.

For future studies, we propose the development of appropriate metrics for actions and investments in Design, that consider the activity as an intangible asset, in addition to a deep understanding of this activity's characteristics. A longitudinal study is already scheduled for the same companies, so that we can verify the real contribution of this metrics. Thus, it will be possible to give direction towards improving the quantitative analysis in design.

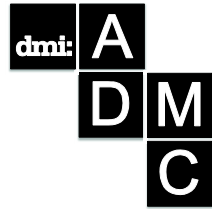
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## Design Thinking and its Impact on Affect

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*In our current research, we investigate the role design thinking can have on innovators' affective state. Positive affect is associated with increased creativity in problem-solving, and we hypothesize that design thinking can shift practitioners' affect. We propose a model of how design thinking may influence affective states and, thereby, affect the problem-solving outcomes. We report on an exploratory study that measures changes in the affective state of 66 design thinking workshop participants. The workshop's primary purpose is to introduce design thinking principles and allow the participants an opportunity to actively develop a new product prototype for another participant by applying the principles. Using the Positive Affect items on the Positive and Negative Affect Scale (PNAS), we measured the participants' state prior to and after their design thinking project session. We present preliminary results that design thinking affects participants' affective states and has the propensity to generate outcomes that create more value for the intended user than in a control condition.*

**Keywords:** Design Thinking, Positive Affect, New Product Development

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## Introduction

The question of exactly how design thinking translates into improved business outcomes has not received much attention from empirical researchers. Business managers across many industries have been employing the design thinking process as a problem-solving approach for the past several years. A consensus is growing that design thinking aids in solving particularly vexing problems that defy simple solutions. However, there is little agreement about *how* design thinking supports producing effective solutions to complicated problems. Researchers have begun to lay out specific hypotheses concerning the mechanisms through which design thinking could be expected to produce positive organizational outcomes in areas such as the quantity and quality of ideas produced and the rigor with which they are evaluated (Liedtka, forthcoming; Cross 2001).

One intriguing opportunity for inquiry regarding how design thinking processes and tools yield better outcomes lies in the area of positive affect, which has received significant attention from scholars (Frederickson, 2003; Isen, 2008; Seligman, Steen, Park, & Peterson, 2005). One of the demonstrated benefits of positive affect is that people in this affective state have shown the propensity to solve problems with a higher degree of creativity than those in other affective states (Amabile, Barsade, Mueller, & Staw, 2005). Following that stream of research, we suggest that some of the positive outcomes associated with the design thinking as a problem solving approach, may relate to its ability to induce more positive affect; that is, during a design-oriented problem-solving activity, the problem-solver may experience an affective shift to a more positive state, which in turn yields a number of positive outcomes, increased creativity among them. This relationship has the propensity to lead to improved business results. In this paper we develop hypotheses that link design thinking and positive affect. We also report on the outcomes of the first in a series of exploratory lab experiments that test the validity of these hypotheses.

The impact of affect on creativity is also now well-recognized, and numerous studies have found a positive relationship between affect and creativity (Amabile, Barsade, Mueller, & Staw, 2005; Bledow, Rosing, & Frese, 2013). Thus, we hypothesize that one mechanism through which design thinking might improve decision-making outcomes is through heightening positive affect. We hypothesize that it may accomplish this through its emphasis on human-centred value creation, collaboration and playfulness - all important activities related to design thinking, and all attributes that research suggests improve affect. The contribution of this

paper will be to open this potentially fruitful line of inquiry about the relationship between design thinking and positive affect, which we do not believe has been previously identified or explored.

We seek to do this by laying out a research design for evaluating whether applying design processes does, in fact, increase positive affect, and reporting on some preliminary results of our initial investigations. The design thinking process specifically applied includes the development of empathy through deep needs assessment using ethnographic interviewing approaches, visualization, iteration and prototyping activities, all tested in a laboratory setting. Preliminary results suggest that applying design processes does, in fact, increase positive affect and produce solutions rated by users as more valuable.

## **Relevant Literatures**

### *The Role of Design Thinking*

As design thinking has gained prominence in the management discourse, attention has been paid to various components of the design thinking process and tools: for example, design research, ideation processes, and prototyping. The relationship between the design process tool kit and positive affect has not been explored, however. Design thinking can be viewed, through one lens, as a particular kind of problem solving approach, characterized by empathy, iteration, optionality, as some of its key dimensions). Developing a deeper understanding of how the design process influences emotions, and how that relationship may change over time, represents a promising area for scholarly inquiry.

Design thinking is a pragmatic process for producing knowledge in tandem with action. Simon (1996) asserts that design is the process that human utilize when creating new things that didn't exist before action was taken. Design thinking is suited for problems that have no obvious solutions, or 'wicked problems' (Churchman, 1967). These types of problems are fraught with ambiguity because of their complicated nature and are often interpreted as threatening. Facing such threatening situations can put problem-solvers in a negative frame of mind that limits their ability to engage freely in the risky business of creating novel solutions.

### *Positive Affect in Organizations*

Organizational scholars have long been interested in the effects of cognition and innovation (Scott and Bruce 1994). The ways in which

organizational actors interpret and construct their flow of experience has tangible effects not only for how they organize and coordinate their actions, but on their ability to innovate and create organic growth for their organizations (Liedtka, Rosen, and Wiltbank, 2009). As such, organizations are environments that influence members' affective state. Affect has a multitude of influences on organizational effectiveness including supporting pro-social behaviours (Rosenhan, Salovey, Krylowski, & Hargis, 1981) and increasing employee satisfaction (Brief & Roberson, 1989). Specifically, researchers such as Amabile et al (2005) have found connections between positive affect and increased creativity in decision-making. While the exact mechanisms linking these two attributes remain unclear, research suggests that positive affect enhances respondents' abilities to relate disparate ideas (Isen, Johnson, Mertz, & Robinson, 1985) and supports increased flexibility in determining category patterns amongst material that seem to have minimal relationships (Isen & Daubman, 1984). New value creation opportunities that are visible only through association across seemingly disparate categories require decision-makers to deal with significant ambiguity and uncertainty (Harting, Harmeling, and Venkataraman, 2006). Managers in general tend to avoid ambiguity (Curley, Yates, and Abrams, 1986), and uncertain situations spark anxiety and conscious and deliberative cognitive processes that seek to restore order (Nonaka, 1988). Thus, managers' emotions and interpretations of a situation impact the kinds of behaviours they enact. For example, if a manager interprets a new situation as potentially threatening or risky, negative emotion is evoked, and he or she may avoid that situation and, as Frederickson (2003) has demonstrated, narrow their focus and seek to minimize the risks associated with the situation, thus failing to see opportunities for more creative alternatives. If, on the other hand, he or she interprets the situation as a potential opportunity, and experiences positive emotion, he or she may experience a broadening of perspective, and act in ways which enable him or her to find higher order, more creative solutions that take better advantage of less visible opportunities that situation contains (Jackson & Dutton, 1988).

Research on positive affect in workplaces has demonstrated how this cognitive state can influence business outcomes, particularly in creative problem solving and risk-taking (Isen & Baron, 1991). A growing body of research demonstrates that positive affect produces favourable results, among them the ability to process information from diverse sources and produce integrative solutions, increased cognitive flexibility, the ability to handle complexity, and the broadening of the decision-maker's field of view

(Isen, 2008). In fact, Fredrickson (2003) argues that the whole purpose of positive emotion is to 'broaden and build' - to facilitate long term development and growth, through their ability to foster more creative and empathic thinking and negative emotions, which aim at ensuring immediate survival in the face of threats.

### *Process through which Design Thinking improves Positive Affect*

#### **Increasing Positive Affect through People**

Design thinking is a human-centred process. It requires the designer to actively engage in gaining empathy for the end users, and to understand their deep needs. Humans have a strong need to form and maintain positive social connections (Baumeister & Leary, 1995), which in term increases psychological and physical well-being (Lee & Robbins, 1998), intrinsic motivation, and sense of belonging among other downstream positive outcomes (Walton et al., 2012). Research on social interaction also has shown that during face-to-face interaction, non-verbal social cues, such as behavioural mimicry, signal a sense of belonging and trigger shifts in creative thinking styles (Ashton-James & Chartrand, 2009). By fostering a stronger social connection, between designer, end-user, and the resulting greater positive affect, design thinking may lead to increased creativity.

#### **Increasing Positive Affect through Prototyping**

Another mechanism through which design thinking improves innovative outcomes is through prototyping. Prototyping is the process of building a low-fidelity representation of a product. The specific processes that are engaged during prototyping include enhanced visual imagery, enhanced sensory experience and playfulness, each of which may contribute to creativity. Dahl, Chattopadhyay & Gorn (1999) have shown that visual mental imagery training has a direct impact on design outcome. In fact, one of the benefits of prototyping is that it allows the designer to pre-experience the product, and facilitates mental imagery of the intended product and following discussion about the design. On the other hand, the majority of the existing literature on play is centred on children and the importance of various forms of play in social emotional development (e.g. Singer & Singer, 2001). Our research on the prototyping process in design thinking may fill this gap by examining the effect of play in adults on problem solving skills.

### **Increasing Positive Affect through Psychological Safety**

Innovators must learn to interact effectively with their teams when working in ambiguous situations. Psychological safety is often defined as the 'feeling able to show and employ one's self without fear of negative consequences to self-image, status, or career,' (Kahn 1990). Researchers have shown evidence that innovators' perception of psychological safety in group settings affects their willingness to take risks when ambiguity creates a threatening situation (Edmondson, 1999). Budner (1962) proposes that there are three sources of ambiguity: novelty, complexity, and insolubility, all of which are hallmarks of the wicked problems that the design thinking process is well suited to approach. Considering these antecedents, people facing such problems are likely to have a more negative emotional state, and consequently adopt more risk avoidance preferences. The climate in the work environment can moderate the how much risk its members are willing to adopt. When members actively value another's efforts in achieving work (Frese, Kring, Soose, & Zempel, 1996) and are supportive of colleague's measured risk-taking (Edmondson, 1999), work outcomes tend to improve over situations where hostilities are more prevalent. Research by Gong, Cheung, Wang and Huang (2012) reported evidence that increased creativity emerges from climates supporting the psychological safety of its members by enabling the following virtuous cycle: personal proactivity (Bateman & Crant, 1993) encourages information exchange (Grant & Ashford, 2008) and supports reciprocal trust (Mayer, Davis, & Schoorman, 1995). These complex interactions are implicated and tacitly addressed throughout the design thinking process; hence they are potentially fruitful areas of investigation throughout a series of studies. Figure 1 depicts the connections between People, Prototyping, Psychological Safety and Pre-Experiences as antecedents to positive affect.

## Positive affect and its antecedents

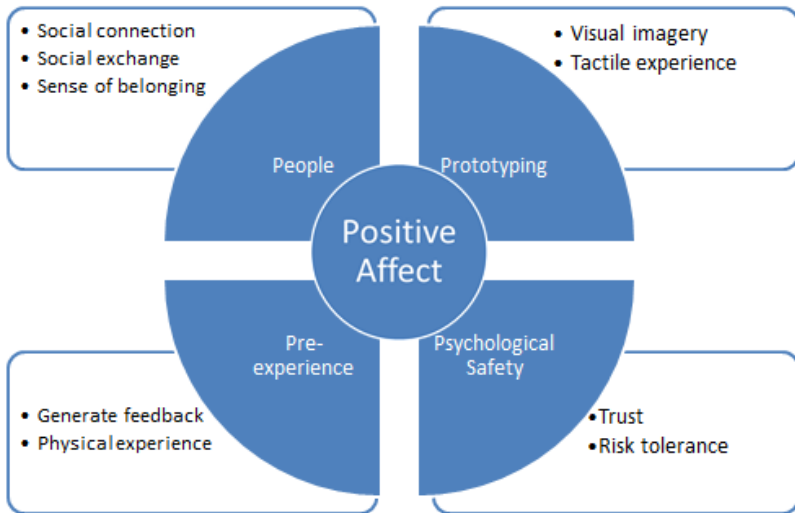


Figure 1: Positive affect and its antecedent; Source: paper authors

### *Design Thinking as an Intervention*

Innovation is, by definition, exploratory in nature, and innovation skills can atrophy in an environment where intense analysis precedes action (Leavitt, 1989). Concentrating on finding correct answers typifies the analytical mindset, which implies that outcomes tend to mimic established expectations. Design thinking introduces the concept that developing useful answers emerge from collecting first-hand data through action – engaging with customers, prototyping and iterating. This approach tends to lead to future outcomes that differ in non-predictable ways from the current reality.

Managers in companies are incited to make decisions that prevent losses. Simultaneously, exploring opportunities shrouded in uncertainty can create great value, which is also important to business growth. The design thinking process focuses on exploring uncertainty through many forms of experimentation. The design thinking process prompts expansive and exploratory decisions early in the process and vigilant decisions later in the process. Uncertainty prevails at the beginning of the process and as certainty increases through gathering action-generated knowledge, the criteria for future actions become more salient, tangible and subject to rigorous analysis. Varying positive affect across the

decision-making and execution processes should have profound effects on the nature of the decision and the goals.

Introducing people to the concepts of design thinking is particularly challenging because of its complex nature. We have relied on a well-established tool for providing an accelerated introduction to the basic tenets of design thinking: the Stanford Hasso Plattner Institute of Design (also known as the d.School) Wallet Project. The Wallet Project is an exercise that allows participants to work with a partner through an accelerated design cycle to develop new solutions that are 'useful & meaningful.' The stated goals for this introductory project according to the Wallet Project website are:

*Participants get the feel of a design approach, gain some shared vocabulary, and get a taste of each design 'mode' (empathize, define, ideate, prototype, test). Specifically, we hope students see the value of engaging with real people to help them ground their design decisions, that low-resolutions prototypes are useful to learn from (take an iterative approach), and to bias toward action.*

Previous research has shown that creativity training session that targets specific elements of the creative process can improve innovative outcomes in a product development context (Dahl, Chattopadhyay and Gorn 1999, Burroughs, et al., 2011). Creative task that is used to measure innovation in product development typically involves designing a product for an intended user group (toy for kids or car jack for the elderly) without the actual presence of the user (Dahl, Chattopadhyay and Gorn 1999, Moreau & Dahl, 2005). Now only is the wallet exercise similar in nature to previous product development task that assess innovation, it also is an effective proxy for design thinking.

We thus aim to test the hypothesis that positive affect will increase during an innovation exercise that relies on the implementation of design thinking principles in a pilot study. We also hypothesize that the perceived creative value will correlate with increased levels of positive affect.

## Methods

### *Pilot Study*

Participants in this pilot study were 66 MBA students in a major mid-Atlantic university who completed a design workshop during the first class



of an elective course in design thinking. Students were randomly paired with each other and given the task of designing a wallet for each other following the instruction of the 'Wallet Project' (see appendix A). The study was approved by the University of Virginia Institutional Review Board.

### *Measures*

Subjects' affective state was measured using the 10-item Positive Affective Scale (adapted from the 20-item Positive and Negative Affect Schedule, Watson, et al, 1988) directly before and directly after the problem-solving activity. The experiment proceeded by asking participants to design a wallet for their partner in a 30 minute session

### *Outcome Measures*

We used a multi-dimensional construct of innovation tapping the following three aspects: value creation, originality and number of ideas. Value creation was measured by the subject's partner's willingness to pay for the designed product, expressed in a dollar amount. To assess the originality of the final wallet product, three independent judges rated the wallets on a Likert scale where 1 indicated the wallet was 'not at all creative' and a 5 indicated the wall was 'very creative.' The number of ideas was captured by the number of sketches that participants drew during the ideation phase.

### *Results*

Table 1 summarizes the descriptive statistics of our measures. One participant's data was removed due to an extreme score in the value creation (value creation=\$2000). The positive affect score was computed by averaging the scores on the Positive Affect Scale pre and post design. Average positive affect pre-design was 3.19 (SD = .82), and average positive affect post-design was 3.86 (SD=.61). We conducted paired sample t-test and the difference between pre- and post- was significant,  $t(65)=6.47$ ,  $p<.001$ .

Table 1: Descriptive statistics of the test group and its measured outcomes

	Mean	Standard Deviation	N	Minimum	Maximum
Positive Affect- before	3.24	.82	65	0.00	5.00
Positive Affect – after	3.85	.61	65	1.60	5.00
Engagement	4.43	.68	65	1.00	5.00
Value Creation	112.83	142.15	65	1	700
Originality	3.50	1.58	65	1.00	6.67
Number of Ideas	5.28	1.36	65	2.00	9.00

For the dependent variable, we created a composite innovative outcome score by averaging the standardized scores of value creation, originality and number of ideas (standard deviation of the composite score is .67). Linear regression was performed using positive affect before and after score as predictors of the composite innovative outcome. Average positive affect after-design had a significant positive effect on the Innovative Outcome score ( $B=.35, p=.04$ ), such that ever one unit increase in positive affect post-design is associated with .35 unit increase in standardized innovative outcome. Positive affect pre-design did not predict innovative outcome ( $B=-.10, p=.50$ ), nor did positive affect improvement score. (Separate analysis for each of the outcome measure before averaging yields the same results)

## Discussion

We have endeavoured to build on growing research on how design thinking plays a role in increasing innovators' problem-solving abilities. In this study, we tested the hypothesis that positive affect increases with the application of design thinking principles during a problem-solving session requiring creative thought and action. Our findings indicate that participants' positive affect does increase in response to completing the design thinking exercise. Additional studies with random assignment and experimental and control conditions are needed to elucidate the process through which design thinking training improves positive affect and innovative outcome.

This study was not able to definitively link increased positive affect with a correlated increase in perceived value of the exercise's solution. Observed effect between positive affect after design and innovative outcome does not

illustrate the particular contribution of design thinking on positive affect, and could be due to the fact that participants have designed a better product and therefore feel better than those who were less creative. This was consistent with previous study on creative consumption where participants reported higher levels of positive affect following a creative product usage solution than following a less creative solution (Burroughs & Mick, 2004).

The relationship between positive affect and applying design thinking principles in the course of solving vexing problems could be the result of many related factors. We developed a model that links several aspects of the design thinking process including building a sense psychological safety when confronting ambiguous circumstances, connecting with people as a source of support and information for problem-solving, pre-experiencing many potential solutions, and prototyping tactile solutions to enhance the innovation experience. These four areas are present within the principles of design thinking.

This research experiments with exploratory methods. With that in mind, there are caveats to the generalizability. We used established tools for measuring positive affect (PANAS) in agreement with current theory. However this tool, as useful as it is, relies on self-report and is subject to participant manipulation. We took great care to not mention the effects that we were investigating during the sessions. We also relied on Stanford d.School Wallet Exercise as a proxy for more robust design thinking implementation. The lack of correlation between positive affect and perceived value generation could be a result of many factors including small sample size and subjective nature of rating value. Even despite these shortcomings, the results were encouraging from this method of investigation and warrants further experimentation and exploration.

The current study is a first attempt at dissecting a complex phenomenon – how can design thinking improve creativity. Studying such a complicated question requires experimentation and this research provides insights into another method for building on the growing understanding of what design thinking is and what it can do.

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## **Appendix A**

### *Wallet Workshop Instruction*

- 0. Preliminaries
  - a. Each participant has the following materials:
    - i. One print out of the wallet design thinking worksheet
    - ii. Sharpies/pens
    - iii. A partner.

#### Design Thinking Workshop Begins:

- 1. Conversation #1
  - a. Time: 4 min
  - b. Script: 'Your task is to design a wallet that is useful and meaningful to your client. To do this, you should try and develop some empathy for her/him. Pay attention to what he/she says and what it tells you about his/her life. You may take some notes on the first sheet. You will have four minutes to interview your client. I'll let you know when four minutes is up. ....Four minutes is up.

- 2. Conversation #2
  - a. Time: 4 min
  - b. Script: 'Hopefully there are a few things that stood out to you during the interview. These could be things that interested or surprised you. Now we are going to dig deeper. Probe the areas that were interesting or surprised you. Look for emotion; ask for stories. Take some notes. We will use the same amount of time as for the first conversation; Partner A will interview Partner B for 4 minutes and then we'll switch' I will alert you when four minutes is up.'

- c. SWITCH. Now Partner B interviews partner A.

- 3. Capture Findings
  - a. Time: 3 min

b. Script: 'Now take a few minutes to collect your thoughts and think about what you have learned. Then express what you have learned in terms of what your client needs, as well as any insights you may have uncovered about your client. A 'need' is what your client is trying to accomplish. These are usually verbs such as want, show, need, etc. Insights are discoveries, unexpected nuggets that reveal your client's preferences which may be helpful when you design something that will meet your partner's needs. Feel free to take creative leaps and make inferences. You have three minutes to do this on your own ..... Time is up.

4. Take a stand with a point-of-view

a. Time: 3 min

b. Script: 'Now - focus on the most compelling needs and interesting insights you noticed to create a concise problem statement that will guide your designing. Try to make it an actionable and juicy problem statement that captures your client's needs! You have three minutes.

c. Alright, time is up.

5. Generate Ideas

a. Time: 5 min

b. Script: 'Now you are ready to design. On the sheet, capture as many different ideas as you can come up with. Sketch them. Go for quantity! Evaluation will come later. Remember your problem statement and your client's needs that your design will meet. -. If you have more than five ideas, flip the page over and keep working. Step outside the box and be creative. You have five minutes, have fun.' | 4 min |

c. 'You have 1 minute left. Try to create at least 2 more wildly different ways to address your problem statement.

d. You will work on your own, without any input from your partner. '5 minutes is up. '

6. Share the Sketches

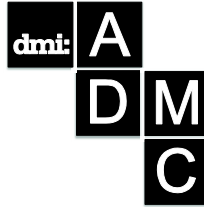
a. Time: 10 min

b. Script: 'Now you will share your sketches with your client. Listen to what they like and dislike - think about you can build on their comments. Also look for new insights. Fight the urge to defend your designs. Focus on



learning about how you can improve your designs. It doesn't matter if your client likes the sketches; they are just a means to move towards a solution to the problem. You are learning what direction to go in from here.

- c. Partner A will share with B for 5 minutes and then we'll switch.
  - d. SWITCH
- 
7. Iterate and Create a Single New Sketch based on feedback --
    - a. Time: 3 min
    - b. Script: 'Hopefully you got some great feedback and have a better sense of the direction you should be going in. The purpose of this step is to iterate - reflect on the feedback you received, and what you know about your partner, and use those reflections to create and sketch one, single new design. You have three minutes to do this. You can build on some of your previous sketches, or create a totally new one. Try to provide as much detail about your idea as possible.' | 3 min |
- 
8. Design the ideal wallet
    - a. Time: 3 min
    - b. Script: Draw
- 
9. Reflect and generate a new solution
    - a. Time: 3 min
    - b. Script: Sketch your big idea, note details if necessary
- 
10. Build you solution
    - a. Time: 10 min
    - b. Script: Make something your partner can interact with
- 
11. Explain your sketch to your partner
    - a. Time: 8 min
    - b. Script: 'In our final step, we'd like you to present your solution to your partner. Describe it in as much detail as possible to them.
    - c. Partner A will present his/her solution to Partner B and discuss it for 4 minutes. Then we'll switch.



## Climbing the Design Ladder: Step by step

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*This research presents findings of a research project where the first author worked with a small to medium sized enterprise (SME) manufacturing company in order to integrate design at a strategic level within the company. This study aims to identify the changes experienced in the participating company while shifting the perspective of design from a product focus towards a strategic focus. Staff interviews at two points in time and a reflective journal were used as data sources within an action research methodology. A shift in the perspective of design was noted in three cultural changes within the firm over time: a focus on long term as well as short term outcomes, on indirect as well as direct value and on intangible as well as tangible benefits. These three components are proposed as ‘cultural stepping stones’ that describe how a company transitions from an exclusively product-focused utilisation of design, to a process-level application of design. Implications of this research are provided as considerations for businesses that are attempting to facilitate a similar transformation in the future.*

**Keywords:** Product Design, Design as Strategy, Design-led Innovation

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## **Introduction**

The manufacturing sector has seen a steady decline over the past 30 years in western economies due to an inability to compete with manufacturers from developing nations in an increasingly overcrowded market. Within this sector, design has traditionally been used as a component of the research and development process to inform the aesthetics and usability of a product. Forward thinking firms are increasingly looking towards design to assist in strategic development and capturing new market value (Norman and Verganti, 2012). Design led innovation (DLI) is a theoretical process that enables a firm to employ design at this level by applying design thinking techniques within the context of the company's business model. However, transforming a company's utilisation of design from a traditional, product-focused activity to a 'whole firm' strategic focus is difficult, and requires a significant internal culture shift.

Few existing studies investigate the changes experienced at a cultural level as a company attempts to transform the way it understands, values and utilises design. This research hypothesises that a manufacturing business cannot integrate design at a strategic level while it considers design to be a solely stylistic or product-focused tool. Therefore, the research question addressed by this paper is: *What are the cultural changes required to shift a manufacturing firm's perception of design from an exclusively product focus towards a strategic focus?* By answering this research question, this paper aims to provide a pathway for other companies to make a similar transition in the future.

Research was conducted by a design innovation catalyst while facilitating a design led transformation within an Australian manufacturing small to medium sized enterprise (SME) over a period of 11 months. By examining the range of approaches used by the catalyst, this study aims to articulate the cultural progression experienced by the participating company as the perspective of design is shifted from a product focus towards a strategic focus. Through an Action Research methodology, staff interviews have been utilised in conjunction with a reflective journal to assess the cultural changes during this project. Implications of this research are provided as considerations when attempting to shift the cultural perspective of design within a firm.

## Literature Review

### *Organisational Culture*

In the highly competitive and continuously evolving business environment, continuous improvement is critical to the success of any organisation. Specifically, the capacity for a firm to envision its future and execute the changes required to reach that vision will determine its success in the market (Todnem, 2005). However, organisational change requires an accompanying cultural change in order to be successful and remain relevant for the company (Cameron and Freeman, 1991; Gray, Densten and Sarros, 2003). Organisational culture is defined by Limerick, Cunington and Crowther (2002) as the shared beliefs, assumptions and values of the majority within an organisation. For many businesses, their core competitive advantages are intrinsically linked with their ability to continually innovate and effectively implement new products, processes and strategies (Sohal and Terziovski, 2000). Although extensive research has been conducted on organisational and corporate culture, few studies examine culture within the context of SMEs.

Many authors have explored the cultural characteristics of successful firms. For example, Wang and Ahmed (2003) stated that a traditional hierarchical leadership culture can often be counterproductive to organisational learning, and that a collaborative team culture in which all members of the organisation can positively contribute is more effective. Barney (1986) proposed three conditions of a firm's culture that must be met in order to provide sustained competitive advantages. First, the culture must enable the firm to operate in ways that add financial value to the company. Second, the culture must be unique in comparison to other firms. And third, the culture must be difficult for competing firms to imitate. Adding to this, a collaborative and innovation-oriented culture is necessary in order for a firm to improve competitiveness through innovative development (Deshpandé, Farley and Webster, 1993). An innovative culture is defined by Kenny and Reedy (2006) as one in which continuous improvement is considered customary throughout the company, and a strong link has been identified between organisational performance and the duration and extent of continuous improvement involvement (Terziovski and Sohal, 2000). A successful innovative culture has four components, as stated by Kenny and Reedy (2006): management is not risk averse; whole-firm participation is encouraged; creativity is stimulated; and responsibility for innovation is shared. An innovation-oriented culture acknowledges that

innovation is not the sole responsibility of a group within the company - for example, employees in R&D – but rather a shared and ongoing process (Kenny and Reedy, 2006). An effective organisational culture, as identified by Denison and Mishra (1995), has four core traits: involvement, consistency, adaptability and a sense of mission. These cultural traits reflected the findings of Schein (1985), who stated that a culture is developed within a firm as employees overcome challenges of external adaptation and internal integration. Table 1 summarises the cultural characteristics of ‘sustainably competitive cultures’, ‘innovative cultures’ and ‘effective cultures’, as discussed in literature.

*Table 6 - Characteristics of Organisational Cultures*

Competitive Culture (Barney, 1986)	Innovative Culture (Kenny and Reedy, 2006)	Effective Culture (Dennison and Mishra, 1995)
Adds financial value to the company	Management is not risk averse	Involvement
Unique	Participation is encouraged	Consistency
Difficult to imitate	Creativity is stimulated	Adaptability
	Responsibility for innovation is shared	Sense of Mission

### *Danish Design Ladder*

The Danish Design Ladder is a model that was developed by the Danish Design Council as a way to categorise the different levels of influence or ‘integration’ design can have within a business (Kretzschmar, 2003). This model is highly relevant to the research presented in this study as it provides a foundational reference point from which changes in the participating company can be gauged by measuring the extent to which design is present within the firm. As explained by Bucolo and Matthews (2011a), design intervention programs, such as design-led innovation, aim to “enable companies to shift their perspective on the value of design and therefore move up the ladder over time, from negligible attention to design, to design being critical to the company’s success” (p. 4). In this way, the Danish Design Ladder framework allows independent companies to be compared on a simple yet reasonably undisputed scale in terms of their perspective and application of design. Research by Kretzschmar (2003) has

indicated that a correlation exists between high company performance and a higher ranking on the design ladder.

There are four steps to the Danish Design Ladder: No Design, Design as Styling, Design as Process and Design as Strategy. These four steps are illustrated in Figure 1, and discussed in detail below.

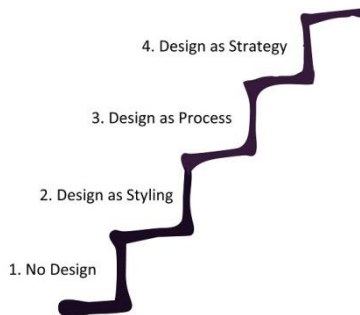


Figure 25 - Danish Design Ladder (Kretzschmar, 2003)

At the first step of the Danish Design Ladder, design plays a negligible role in the company; user or stakeholder perspectives do not influence the product development process. The second step, 'Design as Styling', sees a company utilise design as a means to develop the form, usability and aesthetics of a product. At this level, design outcomes can be easily measured as they are generally evident in new products or product features. The third step, 'Design as Process', is achieved when companies are able to apply design as a methodology, rather than a tool, within projects. The design process can be adapted to the task and involves a strong consideration of stakeholder requirements. At the final step of the ladder, 'Design as Strategy', design plays a pivotal role in the strategic development and management of the company. Upper management is intrinsically involved in the design process in order to create value for all aspects and stakeholders of the company.

The Danish Design Ladder is not without limitations, however. For instance, the model is generic and not industry-specific. Furthermore, it is not a framework for integrating design; the model only measures integration outcomes at an operational level. Currently, there is a substantial quantity of literature that examines and identifies the benefits of integrating design into a company; however there is not a great deal of literature which focuses on the journey to integration which is undertaken

as a company progresses up the Danish Design Ladder. Bucolo and Matthews (2011a) recognise that the utilisation of awareness activities, in conjunction with direct company interventions, is a typical way of assisting a firm to shift up the ladder to a higher level of design integration.

### *Design Led Innovation*

As an integrative business process, design-led innovation (DLI) assists companies to develop a sustainable competitive advantage by realising the strategic value design can provide in a business environment (Bucolo and Matthews, 2010). By employing and integrating design at a holistic business level, a company can be considered 'design-led' or 'design integrated' (Bucolo and Matthews, 2010). DLI is a relatively new field of knowledge that has grown from a need to reposition and redefine the way design is valued and implemented in business.

The fundamental principles of design have remained constant, despite the continuous evolution of its application in industry and business (Norman and Verganti, 2011). This consistency underlines Bucolo and Matthews' (2011a) design-led innovation framework, which has been developed by building upon Beckman and Barry's (2009) design thinking framework. Essentially, the core principles that operate within the design thinking process, such as cyclical iterations, prototypes and solutions, are still active in a DLI process. In DLI however, design is not driven exclusively by user needs or technology (Verganti, 2008). Instead, these core design principles have been extrapolated to strategy-level business applications, allowing a business's vision and value proposition to inform design decisions.

The conceptual Design-led Innovation Framework (Figure 2) illustrates an iterative process that can assist companies to explore, capture and realise the strategic value that design can bring to a business (Bucolo & Matthews, 2011a). Key to this framework is the relationship between operational and strategic activities within a business, and the internal and external focus of these activities. These four elements make up the axes of the framework. The underlying opportunity or value proposition is positioned at the centre of these axes, and is used as the fundamental unifying theme to bring together all sections of a business (Bucolo and Matthews, 2011a).

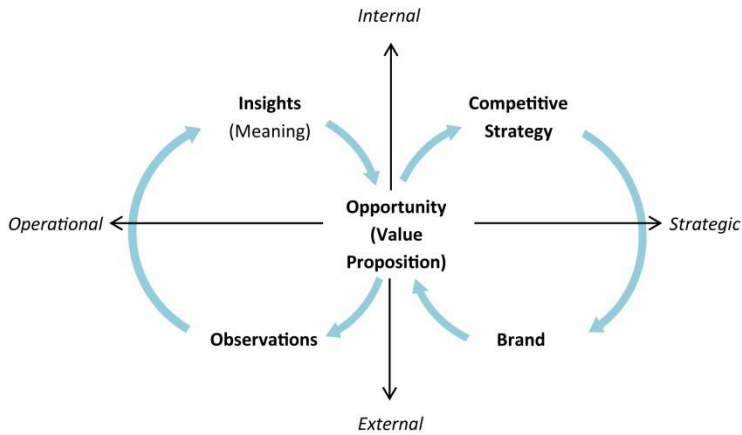


Figure 26 - Design-led Innovation Conceptual Framework (Bucolo & Matthews, 2011a)

The design innovation catalyst, first proposed in literature by Wrigley and Bucolo (2012), is built upon Norman's (2010) Transitional Engineer concept and aims to answer the questions of who would work in the translational space between research and practice in order to facilitate a design led innovation process within a company. The design innovation catalyst is an emerging role within a growing body of literature that challenges the responsibilities of a designer within a company. Wrigley (2013) defines the role of the design innovation catalyst as a practitioner who "translates and facilitates design observation, insight, meaning and strategy, into all facets of the organisation" (p. 4). Additionally, the catalyst disrupts and challenges the internal and external innovation strategies of the firm from a position within the company. Although the catalyst retains an external or holistic view of the firm, it is necessary for the catalyst to be completely embedded within the operations of the firm in order to accurately understand, from a first person perspective, the cultural characteristics of the business.

## Participating Company Background

The company involved in this research is a window fixture manufacturer of approximately 160 employees across several locations in Australia and New Zealand. The company is structured in a similar fashion to most design



and manufacturing businesses, consisting of a board of directors who direct the upper management, followed by middle management or supervisors and then floor staff. Until the initiation of this research engagement, the participating company's innovation strategy could be considered 'sales-led'. This meant that sales staff, being the only customer-facing employees in the company, would dictate the direction of product developments, in response to informal requests from individual customers. This strategy meant that few resources were dedicated to analysing the implications of these developments to the company itself, and to other customers. In turn, this reactive response caused product lines to balloon and inventory obsolescence became a pressing and ongoing issue within the firm. The participating company had not been exposed to design-led innovation strategies prior to the research engagement – design was typically used as a product level tool to develop the features, usability and aesthetics of products.

## **Methodology**

### *Research Design*

The first author of this paper was embedded within the participating company as a design innovation catalyst in order to facilitate and demonstrate the uptake of design-led innovation processes. An action research framework has provided the core methodology for this research engagement. Action research combines change and learning within one process, making it highly applicable to the aims of this research. It is an iterative and cyclical process that assists in bridging the gap between practice and theory by building on the natural process of planning, acting and critically reflecting on the results of the action (Dick, 2002). Figure 3 illustrates this cycle. Reflection in the action research process is regular, systematic and critical, which assists in achieving a rigorous foundation for data collection. In the case of this research, an action research methodology has allowed the researcher to facilitate the implementation of DLI theory within the participating company and concurrently reflect upon the challenges and outcomes encountered.

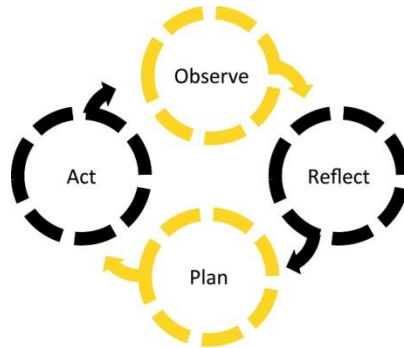


Figure 27 - Action Research Process (Dick, 2002)

### *Data Collection*

Within the Action Research methodology, two types of data collection methods have been utilised: semi-structured interviews with employees and an ongoing reflective journal.

**Semi-structured Interviews** – Interviews were conducted with employees at two points throughout the research engagement: after three months and again at nine months. The first round of semi-structured interviews involved 14 participants from various departments within the company. The main objective of the first round of interviews was to establish an understanding of employee’s initial perceptions of design, prior to extensive exposure to DLI processes. The second round of interviews was conducted with eight of the original 14 participants. These participants were more heavily involved with the work of the catalyst. The discussions conducted in this interview round were focused on identifying changes in perceptions of design and DLI, as well as reflecting on how these changes came about.

**Reflective Journal** - A significant component of the action research methodology is the reflection that takes place after observing the effects of a newly trialled design tool, approach or process. For this reason, a reflective journal was utilised by the researcher to harness these reflections as a data collection method. Plack, et al., (2005) recognised that “*reflection gives meaning to experience; it turns experience into practice, links past and present experiences, and prepares the individual for future practice*” (p. 199). The reflective journal provided a medium for recording and reflecting upon

employee reactions to presentations, workshops, conversations and activities relating to the work of the catalyst and DLI. Figure 4 graphically represents the timeline of the data collection methods. As can be seen, the reflective journal was employed for the entire duration of the researcher's embedment within the company.



*Figure 28 - Data Collection Timeline*

Table 2 provides an overview of some the tools and approaches used throughout the project, which the data collection methods reflected upon.

### *Participants*

Fourteen participants from all departments of the participating company were selected for the first round of semi structured interviews and were grouped as Upper Management, Quality Control, Administration, Purchasing, Sales, Marketing, Research and Development, and Manufacturing. Most participants in each group were from managerial or supervisory roles within their departments. Eight of these original participants were interviewed in the second round. These eight were chosen due to their higher levels of involvement in the design-led project. and were also representative of all the departments in the company

Table 2 – Tools and Approaches Overview

Tool/ Approach	Month	Description and Aim
Business Model Canvas	1	An activity run with the R&D department to understand the existing perceptions of the company's vision, market position and general trends in the industry.
Golden Circles Workshop	2	Invited participants to ask 'why?' By questioning aspects about how the business operates and various procedures, assumptions were broken down and the possibilities of alternative ways of doing things became more apparent.
Staff Interviews and Feedback	3	Individual interviews with 14 staff explored the perceived values of the company and they ways in which they differ to the ideal values. Identifying these incongruences assisted in justifying later tools.
Persona and Narrative Creation	4	These traditional user-centred design tools were facilitated in order to improve the general understanding of end users of the company's products.
Customer Assumptions Focus Group	6	Used to generate a group discussion around assumptions of what is important to customers and how these needs are fulfilled. These key points were then utilised as a conversation starter for customers.
Customer Insight Generation	8	Findings from customer discussions were presented to staff in order to generate conversation around how these insights can be used to benefit the company.
Value Proposition Canvas	9	An exploration tool which prompts new directions for a business's value proposition. The aim was to identify new and alternative value propositions for BlindCo which could be used as part of a new three-year sales strategy.
Staff Interviews	9	Individual interviews with 8 staff encouraged reflection on their experiences with each of the prior tools and approaches in order to to reveal changes in thinking and encourage learning.

### *Data Analysis*

A thematic analysis was conducted on the two rounds of data from semi-structured interviews, focus group and the reflective journal in order to identify common and recurring themes. A thematic analysis (Miles and Huberman, 1994) is appropriate for the aims of this research as it does not pre-define the subject of the identified themes, but rather is directed by the requirements of the research and the input of the researcher (Gavin, 2008).

Through the comparison of data from the early round of interviews and data from second round of interviews, key differences and changes in the perception of design were identified after exposing the participating company to DLI processes over the course of 11 months. In particular, three distinct themes emerged from the thematic analysis which describe the cultural changes in perception of design that were experienced by the participating company. They are: Outcome Focus, Value Type and Tangibility.

## **Findings**

A clear shift in perspective of design was identified within the participating company as a result of the research engagement. This shift was manifested through three separate, yet related changes in the cultural understanding of design outcomes. These cultural understandings are: the outcome focus of design, the value type of these outcomes and the tangibility of these outcomes. At the beginning of the engagement, employees placed a higher level of importance on product-level design, rather than strategic-level design, as they perceived it to be able to provide 'direct' value to the firm through tangible outcomes within a tight timeframe. In contrast, strategic-level design activities were perceived to produce long term, indirect and intangible outcomes, and consequently were not initially viewed as relevant to everyday work. Table 3 describes the initial outlook of the participating company regarding the characteristics of product-level design and strategy-level design. Of course, not all employees maintained such a black-and-white perspective of these characteristics; however this was the common perception that emerged from the results of this research.

*Table 3 - Preliminary Understandings of Design Outcomes*

	Product Design	Strategic Design
Outcome Focus	Short Term	Long Term
Value Type	Direct	Indirect
Tangibility	Tangible	Intangible

By the end of the design-led engagement, the applications, benefits and value of design were viewed from a new perspective within the firm. The department to which each participant belonged is referenced after each quote to contextualise the statement.

Participants no longer saw design as an activity which only applies to physical products: *"If you talk about design and only talk about product design, then I think you've lost it a little bit"* (Upper Management).

The findings of this research describe the transition in thinking that was experienced throughout the research engagement towards understanding, valuing and utilising the strategic potential of design, beyond the well developed product development focus.

### *Short term vs Long Term Focus*

A strong cultural trait identified within the firm was a tendency to value work with immediate and noticeable results over projects which have a longer term or strategic focus. For example, in response to a question about the ideal outcomes of the catalyst position, one participant noted in the first round of interviews: *"I'm looking at more direct value, rather than indirect; short term focus rather than long term focus. So let's hope at the end of the year, we have a process that's finished, complete and tangible"* (Upper Management). Although there were expectations that the work of the researcher as a catalyst would benefit the firm, these expectations were initially at a product-focused level and did not take into account strategic or business-level applications of design.

The introduction and facilitation of tools such as the Business Model Canvas and activities such as persona and narrative creation demonstrated a new potential for design principles to contribute to other areas of the business. However, shifting the cultural mindset of the firm away from a short term focus was hindered by a lack of understanding as to what a potential outcome would look like. *"At this stage probably not everybody realises what the outcomes can be"* (Sales). The use of case studies and clarifying the design-led process went some way towards enabling employees to envision and better appreciate long term outcomes. *"It's looking at that vision. And while you haven't actually said, these are my recommendations, you've asked the questions to stimulate people to get them thinking in that direction"* (Sales).

The cultural progression that was experienced within the company in regards to the outcome focus of design was evident in the way employees began to value long term projects: *"It's the big picture way of looking at things, we just don't have time. But for me it's like, well you don't have time because nobody ever looked at it. It's kind of like the chicken and the egg"* (R&D). As a result of the research engagement, an appreciation was

developed for long term design outcomes which required a holistic or 'big picture' perspective of the company.

### *Direct vs Indirect Value*

Within the participating company, it was found that there existed a general aversion towards design activities, projects or theories that were perceived to provide 'indirect value'. Instead, employees tended to prefer work that would produce more immediate and beneficial results. One participant attributed this aversion to an innate difficulty to effectively measure the benefits of such influences: *"How can I impact the business if I start thinking differently? When can I start expecting sales figures to go up and salary? It's difficult to measure, difficult to track"* (R&D). One participant suggested that the existing culture of the firm embodied a selfish trait, and that this was the reason some employees did not acknowledge potential in perceived 'indirect value' activities: *"There's a 'what's in it for me' attitude. If there's no benefit for them, they're not going to want to change as quickly."* (Quality Control). This explanation was supported by the following quote by another participant: *"That sounds awesome but how will that affect us directly. How can we implement that into what we are doing?"* (R&D).

In comparison to the traditional modes of design outputs that the company was familiar with, the new possibilities presented and demonstrated by the research were more ambiguous as to what the outcome would be. Regardless, tools which drew a clear relevance to the immediate task at hand were used as an effective way to develop an appreciation of indirect value outcomes. For example, insights from direct customer interviews were relevant to day-to-day tasks within the company, and also created value for the overall strategic direction of the firm. In this way, a new appreciation for indirect value outcomes of design could be fostered. The following quote from one participant represents the new perspective of indirect design outcomes at the end of the research engagement: *"It [design] is the next step, about creating value that is not based on product or service, it's based on maybe a better process of dealing with us, or giving them the edge in terms of product, promotion, or channel to market"* (Upper Management).

### *Tangible vs Intangible*

The idea of 'tangibility' was found to influence many staff member's notion of importance in regards to tools, approaches and workshops that

were trialled by the researcher. Tools that had no tangible outcome, such as business level development, were often considered irrelevant to everyday work. For example, in response to a question about the perceived benefit of strategic development, one participant stated: *"It's an under-resourced role, but it's never been focused on or seen as important, because it has a bit of an intangible output to it. There is no physical product"* (R&D). Participants acknowledged the potential benefits of tools with intangible outcomes, such as articulating and understanding the customer value chain, however it was seen as less important than the immediate task at hand: *"...the big picture stuff is gold. It's [we need you to be] getting back to direct value, safety, whatever it may be, to support some of the things we are doing now"* (Upper Management). This view was reiterated by another participant who did not see the intangible work of the catalyst as directly valuable to their work or the company: *"So you'll have to deliver some side things to make it worthwhile"* (R&D).

Creating an understanding and encouraging the utilisation of the intangible outcomes of design was found to contribute significantly towards shifting the overall perception of design within the participating company. This new understanding was principally achieved by creating engagement in activities that did not produce a 'tangible' outcome, such as the 'Why?' workshop and the Value Proposition Canvas tool.

## Discussion

### *Moving up the Design Ladder*

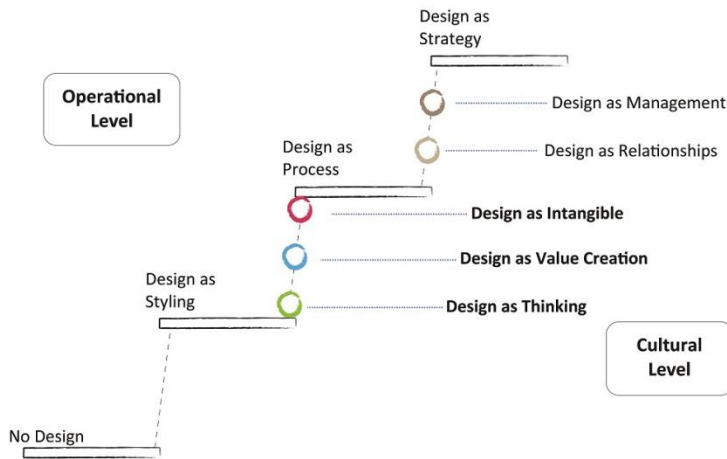
From the exposure to activities and processes within the DLI process, the role of design within the participating company became seen as a way to create value for customers and the business. Further to this, customers became seen as a valuable resource to inform design and insights gained from the customers were used to set new strategic directions and led to improved company performance. To extend this new focus on customer insights, a Marketing manager was employed to implement and drive the company's customer focused approach. In addition, the design innovation catalyst was invited to extend his involvement with company's deeper and more extensive use of 'designerly' principles and practices, outside of product development.

In the context of the participating company, one outcome was a significant shift in thinking considering the outlook of design at the start of the engagement was as an aesthetics and functionality development tool,



with customers having little to no input into research and development activities. This initial perspective is comparable to the product focus of industrial design as described by Gemser and Leenders (2001). The results of this research suggest that the primary shift in perspective experienced within the participating company lies in the perceived tangibility of the design outputs. For example, as a product-focused tool, design outputs are typically physical, visible or at least realisable in the short term as a new function, feature or component. Boothroyd (1994) identified this perspective as a traditional outdated approach to design in manufacturing, where problems are dealt with as they arise.

It is proposed, in the context of an Australian manufacturing SME with a strong focus on traditional applications of design in the product realm, that there are several smaller steps on the Danish Design Ladder (Kretzschmar, 2003) between 'Design as Styling', 'Design as Process' and 'Design as Strategy' that have been realised through this research. These smaller steps are presented as cultural stepping stones: the mutual awareness milestones that need to be met before a company can successfully begin to progress from a product or 'styling' level of design integration. As shown in Figure 5, the four levels of design integration, as recognised by Kretzschmar (2003), are related to the operational applications of design. It is proposed from the research presented in this thesis that a scale of the cultural awareness of design exists parallel to the operational elements of the original Danish Design Ladder (Figure 1). It is in this new meta-level of the ladder in which the cultural stepping stones come into influence.



*Figure 5 - Cultural Stepping Stones applied to the Danish Design Ladder*

As shown in Figure 5, three cultural stepping stones have been proposed between the design integration levels of Styling and Process. These stepping stones are: 'Design as Thinking', 'Design as Value Creation' and 'Design as Intangible'. Additionally, projected stepping stones have been proposed between 'Design as Process' and 'Design as Strategy'. It is possible that cultural transformations are required to progress from level of negligible design influence; however given the starting point of the participating company, this lies outside the scope of this research. Each of the stepping stones presented in Figure 5 can be considered as the cultural imperatives of a manufacturing company that are needed to climb Kretzschmar's (2003) Design Ladder. Unlike the operational integration levels of design presented in the original Danish Design Ladder (Kretzschmar, 2003), the cultural elements of the proposed model are cumulative: a company must acquire, embed, and maintain each stepping stone in order to progress to the next operational level of design integration. However, it is important to note that since these stages are cultural imperatives, reaching a stepping stone does not necessarily equate to observable operational changes within the business. Each stepping stone is discussed in detail below.

**Design as Thinking** - The first proposed cultural stepping stone that was achieved by the participating company is 'Design as Thinking'. At this stepping stone, design is perceived by the company to be a unique way to approach and solve problems. Through this 'designerly' way of thinking, employees begin to incorporate design principles, such as collaboration, experimentation and optimism, into the way they approach and solve problems (Brown, 2008).

**Design as Value Creation** - At the second proposed cultural stepping stone, the company culture recognises that design is a method of creating value, rather than a tool for inventing solutions. At this level of understanding, the cultural perception removes itself from the traditional tendency to expect an immediate and measurable outcome from the application of design processes. Instead, design is now acknowledged to create value for a particular stakeholder – customers, suppliers, the company itself – though short term outputs or long term outcomes. Cockton (2005) describes a value-centred design approach as a shift in perspective from the product, via the user, to the context of use.

**Design as Intangible** - Building from the first and second cultural stepping stones, a company's culture can reach the third proposed level once it acknowledges that design outcomes can be intangible. In contrast to traditional design outcomes in the manufacturing industry, applying design at a holistic level with a business can produce outcomes that are not immediately observable (Lojacono and Zaccai, 2012). Once a company's culture reaches this level of design awareness in conjunction with the two preceding cultural stepping stones, the shift in perception of design can be observed at an operational level through new applications of design principles within procedural elements of the firm - the 'Process' level of the Danish Design Ladder has been achieved.

**Additional Projected Stepping Stones: Towards Design as Strategy** - Although the participating company has not yet reached the fourth level of design integration by applying design at a strategic level, the potential for design to provide strategic value to the business has become apparent to employees. From the findings of this study, projected cultural stepping stones have been formed and proposed. It is important to note that these stepping stones are indicative and are proposed as avenues for future research. The first projected stepping stone is 'Design as Relationships'. At this step, the company recognises design as a way to create value through meaningful relationships with stakeholders in the business's value chain. In the case of the participating company, the notion that design could assist customer rapport in a way that provides value to both sides of the relationship was beginning to be realised within the firm towards the end of the engagement. The second projected stepping stone is 'Design as Management'. Once the culture of a company understands the value design can provide from a managerial level, it is well on its way towards integrating design at a strategic level and becoming holistically design-led. These projected stepping stones draw from Best, Koostra and Murphy's (2010) extension of the design ladder model, which considers expertise and management capabilities as specific requirements for integrating design practices. As illustrated in Figure 5, it is possible that there exist other cultural stepping stones at later stages of the design ladder which will not be evident until specific research is conducted on a company that completes this transformation.

### *Reaching Cultural Stepping Stones*

Achieving these cultural changes and reaching these stepping stones has required the use of a range of design tools and approaches in conjunction with the structure provided by the DLI Conceptual Framework (Bucolo and Matthews, 2011a). Table 4 provides examples of the tools and approaches that assisted in reaching the three cultural stepping stones in addition to a summary of the cultural changes experienced in the participating company.

*Table 4 - Tools and Approaches to reach Cultural Stepping Stones*

Cultural Stepping Stone	Assistive Tools and Approaches used to reach Stepping Stone	New Cultural Perspectives of Design
Design as Thinking	<ul style="list-style-type: none"> <li>• Business Model Canvas</li> <li>• Persona Creation</li> <li>• Narrative Creation</li> </ul>	<p>Considerations are made towards applying a process for long term development within the company.</p> <p>Recognition that a design process can be used beyond exclusively product-focused applications</p>
Design as Value Creation	<ul style="list-style-type: none"> <li>• Interviews and Feedback</li> <li>• Customer Assumptions</li> <li>• Customer Insight Generation</li> </ul>	<p>Design can provide value to all stakeholders of a business.</p> <p>'Indirect value' is still valuable.</p>
Design as Intangible	<ul style="list-style-type: none"> <li>• Golden Circle Workshop</li> <li>• Value Proposition Canvas</li> </ul>	<p>Recognition that design outcomes can be intangible</p>

## **Implications and Summary**

The findings presented in this paper suggest that experiential knowledge and beneficial responses can be generated in an SME through design tools and activities as part of a long term and planned development framework. However, for future manufacturing companies attempting to incite change through the application of design tools and approaches, the company's core culture needs to be recognised as an integral part of the change process. The cultural development outcomes of this research suggest that allocating resources towards understanding and developing the company's culture is highly necessary in order to transition away from traditional modes of operation.

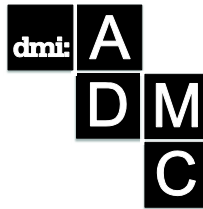
This study was based on the hypothesis that design cannot be integrated at a strategic level while it is considered an exclusively stylistic or product focused-tool. Although the participating company did not reach a level of strategic design integration as a result of this research, their progression up the Danish Design Ladder model would suggest that the identified cultural changes are a prerequisite of this shift. Additionally, two projected stepping stones have been proposed which the company is continuing to work towards. Future research should examine and validate these projected stepping stones by continuing to work with the participating company or with another company at a similar stage of the journey towards becoming design-led.

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# Design Innovation Catalyst Tools to Facilitate Organisational Change

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*Organisations have recently looked to design to become more customer oriented and co-create a new kind of value and service offering. This requires changes in the organisation mindset, involving the entire company, innovation processes and often its business model. One tool that has been successful in facilitating this has been Osterwalder and Pigneur (2010) 'Business Model Canvas' and more importantly the design process that supports the use of this tool. The aim of this paper is to explore the role design tools play in the translation and facilitation process of innovation in firms. Six 'Design Innovation Catalysts' (Wrigley, 2013) were interviewed in regards to their approach and use of design tools in order to better facilitate innovation. Results highlight the value of tools expands beyond their intended use to include; facilitation of communicating, permission to think creatively, and learning and teaching through visualisation. Findings from this research build upon the role of the Design Innovation Catalyst and provide additional implications for organisations.*

**Keywords:** *Visualisation, Design Thinking, Design Innovation Catalyst.*

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## **Introduction**

Guenther (2012) believes that in order for a company to be able to react and adapt quickly to new conditions depend largely on the agility of people involved. As each individual plays a role in the overall business change this process is often hampered by the technical and cultural difficulties involved in transforming how work is traditionally done (Guenther, 2012). Generally this requires individuals and teams to adapt their work methods to collaborate and make decisions across organisational boundaries in a timely manner (Guenther, 2012). Morris (2009) believes that change management in regards to business innovation is not well understood and is poorly practiced even though the pace of change continues to accelerate. Firms are aware of different innovation strategies, tools and processes, however, their capabilities to adopt and embed these approaches require changes at all levels of the business (Bucolo & Wrigley, 2012). This demands not only strong management leadership but also a change in company culture and way of thinking.

The introduction of new approaches and methods within a business may be made more difficult, due to organisational unwillingness to change, often created by previous processes. Brown (2009) believes that long-term thinking and measurement of impacts, both quantitative and qualitative, will help to ensure efforts are sustained, believing a systematic approach is required. Yet, Morris (2009, p. 195) believes “managers tend not to account adequately for systematic change, and they are surprised and unprepared when they should not be”. To overcome this Mitchell and Coles (2003) believe for a company to become business innovators, they need to create their own processes for innovations and improvements, as these changes will need to happen faster, more often, more extensively, and involve more stakeholders. For McKeown and Philip (2003) business transformation is the invention of strategies and management processes driven by new ideas or concept of opportunity and must involved the whole organisation. A company wide transformation therefore needs to address the business’s values and beliefs while demanding changes in skill sets at all levels of management. Consequently, isolated business avenues can be overcome by taking a holistic approach to the design of the business model.

Many authorities have expressed that design and business need to work in partnership to influence business strategy (Brown, 2008; Bruce, 2011; Liedtka, 2010; Martin, 2008). Since 2008 design approaches have gained increased interest from businesses due to companies having growth targets that cannot be achieved through conducting “business as usual”. The value of

design as an innovation driver has been seen in the uptake of Government programs such as *Ulysses* (Australia), *Better by Design* (New Zealand) and *Design Demand* (United Kingdom). The European Union also launched a design innovation policy in 2010. The aim of these policies and programs are to provide firms with design methods, theories and thinking to create innovative solutions in order to gain a competitive advantage in the world market (Design Council, 2011). The Design Council (2011) explains the idea of adopting design principles into business culture and management is linked to success stories such as Apple and Dyson. A design approach in a business context encourages connecting and communicating across different departments that may have previously been isolated during business developments.

Guenther (2012) believes that new tools should be introduced to staff, customers and other stakeholders interacting with the company. This involves allowing for deviation from the way an activity was originally planned, and to customise and tailor tools to reflect new requirements.

This paper explores the role of design tools through the lens of specially trained design innovation experts coined 'Design Innovation Catalysts' (Wrigley & Bucolo, 2012; Wrigley, 2013) in the facilitation of company wide innovation agendas. Through six semi-structured interviews conducted with such catalysts it was found that the purpose of existing design tools had been modified beyond their original conception for a range of purposes.

The underlying value reported seen from the tools was not through their intended purpose but in the facilitation of company wide conversations, allowing a range of employees to have input. It was also found that the design skill of visualisation became a key strength in allowing this facilitation to occur. Overall results found that the visual development and creation of novel, original tools enabled quick discussion between parties, greater creative outputs and disseminated new thinking to a wider company reach. Recommendations for future catalysts surrounding tool creation and utilisation in addition to organisational innovation traction are also presented.

## Visualisation + Design

De Lille, Abbingab and Kleinsmann (2012) explain that the mindset of designers are the real value of a designerly approach to innovation as they frame problems as opportunities for the invention of new alternatives. They think more in terms of creating new possibilities than in terms of selecting

between existing options (Boland & Collopy, 2004). Key design mindsets include the capability to deal with uncertainty, take risks and work in the “fuzzy area of the design process” (De Lille, Abbingab & Kleinsmann, 2012).

Design thinking as discussed by Brown (2008, p. 2) is “a discipline that uses the designer’s sensibility and methods” for innovation. Brown (2008) outlines the personality profile of a design thinker to include empathy, integrative thinking, optimism, experimentalism and collaboration. Evans (2011) highlights that in design practice, designers rely upon intuition and gut instinct when conducting projects.

Coughlan and Prokopoff (2006) believe design thinking enables an organisation to embrace change as a normal part of managing its business. Prototyping and visualisation are cornerstones of the design process (Evans, 2011). Evans (2011) outlines that designers use these skills to conceptualise and communicate the future in a variety of ways and at a range of levels - to develop, refine and communicate different versions of the future. These visions of the future provide organisation with mechanisms to develop an understanding of the potential viability of new products and services. Prototypes come in many forms (visual, physical, digital in appearance or conceptual as proof of concept) within future oriented design activities and are used to understand, explore, develop, refine, communicate and validate potential visions of the future.

Visualisation approaches within future oriented projects provide the opportunity to present visions of the future in a way that breaks existing norms and expectations. The value in design thinking is its ability to translate, visualise and communicate what to others are abstract concepts (fuzzy insights) and to inspire the change process. Designers are trained to make these abstract ideas usable, tangible and concrete through the design process. This is done through translating data and insights identified through collaboration into a form that can be clearly communicated, requiring the designer to draw upon their creative, intellectual and visualisation skills (Evans, 2011).

## **Design Tools**

Many design tools already exist. Kumar (2012) outlines 101 different design methods (tools or approaches) to innovate ranging from exploring concepts to reframing insights. These methods presented by Kumar (2012) are suggested they be utilised in a design approach to innovation. Many of

these tools are presented visually, meaning they require the participant or user of the tool to fill out a worksheet or draw relationships between items.

However, Liedtka (2011) refers to visualisation as the “mother of all design tools” as it is a core element of her ten design thinking methods. Visualisation as a process replaces text and number with images, maps and stories, allowing ideas to be understood to a wider audience. Liedtka (2011) explains that visualisation is about imagining, as images provide understanding more quickly and effectively than words alone.

Visualisation is also capable of communicating complex systems on a single page allowing multiple perspectives to be shared and developed together, quickly making abstract ideas more tangible (Evans, 2011). Examples of visualisation in a design process include sketches, drawing, storyboards, charts and montages to enable experiential engagement with future products and services (Evans, 2011).

Liedtka (2011) presents ten tools for design thinking (Figure 1), which are targeted at managers and used (frequently as textbooks in MBA programs globally), to find and pursue innovation and growth within a business context.

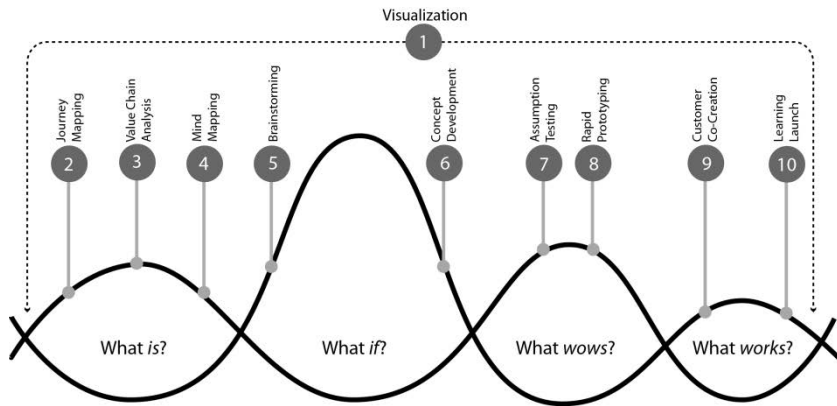


Figure 1. Ten Design Tools (Liedtka, 2011)

Liedtka (2011, p. 18) states that “many managers have become so analysis focused that they have forgotten that the best data is an uncertain environment and this comes from real world trials, not extrapolation of history. So a tool like assumption testing, that structures this process, is essential”. This builds upon earlier work from Sarasvathy (2001) who established effectuation – a way of thinking that assists entrepreneurs in the processes of opportunity identification and new venture creation.

Effectuation includes a set of decision-making principles in which Sarasvathy claims to be the ultimate selection mechanism for successful innovation. Sarasvathy (2001) proclaims causation is the opposite of effectuation. Where effectuation is used in situations of uncertainty, causal reasoning is used when the future is predictable. Situations of uncertainty are described as when the future is unpredictable and goals are not clearly known.

However even with the need for change understood De Lille, Abbingab and Kleinsmann (2012) highlight that little is known of *how* design thinking is embedded into an organisation. Implying that design thinking goes beyond applying tools and expands into building an organisation wide mindset.

## **Prototyping Business Strategy**

Traditionally corporate strategy has been shaped by macro-data, industry trend analysis, competitive analysis and technology assessments carried out by specialists focused on quarter-to-quarter sales (Guenther, 2012). These results are then often separated out into the relevant different departments that do not communicate to each other in regards to overall impact of the results (Lojacono & Zaccai, 2004). Consequently the voice of the customer is often drowned out by the voices of various departments (Lojacono & Zaccai, 2004). Most of the methods used in a design approach are qualitative by nature, with their resulting outputs challenging traditional data reports and instead presented as stories, personas or journey maps.

A typical design approach begins with understanding the user's unexpressed needs and desires; solutions are then prototyped and tested with the user through an iterative process. Brown (2009) believes prototyping in a business context can be applied to share abstract ideas to a whole organisation to give a better understanding and engagement. Brown (2009) continues to explain that a successful prototype is not one that works flawlessly, but teaches the organisation something about their objective, process or themselves. Prototyping should start early in the life of a project, and there should be numerous attempts quickly executed, as each one is intended to develop an idea "just enough" to allow the team to learn something and move on (Brown, 2008).

The use of integrating design tools (methods and approaches) within business management has been reported as a successful way to innovate. As the tools and methods are interchanged between fields (design and business) the role of design is also constantly evolving.

Design processes and current literature would suggest that business model experimentation through prototyping has the ability to broaden perspectives beyond that of current logic, and is a means to discovering dormant opportunities.

Osterwalder and Pigneur's (2010) *Business Model Canvas* is described as a strategic management and entrepreneurial tool, allowing the user to describe, design, challenge, invent and pivot their business model. The *Business Model Canvas* is a visual tool, which requires the user to fill out the nine boxes, answering predefined questions in a predefined order. Through the use of such a tool many different business model concepts can be created quickly, allowing various scenarios (viability and profitability) to be prototyped (tested) iteratively (Brunswick, Wrigley, & Bucolo, 2012). Business model prototyping is explained as a process that facilitates iterative learning and exploration of new business model options rather than the testing of predefined set of hypotheses in focus (Bucolo & Wrigley, 2012). Most business models are conceived within the boundaries of a particular set of constraints. Through the use of such a tool, the core value proposition can be explored and alternative value creation approaches discovered. Sinfield, Calder, McConnel and Colso (2012) explain that this can be done quickly, inexpensively and to the extent possible, through "thought experiments", enabling alternative approaches to value creation, allowing for companies to find new opportunities for growth. Design tools in a business context can allow for quick prototyping of alternative solutions – operational to strategic. Zott and Amit (2010) highlight that managers need conceptual toolkits to design their future business strategies, as well as analyse and improve current design processes to make them fit future scenarios.

## Design Innovation Catalyst

Norman (2010) states there is a huge gap between research and practice, to bridge the gap he proposes a new role of a *Transitional Developer*. This role acts as the intermediary, translating research findings into the language of practical development and business while also translating the needs of business into issues that researchers can address (Norman, 2010). Martin (2011, p. 84) coined a team of design-thinking coaches—"innovation catalysts"—who could help managers work on initiatives throughout the organisation. In line with this proposition, Wrigley and Bucolo (2012) introduce the role of a '*Design Innovation Catalyst*' and

outline the role as the translation and facilitation of design observation, insights, meaning and strategy, into all facets of the organisation. From a position within the company they are continuously challenging and disrupting innovation internally and externally with the goal of transforming the business model of the firm to be more aligned to market demands and future customer needs.

In recent case studies Catalysts have been embedded in companies, enabling engagement with many different internal and external stakeholders (Wrigley, 2013). This is a vital aspect of the role as they are iteratively prototyping solutions against the central value proposition of the firm. Wrigley (2013, p. 5) states that a *Design Innovation Catalyst*,

*must have the ability to design around the organisational constraints and barriers while translating the language impediment that designers encounter when conversing with businesses and their needs. The visual language of design can assist in this communication as well as the delivery of tangible outcomes and additionally be used as a tool to facilitate a conversation between the two parties. This 'facilitator' needs to speak both languages along with the ability to unpack design expression whilst simultaneously working within the constraints of a business model.*

During a *Design Innovation Catalyst* journey they are continually moving through the Design Innovation Catalyst Educational Framework (Wrigley, 2013) (Figure 2). The framework illustrates the move between learning-teaching and industry- academia (Wrigley, 2013). The transition between the two axes allows the Catalyst to absorb knowledge and research within a university environment and then disseminate and implement it into industry projects. This cycle loops back again as they then convey industry experience back into academic research.

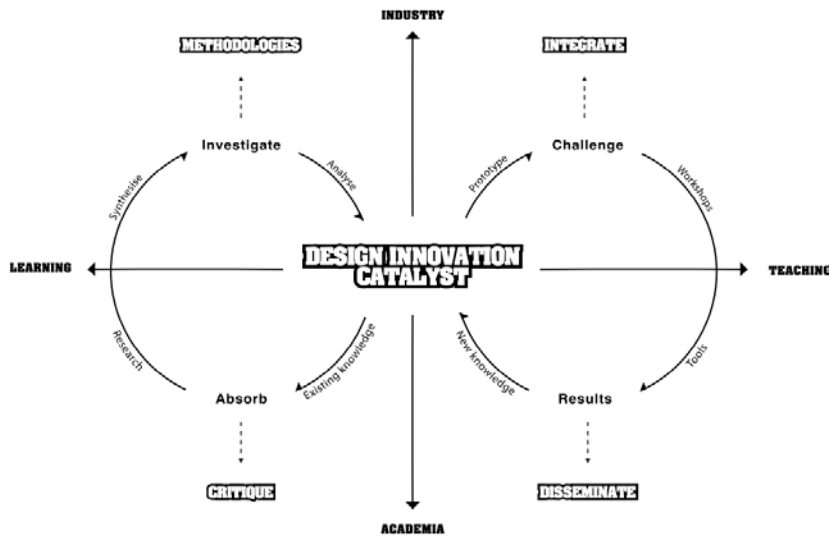


Figure 2. Design Innovation Catalyst Educational Framework (Wrigley, 2013)

## Research Design

This research was conducted with the cooperation of three Australian small to medium enterprises (SMEs) and three multi-national corporations (Table 1) in order to understand how design tools, approaches and methods contributed to the overall design innovation process. These firms varied from product manufacturers to service and infrastructure providers. For each firm, the catalyst was embedded over a twelve-month period (CY2012-13), following the educational framework seen in Figure 2 (Wrigley, 2013). The aim of the catalyst was to integrate design as a business capability through the dissemination of the tools and skills of a design-led approach to innovation. To achieve this each firm applied these approaches to a project directly relevant to their business need.



Table 1 Participant Summary

No.	Industry Sector	Size
1	Transportation	Multi-National
2	Healthcare	Multi-National
3	Infrastructure	Multi-National
4	Manufacturing	SME
5	Manufacturing	Micro - SME
6	Manufacturing	SME

A semi-structured interview was conducted with each catalyst (six in total) at the end of their engagement (embed projects) and lasted approximately an hour each. They were questioned in regards to the design tools employed throughout the process of facilitating organisational change. Five main questions were verbally asked of the participants and their responses digitally recorded.

1. What was your planned approach to innovation and did it go to plan?
2. How important did relationships become and how did you form them?
3. What design tools did you use? What do you feel what the most effective one and why?
4. Has your background as a designer helped in facilitating this process?
5. How did you visually demonstrate ideas and possibilities? Was this of value to the organisation?

A thematic analysis protocol (Braun & Clarke, 2006) was used to generate results and even though each catalyst's approach to innovation was different, conglomerate challenges and strategies to overcome them were reported. A plethora of design tools were selected, created and employed by all of the catalysts at various times throughout the twelve months and for different purposes.

From the interview transcripts three central themes emerged *i)* Facilitating Company Wide Communication, *ii)* Permission to think Creatively, and *iii)* Facilitating Further Teaching and Learning.

### *Facilitating Organisation Wide Communication*

Across the six interviews all catalysts highlighted the use of design tools for communication. This included communication of input and feedback loops alongside cataloguing and documenting the innovation project. A participant said *“the process of getting the information from everybody and using it as a feedback tool was invaluable”*. Another said that the use of visual tools allowed employees in the company, *“to have something that everyone can write on and actually contribute to”*, they then *“used the results from the last presentation as the starting point of the next meeting”*. A catalyst reported he *“developed a tool specifically for the purpose of communicating collective results from everyone’s work”*. This process was said to keep up the communication across employees in the company. This was seen as a particularly valuable outcome in organisations where departmental silos separate employees from one another, reporting that visual, physical tools brought them together to communicate where previously they did not.

Another catalyst highlighted the need to constantly sketch, commenting, *“always be in a room with a whiteboard, as we would always end up sketching out ideas”*. This was done to allow everyone to have input and contribute to the conversation, as a catalyst commented, *“building on ideas or how to solve a problem using quick visual thinking tools created very different outcomes to previous sessions where feedback was much more critical”*. This was felt to be a very different approach compared to that of meetings with pure content delivery – such as a one-way conversation.

Another aspect of facilitating communication is recording and filing information in regards to a projects progress. One catalyst stated, *“the tools are also very good at cataloguing and documenting points in time, if you merge the results together to reflect a project history it can be extremely useful”*. Another catalyst *“would show the previous filled out design tools at the beginning of the workshop and then the new one at the conclusion to communicate how the idea had changed”*. One tool in particular that was used often by all catalysts to document changes in customer understanding was the *‘Emotional Touch Point Timeline’* (Bucolo & Wrigley, 2012) as it was capable of growing and developing with the project. It was reported that everyone in the organisation could relate to the journey of the customer by visually following the display of information as well as allowing employees to build upon the collective understanding. This process of input and output of customer information was used to keep communication and changes in customer segment knowledge updated throughout the company.

### *Permission to Think Creatively*

Catalysts found that the process of starting the conversation with employees was a challenge, however, they commented that design tools were useful in establishing this new relationship. One tool in particular 'The Golden Circles' (Sinek, 2009) was reported to assist in this introduction to gain a better understanding of company values from an employee perspective. This empowered the employees, who felt like they had no voice to change things and that permission was granted to put their ideas forward. One catalyst used these results at the next workshop, with the aim to create a conversation on aligned and misaligned company values and beliefs.

Another challenge faced by the catalysts was the complexity of the company transformation and how it was holistically communicated. It became obvious that through the process of visualising this complexity, ideas could then be circulated and then addressed. A catalyst commented, *"I would sketch things out visually to show the relationship between different aspect of the business"* and *"mapping out complex things quickly to discuss the relationships between them was useful"*.

However, the use of existing tools also provided some challenges, as expressed by a catalyst, *"the visual aspect is difficult as people still get caught up in filling in every box or they feel like they are still quite analytical"*. Catalysts used the tools to better facilitate the exchanging of ideas, explaining that *"it may not lead to any outcomes, but it will help us with the process to get there"*. This allowed them to think more creatively as they were working through numerous ideas quickly and informally.

Additionally some of the newly created tools by the catalysts were not intuitive to use, impacting on dissemination misunderstandings. Some tools were also used to create a new tool specific to the company's needs, with one catalyst reporting they *"merged three existing tools together to create one that suited the direct needs for the business sector"*.

### *Facilitating Further Teaching and Learning*

The use of tools to facilitate learning and teaching included the catalyst learning about the company, as well as employees teaching others in the company how to use the tools. One catalyst stated *"I used the tools myself, just to understand the company better"*. Another catalyst reported some employees once having mastered a tool presented mini tutorials on its use to other employees, saying, *"it was good point of discussion between staff"*.

Another catalyst was placed in a position to teach employees how to use tools, therefore changing roles from a facilitator to a trainer: *“In a two day training workshop, we asked employees to draw up a business activity map of the company and I did a quick synthesis and drew a collective version up on the back wall”*. He then continued to explain that the process of teaching employees how to use design tools, is best done through examples of their current projects needs and then requesting they then explain the process to someone else in the organisation.

## Implications

Organisational drivers to innovate are well documented, however, what is less known is the role of designers (catalysts) in this change movement. Skills of designers, particularly visualisation, have been highlighted throughout this paper. What is known is that tools are capable of facilitating a design approach to innovation, however, tools alone do not hold all the answers.

The true value of visual tools was discovered through this research, not only are they able to provide information regarding their designed purpose (e.g. *Business Model Canvas*) they can also provide a way to communicate across business departments, to engage and ignite creative thinking with employees and facilitate further teaching and learning throughout the business. It was also discovered that the role of the facilitator (catalyst) is just as important if not more so than the tool itself. Facilitators must be capable of bending the rules, changing the tool’s purpose and adapting it to the individual company’s needs spontaneously. Although many tools are provided with instructions, in order to gain their full value they still require the facilitation and mindset of a designer (De Lille, Abbingab and Kleinsmann, 2012).

With the increased introduction of digital tools many of the presented values and benefits reported in this paper could potentially be lost. Such as results being siloed, departments being silenced and creative thinking limited due to company wide engagement being facilitated though a software program instead of a facilitator. It is the skills of a facilitator (drawing on the whiteboard, engaging company wide conversations, encouraging employee input, visualisation of complex relationships and strategies) that highlight the values to be gained through visual design tools. From this research key implications for future catalysts and organisations have emerged (Table 2).



Table 2 Implication of Findings

<b>Implications</b>		
	<b>Design Innovation Catalyst</b>	<b>Organisation</b>
<b>Facilitating Organisation Wide Communication</b>	<p><i>Constantly sketch-visualise thoughts, conversations and ideas</i></p> <p><i>Use of tools by Catalyst first helped facilitate dialogue</i></p> <p><i>Visual language crosses departments</i></p> <p><i>Visualising complex problems helps to solve them</i></p>	<p><i>Way to document information on a project that is informal (conversation/idea) compared to other ways of documenting formal projects milestones</i></p> <p><i>Breaking down departmental soils</i></p> <p><i>Ideas can inspire other people's ideas</i></p>
<b>Permission to Think Creatively</b>	<p><i>Tools help break the ice and understand the culture better</i></p> <p><i>Visualising complex ideas to complex problems</i></p> <p><i>Be aware not to get caught up in ticking every box when using tools</i></p> <p><i>Premise the session with 'this tool will not give us a solution'</i></p>	<p><i>Help demonstrate the relationships between complex parts of the business</i></p> <p><i>Still quite analytical so use the Catalyst to facilitate and gauge what is necessary (as it may just prompt a discussion/conversation)</i></p>
<b>Facilitating Further Teaching and Learning</b>	<p><i>Catalyst can use tools to gather information and learn about the company</i></p> <p><i>Tools can be a good starting points to an unknown problem</i></p> <p><i>Tools can be customised quickly to the firm, sector needs</i></p> <p><i>Facilitator role shift to trainer</i></p>	<p><i>Teaching the organisation to understand itself better</i></p> <p><i>Staff teaching other staff how to use tools</i></p> <p><i>Flattens hierarchy quickly to come up with solutions</i></p> <p><i>Can help give clear goals and an equal understanding</i></p>

## Future Work

This research has discovered that visual design tools are most valuable to an organisation when they extend beyond their perceived purpose. It was found that as the *Design Innovation Catalysts* modified, expanded and deconstructed existing tools to suit the needs of the company, the ability to

innovate excelled. Future research aims to understand if the absence of a capable facilitator impacts upon the perceived value of visual tools. It is the view of the authors that tools are too frequently considered as a recipe to success, herein lies the risk of producing a generic process, wanting and waiting for one correct answer. Therefore by employing a design facilitator tools become apart of the greater design approach to innovation, starting the conversation, documenting the process, engaging employees in creative thinking and allowing a continuous learning and teaching mindset, company wide.

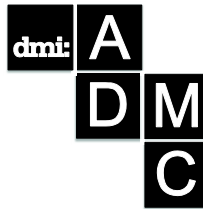
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# Effects of Approach and Anchoring When Developing Design Capacity in Public Sectors

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*Design is increasingly seen as a potential driver for innovation and growth both in commercial and public and policy sectors. However this imply design capacity utilized as a strategic resource, which as Svengren Holm points out mean focusing not only on the product, but also the process (Svengren Holm, 2011). Many studies show however that companies with little prior experience of design have a traditional view of design mainly concerning styling thus focusing only on the outcome, the product (e.g. European commission, 2010; Acklin 2011a; Ward, Runcie & Evans, 2009). With design entering into new fields such as services and public and policy sectors it becomes necessary to look further at how higher design capacity can be achieved for inexperienced organizations within these contexts as well. In a forthcoming study, which is presented and discussed here, we look at integration for design capacity in public sector organizations in regard to issues seen in a previous study (Malmberg & Holmlid, 2013).*

**Keywords:** Strategic design; Design capacity; Integration of Design; Design in public sectors.

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## **Introduction**

In the report “Design for growth and prosperity” the European union argues for design as an important driver for increased growth (Thomson & Koskinen, 2012). Design is described as a driver for innovation in a time when Europe’s previous strategy is no longer viable since emerging competitors are catching up (ibid.).

Design is today increasingly seen as a process to identify and create solutions in a cross-disciplinary manner with engaged user involvement and other stakeholders. It is even seen as part of an organizations’ strategic toolbox (ibid.). This stands in contrast to a traditional view where design has been seen as something mainly connected to industrial product development, concerned with the aesthetic and creative aspects of the tangible products. However the contemporary and broadened view on and perception of design is mostly valid for companies already familiar with design. Within organizations that lack experience of design, the perception of design is often still connected to the traditional view of design and its role as styling (European Commission, 2010).

According to Svengren Holm organizations must utilize design on a broader scale throughout the development process and not only to differentiate and communicate (Svengren Holm, 2011), which is usually the result when focusing on styling aspects, if design is to contribute as a strategic resource. To reach organizations with no design experience and widen their perception is therefore an important issue if design is to contribute as the driver for growth and innovation that for example EU is aiming for it to be.

In this paper we first discuss the results from a previous study (Malmberg & Holmlid, 2013), on integration of design in a non-commercial organization with little prior experience of design, from the new perspective of experiences from integration of design in SME organizations. Secondly we highlight questions raised from this discussion, and present a forthcoming study focusing on anchoring the perception and contributions of design in ventures to integrate design. What actors that are involved in the ventures, as well as how their focus might effect the anchoring and integration of design. We present the study where we follow three ventures to integrate design in public sector organizations, and an initial analysis of the three cases. In the final section we discuss the expected results and contribution of the forthcoming study in relation to prior knowledge in the field. The contributions of the paper is the questions raised on integration of design from the discussion of the results from the prior study, how this knowledge

can be further developed through the upcoming study, as well as the initial analysis of the three ventures.

## Background

There are several ways of describing how design works in an organization. It is not uncommon to describe design as a competence, usually of an individual, as a defined structure in the organization, such as a design department, or from a process perspective. In this paper, our initial point of departure is to view design as a capacity of an organization. And that organizations are taking different steps to integrate design capacity. Typically this capacity is the organizations ability to involve users and stakeholders in innovation and development work, the organizations ability to work with and develop design as a competence and a practice, etc.

There are previous studies on how to introduce and integrate design in contexts and organizations with little or no prior experience of design, Acklin for example have looked at the integration of design competence in order to drive development and increase the revenue in SMEs (Acklin, 2011a, 2011b; Acklin, Cruickshank & Evans, 2013) and there are yet other studies of other commercial settings (e.g. Ward, Runcie & Morris, 2009)

Acklin found that since design capacity is a new knowledge source and might diverge from the usual way a company looks at their business, companies with little or no prior design experience are more able to work with designers and integrate design if they get to build up the structure to manage design and integrate the new knowledge themselves (Acklin, 2011b). She also states that SME's need to be sensitized to what value design can bring as a strategic resource before they consider it as complementary knowledge (Acklin, 2011a). In later studies Acklin et al. (2013) have also seen the importance of a trigger of some sort as well as an open-minded and curious gatekeeper who has a vision and strategy for what design can add to the company in order to develop design capacity which can be utilized in a strategic manner. They say that since the value of the new knowledge is fuzzy in the beginning of the process to integrate design knowledge the gatekeeper must have seen the potential of design as a strategic resource in some other setting (Acklin et al., 2013). This supports Acklin's previous conclusion that there is a need to sensitize the companies to the value design could bring as a strategic resource (Acklin, 2011a). Acklin et al. also highlights the discussions and negotiations between the company and the designer leading up to a design brief as an important factor to

support the company to create a relationship with the new area of knowledge (Acklin et al., 2013). This process will according to Acklin et al. (2013) bridge the move within the organization from seeing potential in the new knowledge to being able to exploit it. This process can be seen as a process of anchoring the perception of design with the aim of increasing the design capacity of the organization.

Ward et al. conclude in their study on the Design Councils program Designing Demand, that demonstrating design as a business tool and to engage senior management are key aspects when integrating design thinking in small businesses (Ward et al., 2009). They saw that many of the managers initially assumed that design capacity would help them restyle or rebrand (ibid.) showing a traditional understanding and view of design as seen in organizations with no prior design experience according to the European commission (2010). By demonstrating case studies of how other SME's had used design as a business tool for small businesses the managers invariably discovered how it could also help redefine their strategy, open up new market or reduce costs by reorganizing their product range (Ward et al., 2009).

We can see parallels between the results found by Acklin (2011a, 2011b), Acklin et al. (2013) and Ward et al. (2009) when it comes to the need to see and understand the value of design as a strategic resource for the company before it can be integrated successfully, as well as the gatekeepers position within the organization and the need for support from management. Our interpretation is that there is a need to anchor the concept of design in the organization for it to be successfully integrated as a strategic resource.

However these studies are all done in commercial settings and as design is increasingly entering public and policy sectors there is a need to learn more about how design can function and be integrated in these context. Contexts that like the studied SMEs usually have little experience of design. The Design Council has looked at the integration of design in public sector organizations and describes three ways in which design is and can be utilized within public sector organizations. As one off projects where the design capacity is not integrated within the procuring organization and the projects is run by a consultant. As projects where the public sector employees are involved in the process, working together with the designer. Design capacity becomes integrated to an extent where the employees understand and utilize a design approach and some methods in their own day-to-day work. This also makes them more proficient to hire design competence when needed. Or design could in the organization be utilized on a policymaking

level within the organization (Design Council, 2013). However the later way to utilize design, for strategic policy decisions, is according to the Design Council relatively new and most work on it has this far been experimental (ibid.). As utilizing design as a strategic resource is of importance if the aim is to drive innovation and growth, not only for commercial actors, the integration of design capacity as a strategic resource also in the public sector is something that needs to be studied further.

## Results form a previous study

During two years we followed a research and development team within a research institute as they started working with design. The technology development within the research institute was strongly driven by a technology focus and all development was funded through policy or partner funding. By using design competence and methods in the development process, the organization aimed to balance their technology driven focus to better meet the needs of possible users and clients. In a previous paper (Malmberg & Holmlid, 2013) we present the study and focus on identifying frictions that occurred when trying to embedding design in the technology development process. In this paper we will use some of the results from the prior paper (ibid.) to further discuss the effects the identified frictions might have on the success of integrating design as a strategic resource in the organization.

Design was in this case taken in as a resource to increase proactivity in the commercialization of the technology, in other words with the aim to be a strategic resource. However as the European commission (2010) states we could also in this organization, which had little prior experience of working with design, see that design was primarily perceived and utilized as styling. Svengren Holm argues that it is likely that if the knowledge structure to integrate design on a conceptual level is perceived as irrelevant for the organizations knowledge production, design will not be perceived as a strategic resource (Svengren Holm, 2011). This resonates with the results we could see in this study on how the perception of design and how it can contribute affected the integration of the design capacity within the organization. We could see a hesitance towards using design as a process within the team as they saw the design approach and process as too resource intense. When not understanding how the process contributes it was difficult to judge what value it would bring in consideration to the resources it would take.

The development team also argued that most of the initial phases of the design process, such as research and analysis were not part of their work but the responsibility of the client, not seeing how the knowledge from these phases in the process would affect their task, developing the technology. From a multidisciplinary perspective this could be seen as a valid argument, each competence focusing on their expertise area. However the development team had no control of whether the client had this expertise or if they had done user research at all, resulting in no knowledge of whether the concepts developed were viable in any other regard than the technical feasibility. The lack of any information about users and use contexts also affected the teams ability to relate to demands made by clients based on user needs or context prerequisites again leading to a focus on technical feasibility aspects of the ideas. Ward et al. (2009) studied a spin out company from a university working on developing a biosensor system. They describe how user research through observation turned out to be an important aspect for the spin out company in order to understand the use context and it's prerequisites when developing their biosensor system from a technical solution into a product (ibid.). User focus in the development process of the technology was new to the development team we studied that had traditionally been very technology driven in the sense that research results steered the feasibility of the technology, which steered the possibilities for development.

The teams previous experience of working with design had been to get concept ideas presented to them that had been made without knowledge about technical possibilities and limitations of the technology. The teams focus on the technical aspects made it difficult to see how the knowledge about users and contexts could leverage the development and make the process more proactive through guiding what could be interesting to focus the research on, how these aspects could be relevant to their work. To the team the ability to present their technology in an interesting and favorable way through styling was seen as a strategic advantage compared to before. However, they did not see the strategic values in how, if used as a strategic tool in the manner expressed in design management literature the design process could contribute to the proactive commercialization of the technology initially sought for. Not seeing design as a strategic resource in the way it is perceived within the design field relates to the findings of both Acklin (2011a) and Ward et al. (2009). The hesitance towards using design competence in a broader way than just styling and packaging of ideas made it difficult for design to balance the focus on technology and support the

commercialization in the sense that the integration of design capacity as a strategic resource did not succeed.

The shift from seeking a strategic resource to increase proactivity in the commercialization to settle for only styling could be an effect of the aim of the integration of the design capacity not being anchored throughout the organization and a lack of clear support for this aim from management. The initiative to integrate design capacity as a tool to support the commercialization of the new technology came in the studied project from a managerial, tactical and strategic level (Mintzberg, 1980) in the organization and the integration was done on an operative level. However, the aim of the project, the goal to become more proactive in the commercialization was not properly anchored on the operative level which could explain why important aspects in the design process in order to contribute proactively was not seen as relevant within the team. Qian and Deserti (2013) show in a study the importance of anchoring the change that come with integrating design on all levels in the organization for the integration to be successful and durable even after the project ends. They point out that integration of design capacity within an organization to a great extent implies a cultural change that affects the entire organization (*ibid.*) not only as in our case the development team. Also Svengren Holm means that the integration must go through the entire organization not only being directed at management or for example RnD department. She argues that for design to be a catalyst and question and develop existing ideas and concepts it must be part of the strategic dialog in an organization, at a strategic level but also throughout the entire organization (Svengren Holm, 2011).

Proper anchoring of the aim to integrate design implies support and understanding of what design implies, how it should be utilized and how it can contribute at a management level. In the case of the integration in the research driven development team, the initiative came from the strategic management level however, during the process to transfer design knowledge and integrate design capacity there was very little support or contact with this organizational level. Svengren Holm (2011) argues that understanding of and support for design on top management level is a vital aspect for a successful integration of design as a strategic resource. That top management supports and have knowledge about design and what design implies in their business context. She states that, 'without clear guidance from management on the role of design in times of pressure for both the marketing and the product development side, there is also no opportunity to change practice and methods' (*ibid.* pp. 307). We could in our study see



that the lack of commitment from a top management level to support and argue for the utilization of the design capacity on a process level made the team fall back into old habits and use design as styling. Had the aim of how design should have been utilized and why been anchored at the operational level this might have been avoided. We have in the previous paper discussed this issue in more detail (Malmberg & Holmlid, 2013). The lack of commitment and engagement from management can have contributed to the project aim and structure not being properly anchored. Both these aspects affected the integration by insecurity in regards to what resources were available and how these should be used. A clear directive from management to integrate design as a process, not only utilizing it for styling, would give mandate for the resources needed. The issue of the team not seeing parts of the process as their responsibility and therefore not committing to them could however remain, but a clear anchoring of the aim and possible contribution of the change within all levels of the organization would possibly have made the team better understand how these aspects of the process concern their work as well.

## **Raising new questions**

From the prior study on integrating design capacity in the research driven development organization (Malmberg & Holmlid, 2013) and the literature we can conclude that anchoring the aim of the integration, how design can contribute in the organization and the perception of design is important aspects which affects the integration and whether design will be able to contribute not only by differentiating products but as a strategic resource by for example identify new opportunities or reframe questions. We can also see that it is not just important that the aim and understanding of design is anchored on management level. The integration is affected also by how the perception of design capacity and the vision of its contributions are anchored throughout the organization, from strategic levels to the operative levels when these are affected by or involved in the design work.

Svengren Holm (2011) argues that the communication and interaction between the design function and the other functions and departments of the organization is an important aspect for successful integration of design as a strategic resource. This is also an argument for why the anchoring at all organizational levels is of importance as the communication will be affected by misunderstandings or different priorities if there is not a common

understanding of what design capacity implies and how and why it should be developed by the organization.

Based on this and in relation to the results of Acklin (2011b), which show that the integration is more successful if the companies are active in the integration themselves, it is of interest to look further at how ventures to integrate design capacity are set up in non-commercial organizations that might not have the same drivers and motivations as commercial organizations. How the concept of design and the aim of the venture are anchored within the organization, how the integration is carried out, what actors who are involved, how they are involved and what influence they have in the integration process. It is also of interest to look at whether the objective of the organization to integrate design capacity affects the integration and if the objectives evolve during the process for example from process to strategic.

As mentioned before, Svengren Holm (2011) argues that it is likely that if the knowledge structure to integrate design on a conceptual level is perceived as irrelevant for the organizations knowledge production, design will not be perceived as a strategic resource. Ward et al. (2009) has observed that management initially perceive design as styling and that it is therefore important to demonstrate how design could contribute as a business tool. On the same note Acklin (2011a) argues that SMEs has to be sensitized to the idea of design as a strategic resource before considering design as complementary knowledge. As we could see in the previous study (Malmberg & Holmlid, 2013) the development team had difficulties letting go of their focus on the technology and were hesitant towards design as a process or strategic resource.

Within the public sector the interest for design capacity and design approaches is growing, a sector that similar to the independent policy funded research institute has limited previous experience of design and are not commercially run (even if there in some countries is an increase in privately run actors, they have not traditionally had focus on financial growth). However, unlike the studied research driven development team with its strong technical focus, the public sector has a connection to the user focus in design work and design thinking. In many of the public sector organizations the user is a natural focus as he is at the core of the business.

This makes it interesting to look at whether the familiarity with a user focus affect the ability to integrate design and anchor the aim and perception of design as a process or strategic resource even though the organization lacks previous design experience.

## **The forthcoming study**

Based on the new questions raised by the discussion of the results from the previous study (Malmberg & Holmlid, 2013) and the growing interest to develop design capacity within the public sector we see two new themes and questions that would be of interest to address.

- First as we have concluded that anchoring of what design is and how it can contribute is of importance in the success of the integration of design as a strategic resource it would be of interest to look further at how ventures to integrate design capacity are set up in non-commercial organizations. Looking at what actors are involved, how they are involved and what influence they have will develop knowledge about how the venture and perception of design is anchored within the organization.
- Secondly as the focus on technology within the development team at the research institute was one important friction and as the focus of most public sector organizations is more connected to people and users, a focus which is shared with design, it is of interest to look at whether the familiarity with user focus affects the anchoring and integration of design.

To look at these two new questions we are initiating a new study where we follow three ventures of two Swedish regional federations and one county council as they in various ways introduce design capacity within their organizations. The study has been set up as a cross case study where we through interviews and self-documentation with reflections from the actors involved follow the integration process of the three ventures.

The three initiatives differ in their approaches to integrate design capacity and the scale of the ventures however just as the prior case of the research driven development team (Malmberg & Holmlid, 2013) they all represent an organization context that, unlike commercial actors such as SME's or big corporations who often have a clear target image, is more complex and often have several different target images within the organization. This is something that might affect the anchoring of the ventures. A big difference between the three cases is the scale of the ventures, their resources and how well anchored the idea start integrating design is. Case A and B are of a smaller scale based on external temporary funding with limited resources and people involved where as Case C is a rather large case with both funding from the county council and external research funding. The descriptions below of the three cases is based on

initial interviews with the project managers from the three ventures that were done in order to get a basic understanding of the organization and aim of the venture.

### *Case A*

The venture to work with design was initiated by the regional federation as a trail to see if a service design approach could support the development and increase user influence when developing within social services in the region. A secondary goal was to spread knowledge about the process and the user centered way to work. The initiative came after having been approached by a service design consultant who presented what service design is and how it can contribute where especially the user focus and methods to involve the users caught the interest of the two people at the regional development that later initiated the project.

The regional federation decided to focus on a specific area of the social services for a pilot project and approached actors from three municipalities in the region who were asked if they were interested to participate. In the pilot project a development project was run in one of the municipalities using a design process and methods. For this a designer was procured to act as a facilitator. The other two municipalities participated as observers and took part in the design workshops that were set up. The project was managed by a project manager from the regional federation together with the designer and followed the design process steps of capture, understand, develop, and test. Each municipality decided individually which actors that should represent them and take part in the project. From the pilot municipality a manager and operative personnel took part and from the two other municipalities only personnel from the operative function took part in the project, which was to be conducted over a six months period. The project is currently ongoing with one month to go before project final. Except from the procured designer no one in the organization had prior experience of working with design.

### *Case B*

The first step of the venture in case B had at the time of this study's start already been finished. Knowledge built in case B will therefore be based on retrospective interviews.

After good experiences with the service design approach from student consulting projects the regional federation wanted to transfer knowledge about the approach to the different social services organizations in the

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region. They wanted to look at possibilities for further use of the approach within the operational development work of the social services as a means to increase user involvement. To achieve this a designer with special skills in communication was procured to look into how to communicate the service design process in a way so it could be understood and picked up in the ongoing development work within the social services organizations. The work resulted in an information kit about service design and its user-centered approach, designed as a tool that could be used when discussing development. The information kit was addressed to and distributed among managers in the operative functions of the social service organizations. The aim was to transfer knowledge about how design capacity can contribute and how the approach could be used for development within the respective functions. Each year the social service organizations must go through and plan their business including potential operational development, an activity where the regional federation saw potential use for the information toolkit.

### *Case C*

Case C is as mentioned larger venture than A and B. The county council has started a venture to integrate design in their regular healthcare organization. Through a design approach and methods the organization hope to increase patient use and to achieve sustainable operational development. To have to procure design competence for projects was seen as a barrier for the utilization of design within the organization so to make design available at all times a project with an in-house design department was initiated. The design department should support other parts of the organization with development involving different kind of design issues. The nature of the design issue varies depending on the need of the department. The design department also run projects initiated internally within the group or in collaboration with external research projects. The vision for this venture is to create value through the interaction between design and the other departments of the healthcare organization. Prior experience of working with design is limited within the organization, but some individuals who have more experience act as design champions. The venture is at the beginning of this study quite new and the organization around the design department is under construction. Following the venture from this early stage will hopefully give interesting insights to how the county council organization is reasoning.

Table 1 Summary of case presentations

	Case A	Case B	Case C
Initiator	Regional federation	Regional federation	County council
Focus of the venture	Try out if the design approach works for them and disseminate knowledge.	Disseminate knowledge about design capacity.	Develop knowledge, experiences and skills within care as well as design
Motivation for taking in design	Increase user influence in operational development	Increase user involvement in operational development	Increase patient benefit and create sustainable operational development
How	Pilot case	Information kit	Internal design department
Involved actors	Project manager from the regional federation, operative personnel from three municipalities, procured design professional	Project manager from the regional federation, representatives from municipalities, procured design professional	Design department, various health care departments, researchers, Management board for the design department
Prior design experience of the involved organizations	None	Regional federation little, as client in student consulting projects municipality representatives none	Design department yes, other departments none
Data collection	During pilot project and follow up	Retrospectively and follow up	Retrospectively, during projects and follow up

### *Data collection*

All cases will be documented through interviews the different actors that take part in the ventures for example project managers, designers, and representatives on different organizational levels from the municipalities' social services and the county health care organization. Actors that have a more active role in the projects will be asked to keep journals of the

projects, which will serve as self-documentation. Interviews will be held during the projects as well as after the projects to follow up on experiences and results. In Case C, which is a larger venture than the other two, some projects will be followed in retrospect and some will be followed as they are conducted. As case C concerns several different types of projects we have in this study decided to focus on how the design department is organized and their connection and work within the county health care organization. In all cases we will except from focusing on involved actors and organization of the ventures, also focus on the results of the projects conducted within the three ventures and how these are implemented or further managed. We see reactions of experiences, how new knowledge is handled and managed and how results are implemented as important indicators of the integration of design capacity. Each case, A, B and C will be analysed separately to learn about conditions and experiences from each case. After this a cross case analysis will be conducted to see similar patterns, contrasts and how the different set ups, scale and aims might have affected the integration of design capacity.

## **Discussion - Expected outcome and contribution of the forthcoming study**

Svengren Holm (2011) argues for the importance of support and engagement from management to show that design is important both through decisions and by allocation of resources as well as continuous communication and interaction between the design function and other functions within the organization, as this support the development of a shared understanding of goals and conditions in projects, for a successful integration of design as a strategic resource in an organization (Svengren Holm, 2011). This also relates to the results described earlier from the studies by Acklin (2011a), Acklin et al. (2013) and Ward et al. (2009), which also show the importance of support from management or a gatekeeper.

Acklin et al. also highlight the production of a design brief as a tool for creating a relationship between the design competence and the other actors (Acklin et al., 2013) as mentioned before. As stated before this process can be seen as part of the anchoring of the perception of design and the aim of integration of design capacity in the organization. Acklin also argues that the integration of design capacity is more successful if the organization themselves are structuring and managing the design capacity and integration of the new knowledge (Acklin, 2011b), also this is connected to

the importance of anchoring. Even if the aim is to integrate design as strategic resource we cannot solely target the strategic level of the organization since as Svengren Holm (2011) argues design as a strategic resource is based on both the result and the process. In the cases studied much of the design work connected to process is done at an operative level in the organization this means also this level needs to understand and see the value in working with design in order for the integration to contribute.

In our previous study (Malmberg & Holmlid, 2013) we could identify frictions when embedding design, frictions that affected the integration of design so that it was not successfully integrated as a strategic resource but only as styling. The venture to integrate design in the technology development team and their organization did not have sufficient support from management even though the initiative to integrate design came from a strategic level of the organization. Also the anchoring of the perception of design and the aim of the integration was too weak especially on the operative level that was most directly affected by it in their day-to-day work. These are all issues that relate to important aspects for successful integration of design according to the literature and can all be related to the anchoring of the venture including the perception of design.

The three cases in the forthcoming study are different in scale as well as in their approach and aim when integrating design. They also present different levels of prior experience of design among the project managers who can be seen as the gatekeepers or design champions in these ventures. Given the different conditions, approaches and knowledge backgrounds but similar basic motives and function we expect to learn more about how aspects such as anchoring within the organization, management and motivation among the involved actors affect the integration of design in non-commercial contexts with other drives than SMEs.

One of the issues for successful integration of design capacity, other than as styling, seen in the case from the previous study (Malmberg & Holmlid, 2013) was the problem for the development team to let go of their strong focus on technology. As stated earlier Svengren Holm (2011) argues that it is likely that in order for design to be perceived as a strategic resource the organization must see the knowledge structure to integrate design as relevant to their knowledge production (Svengren Holm, 2011). To this team user focus was new and felt irrelevant, as their focus was to develop the technology, they did not see the value in the knowledge design could contribute. The cases in the forthcoming study are all, unlike the case in the previous study, used to working with and for users even if they have not



previously worked from a design approach. Through this study we expect to learn more about how and if this connection to design through the shared user focus will affect the ability to accept design as a strategic resource and integrate it as such. This would teach us more about prerequisites for integrating design capacity both in public sector organizations and in strongly technology focused organizations.

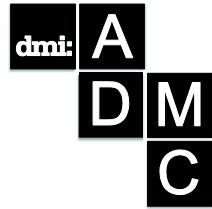
## **Concluding remarks**

In order for design to driver innovation and growth also in areas where design has not traditionally entered we need to further look at how design capacity can be integrated in these settings in a way so that non commercial organizations with no prior design experience can utilize design capacity as a process or even as a strategic resource rather than getting stuck in traditional preconceptions of design as styling. Through studying different initiatives and look at the approach to integrate design, the actors involved in the process and the anchoring of these ventures within their respective organizations we expect to learn more about the issues identified after the previous study to better be able to describe what affects the integration of design capacity in non commercial settings.

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# One Approach to Understand Design's Value under a Service Logic

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*The value of design has been an issue for several decades, where design promotion agencies and national statistics agencies have tried to find ways of measuring and evaluating the contribution of design. Many of these efforts collect their basic model from a traditional view of business value as being created in a value chain. However, when approaching value creation from a service logic perspective, these views are no longer feasible outlets to understand the value of design. In recent developments of business and market logics for service, there is no value before or beyond the value-in-use. In this paper, we develop an understanding of design's value under a service logic. The foundation for this understanding is developed through revisiting the productivity paradox, through the three spheres of value creation, through resource integration and through an individual perspective on value. The conclusion is that design's value is hinged on its contribution to enhancing intended value creation in the joint sphere, and indirect and inferred value created for continued independent value creation.*

**Keywords:** value of design, strategy, service logic, design for service

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## Introduction

In many cases when the value of design is discussed, it is done in a manner that collects its reasoning from Porter's model of a value chain (Porter, 1985). It is not uncommon that design is viewed as adding value to an input then passed on to the next actor in the value chain, that later will be exchanged in a sales situation. Or it could mean that design is viewed as an asset of the company, adding to overall costs in the company, which later is compared to the benefits. Or it could mean that design is viewed as a competence that is bought when deemed to contribute to a development project. Or it could mean that a company is using a visual positioning strategy. All in all, the understanding pushes companies to try to occupy the best position in the value chain, and to measure the value of design through e.g. Return on Investment, or other financial measures (see e.g. the EU-project € Design, 2012)

However, as Normann and Ramirez pointed out (Normann & Ramirez, 1993), this is an outdated view of value creation. They stated that the focus should be on value-creating systems that may be reconfigured in order to co-produce value. Moreover, when approaching value creation from a service perspective, the traditional views are no longer feasible outlets to understand the value of design. When, e.g., taking the radical view of Vargo & Lusch (2004; 2008), and their Service Dominant Logic, there is no value of design before or beyond the value-in-use. The value is phenomenologically determined by the beneficiary (Helkkula, 2011; Vargo & Lusch, 2004; 2008).

In this paper we will review some of the fundamentals for understanding the value of design under a service logic. It is a development of a claim raised by Holmlid (2010), about how design and business value relates to each other. First, some of the foundational concepts will be explained, followed by a discussion on how they reconfigure the value of design. Finally, we make some concluding remarks.

## Foundations

Four concepts will be reviewed as a foundation for further development.

### *The productivity paradox*

In the 1990's there was formulated what was called the **productivity paradox**. This paradox expressed the fact that even though companies were using more information technology, the productivity of the companies did not seem to increase. In Strassman's "The business value of computers"

(Strassman, 1999) a framework for understanding the benefits of the new technology in direct, indirect and inferred benefits was developed (see Table 1). The expectations on the benefit of information technology, had earlier not been analysed this thoroughly, this was Strassman's main contribution.

*Table 1 Directness of benefits*

Direct	Indirect	Inferred
Revenue growth	Risk reduction	Competitive survival
Cost displacement	Performance improvement	Competitive gain
Cost reduction	Cost avoidance	Relationship redesign

Strassman's framework directs our attention to *what* intended values that might be sought, and the *level of directness* they have to any endeavour. Consequences of this are that:

- It is very difficult to show how an endeavour has contributed to an inferred benefit
- Other benefits, such as "increased sales" can be transformed into one or more of the specified benefits (competitive gain, and performance improvement)

### *Service Logic view*

In the **service logic** view of Grönroos and colleagues (Grönroos & Voima, 2013; Grönroos & Ravald, 2011), three spheres of value co-creation is the fundament for understanding service. First, there is the joint sphere, where the service provider and the customer jointly co-create to achieve intended, and not always shared, values, goals and outcomes. Secondly, the provider sphere, which is closed to the customer, consists of activities necessary for the company to achieve their value. And finally, the customer sphere, which is closed to the provider, is where the customer continuously and independently develops value. Service Logic highlights that these three spheres are necessary for any value to be created. Service Logic directs our attention to *when* value is created, and by *whom*. Consequences of this are that:

- participation in activities of value co-creation is required for creating the intended value

- the resources brought into the joint sphere may be unknown to participants
- the capacity of the participants to integrate available resources may be unknown
- the usage of the outcomes of the value co-creating activities may be unknown to participants
- the value(s) created independently in the spheres closed from the participants may be unknown to the other participants

### *Resource integration*

In service logic as well as service-dominant logic, **resource integration** is a central building block. Actors in a service system integrate resources that are made available to them by other actors, in their processes of value co-creation (Akaka et al. 2013; Vargo & Lusch, 2008). Resources might be tools, skills, environments, procedures, funding, etc., made available by specific actors in the joint sphere. In this sense, the resources has no inherent value until the resource is activated by someone in a value creating activity, the resource is becoming. A simple example; the dentist is integrating the waste-basket with its pedal opening mechanism to keep her hands (or gloves) clean. Resource integration directs our attention to *what* someone is using to create intended value. Consequences of this are that:

- the resource in itself is there to be part of value creation activities
- resources that are not available at the moment of co-creation does not have any value

### *The individual's value*

From the perspective of the **individual, value** is fundamental to what we choose to do, and what we choose not to do. To exemplify, there is a common interpretation about elderly people that they are “afraid” of using new technology. Online banking is often used as the example of this, where many elderly people still wants to go the actual bank office. An alternate interpretation is that for some, the value of going to the bank is not connected to banking as such, at least not only, but also to the value of socialising with friends, the value of physical exercise, getting fresh air, etc. Going to the bank enhances and reassures such value creation. Online banking, on the other hand, suppresses and hinders such value creation. For others, where a sought value is to socialize with the extended family, online banking enhances such value creation. The individual perspective directs our

attention to *why* specific value creation is chosen, and *how* such created value is transformed into other value(s). Consequences of this are that:

- the actors in a value co-creation activity may have multiple intentions for value creation
- certain configurations in co-creation activities support some actors to enhance an intended value, and hinders some actors to achieve their intended value
- co-created value travels through the agency of individuals

These four areas form a foundation for a discussion on how the value of design needs to be understood when applying a service logic, and in summary direct our attention to:

- *what* intended values that might be sought
- the *level of directness* intended values have to any endeavour
- *when* value is created
- by *whom* value is created
- *what* someone is using to create intended value
- *why* specific value creation is chosen
- *how* such created value is transformed into other value(s).

## Reconfigurations

### *Resource integration and service logic*

When combining the resource integration view with the service logic view, the resources that are referred to are not actual resources until they are activated as such. This happens in the joint sphere of value creation. In this situation design play a valuable role to make sure that these resources are available and accessible, that it is possible to understand when they are supposed to be integrated, that they are easy to activate, discard and reactivate for integrative actions, and that they are resourceful in these integration activities, for all the actors that are co-creating value. But, which is important to note, if these resources have been designed, the value of design will not be inherent in the resources, but rather emerging when an actor handles the resource in integrative actions. The value is not, it becomes, because it is co-created. If co-creation of these values fails, there was no value of design.

### *Service logic and the productivity paradox*

When combining the service logic view with the productivity paradox, there is a shift from firm performance, to performance of the joint sphere seen as a whole. Similarly, the understanding of outcome needs to be shifted from outcome of the firm, to outcome from the joint sphere. That is, the value of design has to do with, e.g., how swiftly and easily value co-creation by actors in the joint sphere is when they are integrating resources, to achieve their intended value(s) and outcome(s).

### *Resource integration and the productivity paradox*

When combining the resource integration view with the productivity paradox, the direct benefits of design are occurring in the joint sphere. Or more radically put, the value of design cannot be measured as a direct benefit in any other value creation sphere than the joint sphere. Returning to the example “increased sales”, this will still be an indirect and inferred benefit, that can be measured in the provider sphere, and that is related to benefits in the joint sphere. Similarly, in the customer sphere, only indirect och inferred benefits occur, based on the benefits in the joint sphere.

### *Individual’s value and the productivity paradox*

When combining the individual actors intended value with the productivity paradox, the level of directness of a certain value of design may differ between actors. The main value of design may be a secondary value for someone else. Pluralistic value creation, where many different kinds of values are simultaneously co-created and emerging, is a necessity to understand. Sometimes the right pluralistic value creation contains what may seem as conflicting value creation.

### *Individual’s value and service logic*

When combining the individual actors intended value with service logic, the value of design comes from the manner in which the individual actors are afforded to act and be resourceful. Building on the agency of the individual actors to allow them to co-create value, and making sure that the actors co-creating value understand how to combine the agency of the other participating actors.

### *Future interpretations*

Several other interpretations can be made. Some interesting candidates collected from the design research field are:



- Use quality (Arvola, ; Ehn & Löwgren, 1997) that tries to identify phenomenologically derived benefits in the form of strong concepts
- Participatory aspects of activating resources and the value of design to leverage on participation (Bjerknes, Ehn & Kyng, 1987)
- Viewing all actors in the joint sphere as the primary designers, where all other design work should be directed based on such ongoing and emergent design. Then there will be design in the independent spheres, viewed as design-*after*-design. The design emerging in the joint sphere directs how design can achieve value. Ehn (2008) identifies that there is design at use-time, and by doing so uses a value chain thinking. First there is a design, that is prepared by the provider, and then there is a design that happens in the joint sphere.

## Concluding remarks

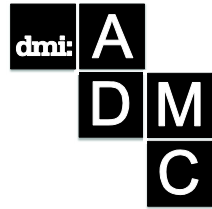
In this paper we created a foundation to make informed discussions on the value of design under a service logic. The foundation is built on the productivity paradox, the three spheres of value creation, resource integration and an individual's perspective on value. These direct our attention to *what* intended values that might be sought, the *level of directness* intended values have to any endeavour, *when* value is created, *by whom* value is created, *what* someone is using to create intended value, *why* specific value creation is chosen, and *how* such created value is transformed into other value(s). Under this interpretation it seems as if measuring the value of design at a firm level is not valuable, unless these measures are shown to be effects of design's contribution to performance in the joint sphere of co-creation.

We conclude that under a service logic design's value shows through direct or emergent values in co-creation activities in the joint sphere, and through the lasting indirect or inferred values co-created in service performance that is brought into other spheres than that joint sphere.

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## Exploring Impact Through Seating Design

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*For a number of years publicly funded research and other activities in the UK have been expected to consider their impact as part of the bidding process as well as during its implementation. More recently, the UK Research Excellence Framework (REF2014, 2012) required case studies demonstrating the impact of research on its external environment. Although often considered as less academic subjects, design and design management lend themselves to generating impact very well. The outcome of such research should be a product or process that is then used by a target group to improve the user experience or provide other benefits, which can be deemed as impact. This paper uses the case study of a series of chair designs and associated research as the basis for an exploration of the various interpretations of impact in relation to the design process and its management. A framework for predicting and measuring impact for use in future work is proposed.*

**Keywords:** *design impact, ergonomic design, design management, knowledge exchange*

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## Introduction

For a number of years publicly funded research and other activities in the UK have been expected to consider their impact as part of the bidding process as well as during its implementation. For examples see HM Treasury (2003) and AHRC (2007). More recently, the UK Research Excellence Framework (REF2014, 2012) required case studies demonstrating the impact of research on its external environment.

This paper uses the case of a series of chair designs and associated research as the basis for an exploration of these various interpretations in relation to the design process and its management. Dating from 1989, the work began with an investigation into the postural and ergonomic requirements of musicians. It has since incorporated consideration of user needs and manufacturing technologies resulting in three separate design registrations and a US Design Patent encompassing:

- Opus seating – for orchestral musicians (Birmingham City University, 1990; Rowe and Snell, 1993);
- SE range – for schools and colleges (Birmingham City University, 2007); and
- Age Inclusive Seating (AIS) – addressing the needs of the elderly (Birmingham City University, 2013).

Based on the case study, the paper explores the impact arising from design and design management and proposes a framework for predicting and measuring impact for use in future work.

## Background

This work has arisen from the necessity of providing impact case studies for the United Kingdom's Research Excellence Framework (REF) (REF2014, 2012). In operation from 2008, the REF is the United Kingdom's current system for assessing the quality of research in higher education institutions. The outcomes of the assessment are then used by the UK's four higher education bodies to inform the selective allocation of research grant. The exercise also provides evidence of the benefits of public funding for research as well as benchmarking information. Each institution's submission comprises five elements: research active staff; research outputs; completed PhDs and research income; research environment; and impact.

Impact forms 20% of the assessment. In its submission, each institution describes how it achieves impact from its research as well as providing a number of impact case studies, the number depending on how many research active staff are returned. The REF guidelines prescribe the format of the case studies including that the impact should arise from excellent research (2\* or above) conducted in the institution (REF2014, 2012).

In the REF research is defined as ‘a process of investigation leading to new insights, effectively shared’. Impact is defined as ‘an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia’ (REF2014, 2012).

Design falls under Main Panel D – broadly defined as arts and humanities. The REF guidelines suggest that impact from these research fields may be seen in various areas including: civil society; cultural life; economic; education (beyond the submitting HEI); policy making; public discourse and public services. Examples of impact that may arise from design research and provided in the REF documentation include: developing new ways of thinking that influence creative practice; contributing to innovation and entrepreneurial activity through the design and delivery of new products or services and enhancing economic prosperity.

## **Seating design case study**

In response to the REF guidelines, Birmingham Institute of Art and Design, Birmingham City University (BIAD) submitted an impact case study based on a range of seating designed developed over a period of 15 years. The following is taken from the REF submission describing the underpinning research and its subsequent impact.

### *Design research*

BIAD’s seating design research integrating posture analysis, user needs and manufacturing technologies has resulted in three separate design registrations and a US Design Patent encompassing:

- Opus seating – for orchestral musicians (Birmingham City University, 1990; Rowe and Snell, 1993);
- SE range – for schools and colleges (Birmingham City University, 2007); and
- Age Inclusive Seating (AIS) – addressing the needs of the elderly (Birmingham City University, 2013).



*Figure 1 A typical Opus chair*

The original work investigated the postural and ergonomic requirements of musicians in collaboration with the City of Birmingham Symphony Orchestra (CBSO) and other major orchestras and resulted in a registered design, Opus1 (Birmingham City University, 1990).

To address the complex needs of the various orchestral musicians, the design incorporated complex curved and laminated components for the seat and back. The design was developed through a constructive dialogue between the manufacturers and researchers to create seating that could be manufactured at a competitive price. It also took account of the architectural sophistication of the new Birmingham Symphony Hall.

The product was manufactured originally by Hostess Furniture Ltd and is currently manufactured and distributed worldwide by Amadeus Performance Equipment Ltd (Amadeus).

A period of evaluation and further postural research followed resulting in an improved design, Opus 2 focusing on the flexibility of the chair's upper back component (Birmingham City University, 2005). This design won a Birmingham Design Initiative Award in 2002 and was selected as an illustration of design and manufacturing capability for the Furniture West Midlands exhibition at the National Exhibition Centre in January 2006. A typical Opus chair is shown in Figure 1.



*Figure 2 Hille SE chairs demonstrating the different sizes*

Of particular significance in the research is the relationship of the lower back support with the upper back support. This was crucial in the development of the SE chair to meet the requirements of the BS EN 1729 standard published in 2007. The consequent design addressed not only postural issues, but also the need for several sizes to suit children of all ages as in the standard. Additionally, consideration was made of the market opportunities arising from the then government's 'Building Schools for the Future' initiative. This required a range of chairs that were attractive in appearance as well as being robust and affordable.

The design solution, resulting from a partnership between the researchers and manufacturers, is a modular system from which the eight size variants can be produced from a limited number of components. By minimising tooling, assembly and storage costs the range of chairs meets the financial constraints of the sector. The chair has been produced and marketed by Hille Educational Products Ltd (Hille) since 2010. The Hille SE chairs are illustrated in Figure 2.



*Figure 3 A Cello chair, part of the age inclusive seating manufactured by hf Contract Furniture*

The latest research has resulted in 'Age Inclusive Seating' (AIS) (Birmingham City University, 2013). Starting in 2011, exploration and analysis has been undertaken into existing care home chairs and the needs and ergonomic requirements of the elderly users as well as their carers. A major aim of this work is to design furniture that enhances the quality of life and independence of this group, leading to more people being able to live independently for longer.

There is now an agreement with hf Contract Furniture to develop the product range commercially, with the first units going on sale in July 2014. A Cello chair is illustrated in Figure 3.

### *Research impact*

The seating design research has had significant impact across a number of areas including market and business expansion and development; user benefits; design for manufacture and corporate identity.

### **Market and business expansion**

Licensing the designs has proved to be a major spur to developing new products and markets for the licensee. This includes a measurable effect on



jobs and profitability, not only for the principal manufacturer, but also subcontractors. Licensee of the Opus designs, Amadeus ([www.amadeus-equipment.co.uk](http://www.amadeus-equipment.co.uk)), based in Battle, Sussex, has grown from a sole trader to a business employing five people. It subcontracts to build the frames for the chairs, thus safeguarding further jobs and turnover.

In the case of the SE chair licensee, Hille ([www.hille.co.uk](http://www.hille.co.uk)), it was purchased from the administrators in 2009 by the injection moulding company that had developed the plastic components of the chair. The new company brought together the expertise of both resulting in significant synergies, reducing the time to market, providing scales of economy and decreasing manufacturing costs. Relocating to Ebbw Vale, Gwent, South Wales, the company now employs 64 people in an area of high unemployment.

Licensing and the development of the AIS range is proving to be a catalyst for the development of hf Contract Furniture ([www.hfcontracts.com](http://www.hfcontracts.com)). It will be the first home-grown design for the company, resulting in a new approach to the care home marketplace as well as opening different markets, such as those in China.

### **User and organisational benefits**

For individual users the postural and ergonomic features contribute to wellbeing. For the organisation the visual language enhances the appearance, appropriateness and context of its environment. For example, still in use in the Symphony Hall, Birmingham, the Opus seating has provided user benefits in terms of players being able to rehearse for longer as well as a contemporary design that complements its surroundings.

The sleek appearance of the SE chair has proved to be very popular with the new academies. It too has provided user benefits with children sitting still for longer and improving their concentration.

### **Modular design**

In the case of the SE seating, by producing the chair in two moulded parts (instead of the more common single component), the number of moulds required to produce the eight sizes of the BS EN 1729 standard is three. Clearly, eight different moulds would be required for a single component version. The moulds are also smaller. Added together, this results in a substantial reduction in tooling costs and the level of pre-production investment required.

### **Corporate identity**

The final area of impact is that of the seating designs and values being used to reinvent the whole of a firm's design led ethos. Again this is particularly evident in Hille, as evidenced by its website [www.hille.co.uk](http://www.hille.co.uk), as well as its liveried delivery vans that feature the SE chair.

### **Summary**

Seating research in an academic environment has led to a number of novel designs. The resulting design registrations have been licensed to UK manufacturers. The designers have worked, for a period of time, with the licensees to realise seating products that are economical to produce and competitive in, as well as attractive to, the marketplace.

Over 15 years, the work has resulted in a number of impacts some of which are more easy to measure than others.

## **Discussion**

Reflecting on the seating design case study as well as the pertinent literature, it is proposed that a framework to identify the potential impact of design research should encompass:

- the definition of impact;
- types of research;
- types of impact;
- the routes to impact; and
- measuring impact.

The following describes each of these areas and the apposite findings with regard to the seating design case study.

### *Definition of impact*

As given above, the REF defines impact as 'an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia' (REF2014, 2012).

Other bodies see impact slightly differently. One of the first UK government publications to highlight how publicly funded work may realise benefits was the Green Book (HM Treasury, 2003). The Green Book does not define impact, but does discuss outcomes which are defined as 'the eventual benefits to society that proposals are intended to achieve' (HM Treasury, 2003). Later OffPAT, in relation to committing public money to the

delivery of capacity-building or infrastructure projects through the now defunct regional development agencies, defines outcomes as ‘the impacts on, or consequences for, the community of the project activities’ (OffPAT, 2006).

In considering self evaluation by its research grant holders, the Arts and Humanities Research Council (AHRC) defines impact as ‘the fundamental intended or unintended change occurring in organisations, communities or systems as a result of programme activities’ (AHRC, 2007).

In all definitions, there is a key reference to impact being about change. As described by Holden (2004):

*The value of culture cannot be expressed only with statistics.  
Audience numbers give us a poor picture of how culture enriches us.*

In the case of the seating design research described above true impact comes from user benefits and the reinvigoration of the commercial concerns which have implemented the research in the form of physical products. Not only have sales resulted from the work, but also the licensees have changed systems, process and promotional activities in order to maximise the commercial benefits.

Additionally, it is worth recognising that impact can also be described as benefits or outcomes depending on context.

### *Types of research*

In considering how research can have impact, it is important to have an understanding of what types of research can be conducted. For example, Davies, Nutley and Walter (2005) in their report arising from a symposium funded by the Economic and Social Research Council regarding non-academic impacts from social science research, state:

*In any assessment of research impact it is important to take account of the different types of... research. This is not just a matter of making the familiar distinction between basic and applied research but also entails acknowledging that different forms of research lead to different types of knowledge, for example: ‘knowing what works’; ‘knowing how things work’; and ‘knowing why things happen’. Assessment approaches need to be able to capture the impact of all these forms of research knowledge; they should not be designed with only ‘what works’ research findings in mind.*

Hughes, Kitson, Probert, Bullock and Milner (2011) in their exploration of how arts and humanities researchers can benefit or impact on the wider community entitled 'Hidden Connections' use a model developed by Stokes in 1997 to discuss pure and applied research. Stokes described three types of research: the Bohr quadrant where research is 'solely concerned with the pursuit of fundamental understanding' the Edison quadrant where 'research concerned solely with considerations of use' and the Pasteur quadrant where 'useful and important reflexive interactions between applications and fundamental understanding take place'.

Hughes et al (2011) find that most art and humanities researchers define their work as 'pure research'. It would be interesting to limit this to design researchers only. The Pasteur quadrant would seem more applicable. Indeed, a prime motivation for the seating design work was to produce items that had a sound academic underpinning but which would be useful and appeal to their users and eventually result in impact.

### *Types of impact*

AHRC (2007) acknowledges that the types of impact are numerous. They include learning and skills for the researchers; effects on government policies and standards; the commercialisation of research through spin-outs and licences; development of new curricula and courses; new research activities; and the benefits to society at large which in economic terms can be categorised as direct, indirect and public good values.

Also AHRC (2007) cite the Kirkpatrick Model to provide four levels of potential impact which are:

- reaction – the initial response to participation;
- learning – changes in people's understanding, or raising their awareness of an issue;
- behaviour – whether people subsequently modify what they do; and
- results – to track the long-term impacts of the project on measurable outcomes.

Investigation of the model shows that the states actually arise from consideration of how training can benefit those being trained so, though useful, it may not provide a comprehensive set of impact stages.

In considering cultural value, Holden (2004), suggests two types of impact: intrinsic and instrumental.

*Intrinsic values are better thought of as the capacity and potential of culture to affect us...Instrumental values relate to the ancillary effects of culture, where culture is used to achieve a social or economic purpose...culture does have significant value, but that instrumental value on its own does not give an adequate account of the value of culture, and that, moreover, better methodologies need to be found to demonstrate instrumental value in a convincing way. (Holden, 2004)*

Meagher, Lyall and Nutley (2008) in studying social science research also propose two types of impact arising from research. As well as instrumental impact they also advocate conceptual impact which is a 'a more wide-ranging definition of research use, comprising the complex and often indirect ways in which research can have an impact on the knowledge, understanding and attitudes of policy-makers and practitioners', (Meagher et al, 2008).

In the specific case of the seating design research that leads to registered designs and consequent commercial products, the notion of conceptual impact seems valid and a useful approach in considering how impact might arise from design.

For a broader consideration of design research projects stakeholders can impart different meanings to impact. In the case of funding bodies, impact tends to be quantified through hard measures such as businesses assisted; visitor footfall or new sales generated. For external partners, beneficiaries or users, impact may also be seen in similar financial terms, but may also include softer outcomes. These include: finding new markets; introducing new processes; enhancing capabilities; increasing capacity and improving the user experience. For the grant holder, possible outcomes include building links with external partners; publicity and esteem as well as feedback into the curriculum and the student experience. Finally, impact for the delivery team or individuals can include skills and personal development; satisfaction from helping others to improve; a record of publications and being part of a collaborative network.

### *Routes to impact*

There has been a move in various funding streams, both structural and research, to request project logic models or project logic chains from applicants, for example, see AHRC (2007). These comprise a number of stages:



where:

- resources are what is needed to achieve the project's aims and objectives
- activities are the things to be done to address the aims and objectives
- outputs are the products that will be delivered by the activities
- outcomes are the changes in knowledge, skills and behaviour that the activities will lead to
- impact is the fundamental changes in service, organisation or community that will result from the activities

For the seating research, the resources are the designers and the manufacturers, the activities are user research, design and prototyping, outputs are the design registrations, outcomes include the furniture and the impacts cover the commercial and user benefits described above.

As advocated by the AHRC, 'in measuring the impact of research it is essential to draw a clear distinction between 'activities' or 'outputs' and 'outcomes' or 'impacts'' (AHRC, 2007).

Davies et al (2005) term this a linear model of research to impact. They suggest five further models including problem solving which starts with the problems of end-users and tracks back to find relevant research and the interactive model where the 'process is modelled as a set of (non-linear; less predictable) interactions between researchers and users, with research impact happening through complex social processes of 'sustained interactivity''.

Walter, Nutley, Percy-Smith, McNeish and Frost (2004) in investigating improving the use of research in social care suggest three models of research use.

1. *Evidence-based practitioner model: this model highlights the role of skilled individual practitioners who are able to express their*

*knowledge needs in terms of researchable questions, and then search for and appraise the research base to meet these needs.*

2. *Embedded model: in this model research is distilled and codified before being incorporated into organisational processes, procedures, protocols and guidelines. In this view, the incorporation of research evidence is a management responsibility, together with the establishment and maintenance of suitable compliance regimes.*
3. *Organisational excellence model: this understanding emphasises the importance of local strategies of continuous improvement that draw both on research and on local experimentation. What matters most here is reflexivity and research mindedness within organisations, together with a willingness to change.*

Although from a different discipline, this combination of practice and research does seem very relevant to the design arena and would merit further investigation.

Davies et al (2005) highlight the usefulness of this typology as it:

*suggests the need for a customised approach to impact assessments contingent on the dominant modes of research uptake and use. For example, in environments characterised by evidence-based practitioners, impact assessments may focus on individual knowledge, skills and behaviour; in contrast, environments where the embedded model operates require us to look for impacts in the organisational processes and routines. A further significance is that each model emphasises the unlikelihood of significant research impacts occurring unless substantial organisational initiatives are already in place.*

They also highlight that impact needs to be considered throughout the research process and not just 'seen as an end-stage activity', Davies et al (2005). Further, they acknowledge that:

*Different models are suited to different circumstances and it is unlikely that any single model will capture adequately the variety of different types of research, the different forms which impact can take and the different reasons why we might be interested in these impacts. Davies et al (2005).*

In discussing impact and outcomes OffPAT concedes that ‘individual projects are unlikely to have a direct impact on the regional GVA (the productivity or economic health of a region)’. It is envisaged that a portfolio of regional projects will or should affect GVA, but also recognises that ‘their impact can be significantly mitigated by external factors such as a change in the interest rates’ (OffPAT, 2006).

### *Measuring impact*

The REF provides a comprehensive list of examples of impact (REF2014, 2012, p91). These include: growth of small businesses in the creative industries; generation of new products; sales figures and income generated; employment data including evidence of jobs created; user feedback or testimony and evidence of third party involvement, such as how collaborators have modified their practices.

The AHRC in providing guidance regarding evaluation and impact discuss a number of issues regarding the measurement of impact. This includes an acknowledgement that impact can be difficult to measure, (AHRC, 2007). For example it is recognised that in the case of media impact while it is relatively easy to measure column inches or sales and readership figures, the actual impact on readers or listeners will be difficult to collate.

AHRC (2007) suggest that ‘tracking people with whom you have engaged over an extended period is the most straightforward way of assessing long-term impact’. However, the importance of a control group and the resource and cost implications of a thorough impact assessment are contemplated.

Walter et al (2004) advocate that:

*measuring non-academic impacts of research is difficult for the following reasons:*

*Timing — it is generally recognised that the impact of academic research is long-term and often indirect.*

*Problems identifying additionality — would the ‘effects’ we are trying to measure have occurred anyway?*

*Serendipity — the outcomes, and therefore the impact, of research activities are by their very nature unpredictable. Serendipity is an important element but it may be difficult to trace the results of such chance uptake.*

For impact arising from the seating design research, it is relatively easy to measure sales. It is more difficult to measure real changes in



concentration in school children and the postural benefits for musicians. The expense of benchmark and follow-up surveys could be prohibitive.

### Maximising impact

In moving towards a framework for the impact of design research the following need to be considered during the development of a design research project:

- type of research;
- the outcomes of the research and the codification of knowledge (eg, product, reports, workshop);
- the methods by which the outcomes are converted to impact and the types of impact;
- the external factors that may impede its take-up; and
- how the impact will be measured.

In the case of the seating design research a key factor in its moving from design registrations to commercially produced products has been the involvement of the designers. Davies at al. (2005) describe the importance of networks in ensuring that impact occurs. The current study and its longevity would support this view.

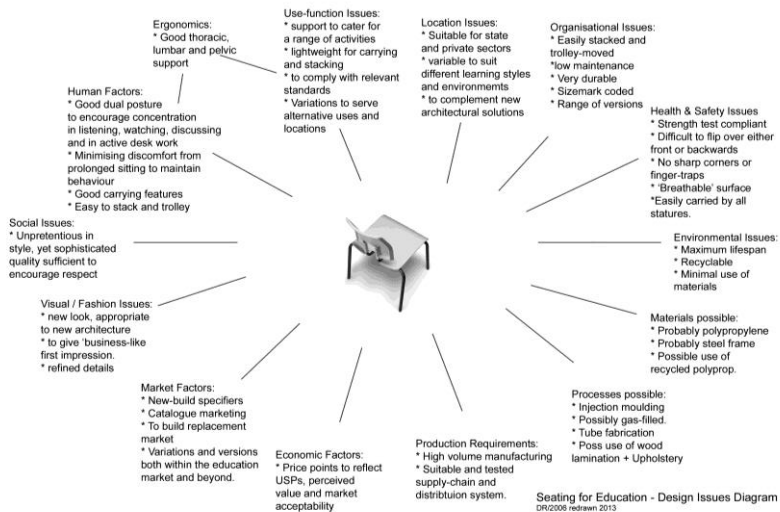


Figure 4 Design wheel for the SE chair

The work also used a novel tool, David Rowe's design wheel. The wheel for the SE chair is shown in Figure 4 below, illustrating how all relevant aspects are explored in developing the final product.

## Conclusions

The impact from design research is complex and underexplored. Insights from other non-scientific disciplines may provide a sound basis for future work and research. The outcomes from the recent REF will provide food for thought, as well as material for increasing the impact of design research. In the words of Davies et al (2005):

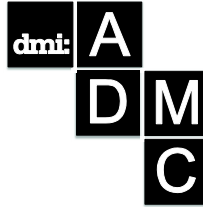
*Once we move towards models of knowledge co-production, the idea of research impact cannot be captured by phrases such as knowledge transfer. At the very least we need to think in terms of knowledge translation, knowledge mediation or knowledge interaction. Similarly, impact is no longer a uni-dimensional concept – the impact of research on policy and practice – but instead reciprocal impacts need to be considered.*

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# The Design in Business Framework: A platform of mutual understanding and inspiration between designers and managers

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*In the on-going debate about whether and how the value of design in business can and should be measured there is an almost classic clash of perspectives between management and design. Most models measuring design are generated in a design perspective reflecting the aim to sell design deliverables to business and regarding the main challenge to be design immaturity and design illiteracy among business managers. This entails a focus on organizational (in)-capabilities and less concern about the concrete design competences, which are often only vaguely defined. As a response to that, we take departure in a management perspective, which focuses on the need for clear-cut explications of design competences and deliverables. We first develop a model outlining four basic categories of design competences, and based on that, we propose a “design in business framework” to be a platform for mutual interdisciplinary understanding of where and how design is perceived to bring value to businesses.*

**Keywords:** Design competences, value, interdisciplinarity

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## **INTRODUCTION**

“Two tribes at war?” Walker’s (1990) almost 25 years old description of the relationship between management and design seems still to be valid. While misunderstandings, paradoxes and pitfalls have become almost classic themes in the study of the crossroads between the two fields, recent studies find that the collaboration between management and design is still suffering from a lack of shared understanding (von Stamm, 2013) and mutual respect (Bruder, 2013). In the stereotyped debate, managers question the value of design, call for clear-cut descriptions of design deliverables and criticize the designers for pitching themselves to businesses as an all-encompassing resource, uncritically insisting that design is all-important (e.g. Nussbaum, 2004; Whyte, 2002). On the other hand, designers find that managers suffer from design illiteracy (e.g. Ravasi and Stigliani, 2013; Kotler and Rath, 2013), and that they do not recognize the value of design.

But despite the debates, there is a strong attraction and a mutual inspiration between the two fields and evidence is found that designing and managing are “less the polar opposites they are often made out to be” (e.g. Cooper & Junginger, 2013: 23). In the design world there is an increasing acknowledgement of the managerial needs for facts and figures showing the value of design, and various kinds of measuring models have been proposed to accommodate this managerial need. Most such measurement models are, however, invented from a design perspective, addressing the main objectives and obstacles seen from this perspective. While the designer objectives are to inspire and sell design consulting and various deliverables to the corporate world, the main obstacle is that companies are not ready to take it in; they are not aware of the values of design. In other words, the main obstacle is that managers suffer from design illiteracy and that their organizations lack design maturity. This has entailed that many central design measurement models evaluate the design maturity in companies in order to reveal what the management world has yet to learn. The spotlight is turned towards managers and organizations revealing their capabilities/in-capabilities and not on the designers whose competences and deliverables are only vaguely explicated and discussed. A recent example of this is DMIs “Design Value Scorecard” (Westcott et al., 2013), which in the form of a matrix can identify the level of “design maturity” of the organization across three functional areas. Using the idea of design maturity, the matrix “serves as an assessment tool to determine where design currently delivers value and provides a foundation for setting and achieving future design goals (2013: 14).” The underlying idea is to measure,

not what kind of value design brings to business, but rather how mature and ready the business is to understand, absorb and utilize design. Here the concrete design deliverables are expressed rather vaguely and instead focus is placed on the organization and its (potential lack of) design literacy. Likewise, Heskett and Liu (2012) evaluate, for example, whether design awareness is among top management or in the whole company, and whether the company operates with internal or external designers, but the measurements still appear to be based on relatively vague ideas of what the design deliverables actually are. In a similar vein, Gorb and Dumas (2013) develop “a picture of the use of design in organizations (2013: 59)” by evaluating companies on a seven-stage scale of design maturity – starting with ‘shallow’ auditing and ending with ‘deep’ implementing.

In a management perspective, focus is, contrarily, placed on the design deliverables accentuating that all initiatives have to be profitable in the short or the long run. From this perspective, the main obstacle is that, even though a lot of managers are beginning to acknowledge that design potentially could bring value to businesses, they still find it hard to see exactly what this value is. This could be interpreted as design illiteracy among managers, but seen from a management perspective it is simply a question of the design world not being able to actually explicate the value of design. Design offerings are often too vaguely described, the reason probably being, as Holm (2013) argues, that “we still know surprisingly little about what constitutes design” (2013: 294). It is increasingly acknowledged that the value of design needs to be expressed in ways that make sense to managers. Lockwood (2008), for example, holds that “as design has caught the attention of the business world, so too we must strive to better understand and consider design on business terms” (2008: 3). This would require that we open up the black box of design and strive to explicate very concrete descriptions of the design deliverables. Conley (2004) expresses this need in a very straightforward way: “Designers and design advocates argue for an expanded use of the field. They have argued that design should be used more frequently, more broadly and more strategically. Yet, when asked why, there is little to support the argument except for case studies that have often been selected because design was involved and the initiative was successful. Design advocacy currently rests on the very thin ground of ‘use it and they will come’ (2004: 1).”

In this paper, we challenge the widespread design perspective underlying most design measurement models and propose a “design in business” framework that focuses on the design deliverables and reflects

the managerial needs for explication of the design competences that potentially could bring value to business. According to von Stamm (2013) differing perspectives are what cause companies not to embrace design. She holds that "...the language used in design and business respectively continue to differ, causing misunderstandings, misconception and confusion. (2013: 327)". Von Stamm calls for a better awareness and understanding of the differences and for tools that can bridge such differences. Our framework is an attempt to respond to this call. Our aim is to explicate design competences in order for designers and managers to have a mutual platform from which the value of design can be introduced and evaluated. We follow Mozota (2013) in regarding the merger of design and management to be an interdisciplinary effort: "The postmodern version of design management interdisciplinarity seeks not to unify or totalize, but to respect the differences" (2013: 291). We strive for an approach in which one party do not work with the aim to convince or teach the other, but in which both parties strive to listen and learn.

The remainder of the paper unfolds as follows. We first discuss various measurements of the value of design. Inspired by work in the more mature field of psychology, we then propose a model dividing design competences into four basic categories. This gives ground for discussing what aspects of design can and should be measured at an organizational level – and what should rather be accepted for its intangible and immeasurable value. We suggest that two of the four outlined categories of design are better suited for measurement than the others, and, based on that, we go on to propose a framework called the "design in business"-model, which in one dimension outlines concrete design deliverables, and in the other dimension describes in which organizational innovation processes the design competences are at play. The framework is meant to be a bridging tool that can serve as a platform for discussion and mutual inspiration between managers and designers about how design might bring value to businesses. We relate the framework to our empirical observations, which are based on qualitative interviews among 20 Danish SMEs, and we discuss the various takes on the understandings and value of design. Particularly, we address the paradoxical issue that what to some is silent design (Gorb and Dumas, 2013), others would regard as not design at all.

## Measurements of the Value of Design

There is no one way of understanding design. Literally, hundreds of different takes, definitions and disciplines of design have been proposed. While some are narrow and specific, addressing one concrete element, others are broad and abstract, encompassing all sorts of human activity, but both extremes are difficult to apply when it comes to understanding how design can make a difference for business (Margolin, 1989). The concept of design has been associated with multiple definitions, but it is generally accepted that design can be understood both as a process and as an outcome. This means that there often is a distinction between regarding design as means or as ends. While the outcome focus would typically be concerned with products or services (design as ends), the process focus is more concerned with how to move from idea to finalized outcome (design as means). But in addition to this "means and ends" distinction, a third layer is increasingly introduced to the understanding of design. As expressed by Nagai and Gero (2012): "Research into designing processes is starting to view designing as a social as well as a technical process, and the understanding that the products of design involve human and social dimensions is growing" (2012: 237).

While design appears to be increasingly accepted for bringing value to businesses, we still know relatively little about what this value actually is. A lot has been written from a design practitioner's perspective, the message appearing to be conveyed by designers and for designers. Many still go with the old claim that any "good design" almost automatically will translate into "good business". But when it comes to assessing whether design brings an actual experience of value in the organizations, designers tend to rely on either peer reviews – where peers grant each other awards for 'good design' – or on numeric evidence in terms of improving sales figures etc. According to Mozota (2013), this entails a central problem in the design-management relationship: "Indeed, it is an interesting paradox between the conviction of designers to bring value to organizations and society and their total ignorance of what organizations mean by – and how they create – value" (2013: 278). It has become a central debate in design communities how we measure and thereby justify the impact of design. In the design literature there is a continuous search for useful metrics of design, which can be used to assess its contribution to business. The value of design in organizations has been measured in terms of e.g. 'design orientation' (Black and Baker, 1987) and 'design consciousness' (Walsh et al, 1992), but often the specific measures of design are rather vague. In search of the "value of design"



Hertenstein al. (2001) left the valuation to an external expert, and in another study 'design intensity' is measured partly as the percentage of projects in which professional designers were involved and partly based on the numbers of design awards won (Gemser and Leenders, 2001). Several studies have strived to link business performance and investment in design (e.g. Chiva and Algere, 2009, Dickson et al, 1995), but often this link is also rather vaguely described.

## **Four Basic Categories of Design Competences**

While some scholars hold that "design eludes reduction" (Buchanan, 1996), which implies that it cannot be broken into specializations and that no definitions or measurements can embrace the diversity of skills, methods and ideas covered by the concept of design, we do, however, follow the general call from business to do exactly that. Following the stance that the concept of design covers a range of very different disciplines and deliverables, we have been inspired by the field of psychology and in particular by an existential competence model (Tønnesvang & Hedegaard, 2012), which distinguishes partly between competences of qualification and self-determination, and partly between introverted and extroverted competences. Qualified self-determination contains a double meaning in that it partly encompasses the fact that we as human beings are part of a society where we need to qualify in order to take part in the technological complexity; and partly it encompasses that we need to be self-determinate in a co-creation of meaningful co-existence related to cultural and societal norms. Albeit created in a different context, we find that this matrix of fundamental competences serves as an expedient framework for distinguishing between four basic categories of design competences in a new way – knowing full well that, in practise, they will often be applied in all sorts of combinations.

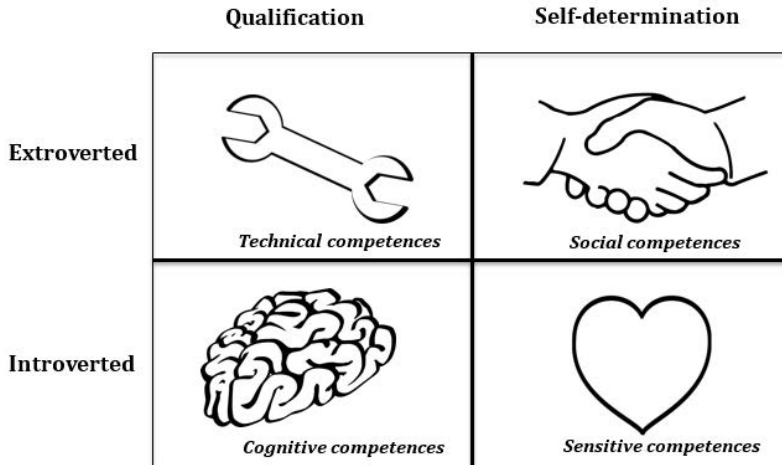


Figure 1: Four basic categories of design competences (inspired by Tønnesvang and Hedegaard, 2012)

Starting in the upper left quadrant in figure 1, technical design competences are all the crafts-related skills traditionally taught in schools of art. The ability to sketch, sew, draw, form, build etc. relates to this basic competence. The keywords in this quadrant are technical skills, professionalism and ability. These are the qualifications of handicraft that you can, to some extent, train and work to learn. In the lower left quadrant, the cognitive competences of design are placed. These are also competences that you can train to understand and learn, but now the competences are introverted and as such invisible. Here all the cognitive skills related to design thinking belong. According to Hassi and Laakso (2011) design thinking competences are, for example, reflective reframing, abductive reasoning, integrative thinking and a holistic view. The keywords related to this quadrant are reflexivity, sense-making, perspective and meaning. In the right side of the matrix we find the self-determination competences that are more related to the social-moral and political-ethical dimensions of being part of a group, an organization or a society. In the upper right quadrant we have the social design competences, which are associated with relational competences and the ability to understand others, connect with and between them, and facilitate processes among

them. Empathic design would be one good example of this, co-design another. This is about connecting with other people. As a chief designer from Bang and Olufsen once expressed it: “We have chosen to become designers because we like to learn about people. We are interested in people” (Storgaard, 2014). Whether it is facilitating internal processes, relating with users and customers or connecting with the larger community and environment, seeing and hearing the needs there, it all belongs to this quadrant. The keywords here are sociality and a sense of community. Lastly, the lower right quadrant describes the introverted sensitive competences. This covers a series of important aspects of design competences such as aesthetics and creativity. An important aspect of creativity is motivation. Further, sensitive competences are related to what Senge et al. (2004) would call “presensing” and being passionate about what you do. As described by Peters (1989: 7): “Design is about obsession”. Thus, the keywords in this quadrant are aesthetics and creativity, but also integrity, motivation, passion and desire.

## **Measuring the Immeasurable?**

In various design measuring models there have been a tendency to measure design at an organizational level as one singular value. The approach is used, for example, in the Danish Design Ladder (National Agency for Enterprise and Housing, 2003; Erhvervs- og Byggestyrelsen, 2006) in which the advancement from not using design to tapping full value from it, is described as a four-step ladder: the first step being “non-design”, the second is design as “styling” (aesthetics, form, colour and graphics), the third is “a process” in which design is created in cross-functional teams, and the fourth is “a strategy” in terms of business models and strategic planning. An implicit assumption in this model seems to be that the further up the ladder an organization goes, the better. This kind of measurement can give a macro-scale picture of how companies within a certain region, sector or country are placed in terms of design maturity. It gives an initial hint that companies regard and use design in different ways, but it still presupposes that each company’s “design status” can be expressed in one value as one certain step on the ladder. The DME Design Staircase (Kootstra, 2009) builds on the same ideas of four tiers of maturity, but evaluates on five different factors – namely the company’s design status when it comes to awareness, planning, resources, expertise and process. This opens for a more nuanced representation, but focus is still on singular values describing the

organizational status of design. We suggest nuancing that approach by dividing design competences in four basic categories, as described above. Our basic concern is that measuring design at an organizational level as one value, black-box measurements in principle is problematic. The best way to illustrate our point is to use Ackoff's (1974) distinction of three categories of complex problems: messes, problems and puzzles. A mess is a complex issue without well-defined form or structure, which makes it hard to even understand the nature of the issue being faced. A problem, on the other hand, has a defined structure and a number of potential solutions, but still no clear-cut way of solving it. Finally, puzzles are well-defined issues with a specific solution to be found. In the search for facts and metrics, business managers tend to demand solutions and to push the limits of what can be measured. This means that messes and problems are often treated like puzzles – and answers are searched for, that aren't even there. Pidd (2003) frames the dilemma by saying that "one of the greatest mistakes that can be made when dealing with a mess is to carve off part of the mess, treat it as a problem and then solve it as a puzzle – ignoring its links with other aspects of the mess (2003: 62)." Based on this, we argue that trying to measure design as a "one size fits all" value for a company in most cases would be to do exactly what Pidd is warning against. Measuring design that way, embracing all aspects of the concept in one value, would be a complete mess with way too many unknown factors, mixed interpretations and differing levels of analysis, and it would therefore be misleading to treat it as a puzzle.

Thus, taking the stance that design has too many aspects and ways of being applied in corporate contexts to be measured as one value, and yet striving for a set of clear-cut categories, we turn to our matrix arguing that the two lower categories of design competences in the matrix, "cognitive competences" and "sensitive competences", however important they are for design practice, are introverted and very personal qualities, that are ill-suited for measurement – not least at an organizational level. Again, Ackoff's term "mess" would be the best way to describe the measurement of cognitive and sensitive competences in an organization. Much is written about designers excelling in these qualities. They can be qualitatively described and illustrated, but lacking clear-cut measurements, we would have to accept that these competences often represent the "something extra" that comes with engaging with designers – or with anybody else who excels on these parameters. This resonates well with scholars arguing that "the beauty of design - when this beauty occurs - isn't in ticking a series of

measurable boxes for a client, but in delivering something completely unexpected that works perfectly (Montgomery, 2012: 1).” Whether to call these competences design, or whether we would be better off with more specific, basic descriptions is part of an ongoing discussion in the field (e.g. Norman, 2010). This does not, however, make these competences any less important for business. On the contrary, actually. As argued by Tønnesvang (2002), in his original making of the model, it is important to be aware that the central competences are “not just related to professional, technical skills, but are also (and particularly) related to understanding how to use your own personality as a working tool” (own translation) (2002: 71).

## **The “Design In Business” Model**

Acknowledging that certain aspects of the design deliverables cannot be measured, we stick to the objective of crafting a framework that explicates how concrete design deliverables and competences can be applied and bring value in various organizational contexts. By doing that we follow Holston (2011), who holds that “the price of a seat at the decision-making table is accountability... As designers participate more collaboratively, they need to be able to explain their work processes and how they create value” (2011: 5). In our framework (see app.1) we explicate design deliverables along *the vertical axis* by outlining the four categories described in the design competence matrix above. Technical competences are split between means and ends. On the one hand there is a ‘process focus’ in which creative, handicraft skills are used to make boundary objects that can support a process; and on the other hand there is a ‘product focus’ in which the same skills are used with the aim to create a product or a service. The category called social competences is split in three, determined by the parties between which connections are being made. Knowing that we have just deemed the two remaining categories, cognitive and sensitive competences, to be immeasurable, we have, however, incorporated those in the framework as well. We find that it is important to constantly remember the close connection to these intangible competences when discussing and maybe even measuring the more tangible aspects of design.

We find that managers with little or no experience in design tend to refer to functional distinctions between departments or to distinguish between activities along the value chain when discussing where and how design brings value to their businesses. Design is most often regarded as a narrow competence related to form and styling, but there is a tendency for

managers to follow Mozota's (2003) proactive approach regarding design deliverables as creative and refreshing tools, concepts and practices that can enhance various innovation processes within the companies. In order to capture this perspective on design, *the horizontal axis* of the framework distinguishes between various forms of on-going innovation in the organization to which design might bring a contribution. Schumpeter (1934) is said to be the first to define the concept of innovation as "the creation of new combinations". Since then the conception of innovation has evolved significantly and scholars have offered a wealth of definitions (e.g. Damanpour, 1991, Daft 1978) and many typologies and models have been introduced (e.g. Jansen et al, 2006; Damanpour, Walker, and Avellaneda, 2009). One of the best known and most widely studied typologies of innovation is the distinction between product and process innovations (e.g. Kotabe and Murray, 1990), but also the distinction between technological and administrative innovations (e.g. Bigliardi et al , 2011; Birkinshaw, Hamel and Mol, 2008) is widely recognized. While technological innovations are directly related to the organization's primary work activity in terms of products and services, administrative innovations mainly affect the organization's management systems and pertain to changes in administrative systems, organizational structures and processes, and managerial knowledge and skills (Damanpour, Walker and Avellaneda, 2009). Birkinshaw et al. (2008) focus specifically on management innovation, which they define as "the invention and implementation of a management practice, process, structure or technique that is new to the state of the art and is intended to further organizational goals" (2008: 825). Management innovation is regarded as a particular form of organizational change as it involves introducing novelty in an established organizational setting. In our framework we take departure in the typology of Bigliardi et al. 2011 (see figure 1), which distinguishes between four types of innovation: product innovation, process innovation, market innovation and organizational innovation. Thus, by mapping out the framework on the two dimensions, we offer a platform, which can help the two parties reaching a mutual understanding of how the concept of design can be understood as concrete deliverables and where in the organization these are potentially bringing value.

## **Empirical Study: Introducing Design To Non-Designer SMEs**

However difficult it is to measure the value of design in organizations, an increasing number of organizations have engaged in design initiatives; and regional and national design support programmes have been established to inspire small and medium sized enterprises (SMEs) to incorporate design as a means for innovation and strategic renewal. In Denmark, for example, the government has set out ambitious goals for the nation to create competitive advantage by means of design for businesses. Design is seen as a key asset and it is suggested that “a larger proportion of Danish businesses is to use design strategically” (Danish Government, 2007). This paper is based on an empirical study implemented as part of a large regionally funded Danish project called “D2i - Design to innovate”. The aim of the project, which is running 2011-2014, has been to strengthen regional organizational growth through design by offering the organizations knowledge of - and experience with - design, and thereby inspiring them to initiate design-driven innovation themselves. Such initiatives are based on the assumption that design does, in fact, create value, and often they come with requirements of documenting such effects. Focusing particularly on SMEs, some studies have strived to document how design and designers can positively influence business performance of SMEs (e.g. Black and Baker, 1987; Walsh et al., 1992, Ravasi and Stigliani, 2013), while others have investigated how SMEs with little or no design experience can acquire new design knowledge (e.g. Acklin, 2013). Acklin proposes a design absorption model that outlines how SMEs go through phases of acquiring, assimilating, transforming and exploiting new design knowledge. Various scholars have, however, shown how difficult it is to transfer design knowledge to non-designer organizations. Based on a design perspective, studies have for example explained how some SMEs are technology-driven and as such are making ‘silent design’ decisions (Gorb & Dumas, 1987). SMEs have been shown to lack access to design resources (Cox, 2005) or simply to have a poor design understanding (Moultrie, Clarkson & Probert, 2007). Against this backdrop, our point of departure has been to investigate the effects of introducing design initiatives in non-designer SMEs. We have interviewed managers in 20 Danish SMEs with little or no design experience, half of which have been offered an inspirational three-day design consultation with a local design team and half of which have not been receiving any particular design inspiration prior to the interviews.

Our overall empirical observation has been that there is an actual clash of perspectives between designers and managers in a non-designer SME. Repeatedly, we sensed frustration after the design consultations because of genuine misunderstandings. As one interviewee expressed it:

*“When it came to what design actually is, it was just one big misunderstanding between us. To us, design is primarily graphic design, but to them it was more like being innovative or unconventional. But at the end of the day, we didn’t get the inspiration that we had hoped for. They addressed so many different things, but they didn’t talk about design, as we understand it.”*

Many of the non-designer managers regard design to be a technical competence related to either product innovation, in terms of styling of the product or to process innovation, in terms of marketing and branding. And when discussing the concept of design with the visiting design team several expressed reservation about the designers’ tendency to incorporate a wide variety of aspects in their understanding of the concept. As one interviewee comments when being presented to methods of user-involvement:

*“Well, why do you call that design? We do a lot of that, but to us, that has got nothing to do with design.”*

This exemplifies how the two perspectives of design and management differs in their understanding of design competences, the former is much broader and embracing than the latter. What some designers think is silent design, design-activities in the organization that are just not regarded as such, others from a non-designer context might not think of as design at all. But by using the “design-in-business” framework the non-designer manager can be introduced and inspired to new ways of understanding the concept of design, while still being respected in his way of placing design in certain functional disciplines of innovation within the organization. One manager addressed the sensitive competences of his employees with the following, thereby becoming aware about the individual/organizational level of design competences:

*“My employees, as a group, might be very much engineers when at work, clinging to technological challenges and particular ways of doing things. But privately and individually they do all sorts of creative things. One plays jazz, another is active in an amateur theatre. So when I bring them out of our normal work setting, anything is possible”.*



## **Conclusion**

With the “design-in-business” framework proposed in this paper we offer a platform of mutual understanding and inspiration between designers and managers. Thereby, we follow the widespread managerial call for an explication of the concrete design deliverables. In order to avoid comparing apples with pears, the “black box” of all-encompassing design needs to be opened and nuanced in a palette of design deliverables before we can start measuring how, where and why design brings value to the organization. While it is tempting to turn to the tangible, extroverted technical and social competences and only measure aspects of those, it is important to also articulate the value of the more intangible dimensions of design.

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## APPENDIX 1:

### The Design-In-Business Framework

"Design in business"		Product innovation	Process innovation	Market innovation	Organizational innovation
Technical competences	Process focus (creation of boundary objects as means for process facilitation)				
	Product focus (innovation of products and services)				
Social competences	Connecting people internally in the organization				
	Connecting with users and customers				
	Connecting with society and other larger groups of stakeholders				
Cognitive competences					
Sensitive competences					

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**Section 5d: Design(ers) Thinking and  
Disruptive Business Model Innovation**

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# **Editorial: Design(ers) thinking and disruptive business model innovation: creating mental models or tangible models?**

Petra BADKE-SCHAUB and Lianne SIMONSE

The current view on societal, economic and technical changes describes the future as an era of disruption, where the rapid development of new technologies needs to be met by radical innovation. In order to cope with these uncertain and complex innovation processes, new methods and approaches, such as new business models are needed. In line with that change of organisation related processes also a change of thinking processes seems to be necessary. But what kind of thinking processes is asked for? This question is in recent literature answered by creating a new meaning to the classical term 'design thinking'. Whereas in the scientific design research community design thinking is the part of design activity which refers to the information processes in the designer's brain, the new established meaning postulates design thinking as a combined construct consisting of these capabilities, which are necessary to win in the worldwide battle of the survival of the fittest, such as explorative, future oriented and intuitive thinking.

The following papers discuss these and other assumptions and try to get a closer grip on the phenomenon of design thinking using an empirical and / or theoretical approach. Thereby the main topics in this track relate to the following questions:

1. What is design thinking and what relevance does design thinking have in times of disruptive innovation?
2. How can design thinking be applied to strategic business model innovation?

The papers try to describe the breadth of the area of design thinking by asking about the transfer of design thinking and the differences to management thinking.

The start with a case study of the development of an Australian Airport Corporation's mobile application using a design-led approach to innovate.

In the paper by Frido Smulders, Kees Dorst and Pieter Vermaas the authors analyse the context of three cases of design thinking transfer, website design, social design and business-innovation design in order to find out whether design thinking can be transferred to other domains.

The paper 'Designing for disruption: Applying design thinking to strategic business model innovation' from Julian Nelson Russell Jenkins and Tim Fife, aims to empirically find out about the assumed differences between designers and managers, that designers are 'using' design thinking in contrast to managers with a more analytical thinking approach. And indeed, their results show that managers and designers seem to be complementary in terms of several variables, which are related to higher levels of uniqueness and quality.

Ryan and Devitt focus on the cognitive behaviour of the actors also distinguishing design thinking and analytical thinking and investigate the suitability of both for the effective early stage formation of radical innovation concepts.

Two papers discuss the topic of crowdfunding as one example of new business models. Pape and Imbesi analyse participatory mechanisms in crowdfunding and show examples of design projects which provide further insights how to understand, evaluate and implement crowdfunding. Shao, Gonzalez Caicedo and Bettiga provide a literature review about crowdfunding as a new business model and present an example of a successful crowdfunding project.

A case study of the development of an Australian Airport Corporation's mobile application using a design-led approach to innovate is described by Price, Wrigley, Matthews and Dreiling. From that analysis they derive a checklist aid in the future development of digital channels.

The following four papers try to connect the design thinking approach and the new business modelling as methodological approach and define the specifics of both of them.

Simonse and Badke-Schaub integrate a design thinking perspective into the business modelling approach and exemplify the design challenge of modelling e-health business models in practices.

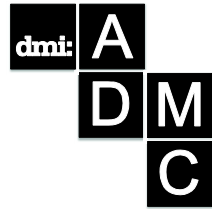
In a similar way Amano discusses design thinking as essential for design methodology and explains learning complexity and synthesis as key elements of business model prototyping.

A slightly different theoretical approach is presented by Newbury who emphasises the strategic foresight, design thinking and design management

*Design(ers) thinking and disruptive business model innovation: creating mental models or  
tangible models?*

as complementary ingredients for quality and speed of design and  
innovation.

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## Crowdfunding: A new meaning for fund-raising & user innovation

Sara Jane GONZALEZ\*, Debora BETTIGA and Jing SHAO

DESMA

*Crowdfunding has emerged as an innovating way of funding for individuals and companies, alternative to traditional fund-raising and centered on user innovation. It represents a new business model designed to support the entrepreneurial spirit from those who have innovative ideas, launch them in designed platforms and create new products and services with crowd's support. However, due to its multidimensional and multi actors' nature, past contributions on the topic are few and scattered across different fields, not giving a comprehensive view of the phenomenon. In this article, we provide a review of the literature of the multifaceted crowdfunding phenomenon, placing emphasis of its close connection with both user and business model innovation. Our review synthesized and organized different contribution of literature by analyzing the three main actors' perspectives: online platforms, entrepreneurs and the crowd. We then provide a key of interpretation of the phenomenon, as a new business model that enables user innovation, explaining how the meaning of funding and the role of users is changing through crowdfunding initiatives and presenting an example of a successful crowdfunding project. We finally propose future lines of research to increase the understanding of this complex yet attractive topic.*

**Keywords:** Crowdfunding, Platforms, Bakers, Crowd, User innovation

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## Introduction

Crowdfunding has emerged in the landscape of Open innovation, where organizations started to recognize external sources of innovation and competitive advantage. Crowdfunding represented here is a type of crowdsourcing, a new way of fund-raising, where the sources of innovation are the entrepreneurs, the users of crowdfunding platforms. The term “crowdsourcing” was initially introduced by Howe (2006) who defined it as the outsourcing of a function or task traditionally done by a designated agent to an undefined network of labourers carried out by a company or a similar institution using a type of “open call”. More specifically, crowdsourcing takes place when a profit oriented firm out-sources specific tasks essential for the making or sale of its product to the general public (the crowd) in the form of an open call over the internet, with the intention of animating individuals to make a (voluntary) contribution to the firm’s production process for free or for significantly less than that contribution is worth to the firm (Kleemann et al., 2008).

Raising funds by tapping a general public (or the crowd) is the most important element of crowdfunding. This means that consumers can volunteer provide input to the development of the product, in this case in form of financial help. From this perspective, crowdfunding is a subset of crowdsourcing, since the latter encompasses also financial help (Belleflamme et al., 2010). Schwienbacher&Larralde (2010) firstly defined crowdfunding, basing on the phenomenon described by Kleemann et al. (2008) as “an open call, essentially through the Internet, for the provision of financial resources either in form of donation or in exchange for some form of reward and/or voting rights in order to support initiatives for specific purposes”.

Crowdsourcing.org, leading website on which crowdfunding is actively discussed via blogs and placed articles, has defined the term as follows: “Financial contributions from online investors, sponsors or donors to fund for-profit or non-profit initiatives or enterprises. Crowdfunding is an approach to raising capital for new projects and businesses by soliciting contributions from a large number of stakeholders following three types of crowdfunding models: (1) Donations, Philanthropy and Sponsorship where there is no expected financial return, (2) Lending and (3) Investment in exchange for equity, profit or revenue sharing.” (crowsourcing.org, 2011).

Crowdfunding has emerged in the Internet community since the late 1990s, mainly in the creative industries such as music, media, press or entertainment, industries in which it remains widely unnoticed until around

the year 2006 (Hemer, 2011). In the area of social projects, such as healthcare, charity or even collective development of new ideas, the phenomenon was instead more evident (Hemer, 2011). Nevertheless, also in different industries such as sport, software and fashion the model of crowdfunding increased in popularity and the initiatives managed to increasingly raise higher amounts of money (Lambert et al., 2010). Crowdfunding has now gained the status of an innovating way of funding, alternative to traditional fund-raising, both for non-profit companies and for entrepreneurial ventures that have difficulties in obtain capital from banks, venture capitals or public funds. Usually, in fact, firms that are too risky, too innovative or that are not able to “sell” their idea in an effective way face difficulties in obtain found from traditional entities (Hemer, 2011).

Due the multidimensional and multi actors’ nature of the phenomenon, and the newness of the field, the resulting contributions are few and scattered across different fields Until now only few theoretical contributions as well as empirical studies have been conducted on the phenomenon and published scientific articles focus only on narrowed sectors, such as social or NGO projects, the media and entertainment industry (Hemer, 2011), not providing a comprehensive perspective of the phenomenon. In this regard, Kappel (2009) investigated ex ante crowdfunding of music projects and ex post crowdfunding for political lobbying, Wojciechowski (2009) analyzed the field of charity and no-profits organizations, while Surowiecki's work "Wisdom of the Crowd" (2004) underlined the relevance of Internet community contribution both in the private and public domain.

The first aim of this research is to provide more clarity into the multifaceted crowdfunding concept through an interdisciplinary review of the topic that encompasses innovation, marketing and entrepreneurship literatures. We pursue this objective by (1) reviewing studies, both from scientific literature and published reports, that give insights into the crowdfunding development (2) providing summaries that merged the diverse views proposed in literature by considering the three main actors in the field: online platforms, entrepreneurs and the crowd (3) highlighting the differences that exists between crowdfunding and other forms of finance. The second aim of this article is to give a key to interpret the phenomenon, in the light of the literature review. We do that by (1) explaining how it could be seen as a new business model, that rather a merely way of gather funding and, consequently, connecting crowdfunding with the user innovation concept (2). Our third objective is to propose future lines of research to increase the understanding of this complex yet attractive topic.

According to these objectives, the first part of the paper will develop a review of the phenomenon, giving some preliminary insight into its development and analyzing crowdfunding through a tripartite perspective: platforms, entrepreneurs and crowd. Specifically, the second section will explain the approach adopted for the review. The third chapter will concentrate on the development of crowdfunding and its connection with social networks. The fourth section will discuss the main characteristics of crowdfunding platforms and the different platform categories. The fifth part will focus on the side of consumers, the "crowd", by investigating its role and its motivations and barriers. Then we will concentrate on the entrepreneur perspective, analyzing what kind of individuals or companies are more interested in it, for what purposes and what are the business models generally adopted. As a result of these considerations, the second part of the article will provide a key to interpret the phenomenon, by discussing in section seven the reasons why it could be seen as a new business model and in section eight how crowdfunding enables user innovation. A real case of crowdfunding is presented, in order to explain and give account of the market implications of the phenomenon. Finally we propose an agenda for future research to advance understanding of these issues, and underline also what are the main critics moved to crowdfunding until now.

## **2. REVIEW METHOD**

In this research, a literature review has been conducted and started from investigation of citation databases, Science Direct and Scopus. And our search method is to use a combination of exact phrases and truncation characters, such as crowdfunding, user-innovation, crowd, platforms, backers, and truncation words associated with them were taken into account. Analyzing result is shown in following section of paper. Furthermore, in order to build clear and specific picture for readers about the information and framework we discussed in the paper, a selected case will be performed in the second part. The role of users, platform and crowd will be further explained through the case in order to gain more insights on this emerging topic. In this study, information from empirical study has been presented, and limit of this methodology is considered as lack of practical access of information. Additionally, it will be better to involve real case study in the future to explore relationships between three segments of crowdfunding in order to get more insights. Especially, the role of user in this innovative business model needs to be further analyzed and developed.



### **3. THE CROWDFUNDING DEVELOPMENT**

#### **3.1. Emerging of Crowdfunding**

Crowdfunding was possible due to the development of Internet, but especially to the technological development of Web 2.0, term first used in 2005 by Tim O'Reilly to distinguish between static and collaborative web usage. Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform, delivering software as a continually-updated service that gets better the more people use it (O'Reilly, 2005).

Web 2.0 refers to two-way collaborative platforms that made it possible for people to become more actively involved. These platforms represent a shift from the Web of static pages to display content and a new paradigm where people add and share content (the main objective of the platform is enable context where active participation can happen). O'Reilly (2007) explains that the success of Web 2.0 applications is about harnessing collective intelligence. Collective intelligence applications depend on managing, understanding, and responding to massive amounts of user-generated data in real time. The idea of collective intelligence has been also connected to crowdsourcing, meaning that a large group of people can create a collective work whose value far exceed that provided by any of the individual participants. The Web as a whole is a marvel of crowdsourcing, as are marketplaces, mixed media collections and the vast personal life stream collections (O'Reilly & Battelle, 2009).

Besides, while the Web 2.0 has been a critical ingredient in the development of crowdfunding practices, it also differs from open-source practices (Brabham, 2008). An important distinction is that in the case of open-source, the resource belongs to the community, which can then exploit it on an individual basis (there is no restriction on who can use it); in the case of crowdfunding it ultimately belongs to the firm (or the individual who own and publish the idea), which will be the only one that use it (Belleflamme et al. 2013).

Web 2.0 technology has provided a critical boost, inspiring new crowdfunding platforms, facilitating access to "the crowd," and making possible communication and networking between entrepreneurs and investors (Lambert and Schwiendbacher, 2010).

### *3.2. Crowdfunding and Social Networks*

The proliferation of crowdfunding was also connected with the rapid development of social networks. Social media platforms, such as Facebook or Twitter, serve as a kind of mediator and allow people to form online communities that share similar interests or knowledge (Mislove et al., 2007). This ability for people to interact with each other has been crucial for the recent development of crowdfunding. Social networks represent a powerful tool for attracting the crowd's attention and launch crowdfunding projects. Considering the powerful influence of social networks in increase the scope of prevalence and improving the efficiency of proliferation, social networks tools are very effective for the project communication.

In some cases the project success depends on the exposition of the project in a crowdfunding platform during a specific period of time. Initially, creators contact their friends, family, co-workers and people they know to fund their projects. However by using social networks is possible to contact a broader range of possible funders. Social network's global exposure and the power of the network itself in stimulating the crowd to pledge a project could be a determining factor to improve the performance of a project during the time available to fund it.

Crowdfunding platforms can operate as little more than a popularity contest, with network effects likely contributing to make a few projects highly popular, while leaving others in relative obscurity; some projects may win out based on their popularity and the strength of their networks (Benkler, 2006). Social networks create momentum; facilitate active participation and sharing information while rallying people around an idea. The power of social media is used to spread the knowledge about a project campaign, launch and start to share a project. It also provides two-way communication, allowing project's creators to receive suggestions and knowledge from online communities linked to their projects and to communicate successful examples.

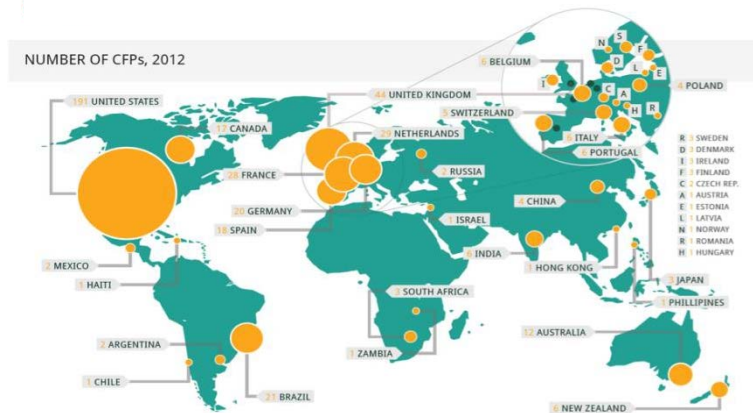
### *4. THE PLATFORMS PERSPECTIVE*

Soliciting funding through an open call is not new, what is new is use an online platform as a funding mechanism. Crowdfunding generally occurs through means of crowdfunding platforms. Such platforms have proofed to be a successful manner of raising funds for companies as well as projects across different industries. Due to the success of these crowdfunding platforms, crowdfunding is seen as an innovative business model that works (The Wall Street Journal, 2010). The Crowdfunding Platform (CFP) has been

defined as “an operator of a funding platform that facilitates monetary exchange between funders and fundraisers” (Massolution, 2012).

The first platform was probably Kiva ([www.kiva.org](http://www.kiva.org)), a microfinance agency that uses crowdfunding to finance small loans for poor entrepreneurs, largely in low-income countries (Flannery, 2007). While the CFPs formed some years ago are still growing in terms of funds raised, new market entrants are securing a larger relative percentage of new funds raised, consistent with a high growth, early stage industry. In 2012 fund raised grew a 63% CAGR (Compounded Annual Rate of Growth), there were 452 crowdfunding platforms active worldwide; North America leads other regions in terms of the total number of crowdfunding platforms (with a total of 532 successful fund-raising campaigns), and Europe is gaining percentage share within the market in aggregate (654 campaigns), (Massolution, 2012).

More than 450 crowdfunding platforms are active worldwide; the majority based in United States (191 CFPs), United Kingdom (44 CFPs), Netherlands (29 CFPs), France (28 CFPs), Brazil (21 CFPs), Germany (20 CFPs), Spain (18 CFPs), Canada (17 CFPs) and Australia (12 CFPs). Latin America, Africa and Asia are emerging markets for crowdfunding platforms. According with the Crowdfunding Industry Report the overall crowdfunding platforms industry raised \$2.7 billion in 2012 (an 81% increase), across more than 1 million individual campaigns successfully funded globally. In 2013 the industry was projected to grow to \$5.1 billion (Massolution, 2013)



*Figure 1 Number of Crowdfunding Platforms in the world. Source: Crowdfunding.org Directory of sites as of April 2012.*

These platforms facilitate how projects are funded in an ease and more simple way. Crowdfunding platforms facilitate the mobilization of ideas, the interconnection of funders with creators, the bringing together of ideas and resources, and new organizational possibilities (Bannerman, 2012). Online platforms made projects all day available, spread the word about the ideas to many people as possible and challenge creators to present their ideas in an innovative way according with the platform’s requirements (e.g. some platforms ask entrepreneurs to upload short videos, description, pictures, etc. explaining the projects to the crowd).

Crowdfunding initiatives are surfacing in a variety of markets; platforms divided all projects in different categories, from art, music, design, photography, technology, literature, politics, environment and education among others. Backing a project is more than just giving someone money. It is also recognized that platforms help to identify possible customers, to find inspiration or to share ideas through creators and backers.

Forbes (Barnett, 2013) published the Top 10 Crowdfunding Sites for Fundraising; the ranking was presented as follow:

Table 1 Top 10 Crowdfunding sites

1	Kickstarter
2	Indiegogo
3	Crowdfunder
4	RocketHub
5	Crowdrise
6	Somolend
7	appbackr
8	AngelList
9	Invested.in
10	Quirky

#### 4.1 Categories of Crowdfunding platforms

Massolution (2012) defines four categories of crowdfunding platforms:

1. *Equity-Based Crowdfunding* (shareholding contract): Investors receive a stake in the company. Depending of the performance of the project, the investors get a percentage of the prize. Equity-based is the fastest-growing category by net year-on-year growth. In 2011 equity-based campaigns were, on average, much larger in size in terms of funds raised per project.

2. *Lending Based Crowdfunding* (credit contract): Investors get their money paid back for their investment over a period of time.

Equity-based and lending-based crowdfunding (i.e., for financial return) is most effective for digital goods (e.g., software, film and music). These categories, on average, raised the largest sum of money per campaign.

3. *Reward Based Crowdfunding* (purchase contract): Investors receive a tangible item or service in return for their funds (e.g., investors get a first or a special edition of the product, the opportunity to meet the innovator in person). Reward-based is the largest category in terms of overall number of crowdfunding platforms. This category is growing at the fastest rate but from a smaller base.

4. *Donation Based Crowdfunding* (donor contract): Contributions go towards a charitable cause. Investors paid for someone else received a benefit, product or service. The majority of the campaigns run in 2011 by crowdfunding platforms were in the donation-based category.

Donation-based and reward-based crowdfunding draw lower levels of funding per project, but are more effective for cause-based campaigns that appeal to funder's personal belief and passion perform best (e.g., environment, community, faith).

## **5. THE CROWD PERSPECTIVE**

As the name of crowdfunding indicates, the crowd plays the role as trigger in crowdfunding process and influence the ultimate value of the offerings or outcomes of the process. People could act as an agent of the offering, selecting and promoting the project that they believed.

### **5.1 Consumer's involvement and crowdfunding**

Research streams on involvement of the consumers are summarized at table 2. Traditionally, customer's role has been emphasized in *Service marketing*, and customer participation has been relatively included in literature and researches (Ordanini, 2011). However, when the customer participation increases more and more, drawbacks such as lower efficiency, increased uncertainty and responsibility over the outcome become significant. In crowdfunding, customer's evaluative decisions and monetary

support are the key players who make the generation of the offering possible.

Open Innovation literature (Chesbrough, 2003) does focus on customer involvement in developing new offerings. In crowdfunding a relatively larger number of people could support the project, compared to other instruments, where only few customers could participate in the whole process. Open Source shares many features with crowdfunding, but participants should not only offer knowledge and effort but also play promotional and investment roles in supporting. Another stream investigates Brand Communities, which mainly motivate their members by providing fun, learning, identification and status, especially when the activity is shared in social networks. However, compared to crowdfunding, they do not include the key element of monetary support form consumers.

Table 2 Research streams on consumer involvement vs. crowdfunding approach

<b>Research Streams</b>	<b>Characters</b>	<b>Crowdfunding</b>
<i>Service Marketing</i>		
	<i>Benefit</i> <i>Offers greater efficiency</i>	<i>Customers are the key players; their participation helps in developing the offering</i>
	<i>Constraints</i> <i>Increases uncertainty and responsibility</i>	
<i>Open innovation</i>		
	<i>Benefit</i> <i>Customers involve in developing an offering</i>	<i>Relatively larger number of people participate</i>
	<i>Constraints</i> <i>Only a few of them could participate</i>	
<i>Open source</i>		
	<i>Benefit</i> <i>People collaboratively contribute to some aspects of the production process or the solution to a design problem</i>	<i>Customers contribute with knowledge and effort, and at the same time they play promotional and investment role.</i>
<i>Brand community</i>		
	<i>Benefit</i> <i>Motivates by fun, identification, status especial with social media</i>	<i>Gains monetary support from consumers.</i>
	<i>Constraints</i> <i>Does not capture the monetary aspect</i>	

## **5.2 Barriers and motivations for investors**

In the case of crowdfunding, an individual initiative tends to reveal several distinct traits:

- (sometimes) play a donor role oriented towards providing help on social projects
- become shareholders
- disseminates information
- being at least partly responsible for the success of others' initiatives
- seeking a payoff from monetary contributions

Table 3 illustrates the barriers and motivations of donors when they make a decision to participate in crowdfunding. Obviously, people are more likely to join in a project, which operated by some people they know. Since the operation of crowdfunding, money they donate could be just disappeared after donation; the possibility of success of the project is also take large consideration in the whole process.

There is normal desire to help creative people especially in art industry, since donors could be seem as an early identifier or supporter of an “unknown” talent. Many people are more likely to pledge if the project conduct by a team and seems could finish as promising. Besides, a shared mission amongst the group who are supporting the entrepreneur could attract more donors. Furthermore, if donors feel authentically connected with and informed by the entrepreneur, they will more willing to join or support the project.

*Table 3 Barriers and motivations of donors.*

<b><i>Investor barriers</i></b>	<b><i>Investor motivations</i></b>
Tax deduction benefit is only a bonus	Benefits such as rewards or exclusivity or sense of pride in society activities
Concerns about the success of the project team or the entrepreneur	The desire to help creative people or have a creative feeling of belonging
No “personal” connection: do not know the entrepreneur	They know the person
Online payment barrier	Engaging in cultural production

Large numbers of people just want to get benefits such as giveaways or free tickets to screenings. In contrast, the crowd could be interested in becoming customers, above investors, of the product once it is available on the market. Moreover, people could have an incentive to spread product information in case of profit sharing. Such information dissemination, free in the case of crowdfunding, would require instead additional financial resources, to develop advertisement campaigns, in the case of traditional financial investors (Lambert & Schwienbacher, 2010). However, since crowdfunding platforms and related payment methods are usually web-based, privacy concerns could disincentive some people from invest in it.

## *6. THE ENTREPRENEUR PERSPECTIVE*

### *6.1. Revenue stream*

Crowdfunding is a source of financing for individuals or organizations, which could be used together with other traditional sources. For the purposes of this paper, “entrepreneur” refers to the people or organizations that propose the ideas or projects to be funded (e.g. product, service, technology, film, music record, art project, etc.). They are innovators who decide to use a crowdfunding platform with the purpose of rising money to develop their initiatives and introduce them to the market. The campaigners (or entrepreneurs) collecting funds can include SMEs, startups, micro entrepreneurs, social entrepreneurs, the self-employed, the cultural and creative sectors, public authorities, innovative or environmental projects, public interest bodies, researchers, consumers or the unemployed (European Commission, 2014).

For the use of entrepreneurs, different business models based on the type of rewards offered to the participating crowd could be individuated (Schwienbacher&Larralde, 2010)

Donations may attract funds due to the fact that such organizations are more inclined to produce high quality products than for-profit organizations, that offer standardized products for the widely distribution. Important in this case is to create a loyalty crowd that values other forms of rewards compared to the financial ones. However, this strategy could also go against the donor’s purposes (Schwienbacher&Larralde, 2010). Passive investments by the crowd do not offer any possibility to investors to become actively involved in the initiative or gain some control or participation in decisions. Here the focus is merely on money raising, losing in that way the possibility to gain insights or ideas from the crowd. Active investments, at the contrary, offer investors the possibility to become involved in the initiative while, at



the same time, the organization can gain feedback on the market demand and needs.

Another classification can be found in Belleflamme et al. (2013) that differentiate between the pre-ordering mechanism, where entrepreneurs ask consumers to pre-order the product, in order to collect the necessary financial resources to start production, and the profit-sharing mechanism, where entrepreneurs raise money in exchange for equity securities. They assume the entrepreneurial choice of the crowdfunding scheme depends on the amount of initial capital but also on extra benefits.

## *6.2. Organizational form*

The organizational form matters (Lambert & Schwienbacher, 2010). Three different typologies of commercial background for crowdfunding exist (Hemer, 2011): not-for-profit, in the area of public (e.g. healthcare or infrastructure), charity, open source; for profit, if the project has a clearly commercial goal like financing a company or a commercial activity; intermediate, if it is not clear the final goal, such as projects for social networks, new services, forms of art.

Above the formal structure, also different kinds of organizational entrenchment exist (Hemer, 2011): independent/single, when the initiative has not a background in an organization but is developed by individuals; embedded, when projects are developed by a private or public organization; start-up if the goal of the project, even individual, is the foundation of an organization.

Few empirical studies have been conducted so far on these issues for crowdfunding firms. Schwienbacher was one of the first researchers that studied in an empirical way crowdfunding for entrepreneurial firms in Europe (Lambert and Schwienbacher, 2010; Schwienbacher&Larralde, 2010). He suggested that the organizational form may be an important driver of the success of crowdfunding initiatives, discovering that not-for-profit organizations achieve their fundraising targets better than for-profit organizations and project-based initiatives (Lambert & Schwienbacher, 2010).

## *6.3. Value creation*

Kleemann et al. (2008) sustained that innovators use the crowd mainly for cost-reduction purposes. However, innovators may need also external support to evaluate the economic potential of their offer (Schwienbacher&Larralde, 2010). Despite the fact that, unlike business

angels or other structured investors, the crowd usually doesn't have specific knowledge about the product, the "wisdom of the crowd" argument asserts that the crowd could in some cases be more efficient than a few equity investors alone (Schwienbacher&Larralde, 2010). Therefore, even if raising money is reported to be a strong motivation for individuals and organizations to use crowdfunding, other motivations for resorting to crowdfunding are seen as equally important; in particular, getting public attention and obtaining feedback on the product or service offered.

Crowdfunding can be used as a promotion device, as a means to support mass customization or user-based innovation, or as a way for the producer to gain a better knowledge of the preferences of its consumer (Belleflamme et al., 2010). Sometimes crowdfunding is used as a strategy to promote a new product by developing marketing campaigns that involve consumers (Lambert &Schwienbacher, 2010) and assess if the product will be successful. In fact organizations experienced also other benefits from the crowd, from the crowd contribution in creating value through product design and improvement, to reduction of time to market, increasing consumers' acceptance and evaluation of products. Crowdfunding can foster entrepreneurship not only in terms of increased access to finance, but also as an additional market testing and marketing tool, which can help entrepreneurs acquiring relevant knowledge of customers and media exposure. The experience with such campaigns also builds employability skills (e.g. digital, communication and problem solving skills) while successful campaigns provide a valuable role model to other 'entrepreneurs to be' (European Comission, 2014). Moreover, in order to achieve their aims, fundraisers and entrepreneurs must use and develop a range of resources (including raising funds and developing their networks) which can also be seen as relevant to employment and employability (Green A. et al (2014) . The entrepreneur could extract value also in the form of new knowledge, obtaining knowledge in the R&D process (Travis, 2008; O'Neil, 2010; Gaggioli& Riva, 2008) or enhancing corporate knowledge management (Oinas-Kukkonen, 2008).

The value of crowdfunding platforms beyond the collection of monetary funds is also evident in the use of these for governments, political parties and the public sector. The main example in this sector was the president Obama campaign in 2008 relied on small donations solicited online during his presidential campaign. During this crowdfunding campaign Barack Obama managed to raise around half a billion dollar with an average donation of 80 dollar (Vargas, 2008). In this campaign, it was for the first

time that the Internet and online social networks were used on a big scale in order to collect campaign money (Kappel, 2008).

## **7. CROWDFUNDING AS AN INNOVATIVE BUSINESS MODEL**

As it was mentioned before, crowdfunding has been recognized as an alternative form of financing that can complement other forms of traditional financing. However, after analyzing all different types of platforms, revenue streams and mechanisms referred to above, we can argue first that crowdfunding is a disruptive business model that gives to entrepreneurs (depending on their needs and the stage of the project) a broader range of options, they can use for build their business proposals, and second that crowdfunding is moving to be seen as “complementary” to be positioned as the first and most adequate option for some projects.

One of the most important characteristics about crowdfunding as business model is the access provided to different types of entrepreneurs (artists, designers, engineers, social enterprises, etc.) who does not find the opportunities offered by crowdfunding in more traditional methods for fund raising. Crowdfunding is still a young and evolving form of finance that should be further explored in the context of the financial ecosystem (European Commission, 2014), but today is recognized the value specially for some segments of the economy, who do not find many responses tailored to their needs, due to their specific characteristics (e.g. social enterprises or the cultural and creative sector) (COM, 2012).

In the case of the SMEs for example, access to finance is one of the most pressing problems. SMEs report a deterioration in public financial support (-13%), access to loans (-11%), trade credit (-4%) and the willingness of investors to invest in equity (-1%) (ECB, 2013) In contrast, SMEs have found in crowdfunding an alternative to find the economic support; they don't receive from existing sources of finance. It can contribute to addressing access to finance problems and help start-ups move up the "funding escalator" (European Commission, 2014).

In addition, the way entrepreneurs formulate their business model using crowdfunding platforms is also different. Entrepreneurs don't present traditional business model canvas on platforms to ask for money. Instead, they decide to go for an attractive way to communicate their ideas, to share the innovation in terms of benefits, improvements, novelty or potential, rather than share a business model canvas or a business plan with a market analysis or a financial plan, which usually are relevant for other backers to

decide. Crowdfunding matches small - or even bigger - contributors and investors directly with the projects in need of funds, mainly in the early stages (European Commission, 2014). Thus, crowdfunding is changing also the way people look at projects to invest. In some cases this is possible thanks to the option to support projects with a low amount of money, that a low risk for backers, but even business angels and investors are looking into crowdfunding to find alternatives to invest as they recognize innovative proposals and opportunities in these platforms.

Finally, the idea of crowdfunding as business model is not only connected to the entrepreneurs and backers, but also to the platforms developers. Platforms developers and managers should decide their commission-based business models to obtain revenues. Most of them take a percentage of the profits from every successfully-funded campaign on their platform, thus their business model is driven by transaction volume (i.e. Higher is the number of projects launched and funded on the platforms, higher is the revenue), but there are differences in terms of market (countries where the platform is available), legislation (anti-money laundering, advertising, consumer protection, intellectual property protection) or financial return (crowd lending and crowd investing).

We can conclude there are opportunities to apply design thinking in developing alternatives to crowdfunding as business model in the way entrepreneurs formulate their business ideas, communicate their projects; the way developers and new players structure their platforms, develop new markets where crowdfunding is unknown, differentiate their selves from existing crowdfunding sites and design strategies to obtain revenue; and finally on the way investors interact with entrepreneurs and projects and the way they explore project offer and made decisions in this new financing/supporting ecosystem.

## ***8. CROWDFUNDING AS ENABLER OF USER INNOVATION***

Several studies have found that user innovation is the province of users with specific characteristics as source of innovation (Urban & von Hippel 1988; Morrison et al., 2000; Franke& Shah 2003, Lüthje, 2003) that develop their own products, which often become the basis for commercial products.

Lead User theory (von Hippel, 1986) describes the characteristics of innovative users (both individuals and firms). These are users ahead of the majority of consumers with respect to an important market trend, who expect to gain relatively high benefits from a solution for the needs they have encountered there (Von Hippel, 2005). In addition, looking at the

entrepreneurs who decide to participate in crowdfunding platforms we have seen they share some characteristics that can be related with the Lead User definition (von Hippel, 1988)

- entrepreneurs (both individuals and firms) face general needs in a marketplace, but they face them months before the bulk of the marketplace encounters these needs.
- they are positioned to benefit significantly by obtaining a solution to those needs.
- they use their real-life experiences and expertise to design new solutions.
- users that innovate can develop exactly what they want, rather than relying on manufactures to act as their agents.

The correlations found between user innovators (lead users) and crowdfunding platforms users are highly significant. Some researchers discuss about users innovators saying that innovation is being democratized (Von Hippel, 2005), meaning that users of products and services are increasingly able to innovate for themselves. Most of the entrepreneurs who have launched a project in a crowdfunding platform, have invested time and money at developing their ideas. They previous developed a project independent of the specific fundraising strategy they will follow, discussing ideas, building mock-ups and prototypes, developing a new technology, product or service and creating a brand, package or a coaction strategy to launch their ideas to the market.

Sanders (2006) argues that lead-user innovation is very effective for highly specialized domains of expertise, but it is not able to address the need and dreams of the large number of “everyday people”. However, a larger number of people can access to the innovations in crowdfunding platforms and back them with information and economic support. One of the benefits for user innovators using crowdfunding platforms is that they have the opportunity to share their knowledge with the crowd and build on the base of the feedback they obtain from the platforms visitors and backers, thus crowdfunding platforms act as enablers of communication between user innovators and the crowd.

Governmental policy and legislation sometimes preferentially support innovation by manufactures (von Hippel, 2005). However, for entrepreneurs with innovative ideas and positive performance of their campaigns, crowdfunding platforms have shown to be an effective alternative to fund projects in contrast to traditional fundraising processes (e.g. venture capital,

business angels, bank loans). The founder of a recent start-up, Pebble Technology, raised \$10 million, the largest amount from Kickstarter, after failing to gain support from angel or venture capitalists (Henton, 2014). The importance of crowdfunding as an alternative way to support user innovation is a topic that will become relevant for researchers and practitioners, since crowdfunding represents an alternative to user innovators to push forward their ideas and transform them in profitable businesses.

Crowdfunding has been effective for innovators not only to collect money and information from the crowd, but also to promote and enable user innovation. The number of entrepreneurs using crowdfunding platforms is increasing over time, as innovators are spurred by the success of previous cases. Speakers at the fifth annual Economist Innovation Forum: “Bigger Returns with Bigger Ideas”, discussed that the legalization of crowdfunding in start-ups will “democratize” investing in innovation. While many of the consequences (positive or negative) of the legalization will play out over the next few years, the most well-known crowdfunding platforms are showing impressive results. User-driven innovation, open innovation and crowdfunding all point to a bottom-up trend toward greater democratization of innovation (Henton, 2014).

Finally we can argue that so far, there has been developed different methodologies to apply user innovation to product and service development, but considering the affinity between user innovators and crowdfunding entrepreneurs, one opportunity for apply design thinking could be the development of methods for enhance user innovation through crowdfunding, exploring new ways of link the creative process to the funding process, new ways (or purposes) of interaction between user innovators and the crowd through crowdfunding platforms, or even how entrepreneurs (or developers) can use the feedback from the crowd to improve their innovation process.

### *9. A SYNTHESIS OF PERSPECTIVE’S ANALYSIS*

After the analysis of the crowdfunding phenomena, we can summarize (Figure 2) the different perspectives of the actors involved. Crowdfunding platforms act as a bridge between entrepreneurs and the crowd through online sites where the project and/or business ideas are presented. These platforms have different categories: Equity-Based, Lending-Based, Reward-Based or Donation-Based depending of the aim, contract and type of fundraising followed by the entrepreneurs.

Entrepreneurs are the individuals or organization who present their ideas and upload them into the platforms in order to collect money to develop or introduce them into the market, their main interest included also collect information (feedback, opinions, ideas) from the crowd in order to improve or test their projects, or develop future ideas. According to our analysis these people share some characteristics with lead users and we believe that crowdfunding can act as an enabler of user innovation.

The crowd is represented for a large number of people who monetary support the ideas through crowdfunding platforms. They have a participative role as they can decide whom to help and they can share their opinions with the entrepreneurs through the platforms. Their motivations can vary depend of the context, but most of them participate because they want to support projects, become shareholders, disseminate information or find a payoff from their contributions.

We argue that crowdfunding should be understood as an alternative business model for both, the platforms developers who often have a commission-based business models driven by transaction volume and for entrepreneurs who can decide between donations, passive investments and active investments; not-for-profit, for profit or intermediate commercial backgrounds and pre-ordering or profit-sharing mechanisms to define their crowdfunding business model.

Finally we conclude that crowdfunding is affecting the entire finance ecosystem, because as a new business model present new possibilities to each actor:

For entrepreneurs: to build business ideas, to communicate/sell them online and to find financial support from non-traditional backers.

For the crowd: to look for innovative business through alternative online platforms, to get in contact with innovators and new ideas developers and to financially support projects through different amounts of money with the possibility to get a reward.

For platforms developers: to think in new ways to connect entrepreneurs and backers, to create new strategies to generate revenue, to develop crowdfunding in new markets or differentiate themselves on competitive markets.

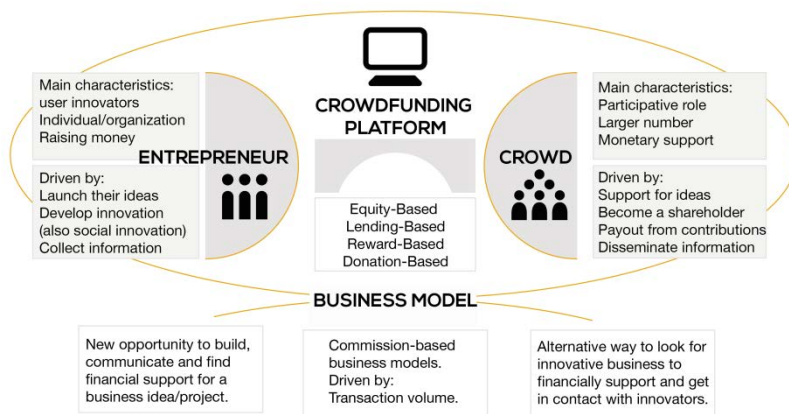


Figure 2 Different perspectives of the Crowdfunding ecosystem.

## 10. AN ILLUSTRATIVE CASE OF CROWDFUNDING

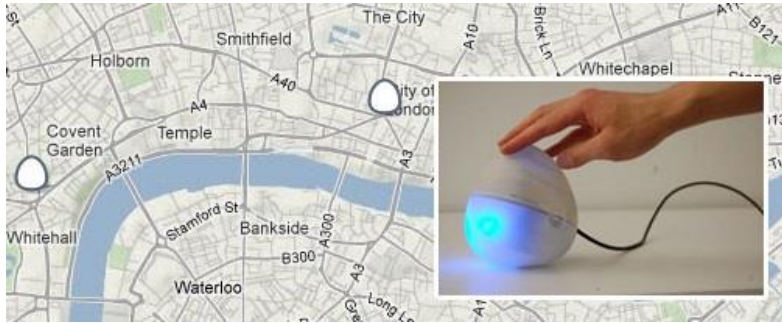
### AIR QUALITY EGG

Air Quality Egg project is an effective example of how the crowdfunding model works by enabling user innovation and how essential is the contribution of all the three actors in the development and growth of a new product, from the initial idea to the commercialization on the market. The project started in March 27, 2012 and was launched on the crowdfunding platform kickstarter.com. In only 30 days collected \$144,592 from 927 backers.

The idea behind the project was to enable people in detecting the air quality and so understand or even change the local dynamics of pollution. The funders thought in fact that government test on air quality, being at regional level, couldn't help in assess local differences. The system was born out of open data web service Pachube's community meetups. The London, New York and Amsterdam communities merged with the objective to create a way for citizens to participate in conversations about air quality. Designers, technologists, developers, architects, students and artists composed the community. The product development evolved through conversation and communication in social platforms.



*Crowdfunding: A new meaning for fund-raising & user innovation*



*Figure 3 Air Quality Egg project. Source: [airqualityegg.wikispaces.com](http://airqualityegg.wikispaces.com).*

The Air Quality Egg is a sensor system designed to enable anyone to collect high-resolution readings of NO<sub>2</sub> and CO concentrations in the air. It works through a system of outdoor sensors that take regular readings of the air quality and send data wirelessly to an Egg-shaped base station inside that transmits these data on Internet (Figure 3). The Egg also acts as a user interface, with a configurable LED light and a button. The air quality data are sent in real-time to an open data service, which stores and provides free access to them, as well as graphs and maps, tweets and SMS alerts. The Egg's sensor system was prototyped and refined several times. WickedDevice designed the wireless system and managed the production.

The fundraising started using Kickstarter platform by setting a \$100,000 goal, a minimum funding level in order to achieve the necessary volumes that can enable design and hardware development to bring the price into an affordable range. People could pledge from \$1 to more than \$10,000 to the project. Rewards were offered to backers that pledged more than \$30. The project was successfully funded on Apr 26, 2012. In few months after the fundraising opening, Air Quality Egg has been launched to the market and is now sold at \$185.00. After the project was funded, a platform was proposed for web developers who want to apply this information in innovative ways via web apps, mobile apps, visualizations or interactive installations.

As the case highlights, the crowd here does not act as a mere source of money but actively participate in the whole process. Various users were involved starting from the concept development through social networks that, as argued in the first session, act as an instrument to attract the crowd interest and gather popularity around the project, thanks to the network

effect. The crowd did not limit the contribution to this first stage and to project funding. It is actively involved also after the product commercialization, through participation in discussion about air quality detected with the egg. This interaction between developers and the crowd is essential for project success. The role of the platform, indeed, has been fundamental and not limited to allow the funding of the initiative. It enables the communication between these two actors as well as to promote the project to a wide public. In our view, it represents a pragmatic example of the nature of crowdfunding that could not be seen as only a new instrument for fundraising, but a truly new business model. Moreover, the Air quality Egg gives a great example of how crowdfunding acts as a further enabler of user innovation, providing a platform for web developers who want to use the information collected by the egg in innovative ways, thus pushing new innovations.

## *11. CRITICS AND FUTURE DEVELOPMENT OF CROWDFUNDING*

Due to the increase of their popularity, the numbers of crowdfunding platforms have grown quite quickly over the last years (Holzer, 2011). Thus the increasing use of crowdfunding platforms evidence that they became popular and represent an innovative alternative to people to fund their own projects in comparison with traditional ways of fund-raising.

Nevertheless as the literature review has shown that the participation of crowdfunding platforms in the global market is an opportunity, especially in countries with a high rate of population that could be recognized as a potential crowd. A topic for further research could be the analysis of how to increase the motivation to create crowdfunding platforms in emerging markets and in which ways the crowd could be involved considering also the cultural differences.

One example of these markets is China, where several website-based crowdfunding businesses appeared from 2010. Aligning to the fast economic developing speed, people, especially younger generation, get more interested in investing small amount of money as one of the way to manage their own finance.

The most famous website is called Demohour ([www.demohour.com](http://www.demohour.com)) which was founded in 2010. It got US\$500,000 angel investment from Taiwan after being online just for a shorter period. Relatively few more projects got success, like Dreamore ([www.dreamore.com](http://www.dreamore.com)), which was

completely free for business funder, and crowd, Tmeng (www.tmeng.cn), based on micro movies, Emielife (www.emielife.com) that has a production background and Jue.so (www.jue.so), more appropriate for creative life products.

While going through their websites, drawbacks are clear to see:

1. As an entirely new way of collecting support from strangers, the level of acceptance from crowd is lower than many other mature methods.

2. Weak protection of patents arise other considerations from funders beyond facing crowd and getting support.

3. A specific case, which could get enough attention from society and earn great reputation, is still lacking. However, since the scale of Chinese market and the bonus of population, crowdfunding has the potentiality to become more and more successful in the future.

For emerging markets, the key now is to make people realize the benefits of crowdfunding platforms, and the risk, which is controllable. This new model of business could become popular only if crowds dispel their concerns. For backers, it will be easier to participate in the project if they could clearly see the benefits and the risks involved. A better audit of financial flow could be implied in order to achieve this goal.

Regarding the business side critics of crowdfunding raised the question of project quality, as it could be less defined than in more traditional investments (Bogost, 2012). Other authors analyze whether crowdfunding embeds geographic constraints on fundraising that are typical of venture capital firms (Agrawal et al., 2010).

Another topic of interest for research could be the question of whether crowdfunding allows also completely different types of organizations to be funded than those supported by the classical entrepreneurial institutions (Tolbert et al., 2011). Franke & Klausberger (2008) sustained that if the phenomenon of crowdsourcing will be over stressed in the market, available crowds will decrease. In any way, crowdfunding provides an empirical setting where several start-ups can be more easily compared, and thus represents an excellent way of testing and extending existing theory (Mollick, 2012). The future regulation of equity crowdfunding, the design strategies of the sites and other potential developments could lead to an evolution of crowdfunding in different ways and with different relations among subjects (Mollick, 2012).

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# A Digital Airport Experience: Design-led innovation in support of airport strategy

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*The digital era is proving to be one of disruption, where new technologies matched with innovative business models can be harnessed to attack even the most established of companies. For businesses with the relative certainty of captive customer bases, such as airports, the ability to digitally diversify offers the opportunity to venture into new modes of operation. For an airport, this opportunity can also be leveraged to sustain superior customer support regardless of a customer's location in the world. This research paper presents a case study of the development of an Australian Airport Corporation's mobile application as part of a greater digital strategy initiative using a design-led approach to innovate. An action research method provides the platform for an intensive embedded practice and study of design-led innovation within the major Australian Airport Corporation. The findings reveal design-led innovation to be a crucial in-house idea generation and concept development capability enabling the bridging of distinct corporate domains associated with commercialisation, operations and customer experience. A Digital Innovation Checklist is presented as an output of this research which structures an organizational approach toward digital channel innovation. The practitioner's checklist is designed to aid in the future development of digital channels within the broader spectrum of strategy by addressing business assumptions.*

**Keywords:** digital strategy, design thinking, design integration, action research

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## **Introduction**

Airports are increasingly being viewed as businesses, rather than public services (De Neufville & Odoni, 2003). The typical business model for airports has reflected this change, with airports extending to city-like social structures; home to industries, people and trade. A driver for the dominance of commercialised airports has been linked to modern society's reliance on air travel as a form of connectivity (Kasarda, 2001). Following the theme of connectivity, an identified industry innovation agenda witnessed within aviation is negotiating the rise of the digital economy. The digital economy has provided the opportunity to radically redesign how airports create and capture non-aeronautical revenue as an ancillary business activity (Taneja, 2011).

For airport management, a diversification from the operation of physical infrastructure of terminals, runways, parking, transport and roads through digital services provides an opportunity to develop new customer relationships. These customers could be passengers, family and friends, retail providers, transport services and other stakeholders within the airport value chain. The use of the word customer within this paper denotes the exchange of value between any of these customer types listed above and the airport. The common end user of an airport is considered the passenger; however, in designing services for an airport, one must consider a much broader view of potential stakeholders. These relationships can be leveraged to support the growth of additional non-aeronautical revenue streams contributing to stronger business performance and growth (Taneja, 2011).

But what value can be packaged and delivered in such a way that strengthens the relationship between customer and airport? How can airports' digitise operations and shift into a future interface with a customer that both supports core business and delights exceptional experience? How can large airport corporations engage customers and discover novel new opportunities to be built upon through digital channels?

These questions pose complex challenges for corporations in airport management and physical infrastructure provision seeking to shift the perspective on the value of digital enabled environments.

This paper outlines a mobile application project completed through a design-led approach within a single Australian Airport Corporation. The research aim is to identify the role of design-led innovation in an Airport Corporations' digitisation as the vital link between customers and a higher level digital strategy.

Therefore, the research question to which this paper responds is; *what role does design-led innovation play within the development of a digital mobile application?*

This paper contributes a novel understanding of the role that design-led innovation can play in the development of an Airport Corporation's digital channel by bridging the value provided by design-led innovation as an approach within an embedded research period. The paper concludes with a Digital Innovation Checklist which synthesises the key areas of corporate business focus within the context of digitisation and strategy.

## **Design-led Innovation**

Design-led innovation begins by gathering deep customer insights using co-design and provocations rather than observation alone (Beckman & Barry, 2008). Transferring deep customer insights into propositions or business opportunities follows as a means for driving and promoting idea generation within the business (Verganti, 2009). Rapidly designing business models that support these propositions then enables new outcomes to be supported by the strategic arm of a business. Once novel customer insights have been gathered, business opportunities for innovation can be translated into a customer centric innovation agenda. These opportunities are framed not as solutions, but rather as propositions for what the future operation of a business might look like (Bucolo, et al. 2012). Importantly these propositions are customer centred with the design-led approach demanding stakeholder and customer engagement. Propositions become platforms for evaluating the current business strategy.

A proposition or opportunity is carried into the internal and strategic level of the business to inform brand strategy, competitive advantage and a business's vision for growth and change. The activity of shifting opportunities into the strategic or operational domains of a firm sits as an integrative activity. Strategic decisions usually occur within the upper management areas of an organization, whilst operational orientated staff may be siloed to focus on operational activities. The act of gathering and translating propositions across a firm's hierarchy or structure is a challenging activity that requires a level of maturity and appreciation of design to sustain (Bucolo, et al. 2012). Wrigley terms the position of this research/practitioner, a *design innovation catalyst* (Wrigley, 2013).

## **Digital Business Strategy**

The addition of digital technology to the business landscape has radically changed the way businesses operate to deliver and capture value (Drnevlch & Croson, 2013). The prevailing perspective on information technology (IT) is that it exists to support business-level strategy by providing back-end functionality to operations (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013). The role of IT within business is undergoing redefinition, driven by key advancements in the way digital technology is allowing businesses to differentiate particularly within turbulent environments (Pavlou & El Sawy, 2006, 2010).

The result of such a digital revolution is the emergence of a more complex environment for innovation and growth (Iansiti & Levien, 2004; Pagani, 2013). Establishing coherent strategy to leverage and integrate digital technology is a new activity now greeting established and new businesses alike. As with general business, digital business relies on the presence of value as a commonality. The value which a business proposes must be met by a matched purpose to which it serves for a customer. Value is not fixed, nor is it stable, but is a function of a customer's choice.

For a business to plan and develop value for the customer of tomorrow, Keen and William state it must be firstly customer-led and future driven (2013). Keen and Williams argue that as every business is now operating within the digital world to deliver value (2013). Therefore, developing strategy through a business model approach is inadequate. Businesses focus must shift towards 'value architecture' – the design of new value propositions to be implemented and leveraged through digital means (Keen & Williams, 2013). But how are new value propositions for tomorrow's customers designed? Whilst IT and information systems have traditionally looked to behavioural information systems, design science and economics to define new opportunities for value creation, there is a now considerable attention shifted to design and design thinking to develop deeper insights concerning customers of tomorrow in the pursuit of successful digital innovation.

## **Design-led Industry Project: Mobile Application**

Airports have long been situated as microcosms for the application of advanced technology due to the limited margin for inefficiency and constant volume of customers (Nicas, 2012). A recognised business opportunity stemming from the rise of urban dependence on air travel is the

development of digital assets capable of providing value to customers and stakeholders within a greater airport system (Taneja, 2011). It is estimated that 70% of customers already carry smart phones, and that up to 50% engage in mobile check in (SITA, 2013). Digital technology empowers the customer to be active within their airport experience and negotiate processing tasks prior to arrival on airport. There is potential at the intersection of new systems enabled by technology, met with deeper customer insight, to create new customer processes which radically change the way airports operate and service commercial and general aviation customers.

This paper is built on the development of a major Australian Airport Corporation's mobile application. The airport corporation involved with this research engaged in the development of a mobile application to diversify into digital channels. The purpose of the mobile application is to support a customer's journey to and from the airport by providing critical information in a mobile context.

The development and production of the application has provided the platform for design as an alternate approach to innovation. The development and release of the mobile application followed the project brief to introduce innovative features to differentiate and define the Airport's app from competitor offerings. This component to the brief provided the critical platform for design-led innovation to operate in order to translate customer insights into radical new service offerings developed and delivered through the mobile application.

The project followed a design-led innovation approach through the partnership with the researcher (first author) and prominent stakeholders within the Business Development Team of the Airport Corporation. The researcher acted as the project facilitator, whilst the Business Development Manager sat in the role of project management during development. Table 1 provides an overview of the key project phases in order to shed light on the broader phases of the project.

Figures 1, 2 and 3, are extracts from the design-led approach to the development of the mobile application and link to the presentation of Table 1. Figure 1 is a frame from the customer testing phase in which deep customer insights were gathered. Narratives were presented to customers in order to engage and provoke dialogue about the possible value and utility of a mobile application. Figure 2 is an extract of the responses following customer engagement and highlights the relationship between insights and reframed 'meanings'. These 'meanings' seek to make sense of insights by

interpreting hidden customer values. Figure 3 is a visualisation of the early conceptualisation of the digital strategy. Whilst most strategic documents use text and diagrams to convey the potential objectives of strategy, this illustration sort to quickly communicate the potential relationship between the customer and airport operations.

*Table 1 Design-led Innovation Project Phases*

<b>Project Phase</b>	<b>Design-Led Tools</b>	<b>Objective</b>
<b>Planning</b>	Case Studies of Competitors – Best case	Project Brief Aims and Objectives Timeline Budget
<b>Internal Workshop</b>	Narratives Convergent thinking Business model canvas Reframing	Collaboratively identify assumptions and differing perspectives Distilling ideas into narratives
<b>Deep Customer Insights</b>	Reframing Persona Design Narrative and Storytelling <b>(Figure 1)</b>	Test and refine concepts Engaging your own customers in dialogue – encourages a higher level of concept transparency and accountability
<b>Propositions</b>	Reframe - insights into meaning or value statements <b>(Figure 2)</b>	Challenged the ability to move beyond customer needs and wants alone.
<b>Design Strategy</b>	Building a roadmap to structure future digital projects through customer centric value propositions <b>(Figure 3)</b>	Ensure cross-channel cohesion requiring greater consideration about how the business delivers value through digital channels.
<b>Project Funding</b>	Carrying voice of the customer through narrative Customer centric concepts	Disseminate final concepts with Senior Management to secure project funding
<b>External Consultancy Specification</b>	Narrative Persona Design	Inspire consultants through insights gained Narrative differs to sequence

		of use in that it encases a character with emotional elements.
<b>Development &amp; Production</b>	Voice of the Customer Narrative	Convey meaning underpinning digital strategy to allow for independent development Requires systems approach
<b>Release</b>	Narrative Graphic Design	Design as persuasion – telling a story to increase adoption underpinned by digital strategy values.

**MEET MATT – TRAVELING TO MELBOURNE FOR WORK.**



*Figure 1 Narrative Excerpt encasing Persona Design – Narratives were constructed and presented to customers using a tablet device. The narratives focused on exploring and evaluating trends observed in the airport's market data as well as presenting digital channel concepts.*

## CUSTOMER TESTING DEEP CUSTOMER INSIGHTS


My Trip	Pax feedback:	Meaning:
<p>*Push notifications of flight details and being able to send your 'my trip' to a friend for flight subscription to notifications</p> 	<ul style="list-style-type: none"> <li>*"Notify me if there is significant delays expected otherwise I might waste hours of my day at the airport trying to pick someone up"</li> <li>*"Is there a way of knowing if the plane is in a holding pattern, this might help me to plan my run to the pickup for my friend...?"</li> <li>*"What if instead of searching for my flight – if I had my QR code, I could scan my boarding pass or check in pass from my airline."</li> <li>*"You feel so guilty if someone is picking you up and your plane is late ... like there is nothing you can do..."</li> <li>*"Having updates is so important – especially if I'm in a café and can't see the screens – or in the bathroom and can't hear the voice overs and it's stressful..."</li> <li>*"Maybe personalise the message – 'Chelsea – your flight is now boarding – head to gate 27...' – is that possible?"</li> <li>*"Notifications should say boarding in 10 minutes, boarding, boarding - final call, Flight closed... Imagine if you got a closed... how would you feel? – maybe the app could then help me get some help if I miss my flight..."</li> <li>*It would be a lot easier if my partner on land was in control and didn't have to rely on me for when to leave. I wouldn't feel so guilty...</li> </ul>	<ul style="list-style-type: none"> <li>- Being informed with the right information so that I can be in control.</li> <li>- Eliminate guilt of travel by networking passengers with family and friends</li> <li>- Humanising my personal experience</li> <li>- Personalisation</li> <li>- Improving pax experience means improving everyone's experience also</li> </ul>

Figure 2 Deep Customer Insights to Meaning – A concept or proposed idea was explored within each narrative. Insights were gathered surrounding the validity of this concept (customer feedback). These insights were reframed into a set of 'meanings' to which a design brief was built to address.



Figure 3 Conceptual Display of Digital Strategy – Visualising the strategy quickly and persuasively conveys the core focus of use of the mobile application. Importantly, the strategy focusses on the broader picture of business operations and how the digital channel fits into this environment – most importantly, visualisation represent the customer.

## Methodology

### Action Research

The industry based rationale of this research methodology utilises an exploratory action research approach in order to align the research objectives of understanding the role of design-led innovation within a practical application (Swann, 2002; Zuber-Skerritt, 1992, 2001). Action research is ideal in the broader research design as the experimental and reflection based learning present within the methodology supports the iterative nature of design practice (Schön, 1983; Swann, 2002), and the cyclic nature of the design-led innovation (Bucolo, et al., 2012). Whilst exploring design-led innovation, action research offers the researcher the ability to reframe and tackle any arising problems within the unique research context through practice (Gustavsen, 2005). Figure 4 illustrates the proposed action research cycle with an integration of design-led innovation. The cycle provides the necessary structure to apply a design-led approach whilst undertaking a qualitative research program exploring the organizational role correlating to a new way of completing work. The stages of action research are produced as an adaption of Swann (2002), and Zuber-Skerrit (1992:2001).

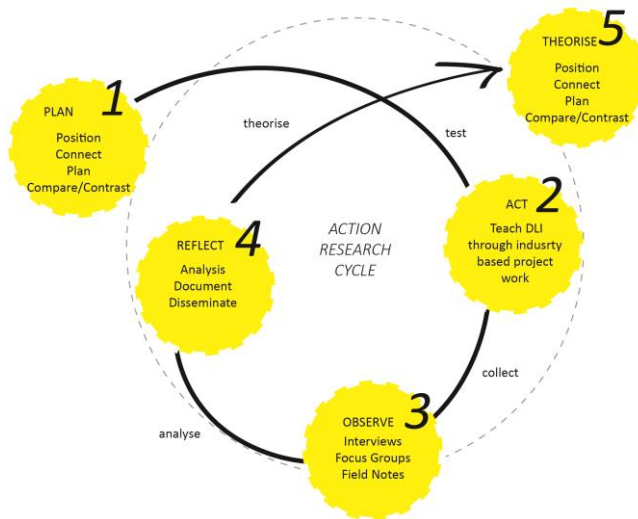


Figure 4 Action Research Cycle. Source: Swann (2002), Zuber-Skerritt (1992, 2001).



Whilst a limitation of this research is that it focuses on one organizational context alone, the 18 month embedded period ensures that the richness of data collected from within the organization provides detail to the study of design-led innovation within a industry type.

### *Data Collection and Analysis*

The action research method contains data collection sets through semi-structured interviews, focus groups and a continuing field notes and a reflective journal (Costello, 2011). Participants within semi-structured interviews and focus groups ranged from coordination through to general management and consisted of all key departments (7 in total) within the Airport Corporation. Table 2 outlines the data corresponding to the findings presented within this paper. Focus groups brought together key stakeholders within the Mobile Application project who were actively applying design-led innovation to progress the project. Stakeholders who sat with close proximity to the Mobile Application project but had not actively engaged with design-led innovation were also included within the focus groups. These stakeholders provided important perspective to the validation and critique of a design-led approach.

*Table 2 Data Collection and Analysis Overview*

Method	Action research Cycle 1	Action research Cycle 2
Semi Structured Interviews	20 Participants	10 Participants
Focus Groups	1	2
Field Notes	48 Pages (A5)	45 Pages (A5)
Refective Journal	11 Pages (A5)	8 Pages (A5)
Data Analysis Technique	Thematic Analysis	Thematic Analysis

Transcripts of focus groups and semi-structured interviews were produced with consent from participants. Field notes and the reflective journal were heavily based on participant observation (Saldana, 2011). A thematic approach to the analysis has enabled data collected in the field to be analysed with no preconceptions of possible themes (Miles & Huberman, 1994).

## Findings

The following findings present the role that design-led innovation has played within a major Australian Airport's mobile application development. The major grouping of themes presented within this paper regarding the role of design-led innovation are; *customer insight, operations and commercialisation*. These themes broadly describe the role of design-led innovation within specific drivers of the business. The sub themes which are structured beneath these major themes describe the more specific function that design-led innovation as an approach has played within the airport.

### *Customer Insights*

#### **Design-led innovation as empathetic bridge to the customer**

The notion of '*starting with the customer first*' meant that business assumptions regarding customers were evaluated early within the mobile application project. Empathy for the '*pains of the customer*' were established and sustained due to the direct representation of the customer within narratives, and the indirect representation of the customer through customer-centric propositions translated from insights gathered in the field. One such proposition that was continually raised throughout the project was striving to help the customer always remain '*in control*' of their airport experience. The notion of referring always to the voice of the customer, or positioning oneself in the shoes of the customer in discussion was evident all the way through to the final development and release of the mobile application. The voice of the customer was linked to uncovering '*blind spots*', or moments driven by assumption particularly when the project progressed quickly. When new stakeholders were brought onto the project, they were briefed on the core values underpinning the mobile application project that were reframed from customer insight, for example; to engage family, friends and colleagues as a support network within a customer's journey; to deliver individually tailored information to help the customer remain in control; to ensure every customer's journey is special; to ensure travelling by air is never a chore. The transparency of the process for gathering insights was powerful in justifying design and development decisions encountered later on in the project timeline particularly throughout project funding and engagement with external consultants.

### **Design-led innovation as an identifier of novel customer centred opportunities**

This function came from an emphasis on developing ideas '*in-house*' based on customer insight, rather than focussing energy toward what competitors or benchmark airports were achieving within the mobile application domain. This allowed airport stakeholders to make more detailed assessments of business performance and the delivery of value through mobile channels. For example, a focus on making contact with local plane spotters who held a distinctive perspective to aircraft operation provided perspective into the aviation community. This face of the airport which is associated with the romance of aviation, was harnessed within social media and *Instagram* in particular to develop an identifiable character of the Airport Corporation. The character is now integrated into the fabric of the mobile application.

### *Operations*

#### **Design-led innovation as transition from problem to solution**

Previously, a focus on matching or repeating the achievement of external competitors this business had developed solutions that were new to the company. Idea generation was an existing strength within the business with creative stakeholders often producing rich but unresolved ideas. However, many great ideas were effectively '*put on the shelf*' as their implementation carried difficult system changes and associated risks. There existed no incubation process for resolving ideas and reducing risk through co-creation. By focussing not just on idea generation, but on concept development in-house, final solutions of the mobile application proved to be more complete in conceptual detail and customer relevance, more differentiating in nature and largely new to the industry.

#### **Design-led innovation reduces project risk**

As the produced mobile application concepts had no identifiable implementation in rival airports, these novel ideas carried risk. The process of testing ideas through narratives and refining out possible irrelevancies or strengthening relevant components within the project allowed the mitigation of risk during development phases. Detail within each concept tested provided constraints which reduced project scope creep within the later specification and production phases. Greater clarity and detail surrounding the final concepts also improved the airport's ability to detail to

external consultancies '*what a successful solution would look like*'. The design-led approach provided an evaluation platform for possible new technologies.

### **Design-led innovation as production of strategy**

Whilst most new product and services developments undertaken in the airport touched or aligned to existing strategy, the design-led approach challenged and disrupted existing differentiation tactics. Previously, digital projects had grown in an organic way – responding to competitors, or jumping to provide solutions in an ad hoc '*spot-fix*' method. Whilst this method is necessary under times of growth, the design-led approach demanded a strategic phase of the project. This holistic approach provided the crucial structure within the project to step into a more intangible and broader view of how digital assets could be developed and harnessed in the future of the Airport's operations.

### *Commercialisation*

#### **Customer Experience and ROI**

The responsibility to deliver viable business cases supporting each project with a plan for a return on investment is essential for a privatised corporation. An airport also operates as a public service in some capacity by providing infrastructure to the public which is amortised through total operations. A fine line is drawn between developing solutions which are driven by a return on investment, alongside solutions which are cost heavy and delivered to the benefit of the customer only. Creating and capturing value both for the customer and Airport was an important element within the design-led approach. The design led processes ensured that the value encapsulated and delivered through the mobile application was designed to meet a necessary need, desire or substantial meaning within the community of customers. The design approach started with the customer and bridged two distinct notions within management: '*good business*'; and, '*excellent customer experience*'. Where a direct return on investment was not measurable or clear, the Airport stakeholders present within the project turned to producing '*excellent customer experience, future proofing and reputation*' as justifications for the mobile application project direction.

#### **Limitation of design-led innovation**

Design-led innovation inherently involves a customer-centric view of how possible solutions can be developed and delivered. The design-led

approach harnessed within this project required funding and investment from multiple departments within the Airport structure, to budget the development and execution of the project. In securing departmental funding, the customer-centric solutions proposed were shaped and altered to better meet the business requirements of the major departments funding the project. Whilst the voice of the customer was maintained within the pitch to these departments, the power held by these major departments ultimately played a role in dictating the final form of particular features of the mobile application. This is an interesting intersection of the design-led innovation and a privatised corporate departmental funding model. Design-led innovation was limited within the later phases of this project by the political structures in place within the Airport Corporation. To mitigate these constraints, the Airport Business Development Team facilitated by the design catalyst (first author) sought to ground these variations to the design specification by aligning them to customer insights gathered earlier in the project phase.

## **Discussion**

Keen and Williams (2013) have called for a ‘value architect’ to *design* the value underpinning the delivery of services through digital means. The ‘*architect*’ is not designing the visible face of a digital service, but rather the core purpose or element of value creation (Keen & Williams, 2013). This type of designer must therefore be suitably armed with customer-centric exploration skills – being able to identify the right problems to solve, not just deploying basic design-led problem solving skills (Beckman & Barry, 2008). The emergence of the ‘*value architect*’ is built upon by this research project which seeks to understand the role that design-led innovation approach plays through its application by stakeholders within the development of an Airport Corporation’s digital strategy.

The findings of this research are underpinned by three key areas of business perspective which a ‘*value architect*’ or ‘*innovation catalyst*’ must synthesise in order to align business agendas (Keen & Williams, 2013; Wrigley, 2013). These three areas are: 1) operations as the core element of an infrastructure provider, in this case and airport; 2) commercialisation, as responsibility to return on investment to shareholders; 3) the importance of customer experience at the operational face of a business. Design-led innovation provides the critical skills and cultural platform to synthesise

these key areas by providing a novel idea incubation phase within existing corporate innovation processes.

The Airport Corporation involved within this research has found value in the development of deep customer insights which identify '*blind spots*' of assumed customer experience. These '*blind spots*' are framed as business opportunities for establishing new products and services to improve customer experience and drive non-aeronautical commercialisation. Importantly, this aspect of design-led innovation synthesises the business's underpinning driver to deliver a return upon investment to shareholders with the customer centric values that are key to improving the reputation of the Airport within the public domain (De Nueville & Odoni, 2003).

The role that design-led innovation has played within the development of the digital mobile application has not just been siloed to the product or service domain alone (Bucolo, et al, 2012). Proposing strategy as a component of design-led innovation based on customer insight has forged a platform continued digital developments. Keen and Williams argue that for a business to develop digital strategies, they must remain future driven and customer focused in order to continue delivering value through appropriate digital channels (2013). Here, the Airport's natural risk aversion and a strong focus on operations associated with physical infrastructure has provided challenges to the design-led approach. The business's drive to commercialise has also impacted how design-led innovation has been harnessed, particularly within the project funding stages.

## Digital Strategy Innovation Checklist

Three critical faces of a business have been encountered and synthesised during a design-led approach to the development of a major Airport Corporations mobile application. These faces are 1) operations – the core activity of the business, 2) commercialisation – how the business is profitable, and 3) customer experience – how customers experience the business's operations. The Digital Innovation Checklist (Figure 5) has been developed from empirical evidence collected within the embedded action research period presented within this paper. The checklist has been developed through an evaluation of the role that design-led innovation has played in problem identification and solving within specific domains of the business.

The checklist is presented in the form of a sequenced canvas seeking to map and construct a synthesis of these key areas as the basic premise of a digital strategy, and importantly prompt practitioners to consider and

include digital channels within the broader spectrum of business strategy. The checklist can be used within early project phases to structure development and/or be used as a checklist nearing completion. The checklist can be used numerically, addressing the questions stated to reveal or provoke business assumptions. Practitioners who may benefit from the checklist include managers of business development, digital strategists, information technology strategists and in-house designers. An application of the checklist is a proposed area of future research and its explorative use by practitioners is encouraged.

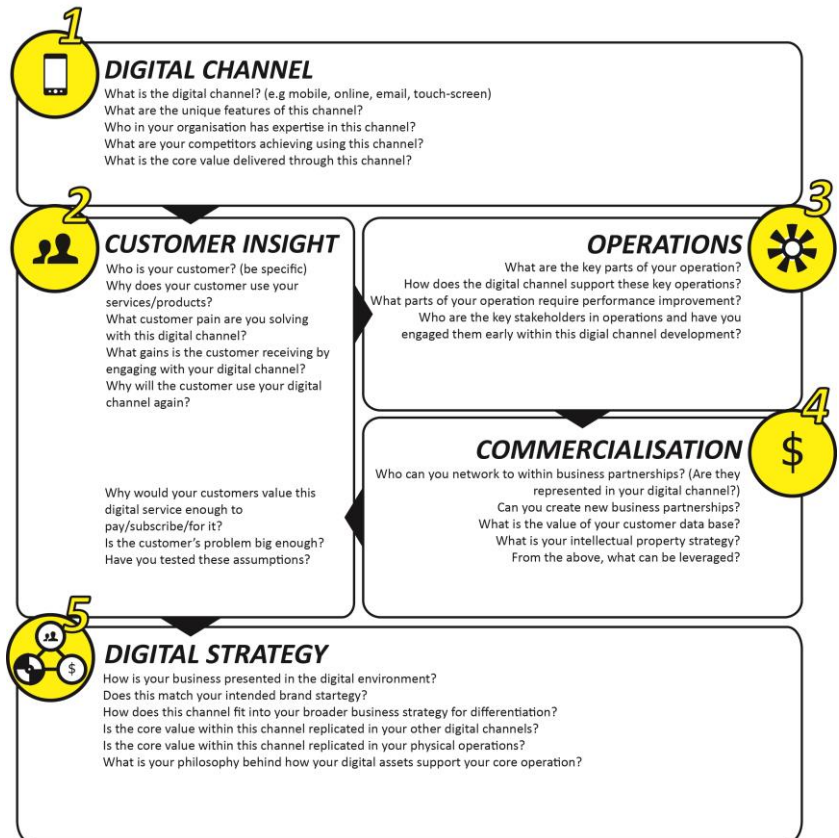


Figure 5 Digital Innovation Checklist. Source: Developed from this research

## Implications

Design-led innovation and practitioners of a design-led approach when undertaking digital channel innovation carry out the following activities:

- Gather customer insights which can be used to ground the possible use of new technologies as the digital channels for delivering value;
- Provide a platform to be reflexive, self-critical, and face the technological age of disruption and uncertainty with energy, enthusiasm and optimism whilst remaining risk conscious;
- Apply a process that provides the internal environment and matched skills to enable new ideas to be generated and refined into new products, services and strategies for achieving superior performance both in commercial and customer experience domains whilst reducing risk;
- Enable core corporate agendas associated with commercialisation, operations and customer experience to be synthesised into viable and inspirational solutions capable of altering the way the industry and public perceive commercial air travel.

This paper contributes to a new understanding of the role of design-led innovation within the corporate digital business environment as the bridge, the enabler and the creator of new value through intersections between customers, operations and commercialisation. The role of design-led innovation within digital channel innovation and broader digital strategy development rests within the synthesis of customer insight, commercialisation and the support of operations. Design-led innovation as an approach plays the role of customer –centric protagonist within the creation of new digital services, products and business strategy. We look forward to future research to test and validate the application of the Digital Innovation Checklist in new diverse contexts.

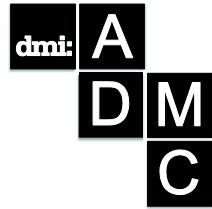
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## Framing Modelling in Business Model Design

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*This research draws from a design thinking perspective to investigate disruptive business model innovation required for eHealth systems interventions. It adopts a deductive approach of reviewing modelling approaches in design theory in association to the business model elaborations in the strategic management literature, from which we were able to build a framework on modelling in business model design. In three cases we applied modelling to the design challenge of modelling eHealth business models in practice. We developed visual business modelling methods that models connected value exchange in network structures. This generated empirical evidence supporting that strategic design thinking is a viable path that is opening view and integrates management expertise in design approaches of mental- and visual modelling. Enabling strategic direction and boundary communication between organisations with a shared vision and commitment.*

**Keywords:** *Business model innovation, Modelling, Design Methodology, Strategic Design Thinking, Mental modelling, Visual modelling*

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## Introduction

Business model design was conceived when online services such as those provided by Amazon were established, and new constructs were needed for the purpose of explaining and improving the understanding of this phenomenon of eBusiness (Afuah & Tuccie, 2000). At that time, eBusiness start-ups even patented a number of business model innovations, confirming that this was a new locus of innovation that went beyond advanced ICT systems and the service itself (Markides, 2006; Chesbrough, 2010). Since then, the theoretical understanding of business models has advanced in the field of strategic management. Different streams of research have been established with different orientations. For example, McGrath (2010) emphasizes a discovery-driven rather than analytical approach in which new insights are created by engaging in significant experimentation and learning. Casadesus-Masanell & Ricart (2010) have pointed out that “the exercise of designing new business models is closer to an art than to a science”. Few approaches have appealed more to the abilities of strategic designers than this strategy approach of “modelling, experimentation, prototyping and discovery” of business models. *However, artefact examples of business models are hard to find and there is a lack of modelling approaches.*

From designer’s perspective, in keeping pace with the changing innovation challenges of internet technologies, the activities of industrial designers are transgressing from merely product (model) design to product service system design and business model design. Strategic designers are increasingly found in new positions to apply ‘design thinking’ to business model innovations in social contexts such as healthcare. Thus far, besides some initial reflections, little is known about business modelling approaches (results, activity and organization) and their use of design theory and methodology (notions, modelling methods and tools).

The aim of this paper is to gain a better understanding in so far as we will analyse and review modelling approaches from design methodology in order to identify guidelines for a business model design approach. In association with the business model as object of design we depart from a basic definition of parameters of a business model. We depart from the business model definition of Amit & Zott, (2001): “A business model *depicts the content, structure, and governance of transactions* designed so as to *create value* through the exploitation of business opportunities” and integrate the insights from the latest strategic management research. Together with the identification of guidelines from

design methodologies the analysis of three cases of modelling eHealth business models in practice provides reflections on the association of these modelling approaches to business model design.

## **Modelling**

This research draws from a design thinking perspective to investigate disruptive business model innovation required for eHealth systems interventions. It adopts a deductive approach of reviewing modelling approaches using design theory in association to the business model elaborations in the strategic management literature. In this section we frame the modelling using System Theory, Design Methodology and Human Centred Design Thinking in relation to business model characteristics and built a framework from these insights, that suits the design challenge of modelling eHealth business models in practice.

### *System Theory*

'Modelling' in complex system theory is regarded as a methodology to research behaviour of large complex systems in reality. According to Simon (1990) we '*capture in our models a simplified picture of reality which, nevertheless, will allow us to make the inferences that are important to our goals.* Simon (1990)'. In order to understand the consequences of opting for one decision over another designer's construct prescriptive models.

### **Resolution level**

To manage the complexity of representing reality in a model, basic principles in modelling are: First, *to separate what is essential* from what is dispensable; second, *to make use of symbols* that represent natural language where appropriate, modelling with pictures or diagrams, rather than making use of numerical description; third, *to aggregate as much as possible*. This aggregation refers to the essential notions of system theory, that artificial systems have a "boxes-within-boxes" architecture with the important property that the behaviour of the units at any specific level can be described and explained without the need for a detailed picture of the structures and behaviour at the levels below. As such a model represents reality with a certain structure and resolution level that provides insights on orders of magnitude.

### *Business Model Resolution: Meaningful Manipulable*

In real life actors acknowledge the high complexity of companies and their business and technological context. Technology innovation involves changes of a set of variables where every change is likely to alter the other variables. The need for business models is finding a way to support the reasoning of business model innovation and a quest for model objects that are manipulable, or experimentable (Baden-Fuller & Morgan, 2010). A model resolution level needs to be determined for useful business model manipulations, that are only possible when the model is (like those of economics) simple enough to work through (or where the implications of a likely change can be programmed into it), but yet complicated enough to capture sufficient content of the firm's arrangements to make the experiment meaningful (Morgan & Morisson, 1999).

### **Model Structure**

'Model Structure' is part of Gero's Function-Behaviour-Structure (FBS)-framework: capturing the structure of the external world into the structure of an interpreted world by the designer and, or a structure representing an expected world. Structure relates to *modelling situatedness*. In generating a model the 'Structure' variable of the FBS framework, that describe the components of the object and their relationships, i.e. what it is, appears to be essential for modelling, bridging the behaviour and function of the dynamic system (Gero & Kannisen, 2004).

### *Business Model Structure: Network Structure*

In association with this design notion, 'structure' is an inherent characteristics for business modelling. Amit & Zott (2001) use the term 'structure' in the business model definition. They relate 'structure and governance of transactions' not to one sole organisation but to strategic networks (Gulati et al., 2000) and the relational view (Dyer and Sing, 1998) of connecting resources across the boundaries of one firm organization. A *network* organisation view seems logical for explaining the eBusiness model innovation that thrives on the connecting capability of the *network* technology of the internet. As such, the network structure mediates between technology and economic value which is regarded as an important characteristic of the business model construct. (Chesbrough & Roosenboom, 2011). With regard to the modelling challenge of designers, we postulate to model *the network structure*.

## ***Design Theory Methodology***

'Modelling' in Design Theory Methodology is considered as the language of the designer (Andreasen, 1994) where reasoning from given purposes to the form and the actuation of an artefact is essential (Roozenburg, 1993). Building on the research of Hubka (1980) who found that the designer is concerned with modelling for about 30% of its activities. The model supports the designer to obtain answers to queries during the design process to elaborate, synthesize, evaluate and communicate (Andreasen, 1994; Maier et al., 2014). The modelling activity has the following set of design characteristics: *object*, *property* and *purpose* object (Andreasen, 1994).

### **Model Object-Property**

A 'model' in Design Theory Methodology is an artefact, which reproduces the properties of an object (Andreasen, 1994; Maier et al., 2014). In a product development project different types of models can be generated for representing the product, such as: experimental set-ups, design sketches, mock-up models, lay-out drawings, block-diagrams, function models and prototypes (Buur & Andreasen, 1989). Properties represent the quality of the product prescribed as requirements in the design specification. Thus, properties of products are, apart from other, performance, size, colour, reliability, costs. Some properties are quantifiable and offer functional benefits e.g. weight, speed, energy consumption. Others are less quantifiable such as appearance and ease of operation (Buur & Andreasen, 1989).

### ***Business Model Object-Property: Value Exchanges***

When we consider the network structure as the object of a business model, the core property that appears to be relevant is value exchange. Teece (2010) describes value creation and value delivery as essential properties of a business model. For him the essence of a business model is in defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit.

Chesbrough & Roosenboom, (2011) indicate that a business model provides a structure of the value chain and describe the position of the firm within the value network. With regard to the modelling challenge of designers, we postulate to model the network structure of value exchange.

Considering the business model as an object, it is interesting to define what a business model is not. A business model is not a singular marketing, a pricing or revenue model. Nor is it other components in isolation such as only a value proposition or network structure. Neither is a business model a policy a strategy, such as a corporate strategy, market adoption strategy or product market strategy and a business model is not a business process (Zott & Amit, 2011).

### **Model User-Purpose**

By a model, the designer obtains answers to queries during the design process. Different models relate to different design queries and decisions.

To limit the modelling activity to a certain extent it is important to define the scope - not all types of questions are associated with one model. The context of a model is dependent from the aim of the user. Moreover, to determine what makes a model a good model depends largely on the context of use (Maier et al., 2014). This also implies that knowledge of the user is important for choosing the *code*, as it is necessary to ensure that the user is able to decode the message; it means understanding the model, reading its properties and abstracting from irrelevant aspects (Andreasen, 1994). In design practice, different models are used for different purposes, explaining or predicting behavior, or articulating and realizing something new. The *user* of a model can be the designer, who creates the model for own problem solving and decision making. If the intended use of the model is to articulate and transfer information then the communication to other users is central. In crossing the boundary between development and manufacturing, the production engineers are important users. In confirming the customer requirement with a mock-up model, the marketing managers and consumers are important users.

#### *Business Model User- Purpose: Strategic managers, Network actors- Strategic direction*

The users of business models are top managers in a 'top team'. Such a top team is needed to build leadership unity, dialoguing, revealing motives, integrating roles, aligning aspirations and interests and caring and 'playing', This team ability should be: 'to reach collective commitments and elicit true engagement toward them, among its members and from other members of the organisation, (Doz & Kosonen, 2010). Network teams that are connecting technology components and platforms in open innovation



projects of collaborative entrepreneurship generate business model innovation (Chesbrough, 2003; 2010).

Three types of purposes of the business model have been identified (Zott & Amit, 2011) From the Strategy perspective, the purpose of a business model is: "To explain new network- and activity system-based value creation mechanisms and sources of competitive advantage." From eBusiness perspective: To describe new gestalts and Internet-based ways of "doing business". To offer typologies or taxonomies (to which class does an observed business model belong to?). And from Technology and Innovation management perspective: "To understand how technology is converted into market outcomes. To understand new networked modes of innovation."

In this paper we study business model innovation and most closely related to the Innovation management perspective. However, the translation and transfer of strategic knowledge to the business model is also important.

### *Human Centred Design Thinking*

'Modelling' in Human Centred Design is considered as a two-sided cognitive process of designers thinking: a mental - and visual process of thinking. Reasoning based on mental models which can be visualised relate to the paradigm of "Human Behavior in Design" (HBiD, Badke-Schaub et al., 2010). This framework focuses on the cognitive processes of the designer and his/her interactions with the environment such as decision making, creative problem solving and coordination and communication with others involved in the process. We have reflected on the 'traditional' design thinking research approach and identified four main characteristics of design thinking: *creativity, visual thinking, reasoning* and *expertise* (Badke-Schaub et al., 2010). These characteristics are based on thinking processes such as: information search and generation, mental imagery, assessment and evaluation, structuring and learning (Goldschmidt and Badke-Schaub, 2010). The intent of the HBiD framework is to understand the complex interplay between the designer, design process, design outcomes, and contextual variables. (Badke-Schaub et al., 2010).

### **Mental modelling**

While designers exchange views with others, they develop gradually their own representations and build mental models of different aspects of the design process that need to be shared by the team to a certain extent in order to be able to act according to the common goal. "A mental model is

defined as a simplified representations of the world that a human being produces for quickly processing new information, and acting in unfamiliar situations” (Gentner and Stevens, 1983; Badke-Schaub et al., 2007). In teams, a shared mental model can contribute to enhance team communication and to guide the behavior of team members, when dealing with new situations (Stempfle and Badke-Schaub, 2002).

The influence of shared mental models in teams has been mainly investigated in the field of human factors (Langan-Fox et al., 2000). Several technique are used to elicit and represent the mental model In table 1 we classified these generic techniques together with a selection of mental modelling methods of design, against three types of designers behavior of reasoning, creative problem solving and decision making. For the selection of mental modelling methods, we screened the 100 universal methods of design collected by Martin and Hanigton (2012) on the inclusion criteria of cognitive, elicitation and representation of an individual and team mental model. As exclusion criteria we used, concerns a generic research method such as experiment, case study and concerns a visual modelling technique. Overall, we selected 11 mental modeling methods of design (see table 1).

Table 1: elementary activities in designing and modes to elicit mental models.

	Reasoning	Creative Problem Solving	Decision making
<b>Techniques eliciting mental models (Langan-Fox et al., 2000)</b>			
<i>Cognitive interviewing techniques</i>	x		
Verbal protocol analysis		x	
Content analysis	x		
<i>Observation of task performance</i>		x	
<i>Card sorting technique</i>	x		
<i>Repertory grid technique</i>		x	
<i>Causal mapping</i>	x		
<i>Pairwise rating methods</i>			x
<i>Ordered tree technique</i>	x		
<b>Analysis and Representation Techniques (Langan-Fox et al., 2000)</b>			
<i>Multidimensional scaling (MDS)</i>		x	
<i>Distance ratio formula (DR)</i>		x	
<i>Pathfinder</i>		x	
<b>(Human Computer) Interaction methods of design (Hanington, 2003; Martin and Hanington, 2012)</b>			
<i>Think aloud protocol (=verbal protocol)</i>	x		
<i>Cognitive walkthrough</i>		x	
<i>Heuristic evaluation</i>			x
<b>Cognitive methods (Martin and Hanington,2012)</b>			
<i>Contextual inquiry</i>	x		
<i>Love letter and breakup letter</i>	x		
<i>Triading</i>	x		
<i>Generative tools</i>		x	
<b>Cognitive mapping (Martin and Hanington,2012)</b>			
<i>Eyetracking</i>	x		
<i>Mind map</i>		x	
<i>Concept maps</i>	x		
<i>Mental model diagrams</i>			x

### *Mental models of Business Managers*

Some business modelling is conducted via thought experiments of managers relating to their own firm. Given that they know lots about the elements and relations involved because they are part of it, they have tacit 'insider' knowledge that another person does not have, and which may not be part of any business model account or description (Baden-Fuller & Morgan, 2010). This makes business models performative in a particularly reflexive way, (Doganova & Eyquem-Renault, 2009) and also distinguishes business models from economic and biological models: the subject of the model - the firm or business and its people - is a knowing part of the model, and of experiments with it (Baden-Fuller & Morgan, 2010).

For mental business modelling by managers, the technique of probing has been used. Probing, that relates to generative tools, is found to be used by the strategic teams of top managers to allow them to experience the future (Doz & Kosonen, 2010).

### **Visual modelling**

For visual modelling designers use symbols, signs, and metaphors through the media of sketching, diagrams, and drawings and thus translate abstract requirements into concrete objects, including 2D and 3D images, clay models and maquettes. The way designers communicate is through visual thinking, framing, and coding design requirements into new models (Goldschmidt, 1994). Here it is interesting to know: architects and designers use sketching not just to record an idea, but moreover to generate it. For example, by visual, generative modelling designers are able to discover new business model innovations (Simonse, 2014).

From the broad range of visual methods used by designers, we identified three generic methods of design that are used for the modelling of business models, actor maps, role perspective maps and activity maps (Simonse, 2014). In table 2 these methods of design are listed.

Table 2: Visual methods modelling designing

	Reasoning	Creative Problem Solving	Decision making
<b>Actor map methods of design</b>			
Stakeholder map	x		
Netmap (Schiffer & Hauck, 2010)			x
Business Origami (Ono/Citizen Experience-McMullin, ...)		x	
<b>Role perspective methods of design</b>			
Human Centered Design toolkit (IDEO, 2009)		x	
Stanford Bootcamp toolkit (Stanford, 2009)		x	
Frog CAT toolkit (Frog, 2011)			
<b>Activity map methods of design</b>			
AEIOU – Activities Environment Interactions Objects Users (Doblin -Robinson et al.,1991)		x	
Scenario Description Swimlanes (nForm-Shek, 2007)	x		
Market creation toolbox (DIBD, 2011)	x		
Customer experience wheel - Lego		x	
User Journey Map (Forrester, 2010)		x	
Customer experience journey (Lego – Philips Design - Stickdon and Schneider, 2010)		x	
Service blueprint diagram (Bitnet et.al)	x		

*Visual Business Modelling methods*

Casadesus-Masanell & Ricart (2010) stress that need for simplifying the representation of business models because it is important to be able to work with the model also on a high level perspective - avoiding excessive detailing allows a business model to remain flexible.

By experimenting new visual toolkit for business modelling have been developed (see table 3). These dedicated designerly methods and tools generate business models by combining actors, role perspectives and

activities of value transactions. All the toolkits listed in table 3 make use of co-modelling (Simonse, 2014).

Table 3: Visual business modelling methods

	Reasoning	Creative Problem Solving	Decision making
<b>Business model canvas</b>			
Business model canvas (Ostenwalder e.a., 2010)	x		
Business model butterfly (Buur, Ankenbrands & Mitchels, 2013)	x		
Value based business model Method (AT-Kearney) – <i>activity map</i>	x		
<b>Visual Business model toolkits</b>			
Board of Innovation toolkit (Bol, 2011) - <i>actor map</i>		x	x
Business model Free format sketching (Vis, 2012)			x
Net transaction tool (Niño Cárceres and Ruiz Arias, 2012)	x		
Value Transaction Map (Griffioen, 2012)	x		
Visual Business modelling toolkit (Van Meeuwen & Walt-Meijer, 2013)	x	x	

In part 2 of this paper we apply the visual business modelling toolkit (Van Meeuwen & Walt-Meijer, 2013) in case 1. Case 2 and 3 continued the experimentation in modelling to provide a broader base for the evaluation of visual prescription and the usefulness of outcomes in applying these visual modelling methods for business models for e-Health directions.

**Dynamic modelling**

In new product development projects, the designer creates a long sequence of models of the product. The advantage of using a design methodological approach is that additional emphasis is given to the continuous process. The practice of modelling involves iterative loops and the adaptation of the model to keep the ongoing changes in the view of the actors. Continuous and emerging model change.

*Dynamic Business Modelling: Value Networking*

Dynamic modelling in keeping the business model viable is also likely to be a continuing task. Adaptation to emerging changes that are unintended and partly beyond managers' control as well as 'voluntary' changes to the BM as the results of one or a set of decisions related to one or several core component are part of business continuation. Expectation with normal functioning often relate to expansion of the organization, (Demil & Lecocq, 2010). For implementing the agreed changes, switching between business models, decoupling activities, modularising business processes and dissociating resources from rigid ownership as well as switching between parallel models and grafting capabilities and platforms to engender catalysing transformation are all ingredients and determinants of a successful business model renewal (Doz & Kosonen, 2010).

**Shared Model vision, communication and commitment**

Models objects are more than the denotation and source of information, models frame the communication of interpretation and demonstration.

A model constituent a shared vision: 'The shared vision, as some synthetic representation of the artefact as a whole, is not in documents or written plans. To the extent that it exists as a whole, it is a social construction— dynamic, plastic, given nuance and new meaning at each informal gathering of two and three in a hallway or at formal meetings such as scheduled design reviews. (Bucciarelli,1994) Irrespective the explicit reason for their creation, most design models have a catalysing role in communication. A model artefact has an embedded story or scenario communicating for example how it helps people with the things they care about. Also among the various audience involved in innovation processes models mediate between the functions, across the boundaries of departments and disciplines. According to Carlile, (2002) a model can be viewed as a boundary object to transfer and translate knowledge across boundaries of expertise. He has defined criteria to measure how efficient a boundary object is that we can closely relate to the three types of designers activities in the design process: reasoning, creative problem solving and decision making (Carlile, 2004).

Models embody the current state of the design, serving as a medium for interaction and reflection amongst designers and beyond in cross -functional teams and management boards. Team communication appeared to be more robust with the introduction of objects and references to them (Minneman

& Harrison, 1996). Moreover a model also orients group members to the cooperative aspect of their work (Perry & Sanderson, 1998).

*Parameters of Business Modelling: synthesis*

In sum, from reviewing modelling approaches in design theory in association to the business model elaborations in the strategic management literature, we are able to build a framework with deductions of the modelling notions from Complex System Theory, Design Theory Methodology and Human Centred Design Thinking in relation to business model characteristics and insights (see figure 1).

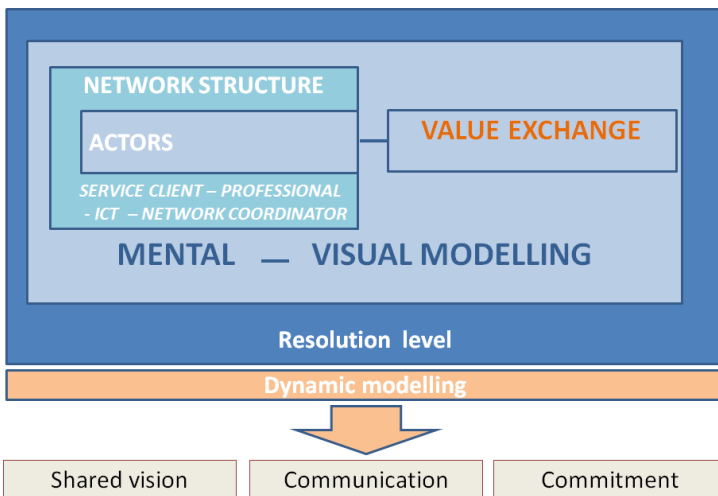


Figure 1 Modelling framework.

In the next section we apply this modelling framework to the design challenge of modelling eHealth business models in practice.



## **Modelling applied to Business model innovation**

### *Modelling eHealth business models in practice*

#### **eHealth business model innovation**

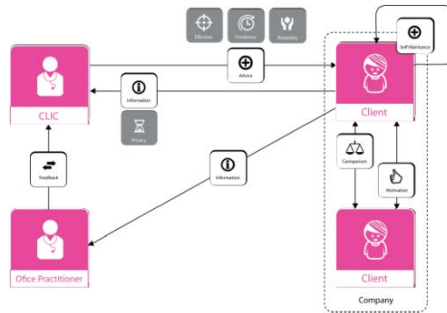
With eHealth, the use of internet technologies within the medical domain, new innovation opportunities arose for internet-based healthcare. Thriving on new interaction possibilities, a wealth of new on-lines services enabling patient education and disease management programs have been developed for the purpose of improving self-care and improving time, quality and cost efficiency performance of healthcare providers. Although the clinical results of the eHealth innovations have proved to be very promising, the implementation is not so straight forward (Pagliari, 2007).

In fact, problems have been encountered in the adoption of most eHealth innovations. The main barrier in adopting online service innovations, besides budgetary limitations, is the business model. eHealth services appear not to fit with the organizations of the health care providers. (van Limburg et al., 2011).

#### **Case 1: Visual business modelling method**

The visual business modelling method is an actor map toolsets that visually captures the connections between multiple stakeholders and evaluate the value types of interactions (Van Meeuwen et al., 2014). The modeling toolkits consists of preprinted icon cards starting with two cards for the client and health professional card and five other actors icon cards plus eight cards for types of transactions and nine for value attributes. Blank cards are included to allow the participants to add actors, transactions or value attributes. In this case experiment for modelling a precare service, five respondents were invited for an interactive session with the researchers. Each participant was asked to visualize the business models concerning the precare service by using blank A3 sheets of paper, markers, and the visual business modelling toolset. All sessions were recorded. Within-case evidence was acquired by analyzing the records, taking notes, and combining the notes with the created visual models. Three types of data were analyzed: visual modeling data, interview data and documented data concerning the modeling process. The different qualitative data were combined to frame, analyze and synthesize the business model view of each respondent (see figure 2).

A.



B.

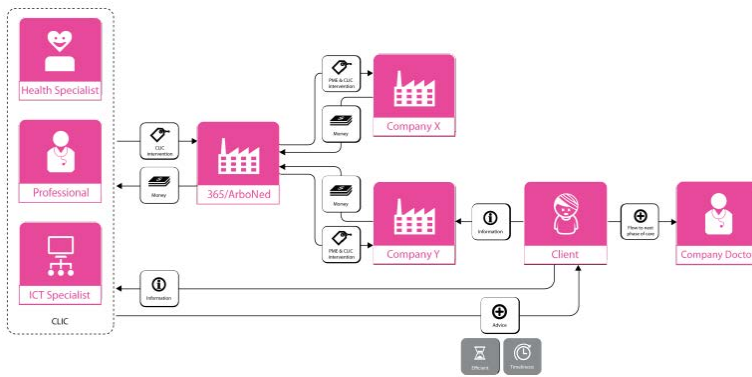


Figure 2: Two business model views A. from client perspective and B. from PRE Health Professional perspective (Van Meeuwen & Walt-Meijer, 2013).

By analyzing the different visual business models created from the different perspectives, we created building blocks from extracting valuable actors, transactions and value attributes that were commonly modelled. The business model design consists of five building blocks:

- Building block 1: involve a health professional, since this will ensure privacy and reliability in the transactions between the client and the service.

- Building block 2: provide an online flow of information with regular interactions to the client in order to stimulate self-management of personal health.
- Building block 3: involve an intermediate organization with a large customer base to extend the service's reach.
- Building block 4: involve a service-dedicated health expert for personal face-to-face contact with clients in order to ensure and increase the perceived quality of the eHealth service.
- Building block 5: include social interaction with other clients of the online service with a view to motivating and supporting the self-management of personal health.

For the synthesis into the final visual business model design also the visual business modelling toolset was used as a basis for designing the new business model for the pre-care service.

### Case 2: Layered visualization business modelling

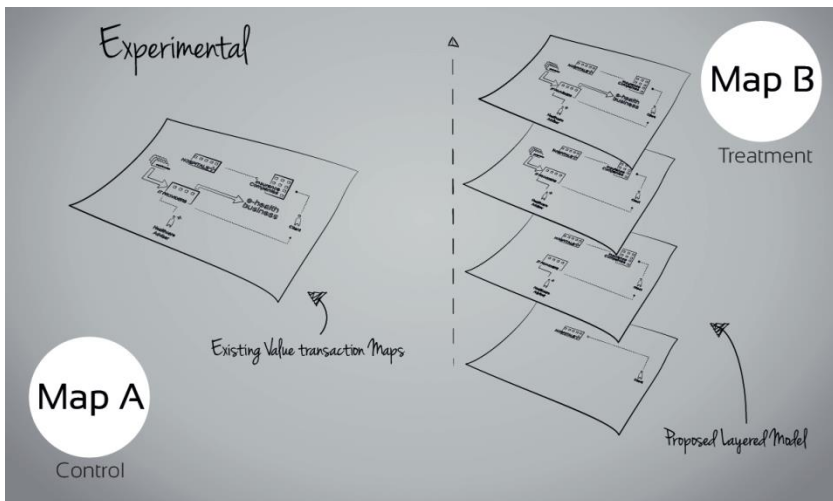


Figure 3: Value transaction map vs. Layered visualization of business modelling, (Schultes & Tekeli, 2014).

With the layered visualization business modelling toolkit, separate layers communicate the business model in a chronological way. In this case study, participants of a product service system on diabetes self-measurement

service were invited for an interactive session to experiment and test the efficiency of the layered map as a boundary object against the actor transaction map of the visual business modelling toolkit. In the experiment set-up, the researchers used the visual business modelling toolkit in the session with the first group and the layered visualization modelling toolkit with the second group (see figure 3). For reasons of internal validity and reliability the inquiry about their views on the used business modelling toolkit was conducted separately. A structured evaluation protocol is used to collect the experimental data for comparison on the boundary object criteria for efficient reasoning, creative problem solving and decision making (Carlile, 2004). Measuring is still in progress on the effect on *reasoning*: 1) Understanding the concept of the business model; (2) Imagine thyself in the business model scenario, assuming an active role in the business model. (3) Recognize the dependencies of different stakeholders; Measuring on *creative problem solving*: (4) Recognize/ Identify potential challenges, problems and pitfalls (translate knowledge); (5) Propose a solution and improve the business model by adapting it; (6) Transform the system/tool. And on the last criterion *decision making* (7) Discuss / explain this along the tool.

### Case 3: NICE board business modelling toolkit

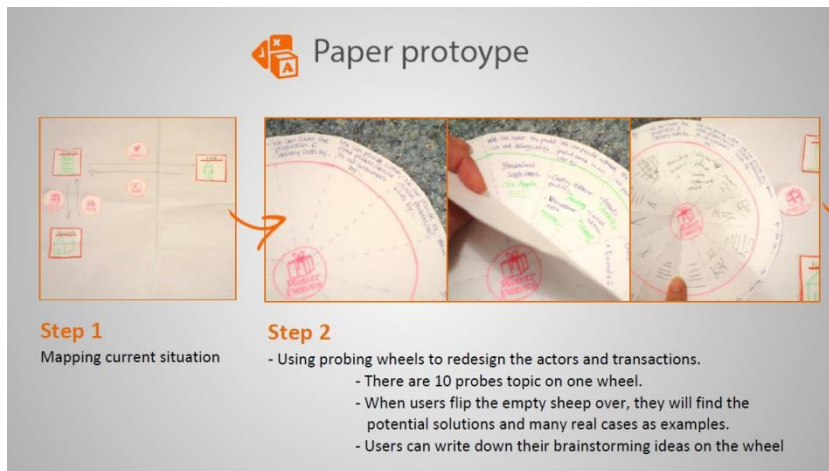


Figure 4: (prototype other picture/) framing for NICE board business modelling toolkit (Zambelli Sessona & Chang, 2014).

This business modelling toolkit is designed to brainstorm about business model innovation ideas and options to increase value in the product service system. It enables the users to map the business model through the use of icons magnets with visuals of actors and transactions and a white board as actor map (Schiffer & Hauck, 2010). The NICE board toolkit consists of a circular boards and a transaction objects magnet in the middle. On the board are a number of probes that trigger the user to brainstorm about different NICE ways to create and increase value. NICE stands for the Novelty, lock-In, Complementaries and Efficiency (NICE) strategies that creates values for e-businesses (Amit & Zott , 2000). For more probing during the brainstorm, users can take a look at the paper board underneath which presents them a serie of examples from e(-health) companies showing how they tackled the situations (see figure 4).

In this case study participants of a product service system on exergame service co-designed business models with the researchers in the brainstorming session moderated by the NICE board. The research is still in progress, in the first week of July 2014 the first design results are expected to become available, to present on the conference in September.

## **Discussion**

In association with the business model as object and integration of insights form the latest strategic management research, we analysed and reviewed the requirements for modelling approaches from a design methodological view. Three cases of modelling eHealth business models in practice are described to identify guidelines for a business model design approach.

### *Business modelling*

#### **Modelling connected value exchange in network structures**

For explaining the eBusiness model innovation that thrives on the connecting capability of the *network* technology of the internet, a network structure view has been grounded in the literature review. For modelling value networking structure we propose a *strategic design modelling* that captures the organic properties of social software design that stimulates informal social interactions on the internet in combination with the organization design of the formal governance structure. The visual business modelling toolkits start an analysis *from each actor perspective*. The position

in the network structures is analysed in terms of value exchange, formal and informal value exchanges are framed and compared. Informal exchange concerns for example the use of social media between clients of the precare service. Formal exchanges concern for example the service level agreement contracts between ICT-provider and Healthcare provider on the information system that supports the online precare service. Modelling connected value exchange in network structures relates to value delivery from inside to outside across organization boundaries in relations of value flows. These value flows are customer driven and thus user centric – person centric. The exchange relations consider all value exchanges of professional and informal communication. In contrast to organisation design (OD) the design of a command and control span are found to be less relevant in designing the value networking structure and overall there is less a hierarchy structures of power. The value networking modelling by strategic design modelling translates the internet technology properties of the network to one of value exchange with a minimal critical specification of the formal exchange relations: the connected value exchange.

### **Modelling for strategic direction and communication**

This research on business model design gives a special view on the designer: who together with the strategic manager and ICT expert are a minimal team to model business model innovation. This business model design team, generates the business model design for the network organisation. As prerequisite for modelling value exchange in the network organisation structure, knowledge from the fields of strategic management, design and internet technology needs to be integrated.

The advantage of using a design methodological approach is that next to business aspects – including the customer and the value propositions – additional emphasis is given to the continuous process, which takes into account iterative loops and the adaptation of the model to keep the ongoing changes in the view of the actors. A modelling approach framework for business model design generation derived from combining theoretical and empirical insights in modelling business models for eHealth services. The framework provides an aid to managers and designers who seek to overcome the implementation barrier of eHealth systems.

### ***Human (Designer) Centred Design Thinking***

In the discourse about design thinking the emphasis is on Design thinking as human centred innovation. (Brown, 2009). Further claims are made postulating design thinking as bridge between people from different disciplines to effectively explore new ideas—ideas that are more human-centred, that are better able to be executed, and that generate valuable new outcomes. The pace and proliferation of design thinking publications have meanwhile reached a point where it is useful to reflect on what has been learned until now.

### **Mental and visual modelling in Design Thinking**

In contrast, the Design centred methodology (Badke-Schaub et al., 2011) investigating design(ers) thinking within the “Human Behavior in Design” (HBiD) framework focuses on cognitive processes of the designer and his/her interactions within the environment such as reasoning, creative problem solving and decision making. We have reflected on the modelling approach in the literature and experimental cases and identified three main process characteristics of design thinking: reasoning by mental modelling, Creative problem solving by visual modelling and decision making as important extensions to the HBiD-framework (see table 4). We further reflected on what *Design Thinking* is and refined:

*Design thinking encompasses: a series of cognitive activities (such as reasoning, creative problem solving and decision making) which are directed to the understanding of the problem field in order to create a mental model and process which is meant to solve the problem.*

In order to support the designer, the traditional methodological approach is dedicated to the individual level of decision making, while the business modelling approaches have found common ground in approaches of strategic decision making.

**Table 4** *Human centred Design Thinking framework comparing product innovation and business model innovation.*

Context of Innovation	Designer and Product Designer: - user values + industrial engineering possibilities to products	Design thinking			Design Outcomes
		Reasoning	Creative problem solving	Decision making	
Product innovation		Mental modelling	Visual modelling	Individual designers decisions  Project teams and project board decisions	Sequence of artefacts for boundary communication between functional disciplines: experimental model, mock-up, prototype,
Business model innovation	Strategic Product Designer: - network actors values + strategic management exchange possibilities to business models	Mental business modelling	Visual business modelling	Strategic management team decisions in network organisation teams.	Business model artefacts for strategic direction and boundary communication between organisations: shared vision and commitment.

Strategic design thinking

### **Strategic Design Thinking**

From the reflections and insight in this research project we propose to define strategic design thinking an integration of *a series of cognitive activities (such as reasoning, creative problem solving, decision making)* which are directed to the understanding of the business problems, its network structure and value exchange possibilities to co-create a design process and outcome which are meant to provide a strategic direction and communication of a shared vision and commitment.



From that view more empirical research is needed to generate further empirical evidence supporting that strategic design is a viable path for understanding and explaining the complexity of designing in context.

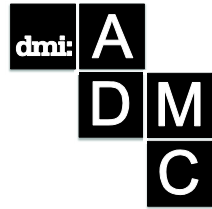
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# An Investigation into Design Thinking Behaviours in Early Stage Radical Innovation

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*The early stage of radical innovation is characterised by uncertainty, data overload and often high rates of change. Schumpeter's 'creative destruction' view of innovation is now exacerbated by 'hypercompetition' (D'Aveni, 1999), a theory that describes the increasing rate and intensity of change in modern markets. In the design and strategy literature, design thinking is often positioned as an appropriate mediator of radical innovation in these circumstances, by facilitating interpretation of market uncertainties and moderating organisational behaviours. At its inception radical innovation is determined largely by the cognitive behaviour of the actors involved, often semi-consciously. In this study we set out to distinguish design thinking from analytical thinking and investigate the suitability of both for the effective early stage formation of radical innovation concepts. Additionally, whereas design thinking literature mostly investigates and reports on the benefits of its application, we seek to understand where design thinking's limitations lie and where it may be better replaced by other forms of cognition. This paper reports at an interim stage of a continuing study. It provides a comprehensive review of relevant literature and a qualitative exploration of two successful innovating SME firms. A framework is given for a novel experimental protocol that will be used in the next stage of the larger study.*

**Keywords:** Design thinking, radical innovation, emergent strategy, cognitive models, strategic decision making

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## Introduction

Increasingly, competitive industries seek to target radical innovation as a route to strategic competitive advantage. But high levels of market and technological uncertainty, coupled with organisational complexity and competitive intensity mean the route to success in pursuing this radical agenda is far from clear.

The knowledge base surrounding new product innovation is predominantly concerned with the 'back end' of new product development (NPD). According to Buxton, our knowledge system is out of balance, "...we must adopt an approach that inherently aspires to get the right design as well as get the design right. The former, which is one of the prime objectives of the up-front design phase, is the part that is too often absent in today's practice" (Buxton, 2007 P.78).

Successful radical innovators employ various strategies. Sometimes they identify new uncontested markets (W. C. Kim & Mauborgne, 2004; W. Chan Kim & Renée Mauborgne, 2005); or they change the meaning of existing markets (Verganti, 2009); or, they change the rules of competition to favour them and disadvantage their competitors (D'Aveni, 1999); or, they use combinations of all these and more. In each case they face acute uncertainty, even more so at the very early stages, when identifying market opportunities and proposing radically innovative solutions. It is uncertainty that chiefly characterises the early stages of radical innovation (ESRI) and influences the nature of strategic decision making. Under this uncertainty the traditional and more dominant analytically-based models are less useful (Marren, 2010; Mintzberg, 1994). Further, it is not always a matter of choice whether to pursue radical game changing initiatives; instead in a growing number of markets it is a reality of survival (D'Aveni, 1999). It is with this in mind that the literature is calling for new research from which models and tools can be developed, and to help counteract our overreliance on analytical thinking and frameworks (W. Chan Kim & Renée Mauborgne, 2005). An increasing number of authors now propose that design and design thinking are particularly suited to bring value and tractability to this dilemma (Kotler & Rath, 1984; Martin, 2009).

ESRI accounts for up to 50% of the overall innovation development time (Smith & Reinertsen, 1991). Proficiency in ESRI is a key determinant in the success of firms involved in radical innovation and is the stage at which many of the final characteristics of the innovation are determined (Khurana & Rosenthal, 1998). It is the major determinant of speed to market and therefore a prime source of early mover advantage over rival firms

(Langerak and Hultink cited in Brentani & Reid, 2012, P.73). Yet, it is poorly understood and there is a dearth of strategic tools to effectively manage the “fuzzy front end” activities.

This paper provides an interim report on a study of the extent and nature of DT behaviours in radical early stage innovation decision making.

In the following sections we describe ESRI and its theoretical base, as it has been thus far developed. We also identify the micro-behaviours of design thinking and its theoretical foundations. We set out our research strategy and we draw on analogy with entrepreneurship research to develop a research instrument. We categorise three cognitive styles of strategic decision making: Analytical reasoning (ANA), DT non-analytical reasoning (DNA), and other non-analytical reasoning behaviours (ONA). Each is described and defined for data-coding purposes.

Finally, we validate the research instrument framework and sequence against empirical findings from interviews with a preliminary sample of expert innovating organisations; suggest improvements and set clear guidelines with which to progress our empirical investigation into ESRI.

## **Research objectives and methodology**

In this paper, we draw on parallels with Sarasvathy's successful study of the early stages of business formation by analysis of the cognitive styles of expert entrepreneurs (D. Sarasvathy, 1997; D. Sarasvathy, Simon, & Lave, 1998; Saras D. Sarasvathy, 2001; Saras D Sarasvathy, 2009; Saras D Sarasvathy, Dew, Read, & Wiltbank, 2001) and we propose a derivative methodology to help research and better understand the front end activities of ESRI. Using a novel research methodology, Sarasvathy empirically characterised key elements of entrepreneurial expertise in contrast to traditional business planning approaches (Saras D Sarasvathy et al., 2001). In doing so, she expanded understanding of the ‘pre-firm’ and its associated problem space (D. Sarasvathy, 1997).

The overall study's objectives are to establish the nature of design thinking behaviours, the extent of their use and the benefits that accrue from these types of behaviours. In addition, we wish to determine the circumstances in which they are most beneficially applied and, of equal importance, when they are less suited than traditional, more analytical approaches. We hypothesise that many ESRI activities are essentially design thinking in nature, even if not explicitly identified as such. Due to limited

literature and understanding of ESRI this qualitative study draws from a wide theory base and is exploratory in nature.

The overall study encompasses three phases.

PHASE 1: Retrace existing innovation development patterns and establish key elements and process sequence.

PHASE 2: Map expert innovation process by concurrent cognitive experiment and establish the sequence of micro behaviours (cognitive approach) and their nature. Phase 2 will draw on phase 1 findings to validate an experimental research instrument.

PHASE 3: Confirm the extent of the role of DT in early stage radical innovation.

This paper reports on phase 1 completion. Here, we prepare guidelines towards a research instrument for cognitive experiment. Through phase 1 we have conducted semi-structured interviews creating case studies of 6 innovation events (3 separate innovation events in 2 different firms). Interviews were conducted using grounded theory principles (Moghaddam, 2006). Interviewees self nominated based on their involvement and comprehensive knowledge of the innovation event in their organisations. Three separate individuals were interviewed for each innovation to ensure complete and accurate process mapping. Any inconsistencies were later revisited and corrected.

In practice, radical innovation is a long process. Practical limitations do not afford a longitudinal study so our experimental protocol uses a research instrument that frames a hypothetical, though realistic and empirically validated, scenario set and problem space. The instrument will present ESRI scenarios with decision-making tasks designed to elicit evidence of cognitive styles and behaviours. By 'think aloud' verbal reports we propose to capture cognitive responses of subjects. In this paper we offer taxonomy of cognitive styles for coding. Two forms of analysis will follow. Quantitative analysis will determine the proportional contribution of each cognitive style to ESRI, qualitative analysis will inductively extract principles for applying DT to future ESRI. This paper establishes rules by which to develop the experimental protocol problem set including its problem space, sequence and actor characterisation. From it industry specific experiments may be developed by adaptation of a previously reported event or creation of a brand new event, convincingly real.



## Innovation typologies: Radical v. Incremental

Radical innovation is a complex concept, often involving unstructured processes, surprising events, and disruptive outcomes. Innovation derives from the Latin word ‘innovare’ which is to renew or alter and ‘novus’, meaning new, fresh or young. For the average person in the street: Innovation is ‘doing something new’. For the scientist or engineer: Innovation is ‘inventing or discovering something new’. For the designer, business person or economist: Innovation is ‘doing something new that adds economic value through user adoption.

Radical is drawn from the Latin word ‘radicalis’, meaning of-root or fundamental. Prefixed to innovation it implies a fundamental or root change. In context of business innovation it asserts a degree of change affected at systems level. In sum, radical innovation is a ‘change of frame’, “doing what we did not do before” where as incremental innovation ‘improves within a given frame of solutions’ or “doing what we already do” (Norman & Verganti, 2013, P.82). Therefore radical prefixed to innovation demands a threshold of change beyond incremental.

Norman and Verganti offer a ‘hill climbing’ analogy to distinguish between incremental and radical innovation (see Figure 1);

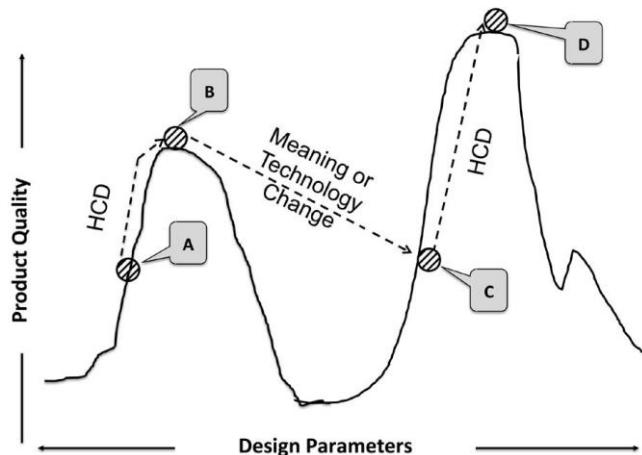


Figure 1: The hill-climbing paradigm applied to incremental and radical innovation (Norman & Verganti, 2013, P.79)

*[Incremental Innovation:] A given product might start off at “A.” Through Human-Centred Design and Design Research (HCD & DR), the product undergoes a series of incremental innovations, eventually bringing it to its maximum quality for this part of the design space, point “B.”*

*[Radical Innovation:] To move to a different hill, one with a higher potential, requires radical innovation, and this comes about through either technology or meaning change, leading to point “C” on a larger hill. Note that the initial outcome is often inferior to that previously reached (“B”), and so HCD and DR are required to make the necessary incremental innovations to reach maximum potential. To make matters more complex, when the product is at point “C,” there is no way of knowing if indeed there is a superior level (“D”) or if this is an inferior spot in the design space. (2013 ,P.79)*

Radical innovation can be further categorised into different dimensions. We draw on Bessant and Tidd’s (2007) 4Ps of innovation space. Here they capture the two degrees of innovation, radical and incremental, along four dimensions; **Product innovation** reflects changes in products and services, **Process innovation** reflects changes in the how things are created or delivered, **Position innovation** changes in the context in which things are introduced, and **Paradigm innovation** describes changes in an underling organisational model. The 4Ps model offers a common platform to measure and compare disparate innovation types and specify their place along the incremental-radical continuum.

We define radical innovation as *a new product, process, position or paradigm that significantly alters the natural progression of a market or industry, to meet one or more of the following conditions of degree;*

*A. Reach non-customers of an existing market space. Customers that otherwise would not naturally enter the market. (For further definitions see Kim and Mauborgne’s three tiers of non-customer (2005))*

*and/or*

*B. Significantly undermine incumbents by changing the rules under which an existing market operates, necessarily with or without performance benefit to the customer. (For further reading see hypercompetition theory (D’Aveni, 1999))*

## **The Early Stage of Radical Innovation**

Here we introduce extant literature on the topics relevant to early stage of radical innovation bounds, its process and sequence, and its decision making problem space.

### *Background*

ESRI literature makes up a small part of innovation literature. The majority of the literature relates to later project execution and management issues with a relatively small portion addressing front end activities. Of those addressing front end activities, they typically expand on linear phase models focusing on 'pre-project activities' (Smith & Reinertsen, 1991), phase 0 and pre-phase 0 (Khurana & Rosenthal, 1998), stage 0 (Cooper cited in J. Kim & Wilemon, 2002), fuzzy-front-end (FFE) (J. Kim & Wilemon, 2002; Smith & Reinertsen, 1991), or front end innovation (FEI).

ESRI activities address all activities prior to NPD, where a project achieves 'new product development' status. Khurana and Rosenenthal (1998) describe it as the episode before go/no-go decision when a business unit commits to funding or launches a NPD project. They expand on linear phase models of NPD processes so to recognise two additional phases, 'Pre-phase 0' and 'Phase 0'. Pre-phase 0 is an ongoing, ill-defined activity, whereas Phase 0 concerns the preparation of a NPD project proposal for formal decision gate approval. Similarly, Kim and Wilemon adopt the term 'fuzzy front-end' and define it as "the period from when an opportunity is first considered and when an idea is judged ready for development." (2002, P.269). In this paper we draw significant contribution from De Brentani. She draws similar bounds but allows for a more open-ended inception point, describing "...the time and activity prior to an organization's first screen of a new product idea." (2012, P.70) Other important literatures and concepts include Cooper's 'Stage 0', a poorly understood set of activities preceding his popular stage gate process, and Reinersten's 'fuzzy front-end' portrayal of pre-project activities undertaken. While there is some consensus to the concluding point of ESRI, its start is much more unclear and currently without consensus.

It is not unusual for very early activities to be acknowledged by contributors and yet in the same writing excluded from the investigation (Khurana & Rosenthal, 1998). This is normally an outcome of practical research constraint. An exception to this is offered by Reid and De Brentani 'fuzzy front end model of discontinuous innovation' (Brentani & Reid, 2012; Reid & De Brentani, 2004). Here they prepare an ambitious model for study

into the frontiers of ESRI. They describe a start process which is bottom-up initiated by semi-autonomous individuals who traverse organisation boundaries in search of new knowledge. They bring together a number of complex issues including radical innovation, early stage processes and bounds, and key individual roles. To inform the research instrument, we draw on wider contributions from literature to strengthen weak points in De Brentani and Reid's model, clarifying the radical innovation process and problem space.

### *The ESRI process*

Reid and De Brentani (2004) and later De Brentani and Reid (2012) offer the most complete early stage radical innovation model. They distinguish a radical process from an incremental process by its orientation and sequence. Semi-autonomous activities by individuals initiate new information flow from the environment into the organisation.

*For incremental new products, structured problems or opportunities typically are laid out at the organizational level and are directed to individuals for information gathering. In the case of discontinuous innovations, however, we propose that the process works in the opposite direction—that is, that the timing and likelihood of organizational-level involvement is more likely to be at the discretion of individuals. (Reid & De Brentani, p. 140)*

In total, three decision-making interfaces exist and effect information flow through the ESRI process. A boundary interface (between individual and environment), a gatekeeping interface (between individual and organisation) and a project Interface (between organisation and specific project team). Transition between interfaces is controlled by a key individual in each case. Only at the third and final interface, the project interface does the route of control reverse. On achieving NPD status direction is centralised by appointment of project level decision makers.

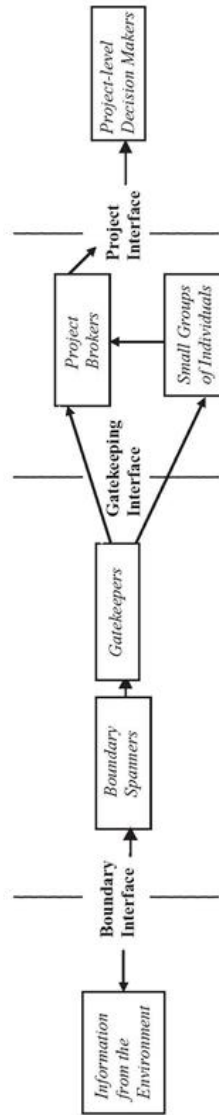


Figure 1. The Fuzzy Front-End (the Basic Model) (adapted from Reid and de Brentani, 2004)  
Solid arrows indicate the movement of the “NPD vector”; speed and direction of information movement are a result of the effectiveness of individuals playing the roles of boundary spanner, gatekeeper, and project broker

Figure 2: (Reid & De Brentani, 2004)

Fundamentally ESRI is an information processing activity whereby new information is translated into innovation concepts and strategies (De Brentani and Reid, 2012, P.71). Accordingly, quality and speed of information flow are key determinants of process effectiveness. Quality is determined by communication effectiveness. The ability to encode information for transport, transport and decode after transport determines concept appropriateness and integrity. Speed determines the efficiency by which processing is completed and early-mover advantage. Effectiveness of both variables is determined in different ways at each interface. We extract guidelines for the research instrument by exploring each phase.

### *Boundary phase variables*

The first of three phases is the point at which new information enters the organisation. According to De Brentani and Reid the process effectiveness at the boundary phase is dependent on three key variables; (1) Innovation attributes, (2) boundary spanner positioning both inside and outside the organisation and (3) ability to assimilate new information patterns.

Innovation attributes pertain to levels of discontinuity between new information and existing organisational activity. That is, the greater the discontinuity, the greater the challenge in recognising its relevance in the first place. Discontinuous pattern recognition requires multiple waves of opportunity recognition prior to any action (cited in Brentani & Reid, 2012, p. 75). Secondly, effective boundary spanner positioning requires a broad and diverse networks base. Positioning beyond well established market linkages is an indicator of breadth. Thirdly, the individual's ability to assimilate relevant information requires perception or classification of new information patterns. We draw on the concept of 'absorptive capacity'. It states; "the ability to evaluate and utilize outside knowledge is largely a function of prior related knowledge" (Cohen & Levinthal, 1990, P.128). Accordingly, learning is more difficult in novel domains as existing concepts are less richly connected. A diverse knowledge is advantageous where there is uncertainty in order to increase the likelihood of novel connection between patterns. A narrow skill focus, or capability bias, restricts exploration and breadth of linkages (March, 1991; Zhou & Wu, 2010).

For our purposes variables 1 and 3 overlap, and so combine to form a single implication for the research instrument. In sum, there are 2 implications for the research instrument;

*Firstly an existing knowledge set that is broad should positively promote*

*An Investigation into Design Thinking Behaviours in Early Stage Radical Innovation radical connections. A measurement scale will have two poles – narrow knowledge base v. broad knowledge base.*

*Secondly network positioning should be broad and diverse. A measurement scale will have two poles - redundant (only established market networks) v non-redundant (broad and diverse networks).*

### *Gatekeeper phase variables*

The second of three phases sees the introduction of an organisation layer in decision making. At the gatekeeper phase, information is processed in terms of relevance to the organisation and includes three relevant variables: (1) perceived attributes of evolving innovation concepts, (2) established internal relationships and structures, and (3) ability to communicate new information. Two further variables include individual motivation and extraversion; both influence speed of flow but are beyond the scope of this study.

By the first variable, gate keepers perceive new information through their individual value lens and organizational strategic values. To better understand the nature of the process we draw on two related concepts; firstly, Khurana's and Rosenthal's 'holistic front end'; "This means understanding the link between business strategy and NPD, simultaneously considering the portfolio of product development efforts and objective assessment of the particular NPD opportunities" (1998, P.59). Secondly, Hambrick and Mason's decision making model. In particular 2 constructs; the organisations 'limited field of vision' and individuals 'cognitive base and values'. Limited field of vision describes strategic areas to which attention is directed and bounded by existing organisation activity (1984, P.195). Cognitive base and values are individual 'givens' or assumptions. Together they situate or frame patterns for relevance to company and individual. In terms of this research the 'field of vision' guides initial search activity at the boundary phase and their cognitive base and values relate to an individuals cognitive styles, or information processing behaviours (for example analytical v non-analytical discussed later).

By the second variable, the nature and strength of internal relationships determine flow effectiveness. In practical terms, this implies that an individual acquainted with a diverse set of individuals will be more likely to receive broad disciplinary feedback, which is known to promote innovation. Wider literature suggests innovation novelty and relevance suffers where such groups are myopic or dominated by a single capability (Zhou & Wu, 2010). In light of this, human bias accentuates this negative as individuals

are more likely to share embryonic concepts within their immediate groups (Brentani & Reid, 2012). A further consequence of divisional boundaries and the grouping of disciplines, normal to organisations, i.e. engineering department, marketing department, finance department etc. Organisation structures may indeed be a prolific inhibitor of radical innovation with the following exceptions; where individuals are inclined to cross divisional boundaries (McDermott & O'Connor, 1999); where process promotes this to happen (Khurana & Rosenthal, 1998); or where breadth of knowledge is within the individual (Khurana & Rosenthal, 1998). In each case flow and quality of innovation concepts will improve.

By the third variable, flow and quality of information is affected by the gatekeeper's aptitude for communication. The provision of good context, linking technical and market applications speeds up the process of information sharing (Brentani & Reid, 2012).

In sum, there are three implications for the research instrument;

*Firstly new information patterns are filtered through 3 legacy organisation elements; the overarching or gestalt strategy (Mintzberg, 1978), the portfolio of existing products, and the individual cognitive style. In order to isolate the individual's cognitive style the research instrument must set out of the other two variables, the gestalt strategy and existing product portfolio. Appropriate measurement scale – Analytical v. non-analytical of which design thinking is one form.*

*Secondly, a gatekeeper who seeks breadth of experience in sharing and validating opportunities is shown to enable innovation, whereas normal organisational divisions impede gatekeeping but are commonplace. The research instrument must determine normal organisation conditions in order to assess gatekeeper practices. Appropriate measurement scale - Narrow disciplinary focus v. broad disciplinary focus. As stated by Khuarna and Rosenthal, breadth may be within the individual or fostered by the process (1998). Therefore special consideration is necessary for individuals with breadth of knowledge.*

*Thirdly, greater visibility between market and technology linkages facilitates radical innovation. The research instrument must set out conditions to evaluate the nature of communication mechanisms and their ability to communicate context across different innovation dimensions (4Ps). Appropriate measurement scale - Analytical v DT or other non-analytical.*



### ***Project phase variables***

The third and final phase is the point at which the project is officially accepted or rejected by central management. According to De Brentani and Reid process effectiveness at the project phase is dependent on a 'project broker', a position normally fulfilled by a senior manager. Here the broker prepares and introduces the idea for its formal screening, setting out its connection to current strategic context. Three key variables include; (1) existing organisation competencies, (2) new project decision criteria, and (3) speed through decision gate.

By the first variable, radical projects may have competence destroying implications for the organisation and therefore be rejected.

By the second variable, an organisation that presents rigid decision structures may slow or even kill a radical innovation, particularly where decision criteria are onerous. Good Broker navigation will speed up this process and flexible gates are recommended to allow brokers to champion and adapt decision criteria to something more relevant.

By the third variable, early broker involvement ensures faster evolution of any innovation concept. Seniority of project broker brings with it experience and understanding in negotiating decision criteria particular to that organisation.

In sum, there are two implications for the research instrument;

*Firstly, radical innovation is often competence destroying. This combined with formal decision criteria impedes fast decisions. The role of the Project broker is to prepare NPD proposal for formal decision gate and overcome barriers fast. In doing so they must satisfy a number of conditions including meshing new opportunities within the current strategic web and work round ill-suited formal decision criteria. The research instrument must set out realistic organisation criteria for project approval and provide a radical innovation concept. By this we may isolate broker ingenuity and make visible their cognitive mechanisms for measurement. Here, we seek to record and measure both the communication tools adopted and broker emphasis in terms of targeted validation criteria and negotiation behaviours, overcoming problematic criteria. Appropriate measurement scale – analytic v. DT or other non-analytic approach.*

*Secondly, delayed broker involvement is likely to delay project approval. The research instrument should determine at what point project broker (senior manager) involvement is sought. Appropriate measurement scale - initial instances of gatekeeping v. just prior to project decision gate*

### *The initial problem space*

A key determinant of process initiation is the problem space in which it exists. Interestingly Sarasvathy deals with strategic choice under uncertainty. While this methodology follows Sarasvathy's there are some notable differences. In particular, entrepreneurship deals with a pre-firm problem space, whereas we deal with a pre-innovation problem space. An entrepreneur does not inherit the benefits or burdens from firm history and as a result easier for the entrepreneur to impose personal values, goals & motivations in decision-making (D. Sarasvathy, 1997), whereas a boundary spanning individual acts within an organisation and is therefore bound by an extra organisational layer of influence. For purpose of framing this discussion we expand on the three elements of the pre-firm problem space; Knightian uncertainty, goal ambiguity, environmental isotropy (Saras D Sarasvathy, 2009) and include legacy organisation factors.

Knightian uncertainty distinguishes between predictable futures and unpredictable futures. Faced with Knightian uncertainty it is impossible to calculate probabilities for future consequences. Two seminal theories characterise the unpredictable problem space; 'artificial science' (Simon, 1985) and derivative concept of 'wicked problems' (Rittel, 1973).

According to Simon artificial problems are solved by the logic of thought that is flexible to ever changing inputs, constraints and variables, whereas natural sciences asks for purely empirical data and facts and ordinary declarative reasoning to explain precise relationships (Simon, 1985, P.150). Artificial problems are creations of human intention and emotion bounded by natural laws;

*The world we live in is much more a man-made, or artificial, world than it is a natural world. Almost every element in our environment shows evidence of mans artifice. The temperature in which we spend most of our hours is kept at artificially at 20 degrees Celsius; the humidity is added or taken form the air we breadth; and the impurities we inhale are largely produced (and filtered) by man (cited in Saras D Sarasvathy, 2009, P.152).*

'Wicked problems' exist within the artificial sciences and describe a problematic juncture where goal formulation, problem definition and equity issues meet (Rittel, 1973). Strategic choice is implicated as follows;

*In a world of Newtonian order, where there is a clear relationship between cause and effect, companies can judge what strategies they*

*An Investigation into Design Thinking Behaviours in Early Stage Radical Innovation want to pursue. In a wicked world of complex and shadowy possibilities, enterprises don't know if their strategies are appropriate or what those strategies' consequences might be. They should therefore abandon the convention of thinking through all their options before choosing a single one, and experiment with a number of strategies that are feasible even if they are unsure of the implications. (Camillus, 2008, P.104)*

Secondly, an implication of an artificial problem space is 'goal ambiguity' and 'environmental isotropy'. Upfront goals require conditions for prediction, in its absence goals are neither given nor well ordered. Here non-predictive control replaces predictive control. In an infinite range of possibilities it is not clear what elements of the environment to pay attention to and what to ignore. Further to this, wicked problems are never truly solved but exist without a stopping rule.

Most radical innovations are synthetic, man made creations, bounded by natural science but guided by human intention. At its initiation a radical innovation problem space exists along degrees of human intention. At its lowest, human intention is inconsequential and innovation arises from a technology breakthrough and carries no socio-cultural change. At its highest, human intention is significant, innovation is meaning driven and a new socio-cultural model results.

In sum, an implication for the research instrument;

*Starting out, radical innovation possibilities are infinite, goal constraints are incomplete and environment signals are neither prioritised nor well ordered. Future conditions are not predictable. Two control factors simultaneously processed by individuals determine early goals; firstly organisational layer control and secondly individual cognitive style control. The research instrument must provide the environmental stimuli, characteristically ambiguous and isotropic, and organisational layer control conditions in order to isolate and observe the individual cognitive control styles. Appropriate measurement scale - Analytical v DT or other non-analytical.*

## **Cognitive styles in decision making: Analytical Thinking v. Non-analytical thinking**

Here we introduce literature on topics relevant to the actors in the process. We delineate a taxonomy of cognitive styles, distinguishing Analytical Thinking from Design Thinking.

Suitability of cognitive style is dependent on the nature of the problem space and existing organisation attributes. Analytical reasoning is useful in domains of clarity, where all variables are known to the decision maker and the future is predictable (Saras D Sarasvathy et al., 2001). "According to the logic, once a problem is comprehensively stated the optimal solution can be rationally derived from the inner structure of the problem" (Lindberg, Gumienny, Jobst, & Meinel, 2010, P.244 drawing on Newel et. al 1967).

Sarasvathy (2009) distinguishes two forms of analytical reasoning, deductive reasoning and Bayesian probability. Deductive reasoning deals with wholly objective issues and exemplifies the natural sciences, whereas Bayesian probability deals with subjective issues by means of rational methods. In this instance problem space uncertainties are transformed into factual statements so that it becomes susceptible to analytical techniques. Notably, both methods have different problem spaces at the start, one is to some degree subjective and while the other is wholly objective, but interestingly both adopt analytical reasoning tools in solving the problem space.

Non-analytical is a catch all term we use to describe all approaches that do not fit analytical reasoning. Like Bayesian probability, non-analytical approaches address subjective issues, but unlike Bayesian probability the problem space is left uncertain while solving and non-analytical means are adopted. Effectuation is at least one known embodiment of this, described by Sarasvathy as the inverse of analytical processes. Others both good and bad include intuition, chaos, chance, magic, etc.

For the purpose of analogy we draw on the introduction of the Nintendo Wii to the game console market to help distinguish between Analytical, Bayesian and Non-analytical (design thinking) cognitive styles in practice.

At its inception the game console market was technology driven, focused on passive immersion in a virtual world (Verganti, 2009). Market share was won and lost by an organisations ability to deliver graphical realism. At this time one might declare the problem space as follows; Nerdy gamers need the latest technology. Moore's law says every 2 years technology will have 10 times the power currently available. Therefore we know gamers will expect 10 times better games.

We hypothesise 3 different possible responses, analogous to 3 cognitive styles in practice:

*Analytical – From market truths we can deduce the level of improvement necessary. We can plan in advance the necessary steps for execution.*

*An Investigation into Design Thinking Behaviours in Early Stage Radical Innovation*  
*Bayesian – Xbox and Playstation have a technology advantage we cannot make up. We know that many people do not consume game consoles but we don't know how many latent customers there are. By conducting surveys and reviewing market analytics we may predict the number and nature of potential customers. Based on this prediction we can define the exact solution.*

*Design thinking – Xbox and Playstation have a technology advantage we cannot make up. It is reported that consumers cut back on game consumption as they start families. In our broad experience gaming is not very interactive when in the presence of other people and it focuses on a narrow set of technologies. What if we did something for the family? Let's build a quick experimental model to see how they respond and learn from this.*

Possibly the key distinguishing element between analytical reasoning and non-analytical reasoning are their lines of inquiry. According to Bamford (2002) analytical process adopt an analysis/synthesis line of inquiry. Non-analytical process adopts a conjecture/analysis line of inquiry. An analysis/syntheses model seeks absolute truth from the start. Conjecture/analysis draws on Popper's pragmatic view of truth as ultimately a matter of professional agreement among scientists and only requires the appearance of truth. Here, relative truth is declared at the end of the process once proven satisfactory in a follow-up analysis. By Popperism, truthfulness and accuracy of a stating hypothesis doesn't matter as it is ultimately unimportant to its resulting acceptance or rejection. In other words, if a guess is made and it is tested and found out to be good, then the outcome is accepted.

In the case of radical innovation this releases future possibilities from the restrictive grip of declarative accuracy. As not all methods of hypothesis construction are rationally definable it affords broader approaches to hypothesis creation. Analytical reasoning is conditioned on declarative statements drawn from historic patterns.

This orientation of inquiry is further lived out in Sarasvathy's distinction of analytical logic as predictive control v. effectual [non-analytical] logic of non-predictive control.

In sum, there are a number of implications for a coding scheme:

*Evidence of analytical reasoning:*

*1) An analysis/synthesis line of inquiry. 2) Subject defers design decisions in search of declarative statements. 3) The design solution is strictly modelled on historic patterns. 4) A prediction control mindset is apparent. 5) Subject*

*assigns all market influence to external firm factors.*

*Evidence of non-analytical reasoning:*

*1) A conjecture/analysis line of inquiry. 2) A non-predictive control mindset is apparent. 3) Subject believes in their ability to influence the market*

### ***DT as a form of non-analytical reasoning***

Design literature firmly positions design cognitive styles with non-analytical reasoning. Bousbaci (2008) distinguishes design thinking from classical scientific thinking by two dimensions, focus and outlook. He describes scientific thinking as a 'problem focused' approach, characterised by steadfast pursuit of the problem presented. Whereas design is described as a 'solution focused' approach, characterised by problem apathy, pursuing a quality solution to a problem not necessarily the one started with.

Similarly, Schon and Buxton distinguish between 'problem solving' and 'problem setting' (cited in Buxton, 2007, P.384), Buxton aligns analytical traits to problem solving expertise and design thinking traits to problem setting expertise. Schon distinguishes between scientific and design lines of inquiry. Science is convergent and depends on 'agreement about ends'. Design practice is divergent and adopts non-technical process, framing problem situations where 'there is yet no agreement about ends' (1991, P.41). Liedtka (2000) differentiates a design approach from traditional planning approach to strategy as being more widely participative; more dialogue based, issue-driven rather than calendar driven, conflict using rather than conflict-avoiding, where they all aim for invention and learning in place of control. According to Martin (2009) a reliability focus is consistent with analytical reasoning and perpetuating the past. A validity focus is consistent with exploration, innovation and design thinking.

Van Aken (2004) distinguishes between 'explanatory science' and 'design science' along 3 dimensions, reputation systems, control rules and outlook. Explanatory science is characterised by an academic reputation system that rewards rigour whereas design science is characterised by a professional reputation system that rewards relevance. Explanatory science follows a quantitative recipe using algorithmic rules and evidence may be left out after it has been assessed, whereas design science follows heuristic rules based on variants of a design exemplar and evidence must remain part of the results. Explanatory science is description driven, seeks an understanding of phenomenon, whereas design science is prescription driven, designing of solutions in context.

In summary, there is a clear dichotomy between design thinking and analytical thinking. It needs to be noted however, we are not saying design professionals don't practice analytical thinking, or scientists don't practice design thinking. Rather any one individual will use different types of reasoning faced by different circumstances. We have simply isolated cognitive styles as the unit of analysis rather than the individual.

In conclusion, design thinking is a form of non-analytical reasoning inverse to analytical thinking. It constitutes a distinct mode of reasoning based on an entirely separate logic.

We summarise the key differences in the Table 1 below.

*Table 1 Analytical thinking v. Design thinking*

	<b>Analytical thinking</b>	<b>Design thinking</b>
<b>Line of inquiry</b>	Problem focus Problem solving Convergent thinking	Problem unbounded Problem setting Divergent thinking
<b>Reputation system</b>	Reliability Rigour	Validity Relevance
<b>Decision rules</b>	Algorithmic rules	Heuristic rules

## **Empirical validation of the research instrument framework**

For purpose of validating our theoretical assumptions of radical innovation process model and its environmental characteristics, we draw on a set of empirical interviews conducted in phase 1 of the larger study. Interviews focused on 3 innovation events within the recent history of 2 organisations which are both experienced in radical innovation, and award winning industry leaders.

We offer a summary of one innovation event captured in phase 1 and follow with a discussion on its similarities and contradictions with our theoretical model.

This innovation event pertains to a device for the accurate detection of heat cycles in dairy cows: The total innovation episode from first cognitive trigger to product launch lasted for a total duration of 5 years, from 2003 through 2008. We have identified the ESRI phase to have concluded in 2005. There after the project had NPD status. We locate the innovation event and its development sequence onto our theoretical model.

### *Starting environmental conditions*

*Organisational layer* - In 2003 the organisation was already a well established and a successful player in the dairy equipment market, in particular focused on the manufacture and supply of milking parlours to both Irish and international markets. It had good mechanical engineering resources but limited software capability.

*Market status* – At this time an issue for detecting fertility in cows for dairy farmers existed and was known by the wider industry. Most farmers practiced fertility detection in cows by simple observation. Some basic technologies existed with limited accuracy. Technologies were based on step counting which required twice daily monitoring in order to check device display, normally practiced at milking time. Its detection method monitored a single symptom whereas human observation afforded multi-symptom checks. Technology to replicate human detection methods was not yet implemented.

### *Boundary spanning events:*

There was clear evidence that this innovation process commenced from boundary spanner activity. At the start of the process the boundary spanner was cognisant of financial losses to the farmer experiencing poor fertility detection. He was particularly sensitive to the accuracy limitations of the current step counter technology on grass fed farms as against grain fed farms. In Ireland, most farms practice grass feeding and this magnified any deficiencies in step counters. The boundary spanner was sensitive to this as Ireland was the organisations home market. Here, the grass fed cow moves around more and is inconsistent in its daily movement, whereas the grain fed cow is less active because of corralling. A heat cycle brings about significant increase in general movement, this change is more sharply contrasted in the corralled cow and thus suited to step counting technologies.

A point of breakthrough sparking the innovation cycle started when the passive awareness of the problem was stimulated by the new awareness of a technology breakthrough. The boundary spanner was active in reading technology journals and as a result triggered the first significant innovation event. An episode of pattern matching connected a technology breakthrough to the market need.



### *Gate keeping events:*

Next the boundary spanner turned gatekeeper, aware of the opportunity he started to informally discuss it with colleagues. The key breakthrough occurred on a flight to North America with an international sales manager. During the flight the opportunity was informally discussed and its market potential was affirmed by the second party. This moved the idea forward to a number of exploratory exercises coordinated by the gatekeeper.

### *Project status approval:*

Over several informal meetings a plan of action was put into operation. A number of tasks were identified following gate keeping activities. Software and mechanical resources were engaged to develop a wearable housing to allow technology testing. Video analysis was conducted and correlated against digital readings. Algorithms were created to trace a number of symptoms and expose heat cycles. Following these steps the first complete offering was available for reliability testing in the field.

At a second, later stage additional new resources were added indicating a further commitment to project, including the hiring of a dedicated sales person at which point the product was launched to market.

### *Confirming radical innovation status:*

This product matured into a radical innovation satisfying 2 conditions; reaching non-customers of existing technologies, and affecting new competition rules for the industry. After two years on the market, unexpected demand came from animal breeding companies in place of farmers. The focus of sales channels shifted from milking equipment dealerships towards artificial insemination companies and by good performance they grew and expanded the market for fertility detection devices. Farming is now undergoing a change in meaning from manual farming methods to smart farming significantly led by technology improvements in wearable sensors.

### *Implications for research instrument*

Our findings from preliminary interviews support the first two phases of process model, the boundary and gatekeeper stages. However, at the project interface the point of project approval, and thus end of ESRI process, is not clear. For example, in the case above some of the tasks were bootlegged, done under the impetus of one individual and it is not clear whether it was centrally approved or not. Interviewees revealed meetings

during the course of this innovation were rarely formal, instead undertaken without clear agenda items or written outcomes. More often instruction appeared to take the impetus of 'do what you can when you can around your day to day responsibilities', rather than official time allocation even on reaching NPD status. This creates some ambiguity around the transition point from 'project phase' to NPD status. Activities and goals undertaken at this time equally resemble informal group engagement by a 'project broker' as official project team leadership.

The case above is further complicated as the same individual played the role of Boundary Spanner, Gate Keeper and Project Broker who also happens to be a son of the owner. In summary, a problematic issue arises in clarifying the Project phase conclusion within SMEs. Pre-project approval activities and post-project approval activities may be hard to distinguish.

In light of this problematic juncture we draw attention to retrospective interviews as a notable limitation, important details and nuances may be lost to poor memory recall. It is expected some of the difficulties faced here will be mitigated by the proposed think aloud research protocol as it concurrently reports on activities and offers more immediate verbalisation which is more accurate and detailed (Ericsson & Simon, 1980). In order to unequivocally resolve this, we recommend it is clarified between subject and interviewer before concluding the research experiment.

Our findings support two key variables which bound the initial problem space. These recognise legacy organisation attributes, in particular existing markets and capabilities, and attributes of the individual, in particular their knowledge base be it of technology or market type. In an uncertain problem space an organisational layer bounds an employees thinking at the start. Khurana and Rosenthal's 'Holistic front end' and Hambrick's 'field of vision' offer theoretical grounds for measurement of both individual and organisational influences on cognition. Finally, this study supports the important and relevant issue of individual positioning in networks at the boundary spanning interface. For example, we know in the case above the individual participated in both academic technology networks and interfaced with end customers at trade shows. This, along with the individuals absorptive capacity (Cohen & Levinthal, 1990), proved a significant driver in the resulting radical innovation outcome

## Conclusions

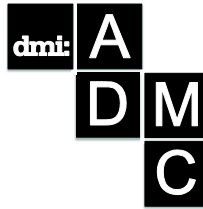
In conclusion, this study sets out a novel experimental protocol and framework for future investigation of design thinking and early stage radical innovation by contributing three elements. It empirically supports a process model for radical innovation. Secondly, it characterises the environment of the radical innovation problem space. Thirdly, it offers a taxonomy of cognitive behaviours to be observed in ESRI.

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# Prototyping in Business Model Innovation: Exploring the role of design thinking in business model development

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*The role of design for innovation management has been argued especially under the discourse of design thinking by scholars and practitioners. For fostering innovation, one of the obstacles is the uncertainty over the process, and prototyping has been acknowledged as a key element of the design methodology to embrace the uncertainty. However, the focal point of the discourse is often on the human-centric aspect and there is less argument on prototyping. Concurrently, the argument of design methodology for innovation has started to identify the need for a more comprehensive approach than approaches focusing on product innovations, and the argument has expanded to business model innovation. By clarifying the concept of business model innovation and the relevant concepts by literature review, this paper proposes a theoretical model of business model prototyping with the four key elements: iterative and agile learning, tangibility, complexity and synthesis. It is accompanied by the examination of the possible domains of further research. Through the development of the theoretical model, this research serves as the basis for arguing the relatively neglected issue of prototyping for business models.*

**Keywords:** Design thinking; prototyping; business model; innovation; business model innovation

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## **Introduction**

It has been acknowledged that managing innovation is surrounded by a high degree of uncertainty (Christensen, 2003) and the required strategy to embrace the risk in the uncertainty is different from management strategies in the conventional management discipline (MacGrath, 2000; Ries, 2011; Blank and Dorf, 2012). In line with the growing importance of innovation, the strategic role of design has been argued under the concept of design thinking as an alternative methodology for fostering innovation (Dunne and Martin, 2006; Brown, 2008; Lockwood, 2010; Plattner et al., 2010).

Also business models have become a popular concept relevant to innovation (Amit and Zott, 2010; Chesbrough, 2010; Teece, 2010), and some tools based on the concept are developed to explore new opportunities in the uncertainty (Osterwalder and Pigneur, 2010).

While innovation is traditionally regarded as a matter of technology and products (Fagerberg, 2006; Chesbrough, 2007; Norman and Verganti, 2012), it has started to be acknowledged that business model innovation is a new area of innovation. Different from innovations categorised by the output of innovation such as product innovations, the concept of business model innovation rather provides a new approach to fostering innovation than specific cases, and the concept is still under development (Schneider and Spieth, 2013).

This paper will examine the possibility of applying the methodology of design thinking, especially focusing on the method of prototyping, to business model innovation. It will also propose a theoretical framework of business model prototyping focusing on the four elements of the concept: iterative and agile learning, tangibility, complexity and synthesis. Finally, it suggests the possible area of further research.

## **Key Concepts**

### *Innovation*

It is recognised that there is a wide range of research and attempts to define innovation (Fagerberg, 2006; Cruickshank, 2010). Therefore, before moving to an argument on the contribution of design thinking to business model innovation, this chapter will clarify the definition of innovation for this paper as the conceptual foundation, and it also reveals the conceptual difference between product innovations and business model innovation.

### **The definition of innovation**

This paper mainly follows two definitions of innovation.

One is provided by OECD, and the other is offered by Sir George Cox, a former director-general of the Institute of Directors. In Oslo Manual, OECD (2005, p.46) defines innovation as:

*An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.*

This definition encompasses various types of outputs as innovation and emphasises implementation as a key aspect of innovation.

Cox (2005, p.2) also defines innovation as ‘the successful exploitation of new ideas’. Here also exploitation is the key point of innovation. It seems that, as innovation tends to be misunderstood as invention, which is more likely to be mere idea generation, these definitions try to ground innovation on a larger basis including the implementation of ideas. Following the definitions, this paper regards innovation as a comprehensive activity.

### **Product innovations**

OECD (2005) also proposes a taxonomy of innovation that divides innovation into four types: product innovations, marketing innovations, process innovations and organisation innovations. It defines that ‘Product innovations involve significant changes in the capabilities of goods or services. Both entirely new goods and services and significant improvements to existing products are included’ (p.18). This definition suggests that this categorisation is based on the output of innovation. For instance, the characteristics of product innovations in this definition is that the innovations are delivered through goods or services. Another point of this definition is that the word ‘product’ does not only mean goods but also includes services. In other words, the physicality of the products is not focused as the key element of products.

It is not new to think that the boundary between products and services is vague. For instance, an argument on service-dominant logic reveals that the product is only a medium to provide a service and it should be regarded through a logic concentrating on services (Vargo and Lusch, 2004). In this logic, products are a physical medium of the services to deliver the value.



### ***Business model innovation***

The brief overview of the concept of product innovations shows that the argument on innovation conventionally focuses on the output of innovation.

If following the same scheme of the argument, business model innovation would be the implementation of a new business model. However, as we will see, one of the advantages of using the concept of business models for fostering innovation is that it provides amore holistic perspective of the business and helps the users to avoid sticking to a single element of the business.

To clarify what business model innovation is, the next section will frame the concept of business models as the theoretical basis for the innovation.

### **Business models**

#### *The definition of business models*

There are numerous arguments on the definition of business models and the general definition has not been formulated (George and Bock, 2011; Schneider and Spieth, 2013). In the early stage of the research on business models, the term was used to mostly describe the financial side of business (Schneider and Spieth, 2013). In the progression of the argument, it became a concept representing the holistic architecture of a business. Teece (2010), for instance, asserts that business models are more conceptual and holistic than a mere financial model.

To settle the definition, this research focuses on the definitions by key researchers on innovation. Chesbrough and Rosenbloom (2002) describe it as a medium between the technical domain and economic domain. Their argument basically suggests that technological progress itself hardly fosters innovation, and the consideration of commercialisation of ideas will be needed to exploit the opportunity. Johnson (2010) also points out the importance of the delivery of values. He argues that a business model 'defines the way the company delivers value to a set of customers at a profit'.

Research by Osterwalder (2004) is also broadly acknowledged, and the definition of business models encompasses a more comprehensive set of the elements in the concept. The definition is that 'a business model describes the rationale of how an organization creates, delivers, and captures value' (Osterwalder and Pigneur, 2010, p.14). The creation of value is the traditional focal point of innovation management, which is about the generation of new ideas, products and services. The delivery of value is an

adaptation of the new ideas to the market including the customer segment, channels and customer relationship. Capturing value is the monetisation of the scheme. Through clarifying the three key aspects of business models, the definition shows business models as a holistic overview of a business.

*Key aspects of business models*

The argument on the definition of business models indicates that *comprehensiveness* is one of the key elements of business models.

Another key aspect is agility. Blank and Dorf (2012) compares the advantage of business models with that of business plans. His assertion is that most of the business plans for a new market or a new business do not survive at the first contact with customers in many cases. In other words, those plans actually include many assumptions.

This point resonates with one of the assertions by Christensen (2003). He argues that a market research, even if it is made by expert analysts, cannot predict the future of a new market and simply a market that does not yet exist cannot be analysed. He adds that most of new successful ventures actually abandoned their original plan in the implementation of their business.

Rather than spending much time only for planning, Blank (2005) suggests that those who develop new businesses should go out and start to validate the scalability of their business from the early stage. Christensen (2003) also suggests that action needs to be taken to learn before planning, and planning is only needed for learning new markets.

## **Comparison with product innovations**

*Innovation as the output of innovations*

The previous section reveals inclusiveness and agility as the key characteristics of business models.

In this understanding, the concept of business model innovation does not fit in the categorisation of innovations OECD provided. As we have seen, the categorisation by OECD is based on the outcomes of innovation. For example, product innovations are the innovation of products and marketing innovations are the innovation of marketing methods. The report uses the plural form for innovation and this also implies this point.

*Business model innovation as an approach*

On the other hand, the concept of business models include various aspects of businesses. The insights from the analysis of business models can end up as any type of innovations in the taxonomy of OECD. The analysis of

a business model, for instance, might identify a new value creation or a new way of delivering value as a potential opportunity of innovation. The former can be categorised as product innovations and the latter can be process innovations.

Business models are also tentative (Osterwalder and Pigneur, 2010), and it is rather a conceptual tool or concept itself to explore latent opportunities than an outcome directly influencing the business.

Therefore, business model innovation is hardly settled in this categorisation. It seems that business model innovation is not the innovation of business models but the innovation through the analysis of the business model. In other words, the characteristics of business model innovation is how to identify the opportunities for innovation rather than the type of the outcomes.

#### *Need for a new approach to innovation*

The reason why the research on innovation began to more frequently discuss business model innovation is not because product innovations became obsolete and we need to move to a new realm of innovation, but because it is gradually revealed that focusing on a single element of the business can miss the potential opportunities of innovation and the opportunities can actually be in the area of other elements of the business. For example, while you focus on a product innovation, the actual opportunities of innovation can be in other areas such as the realm of marketing innovations or organisation innovations.

An advantage of business model innovation approach, as we have seen, is to enable innovators to capture the whole picture of their business or activities and help to identify possible opportunities of different types of innovation.

The clarification of the conceptual difference between product innovations and business model innovation will support the argument in the following section on design thinking as the strategic role of design and the contribution to business model innovation.

#### *Design thinking*

The previous argument clarifies what business model innovation is. This section moves to the argument of the contribution of design and design thinking for innovation, especially product innovations and business model innovation.

### **The limited view of design for product innovations**

While being aware of the integral role of design for innovation, OECD (2005, p.17) conceptualises product design as part of marketing innovations as well as product innovations. It argues that 'Marketing innovations involve the implementation of new marketing methods. These can include changes in product design and packaging, in product promotion and placement, and in methods for pricing goods and services' (p.17). This idea is derived from the theory of marketing chiefly represented by the concept of 4P's. One of these Ps is product, and product design is regarded as an element of the product in the marketing theory (p.31). In this context, product design plays a role of increasing the attractiveness and appeal of products to a new market or a target market segment.

### **Design thinking as the strategic role of design**

Design has been discussed as a broader activity, even since Simon (1996) argued design in his discussion on the sciences of the artificial. He argues that 'everyone designs who devises courses of action aimed at changing current situations into preferred ones' (p.111). In this point of view, the role of design is not necessarily limited in the area of physical objects but rather it is about providing better situations.

Moreover, there has been an argument for the strategic role of design under the concept of design thinking.

Despite the controversy, this section builds the theoretical ground of the strategic role of design from the concept of design thinking, as the concept is relevant to the application of design approach to outside of the design discipline, which is the main theme of this research.

### **The key elements of design thinking**

The next section discusses the key elements of design thinking to clarify the potential contribution of design thinking to business model innovation. This research will mainly follow the five tenets of design thinking by Lockwood

(2010), the former director of the Design Management Institute.

The tenets comprehensively summarise the characteristics of design thinking. To theoretically complement it, it is integrated with other frameworks of the methodologies based on design practices, such as IDEO (Brown, 2008) and Adaptive Path (Merholz et al., 2008).

The elements are:

- Human-centredness / Field research (mainly with observations for deeply understanding consumers)
- Collaboration (with customers and/or internal multidisciplinary teams)
- Learning through iterative process (Prototyping; Agile Development)
- Visual Storytelling (Prototyping)
- Concurrency with business analysis (integrative thinking; divergent and convergent thinking)

### *Contribution of design thinking to business model innovation*

Introducing cases of Frog and IDEO, Simonse et al. (2012) suggest that strategic designers can contribute to innovation by providing a new business model. They also refer to Buchanan (2001) for claiming this point. His assertion is that the domain of design has expanded from things and symbols to systems and environments.

This argument overlaps the concept of business model innovation. The key objective is not to provide a better good or service but to build a better architecture and system of a business or an activity.

For this objective, the element of business to be innovated should be identified before the development for innovation begins. This is a distinctive difference between an approach to product innovations and business model innovation, and there will be unique issues of business model innovation.

Compared to product innovations, the output of business model innovation can be varied. This suggests that there is a wide range of directions business model innovation can possibly take, and identifying a right direction is an important part of the process. For this purpose, the iterative learning process plays a vital role, which is represented by the concept of prototyping in design thinking.

As a similar concept, Chesbrough (2010) also recognises the importance of business model experimentation as a learning process. Although the word, experimentation, can be associated with the verification of a pre-defined ideas (Brunswick et al., 2012), in the case of Chesbrough's claim the key point of business model experimentation is revealing knowledge, latent before the experimentation, for the future steps in iteration. The main objective of the experiment is consistent with the benefit of prototyping.

From this point of view, this paper will propose a concept of business model prototyping as part of the contribution of design thinking to business model innovation.

## **A proposed concept: business model prototyping**

This paper proposes a conceptual model of business model prototyping. The key elements are the following:

- Iterative and agile learning
- Tangibility
- Complexity
- Synthesis

The subsequent sections will discuss the detail of each aspect.

### *Iterative and agile learning*

One of the key elements is iterative and agile learning. The main objective of prototyping is to get feedback and learn from building and implementing a product or service. This point is sometimes argued as a difference between piloting and prototyping (NESTA, 2011). Moreover, the learning process is often iterative.

The iteration in the process of design thinking is regarded as a key element of managing uncertainty in facilitating radical innovation (Brown, 2008; Lockwood, 2010). As Christensen

(2003) claims, a new market cannot be analysed. To tackle this problem, designers build the product or service to learn, not to implement. Traditionally production should be flawless, but if you think that the production process itself is a learning process, even failure can be a learning opportunity. This aspect of design is conceptualised as prototyping in the argument of design thinking.

In the process of business model innovation, what element should be innovated needs to be identified before the development of the element. Relevant to the search, there is a significant concept of the lean startup methodology called *pivot*.

Similar to the concept of prototyping, the method of minimum viable products usually goes through an iterative process. After each iteration, the user of the method needs to interpret the feedback from the iteration and decide whether to keep improving the current product (persevere) or change the direction (pivot).

In addition, there is an argument in design practice about the level of fidelity of prototypes (Houde and Hill, 1997; McCurdy et al., 2006).

The concept of minimum viable products indicates that the prototype should be minimally developed just enough to get feedback. In the context of design thinking, also low-fidelity prototypes are theoretically preferable for getting feedback as designers can be open to the feedback when they spend less effort and time for the prototype and avoid the fixation with their initial idea (Gerber and Carroll, 2012).

Following these ideas, the required level of fidelity of prototypes basically depends on the learning objective and the development should be minimum. Additionally, as the process is assumed to be iterative, the agility leads faster cycles of iteration and it will be a fundamental element of the prototyping process.

### *Tangibility*

Tangibility should be considered as a key characteristic of business model prototyping.

Prototyping can be also part of visual storytelling, as prototypes are fundamentally tangible representations of the concepts. Lockwood (2010) asserts that visualization of concepts is always included in prototypes, and the form of prototypes is various from concept sketches to physical mock ups. The variation can also include some methods and tools of in service design such as stories boards, customer journey map and a service blueprint (Polaine et al., 2013).

This tangibility of prototypes in design thinking makes it easier to obtain feedback and facilitate interaction among stakeholders (Brown, 2009). There is usually difficulty in the collaboration among people in different departments as they tend to have a different view of their own businesses and customers from each other. Prototypes can work as a medium of sharing the common understanding of their business and service (Star and Griesemer, 1989; Henderson, 1991; Carlile, 2002).

Business model canvas can be a good example of turning the business model to be tangible (Blank and Dorf, 2012), and there are similar mapping tools for entrepreneurs (Maurya, 2012) and social entrepreneurs (McCahill, 2013) to help the visualisation of the abstract architecture of the business or activities.

## *Complexity*

Arguments in design thinking about prototyping sometimes point out the difference between prototypes and the final solution. For example, Moggridge and Smith (2007, p.685) regard prototypes as ‘a representation of a design, made before the final solution exists’.

However, as business models represent a highly contextualised environment of business, it is difficult in some cases to gain a profound knowledge from a simulated situation.

As a way of resolving this problem, some practitioners recommend to launch a developing product to market in the early stage (Cooper and Vlaskovits, 2010; Ries, 2011; Blank and Dorf, 2012). The main purpose is to gain actual data through an actual product launch. In this scenario, the boundary between prototypes and the final solution is blurred.

If we think back to the definition of design by Simon (1996), design is for creating a preferred solution and it can be an endless activity. There is always a possibility that any final solution can be overcome by a preferred solution in the future.

Obviously, from the perspective of risk management, a virtual situation and closed exposure of the representation of the solution are preferable as it can avoid the risk of being copied and brand damage. However, in some cases, the actual exposure of prototypes to the real market is required to gain a profound insight for business model innovation because of the complexity. Therefore, the level of exposure should be considered depending on the learning objective.

## *Synthesis*

One of the biggest challenges in prototyping for business models is the way to interpret the feedback they get. A suggestion from the methodology of design thinking is that it should be synthetic. The way to respond to the feedback in design thinking is presumably more synthetic than validation. Kelley and Kelley (2013) include synthesis as one of the crucial phase of design thinking.

Obviously quantitative analysis tools are useful for that matter, but the collected data cannot provide the clear answer about whether you should keep improving your current solution or shift to a radically different direction based on validated learning you got by that time. The decision is fundamentally influenced by human factors. Because of this, feedback should be synthetically analysed and an integrative alternative solution should be provided through the method of business model prototyping.



## **Limitation**

Due to the lack of general definitions of some important concepts in this paper, such as innovation, business models and design thinking, this research focused on some of the seminal definitions. Other theoretical basement obviously can lead to a different conclusion.

Also as this research is based on literature review, additional supports by empirical data are needed to propose a more reliable suggestion.

Moreover, although this research relies largely on the concept of design thinking, the validity of the argument of design thinking is controversial in the design research community (Kimbell, 2011; Johansson-Sköldberg et al., 2013). The reason is that the origin is mainly from the research community of management (Martin, 2009) and the practice of a leading design agencies such as IDEO (Brown, 2009) and they hardly refer to the literature in the design research community. Therefore, if the concept is revised by a more comprehensive theory, it might lead to other conclusions.

## **Further Research**

This paper explores the theoretical model of business model prototyping. There are other possible future directions of further research.

### *Methodology*

#### **Case studies in actual contexts**

Exploring case studies of using business model prototyping can be a possibility of the further research. In the real context, those iterative learning might be conducted with a different name. The integration of theoretical analysis and empirical case studies can provide a more solid framework and argument.

#### **Experimental application of business model prototyping**

The other possibility is to apply the theoretical model to develop an experimental tool-kit of business model prototyping, and test it in actual projects. This can also possibly generate an enriched empirical data.

## *Research themes*

### **How the result of prototyping is synthetically interpreted**

One of the problems in business model prototyping is how to interpret the gained knowledge. The decision of whether incrementally improving the current solution or changing the direction is still regarded as an unavoidable human element and mythical part of venturing new businesses (Ries, 2011).

Clarifying how the gained knowledge is synthesised in the application of prototyping in design thinking to business models is a potential theme that needs to be examined.

### **How business model prototyping can turn the complexity of a business to be tangible**

This paper argues that the complexity of a business represented by a business model is one of the obstacles to facilitate business model innovation, and the advantage of prototyping is tangibility to support the learning process and collaboration.

The concept of design thinking regards prototypes as visualisation of concepts rather than only a partial representation of the final solution, and there are popular tools to visualise a business model such as business model canvas.

However, a business model itself is also a simplified overview of a more complex reality of the business. Only visually mapping out the elements does not appear to be sufficient enough to embrace the complexity of the business.

In the context of entrepreneurship, utilising the real market to tap into the complexity is one of the methods to tackle the problem (Blank, 2005; Ries, 2011). Obviously, the advocates of design thinking have also promoted the importance of field research in the real situation to gain insights (Neumeier, 2008; Lockwood, 2010; Kelley and Kelley, 2013), but the main objective is basically the development of new products and services.

How the tangibility of prototyping can be expanded to the level of business models to tackle the complexity can be a theme of the future research.

## **Conclusion**

This research discussed the key concepts relevant to business model prototyping, proposed the theoretical model indicating the key elements,

iterative and agile learning, tangibility, complexity and synthesis. Built on the analysis, it also suggested the possible opportunities for the further research.

Prototyping has been a key method in design thinking and it has a potential for contributing to business model innovation. While there are commonalities between prototyping in design thinking and the application to business model innovation, such as iterative learning and agility, there is also a particular problem of business model prototyping to tackle such as the complexity. The tangibility of prototyping will provide an advantage for solving the problem, but it needs further research to clarify the role.

This research is an attempt to produce an integrated and more inclusive concept of business model prototyping. Empirical research will be the next step to verify the key elements identified in this research. As the research theme, how to synthesise the gained knowledge into a new solution and how to turn the complexity of the business to be tangible need to be examined.

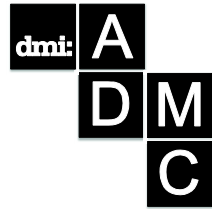
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## Applying Design Thinking Elsewhere: Organizational context matters

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*In this contribution design thinking is taken as a transfer of design methods from product development to other domains. It is argued that the success of this transfer depends on the organisational context offered to design thinking in these other domains. We describe the application of design methods in product development and in two new domains by what we have called the IDER model, where D refers to design and I, E and R to the organisational context. Then we show that characteristics of the contexts in the new domains may determine the success of applying design thinking in these domains. Finally we focus on the transitions among design and the other contextual elements as another source that can 'make or break' the success of applying design thinking. We support our arguments with two cases of design thinking: social design and business-innovation design.*

**Keywords:** Design thinking; product development; organizational context of design; boundary transitions

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## Introduction

The emergence of design thinking as a general approach to address problems presupposes that design methods can be applied in multiple domains different to its original domain of product development. By this presupposition design thinking is taken as a stand-alone approach that can straightforwardly be applied in new domains. Many current applications of design thinking follow this path and have led to promising and challenging propositions in social design and business (e.g., Brown, 2008 & 2009; Carlopio, 2009; Martin, 2009; Plattner, Meinel, & Leifer, 2009; Verganti, 2009). Future applications may however be less successful, and raising doubts about that presupposition that design thinking can be applied freely and unconditionally. In an earlier paper (Authors, 2014) we have argued that effective applications of design thinking can be supported by an understanding of its original organizational context in product development. This context has provided sufficient conditions for applying design thinking with a reasonable measure of success; hence its analysis provides insight how contexts in other domains can provide similar sufficient conditions (and perhaps necessary conditions) for applying design thinking. In this paper we extend our contextual analysis of designing by also focussing on the socio-interactive dimension of the handover of information between design and its organisational context. Through also understanding how designers are socially embedded within industrial product development and the product life cycle, design thinking can grow to truly become a stand-alone problem solving approach.

First, we introduce our contextual perspective on design thinking by describing two cases in which design techniques, tools and methods have been applied to address problems in other domains with varying success. In section 1 we describe how product development design tools are applied in the domain of social policy, again with varying success. In section 2 we show how design methods were used effectively in the realm of business innovation. Second, we describe our earlier argument by analysing the context of design in its original domain of product development. In section 3 we give the *IDER model* for capturing this context. This model represents the overall development of industrial products and product life cycles, and identifies its four core elements. Design is one of these elements, and the other three make up the context of the design activity. In section 4 we delve into the nature of the other three elements and in section 5 we focus intensively on the socio-interactive transitions between these elements. Third, we return in section 6 to our two cases of the application of design to



other domains and analyse them from this contextual and transitional perspective. Section 7 contains overall conclusions for the further development and transfer of design thinking.

## **1. Design tools for social policy**

Our first case concerns the use of design methods for improving life conditions in the Australian Indigenous communities. The protagonist is an industrial designer who since 1991 has been working as a consultant with NGO's and the Australian Government to improve Indigenous environmental health. Health in Australian Indigenous communities is poor and Indigenous Australians have a life expectancy that is about seventeen years less than that of 'mainstream' Australians (Australian Bureau of Statistics, 2010). Less than ten percent of 6000 households surveyed in Indigenous Australia have adequate facilities to store, prepare and cook food. About 71% of these households have electric cook-stoves (Department of Families, 2007).

During his involvement in the field, the designer regularly encountered anecdotal evidence about these electric cook-stoves poorly performing in Indigenous communities. Indeed, some stoves were reported to last no longer than 6 to 24 months – a very short time compared with the ten-year service life that consumers and the housing providers usually expect from this appliance. When he started investigating this issue most comments about this short lifespan were laying the blame with the users. Some typical examples were: “we should have programs that train ‘them’ how to use stoves”; “I wonder what ‘they’ are doing to them?”; “they don’t know how to cook with a stove, ‘they’ like cooking on a fire” or (quite untrue, by the way) “they use the stoves to heat the houses but not for cooking food”. It was obviously the user's fault that the stoves did not last (Tietz, 2009).

The designer set out to investigate what was really happening by undertaking a study of these stoves in two remote Indigenous locations. Instead of interviewing the users, the designer decided to 'interview' the stoves. Data loggers were installed in the consumer switchboard on the outside of the house to measure the current draw from the dedicated stove electrical circuit. The stove was logged every 3 minutes, an interval that should show even the shortest duration of use of an electric solid element domestic stove. The data was collected for about one year, and subsequent analysis of about 2 million data points showed that the stoves were used on average for about 3.5 hours per day, with peaks in some households of up to

6 hours per day. The manufacturer of this particular kind of stove, usually specified for public housing, is an international electric appliance corporation that, through a number of brands, virtually exclusively services this market segment. When they were approached with the data from the investigation, they divulged that the stove concerned is only designed to be used for a maximum of 50 minutes per day/five hours a week. This is enough to explain the short lifespan of the stoves within the Indigenous context (Tietz, 2009). Further investigation showed that the same stoves have been ordered and reordered by the various housing providers for years – no one deemed it necessary to investigate why the service life was so short; instead the users were blamed and more of the same stoves were installed. Moreover, it is a requirement to order from only a range of approved products from suppliers included on a preferred purchase list of the Australian Government. The ongoing expenses and costs associated with the constant reordering, reshipping and reinstalling of stoves seems to have gone unnoticed in a sector where cost reduction is often front page news.

The amount of stove usage that was uncovered in this study falls easily within the range of commercial cooking equipment. Commercial stove manufacturers approached with this data felt confident that their products are able to handle this kind of use. From a design perspective a solution therefore seemed to have been found. The problem with the poorly performing electric cook-stoves in Indigenous communities was uncovered to be related to specific user requirements and commercial stoves would meet these requirements. Moreover, it is arguable more economical to opt for this solution. The larger institutional organisation did however not allow adopting this design solution; given the Governmental requirement in Australia that only a range of approved products from preferred suppliers can be ordered for housing, commercial stoves could not be ordered.

In this case design methods were applied to a problem in the domain of social policy, and a sound technical solution found with these methods was blocked by institutional constraints. One may blame the irrationality of institutional arrangement for this failure of social design, yet one could also note that in this case the constraints the Australian Government imposes on purchasing equipment were not properly taken into account. On either reading the case of designing for Australian Indigenous stove usage is a case of unsuccessful application of design methods by the mismatch between the solutions that can be found by these design methods and the institutional possibilities.

## **2. Designing policies for industrial innovation**

The first case provides evidence that domains other than product development do not automatically provide the right conditions for product design methods to be effective. Our second case is however a success story and concerns the use of design methods in the domain of industrial policy to strengthen the innovation capacities of companies.

During the 1970s awareness was growing in the Netherlands that industry had to change its innovation strategies from maximising production capacities based on technology push to strategies that aimed at market pull. The Dutch Ministry of Economic Affairs decided that especially medium-sized companies were in need of support to make this transition possible, and a project called *Project Industrial Innovation* (Pii) was initiated in the late 1970s aiming at improving the innovative capacity of those companies. The project was commissioned to a task force within the Netherlands Organization of Applied Research (TNO), and project leader became Jan Buijs, a university trained industrial design engineer. The vision of the Pii project was to enrich the target companies with a sustainable innovative capacity, that is, to help them not by just once developing a new innovative strategy, but by implementing in the companies a structured thinking process that could serve repetitive cycles of new business searches and developments.

This structured thinking process, which is now known under the name *Delft Innovation Method* (Buijs, 2003; 2012), contains design methods and tools. Yet the Pii project serves in this paper as our second case not because it promoted the use of design methods to its target companies, but because Buijs and colleagues used design methods and tools to develop the Delft Innovative Method itself. For finding the right solution to the task of improving the innovative capacity of medium-sized companies, the task force used divergent thinking to scan various bodies of literature, and then investigated the literature of strategic management, creative problem solving and design methodology in more detail. They used integrative thinking to bring elements from this literature together into a coherent conceptual method. And they engaged in prototyping, to test their ideas and identify possibilities to improve on them. The result was a structured process built up with elements from strategic management, creative problem solving and design methodology, and aimed at the identification of promising new business ideas. The Delft Innovation Method was finally validated by the task force in test runs with a few pilot companies before the methods was actual implemented nationally.

The means for implementing the Delft Innovation Method were moreover deliberately engineered in the Pii project. For addressing a first tranche of about 70 target companies the task force scaled up the necessary capacity for implementation. Since this capacity was only needed for the duration of the project, they decided to work with a network of consulting groups and individual management consultants. For preparing these consultants for their task a special training program was developed for making them familiar with the Delft Innovation Method and its underpinning theories, and for enabling the consultants to teach the relevant skills in the area of creativity. Inside the target companies the consultants trained innovation teams through series of concentric design/learning cycles until the new business concept was concrete enough for the company to start a regular product development project. These teams were, as in design, multi-disciplinary and consisted of employees from the disciplines that potentially are affected by the innovation activities: top management, marketing and sales, production and product development.

The Delft Innovation Method was eventually successfully transferred to about 140 companies. This success could not only be measured with initial rates of new product introductions by the participating companies, but also with rates by which these companies introduced new products on the market thereafter (Buijs, 1987). The method has proved its value over the last thirty years and is still being taught to thousands of professional and academic bachelor students in industrial design in the Netherlands. Also, the different consultants involved in the Pii project kept using the Delft Innovation Method in their respective practices. This final case shows that it is possible to successfully apply design thinking in new domain, in this case the domain of industrial policy. Before we address the underlying success factors, we return to product development to describe its original context.

### 3. Design methods for product development

For further analysing the success and struggle in the two cases, we return to product development for describing the original context in which design methods are successful. This context is the development of industrial product life cycles, and our tool for capturing it is an abstracted model which we have called the *IDER model* (Authors, 2014), and in which product life cycle development is divided into four elements:

- *I* = Initiating a new product life cycle

- *D* = Designing concepts for the product
- *E* = Engineering the product and the process
- *R* = Realising the product life cycle

The first element *I* of *initiation* typically associates with the front end of product development. During initiation the focus is on the search for a new product life cycle by, for instance, market research. But initiation can also focus on the creation of ideas for the replacement of existing technologies embedded in present products by new technologies to create better performance. The second element *D* of *design* concerns the development of concepts of the new product life cycle, and this element is product development proper. The third element *E* covers the *engineering* and embodiment of the artefact and the associated development of the necessary manufacturing processes and tools. This includes the application of mathematical principles and natural laws with judgement to develop the artefact and its production system. Engineering aims to validate and consolidate what comes out of the *D* element and to prepare that content for implementation in the *R* element. The fourth *realisation* element *R* aims at inserting 'life' in the value chain, that is, ramping up all activities associated with, e.g., purchasing, production, sales and use of the new product. This element covers the full product life cycle from market entry till end of life. The four elements in the IDER model can be seen as sequentially dependent: there is no *D* without an *I*, no *E* without *D* and no *R* without *E*. One may consider the elements as cyclic, since there is typically no initiation *I* without a present realisation *R* – the search for new ideas is done in the domain of the present world with its present products. In practice, however, the sequence of activities will be less ordered and more iterative, the point remaining that the context of design methods and tools that are used in design *D*, consists of the initiation *I* and engineering *E* of product life cycles, and to a less degree, the realisation *R* of these cycles. The *D* element in the IDER model of product development is the element in which designing takes place, and it represents the traditional object of research by design researchers, leading to models and methods for design.

The IDER model puts design thinking and its methods and tools for product development in their context, and emphasises the need to consider the whole life cycle when developing a new product. This context of design is regularly neglected: design researchers dominantly focused on design practices that concern finding concepts of products as solutions to design problems. Moreover, when we realise that product development often concerns the redesigning of existing products, the industrial product-life-

cycle-development context is typically implicit/ already given. In this case the context does not need to be created, but merely to be adjusted for realising the life cycle of the upgraded product. Hence, product development as redesigning focuses primarily on the creation of the upgraded product.

However, for innovative product development this exclusive emphasis on the product is insufficient. Developing the four elements of the product life cycle becomes a different and more involved task. Initiating such more innovative development implies taking distance from existing products and its related knowledge base regarding the transitions among the elements. In design research some attention has been given to the transitions between them, and in the next two sections we concentrate on the findings of this research. In the final part of this paper we then return to the application of design thinking in domains different to product life cycle development.

## 4. Product life cycle development

To fully capture the development of new products one needs to create an understanding of all four elements of the IDER model, including the relations between these elements from a content perspective. This section discusses the literature on these subjects. The next section will focus on the relatively neglected transitions between the four elements from a socio-interactive perspective where knowledge and skills being handed over between different groups of actors within or between organisations.

### *The individual IDER elements*

In the design literature the focus is often on design methods and tools, which leads to an understanding of (only) the *D* element of design. The element *I* of initiation is described in some detail in the (fuzzy) front end of innovation literature (De Brentani & Reid, 2012; Koen et al., 2001; Reid & De Brentani, 2004; Smith & Reinertsen, 1998). Literature on engineering *E* is often focused on particular fields of application, e.g., buildings, airplanes, dykes or ships. This object-dedicated stream of literature, initiated some 150 years ago in England and Germany, converts general engineering rules to dedicated rules belonging to the artefacts in a particular field of application, like airplane design, (Torenbeek, 1982), ship design (e.g., Evans, 1959; Watson, 1998), et cetera. Application of these rules is typically a validating and consolidating process that forms a solid base under the new artefact. Operational research (Chen, 2010; Luss, 1982; Simon & Newell, 1958) sheds

some light on the realisation element *R*, but more research is needed to deepen our understanding of the *R* element for more innovative product development.

The literature concerning product innovation either concentrates on the *I*, *D* and *E* elements with the goal of bringing a first product onto the market as quickly as possible (known as time-to-market studies) or on issues related to the *R* element, known as diffusion studies and operational efficiency and operational excellence studies. The literature focusing on the time-to-market of a new product presents tools to speed up the processes within the *D* and *E* elements, (e.g., Cohen et al., 1996; Eling et al., 2013; Langerak & Hultink, 2005; Langerak & Hultink, 2008). The literature on the quick dispersion of products in the market, known as market introduction and product diffusion studies (e.g., Hultink, 1997; Hultink & Atuahene-Gima, 2000; Linton, 2002; Rogers, 1976) must be placed within the *R* element since these studies typically do not include any of the *E* activities. Also the incremental improvements of the operational chain belong to *R* and are found in literature under methods and tools like quality circles, Kaizen, Six Sigma, et cetera (e.g., Bañuelas & Antony, 2003).

### *The transition of content between the IDER elements*

There is not that much literature focusing on the transitions between the elements in the IDER model. Formulating the design brief can be seen as the transition from the *I* element to the *D* element. Unfortunately, the literature on this subject is often weak and anecdotal. There is older literature that shows that the brief forms an important transitional function if formulated properly (Walsh et al., 1992). Some evidence indicates that design briefs are more misleading than leading as transitional documents (Herbruck & Umack, 1997). Other literature focuses on the design brief in the situation of outsourcing design by small firms without proper design resources (Berends et al., 2011; Lewis & Brown, 1999). Literature on the front end of innovation mentions the information flows at the project interface, the interface where the idea enters the formal stages of new product development and where development teams gets aligned (De Brentani & Reid, 2012). These authors mention the hypothetical role of 'project brokers' that typically integrate new (product) ideas with the "ongoing strategy and projects of the firm" (p 81). From this perspective, project brokers might act as boundary spanners between the *I* element and the *D* element. How these information flows actually take place from initiation to design is not clear.

The transition from *D* to *E* is not explicitly addressed in the literature either, which may be explained by the observation that design and engineering activities typically take place within a single department in companies. However, there is considerable literature addressing the *E* to *R* transition. This literature discusses how demands related to downstream *R* processes can be incorporated in the upstream development activities in the *E* and *D* elements of product life cycle development. For instance, design and engineering strategies named *design for manufacturing* (DFM) and *design for assembly* (DFA), and others like DFX (e.g., Pugh, 1991; Ulrich & Eppinger, 1995; Wheelwright & Clark, 1992) are aimed at incorporating in the *D* and *E* elements criteria that are related to the producibility of new products in the *R* element. This holds also for design and engineering strategies like *user centred design* (e.g., Norman, 2002; Stanton & Young, 2003), *design for maintenance* (e.g., Desai & Mital, 2006; Ivory et al., 2003; Pahl et al., 2007), *ecodesign* (e.g., Bovea & Pérez-Belis, 2012; Van Hemel, 1998) and *design for recycling* (e.g., Gaustad et al., 2010; Pahl et al., 2007). The use and maintenance of products, their disassembly or re-use of products fall within the *R* element, and the latter strategies are meant to control these ingredients of *R*. The essence of all these DFX strategies is that they aim to make the transition from the *D* and *E* elements to the *R* element as smooth as possible, and to limit the amount of iterations across these transitions. In other words, once the development process of a product life cycle has arrived in the *R* element, then iterating back to the *E* element is unwanted and often costly. The literature addressing the late engineering changes that result from such iterations shows that they are quite common. The news of frequent recalls of products that are already on the market and in use (by, for instance, well-known car manufacturers) underscore this observation.

## 5. The socio-interactive transition between the *IDER*-elements

The literature discussed so far addresses these transitions between the elements of the *IDER* model mainly from a content point of view, that is, by focussing on the content related to the product under development. On the organisational level we find the *Design Manufacturing Integration* (DMI) literature that helps to bridge the transitions between the elements. This literature concentrates on structural integration and coordination mechanisms, like cross-functional teams, co-location, et cetera (Adler, 1995;



Liker et al., 1999; Nihtilä, 1999; Rusinko, 1999; Vandervelde & Van Dierdonck, 2003; Vasconcellos, 1994). The main objective of applying these structural mechanisms is to secure an efficient handover and handling of this content.

On a deeper level of analysis, and additional to the above, one finds the socio-interactive perspective that deals with handing over results by actors from one element to the other. Such a perspective is needed especially in the case of the involvement of multiple groups of different actors each working within the confines of his/her own element. In product innovation there are many boundaries to cross that typically includes the transition of knowledge between different groups of actors. In companies this transition involves for instance a transition from actors in one department to actors in another: design engineers within research and development (within R&D departments, or similar) hand over knowledge and skills to people representing the operational chain like production and assembly workers (within Manufacturing or Operations departments). A socio-interactive perspective on this transition for determining what happens between the participants of these different processes as well as the design content during this transition is sorely needed.

Research on the socio-interactive transition across these boundaries is still scarce, yet growing. For instance Carlile (2002; 2004) addresses this issue within innovation processes from a knowledge management perspective. He presents a framework that describes three boundary-crossing approaches that each match with an increased complexity and novelty of the boundary between specialised domains. (1) A syntactic approach is for boundaries with shared and stable syntax that facilitates the exchange of explicit knowledge. When boundaries become a bit more complex a common syntax is not enough and differences in interpretation require a semantic approach (2) that aims to enable the move of knowledge stemming from different 'thought worlds' (Dougherty, 1992). The semantic approach helps to bridge the differences. Finally, a pragmatic approach (3) to boundary spanning brings knowledge embedded in local practices into the equation. Carlile (2004) suggests that the more practices are apart from each other the more difficult it becomes to hand over embedded and tacit knowledge to each other. Knowledge within a practice is "at stake" when accommodating new knowledge from another practice, especially if the existing knowledge is based on hard-won lessons over the years. The use of boundary objects in all kinds of forms (drawings, sketches, models, prototypes, et cetera) are believed to help creating a boundary spanning

infrastructure that supports the transformation of knowledge in such a way that the receiving party is able to absorb this.

In addition to the knowledge perspective on boundaries, a transitional perspective completes the present state of knowledge regarding the socio-interactive description of the boundaries among the IDER elements. These transitions are taken as social processes among the different groups of actors involved in product life cycle development, as they take place over time. In the literature this socio-interactive perspective on the transitions between the elements of the IDER elements is taken up in (Smulders, 2006; 2007). In this work it is argued that transitions among elements are not just a matter of knowledge handover but also a matter of changing the practices within the respective IDER elements. The observation by Smulders (2006) is that the product innovation process within element *R* ends not only with the creation of the tangible product, but also with a new or changed socio-technical system. It is this socio-technical system, consisting of organisational routines (e.g., Feldman & Pentland, 2003) and supportive tangible and intangible artefacts (machines, procedures, moulds, production line layout, et cetera) in a performing state that produces the product. Although all participants focus on the realisation of the artefact, the social system has to change in a parallel process.

However, it is not only the socio-technical system in the *R* element that is important here; when considering the transitions also the qualities of existing socio-technical practices within each of the IDER elements needs to be taken into account. Especially the absorptive capacity (e.g., Cohen & Levinthal, 1990; Zahra & George, 2002) of these practices plays a crucial role in the success of the transitions among the elements. Absorptive capacity of an organisation (or part thereof) is defined as the ability to acquire, assimilate, transform and exploit new knowledge (Zahra & George, 2002). If the absorptive capacity within element '*n*' is too low to internalise and work with new knowledge coming from element '*n-1*', then the innovation process comes to a halt and never reaches the *R* element. In other words, the socially embedded organisational routines of any IDER element must be capable of handling whatever comes out of element '*n-1*' and handover its results to element '*n+1*'. If not, the transformation of knowledge from ideas (*I*) to concepts (*D*) to drawings (*E*) to routines (*R*) when handed over from one actor group to another over the totality of IDER elements will be jeopardised.

This observation raises questions as to what happens if there are no heuristics regarding the transformations between the elements of the IDER

model. Or what happens if there is no existing socio-technical system in place, like in the case of a new venture, or in the case that the artefact is so different that a totally new socio-technical system is needed to realise it. And how to proceed from *D* by *E* to *R* if there is no easily understandable tangible element that could form the central focus of the process, like in a service industry? In the next section we return to our two cases in which design is applied in other domains than product development, and discuss their success and failures using the IDER model.

## **6. Discussion**

The position we argue for in this paper is that the properties of the organizational context matters when design thinking is transferred from product development to other domains. Especially, for a successful transfer of design thinking the boundary spanning capabilities among the elements are of prime importance for securing the transitions across the IDER-elements. Let us briefly revise the two cases discussed in this paper.

Our case of improving by design the life conditions of Australian Indigenous communities may be seen as one in which primarily the *D* element was transferred from product development to social policy development in the institutional setting of the Australian Government. Yet in this transfer it was not taken into account whether that institutional setting provided the boundaries and boundary transitions among the IDER elements in the same way as product development does. The designer incorrectly assumed that the *E* and *R* elements of the Australian Government had the capabilities to adopt his solution. It seemed so simple, just purchase another stove and install it in the outback. Yet, this proved not at all that simple and the process of innovating through design methods came to a halt because of two things. First, the routines within the practices of the designer and these within *E* and *R* elements of the Australian Government were too far apart to be bridged. Second, the absorptive capacity of the *E* element within the governmental organisation proved to be too low to accommodate the results from the *D* element (even though the proposed solution would make economic sense).

Apart from obvious solutions of making adjustments to the *E* and *R*, an ideal solution would have been to focus on the activities performed in the *I* element. Within the *I* element not only the *D* activities should be initiated, but the totality of IDER activities should be taken into account including the

future socio-interactive transitions among the subsequent *D*, *E* and *R* elements.

Our second case, the example of the Pii project shows that the transfer of design thinking to a domain different to product development can be successful. In terms of the IDER model this success can be analysed as due to a well-orchestrated social transfer of the different elements to the new domain. The initiation element *I* to create sustainable innovation capacity in medium-sized companies was located in the Dutch Ministry of Economic Affairs. The design element *D* of developing this capacity was carried out by the task force within the Netherlands Organization of Applied Research (TNO). The content and socio-interactive transitions from the *I* to *D* elements were secured because the available organisational routines of the task force were adequate to design, engineer and realise a new innovation method. This task force was used to design approaches to support companies in their search for new business opportunities and subsequently apply that to the specifics of their clientele. This meant they already possessed most of the required organisational routines for the *D*, *E* and *R* stages including the transition between the IDER elements.

The task force developed the Delft Innovation Method in the *D* element to realise the sustainable innovation capacity in medium-sized companies, and the task force developed an implementation plan for delivering this method to the companies. This implementation involved a group of external consultants who were to bring the Delft Innovation Method to the target companies. The *E* and *R* elements thus involved yet another group and the content and socio-interactive transition from *D* to *E* and *R* was in turn secured. The external consultants had the organisational routines to support companies, and the task force trained the consultants for their assignments. This training not only focussed on introducing the Delft Innovation Method to the external consultants, but also on the subsequent development of consulting routines to bring the method to the medium-sized companies. This training of the consultants ensured that the socio-technical system as envisioned by the task force was put into place. Finally the task force held regular coaching meetings among the external consultants. By doing this, the similarity of practices ensured a strong transition of knowledge over the boundary between the task force and consultant.

## **7. Conclusions**

Design thinking originated in the design techniques, tools and methods as used in industrial product development, and design thinking is now transferred as a general problem solving approach in many domains beyond product development. We have shown in this paper that the application of design thinking in other domains than product development need not always lead to the successes expected. We argued that this may be explained by comparing the organizational context of design in product development with the contexts for design in the other domains. Two cases were considered. In our first case of social design, we could explain the initial lack of success of the application of design *D* by the flawed assumption that the domain of social policy could provide a structural similar context to social design as the context of product development does to product design. This assumption proved to be wrong. This then led to solutions that could not be embraced and realised by the organizational context. The required capacity to absorb the results from the *D* element was not sufficiently in place. Our second case of design for industrial innovation showed that when in a new domain a context for design is created where the boundary transitions are secured in a similar way as in its original context, success could be achieved.

For giving this argument we represented the context of design in product development with the IDER model. In this model design in an element *D* that is preceded by the *I* element of initiating a new product life cycle and succeeded by the *E* and *R* elements of engineering and of realising the new product life cycle. We surveyed the literature on the four elements of the IDER model and paid considerable attention to the (socio-interactive) transitions between these elements.

The lesson to be drawn from our analyses is that organizational context matters when design thinking is transferred from product development to other domains. In order to transfer design methods *D* to other domains, one needs to assess in these other domains if the right capabilities are available to realise the outcomes that may be created by design techniques, tools and methods. A short-sighted application of design thinking in other domains may lead to disappointing results.

When transferring design thinking, one has to look at the organizational context in the new domain of application and see if it will enable design in the same way that the context of product development enables product design. For achieving this match, the context in the new domain may need to be adjusted in such a way that the transitions to the other elements are

secured and that the capabilities of the respective elements are assumed to be sufficient for further elaboration. Adjustments need to be realised while initiating (*I*) the application of design thinking in its new context. It must be realised that these adjustments are not just limited to its new context, but equally may put requirements on to the application of design thinking *D* itself. What is contented here, that while considering the application of design thinking in any new domain, one need to assess the full span of the IDER elements and devise the necessary adjustments during the initiation process. In fact, one needs to go through a mini IDER-cycle preceding the application of design thinking elsewhere.

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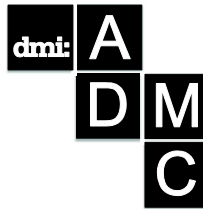


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# Design Management, Design Thinking and Strategic Foresight – Tools in an age of disruption?

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*Strategic foresight, design thinking and design management strategy share some fundamental principles and similarities in principles, methods and processes. All are potential tools to help people and organisations, especially business, plan for the future, make sense of complexity and navigate disruption. So, if they were applied in design practice or business strategy, could strategic foresight used with design thinking and design management assist organisations, designers and their clients in anticipating, planning for and designing for the unknown? The underlying premise of this paper is that strategic foresight, design thinking and design management are complementary and potentially mutually beneficial in an age of disruption and change. Design and foresight together may improve the quality and speed of design and innovation programs, streamline the path from idea to market, or help to clearly communicate a developing idea through scenarios, creative pitches and prototypes. Bringing design into a foresight process could help with the rendering and articulation of business and design concepts and ideas that otherwise might remain unrealised in the mind's eye. The aim of this paper is to explore commonalities and differences between strategic foresight, design management and design thinking, and consider whether the tools and methods of strategic foresight might enhance existing design thinking and design management principles and processes. This paper primarily considers the potential nexus between all three philosophies, and the possibilities that could emerge or be created from there.*

**Keywords:** *Strategic foresight, design thinking, strategy, business, innovation*

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## **Introduction**

Whether it's disruption to technology, society, human need or culture, people and organisations have a limited capacity to navigate the unknown and unexpected. Whatever is said or done, 'the future' is perceived as out of sight – except in some science fiction or in most technology and economic forecasting – and it's either deliberately or instinctively put out of mind in our wider society and culture. However, 'the future' does not exist, and nor will not take care of itself – and there is too much to risk in assuming it does and will do so.

Strategic foresight, design thinking and design management are all potential means to help people and organisations, (especially society and business) solve problems, make sense of complexity, plan for the future and navigate disruption.

So as tools, what do they offer? Design thinking is a collaborative, hands-on process, human-centred process for problem solving with links to improvements in business, strategy and innovation (Martin 2009; Owen, 2007). The term design thinking is also used to refer to the study of the practices of working designers (Cross 2006; Lawson 2006), and to the application of this human-centred 'open' problem solving process to real world 'wicked' problems in other areas (Rittel & Weber 1973). Buchanan (1992) suggests that design thinking has potential applications to different fields. Design is the creative, hands-on process that takes an idea and forms it for a market (Lawson 2006). Futures thinking is the ability to think about and develop futures (Slaughter 2005). Strategic foresight is the action science of the futures and foresight discipline (Bell 2008). Design management is the application of design and management processes to improve design effectiveness and solve general business problems ([www.dmi.org](http://www.dmi.org)).

Like design thinking or design management skills, being able to think about the future – to use 'futures thinking' and to apply strategic foresight – is a learned capacity. Futures thinking is both the process of developing a range of views to solve complex problems and a process to explore ways in which the future could develop, so that we can understand the outcomes sufficiently well that people can comprehend what choices and decisions can be taken today to create the best possible tomorrow (Horton 1999).

Developing a capacity for futures thinking is also necessary given that human imagination typically has three shortcomings: it works quickly and effectively, it is stuck in the present, and it cannot tell us how we will think

about the future once we get there (Gilbert 2006). Developing a capacity for futures thinking and applying it with design thinking and design management could free the imagination, expand the effort and extend the time horizon that we use when solving a problem.

'Futures thinking' (and/or strategic foresight) is increasingly permeating the fields of business, technology, design, strategy, innovation and leadership in a similar way to design management and design thinking. And while it too is aligned with a specific discipline – strategy not creativity – it's not primarily driven by industrialised economies or perceived as must-have in organisations beyond trends and forecasting. Indeed some might argue that it is not nearly sufficiently palatable where it may be most needed and beneficial (Hines 2007; Saul 2002; Slaughter 2008).

## **What is strategic foresight?**

'Strategic foresight' and futures thinking inform "conscious human decision and action as means to control the future" (Bell 2008 p. 181). Neither has anything to do with crystal balls, lotto numbers or weather patterns but they do incorporate tools and methods for long-range thinking, prospecting and the systematic and rationally-grounded exploration of change (Slaughter 2005).

Futures thinking and strategic foresight enables the development of understanding around not just 'the future' but around multiple alternative futures (Slaughter 2005). Futures thinking enables the imagining and visioning of possible, plausible and preferred futures for people and organisation and recognition of the need to act on that understanding so that everyone benefits (Horton 1999) . Frequently futures thinking is located and harnessed within organisations – business, government, community groups and non-government organisations – and is intended to open up thinking 'what could be' in individuals as well as the organisation itself (Bell 2008; Slaughter 2005).

If futures thinking means thinking about the future, it also implies a systematic or strategic approach to predicting the future, planning for disruption, and managing change – hence strategic foresight. There are many methods for facilitating strategic foresight (and futures thinking) including environmental scanning, data and trend analysis, pattern recognition, intuition and imagination to envision multiple desirable and sustainable paths of action (Bell 2008; Hayward 2003) . Strategic foresight is an iterative, structured process that considers a range of possibilities and

multiple perspectives (Slaughter 2005). It's not about predicting the future, but it is about asking 'what if?' and using responses to that question to shape better pathways forward by helping people and organisations understand the potential impacts and consequences of today's decisions and actions.

### *Can we think about the future in an age of disruption? And how?*

There is no 'right' way to use futures thinking and the principles and methods of strategic foresight can be applied to solving many different types of complex problem. It stimulates innovation, gives space to alternative opinions and view, and can be a powerful planning tool. Futures thinking also stimulates consideration of historical facts, current behaviour and the trends that connect the past with the present and the future. In other words strategic foresight requires good hindsight (knowledge of peoples, history and time) and great insight (knowledge of current peoples, events and skills).

Futurists seek to explore alternative futures, alternatives that Bell (2008 p.73) describes as "what can or could be (the possible), what is likely to be (the probable), and what ought to be (the preferable)". Futures thinking can be characterised by three main things - this is not to say these are exclusively the domain of strategic foresight as it overlaps many other disciplines not least design thinking, design management or service design. First, futures thinking often examines not only possible but also probable, preferable and possible futures, the last often based on 'wild cards' (Bell 2008). Second, futures thinking typically seeks a holistic or systemic view based on insights from a range of different disciplines and perspectives (Bell 2008; Slaughter 2005; Voros 2003). Third, futures thinking challenges and unpacks the assumptions, beliefs and values (e.g. personal, business, community, corporate, religious) behind dominant and contending views of the future (Bell 2008; Slaughter 2005).

In an age of disruption, strategic foresight is a means of anticipating and preparing for change. Futures thinking and strategic foresight methods can be used to identify, analyse and understand the assumptions and beliefs underpinning particular views, as well as locating changes to our social, cultural, technological and economic milieus so that preferred futures can be created (Slaughter 2005; Hayward 203).

Futures thinking is most useful for planning and strategy with longer time horizons that specifically attempt to anticipate and be robust to possible future events. As a practice, strategic foresight takes a longer term view (Bell 2008; Slaughter 2005) and is less focused on short-term predictions about markets, the next business cycle, the latest trends, technology fads or short-term management-driven time horizons – except to learn from them in order to plan for change.

For ‘futures thinkers’ who look to the future in their professional or personal life and those who provide analysis of the future for strategic planning, methods and tools include appreciative inquiry, visioning, intuition, analogy, argument, logic, planning, policy analysis, cultural criticism, strategy development, reflection, Causal Layered Analysis (CLA), the Futures Triangle, the Futures Cone, time horizons, morphological prospection, Delphi Method, critical thinking, marketing, roadmapping, goalsetting, forecasting, prediction, modelling, statistics, trend analysis, operations research, surveys, environmental scanning, scenario development, prediction analysis, and risk analysis and management (Bell 2008; Inayatullah 1998; Slaughter 2005).

### **Asking questions about the future**

Futures thinking is not a simple one-off exercise. Strategic foresight is rarely a blue sky moment with questions like ‘What will the future look like?’, ‘Will we be using hoverboards’ or ‘What is the future of design?’ being asked. Organisations interested in exploring ways of navigating change and making sense of disruption have different drivers, needs and expectations. Sometimes they’re interested in strategic alternatives based on choices they need to make, sometimes it’s about potential changes to their business structure or operating environment, sometimes it’s about gaining a better understanding of emerging markets, competitors, and/or stakeholders, and sometimes it’s about deeper changes in values, behaviours and beliefs.

This often leads to different and ‘better’ questions being asked that delve deep into the core of the problem, the proposed solution, and the needs and wants driving it (Inayatullah 1998).

The iterative nature of foresight, as in design, means that questions must be asked so that other deeper questions can be prompted. Along the way new issues and adjacent contingencies and factors can emerge. Sometimes the answers to initial questions lead to further questions and reveal deeper systemic issues underlying the problem that drove the initial question/s.



### **Exploring multiple possibilities**

While futurists use a variety of tools and techniques in foresight work, at the core of futures thinking is the notion that there is no one determined future (Bell 2008). Scenarios are a means to develop and explore alternative futures, using imagination and creativity to design the most preferable future in the short term. In particular, scenarios help organisations think in terms of future outcomes whether considering services, products, operations or strategy. Design is key to creating scenarios whether the optimistic or the ideal, pessimistic or dystopian or disaster – or of a future not very different from the present.

The key point of scenarios is the conditions envisioned and created in these three environments i.e. what is imagined and designed. Scenarios are a powerful means of nutting out and clarifying shared visions of the future considering questions like ‘Who is in these future worlds?’, ‘Who is privileged?’, ‘How do people think and engage with one another?’, ‘Are there risks?’, ‘How do people interact and what tools do they use for this?’ and ‘How do they navigate their environments?’. Design management can use scenarios as part of the planning process, as the potential worlds the outcome will be part of and determine.

### **Making design decisions**

Designers make decisions throughout the design process (Ambrose 2010; Best 2006). Common to most decision-based design frameworks is that design is a rational process of choosing among design alternatives; but do design decisions have to be scientifically or mathematically sound? Is design a truly rational process? What are ‘the best possible results’? Are they appropriate? For whom? Who decides? What is the impact of disruptive forces whether social, technological or economic? What views are involved in evaluating and choosing between alternatives? Is there a decision matrix to determine the intrinsic worth of outcomes associated with disruption?

The role of decision making in design – and even the identification of design as decision making – is problematic. Who, when and why? And while the quality of a decision cannot be assessed by an after the fact debrief or evaluation of its outcome, it is hard to imagine a designer who is not focused on the outcome of any design decisions being made. Exploring the relationship between design decisions and the performance of the resulting solutions is fundamental to design management, with optimisation used to introduce goal-seeking directly into design exploration.

Does a decision-based design framework assume that designers make critical decisions only *after* design concepts and alternatives – different choices with different outcomes – have been generated, and that generated alternatives can be represented in forms to which decision-based design can be applied? Decision-based design cannot account for or suggest a process for how concepts and alternatives are generated – and this is often regarded as the most creative and hard-to-model aspect of design thinking.

Is decision analysis too narrow for the human component? What disruptions should be considered or anticipated in setting the framework? Do organisations need to ‘frame’ the design process or create alternatives that can be addressed before decision analysis techniques are applied to ensure that ‘we are working on the right problem’? Does this become the role and purpose of design thinking and design management? Could futures thinking be part of the frame, understanding that the framing of design decisions is the most engaging part of doing design, as well as the most difficult (Ambrose 2010; Best 2006; Lawson 2006)?

### **Design (Thinking) in a Team Environment**

Design is more and more recognised as a team process with multiple socio-technological dimensions (Brown 2009; Fry 2009; Haque 2011). This includes social and ethical responsibilities, understanding purpose/intent of design in human-centred terms, and ways that inform and address the global and social impact of design.

Participatory design fosters design that’s more like a social process in which teams define and negotiate inputs and outputs, not unlike design management practise (Brown 2009). Each design participant brings their own unique set of skills and experiences so that the team interactions and the resulting design is an intersection of the participants’ contributions, skills and knowledge.

But a human-centred design perspective does not guarantee ‘good design’. It only dictates that the outcome/artefact can and should serve all members of the potential user population, including those traditionally underrepresented. The likelihood of a successful design outcome is increased when teams have complementary roles, a plurality of viewpoints, a neutral manager and a ‘wild card’. This clearly lays the ground for introducing disruption.

***Systems dynamics and design:*** Good system designers can anticipate the unintended consequences emerging from interactions among the multiple parts of a system. This kind of thinking (akin to foresight) is essential for, and

usually used in, systems and service design. It is also a principle of good design management, practiced at every stage of the design process.

But being able to reason qualitatively about feedback, and to look at a piece of design as part of systems, should be an integral part of design – whether for a piece of print communication, packaging, building interiors or a new product developed from scratch. Designers must be aware of the issues and unintended consequences that come from system dynamic and futures thinking is underpinned by systems theory (Bell 2008).

**Working amid uncertainty:** Often the design process begins with imperfect models, incomplete briefs, insufficient information and ambiguous objectives on top of changing deadlines and disparate stakeholders with multiple opinions and priorities. All of this means uncertainties that have to be considered and addressed in the process (Ambrose 2010; Brown 2009). Design thinking accommodates uncertainty but futures thinking could mean the communication of outcomes in terms of possibilities instead of probabilities – maybe even including discussion and selection of preferred futures. By emphasising conceptual understanding, having more hands-on involvement, using more action research and user-centred and participatory design, and increasing prototyping and testing, uncertainty could be made more valuable and better valued at every point in the design process (Best 2006).

**Ideation and concepts:** One of the challenges in design is the number of variables, interactions and considerations in a design task or project (Best 2006). As these grow in number and/or complexity, the designers' capability to grasp all of the details simultaneously may not. More often than not, a design team will choose to focus on a limited number of factors, usually the most important ones. Foresight asks which ones are the most important? To whom? Why? Which should be privileged? How and where? Even the best designers may not ask enough of the right questions to make workable futures-focused assumptions.

**Prototyping and testing:** In most cases, design requires some use of empirical data followed by experimentation before research and testing. This process allows for more time to analyse and understand the results. These techniques are often used in industry through innovation programs or methodologies such as Six Sigma or *Kaizen* (Esslinger 2009; Martin 2009). Quantitative methods still dominate even though they offer limited scope to engage the user and integrate their experience. As the various qualitative methods of experimentation and exploration prevalent in design are more

widely used and understood, acceptance has grown (Brown 2009; Martin 2009b) Foresight methods such as Delphi and morphological prospecting could be introduced to inform understanding and models based on data (Slaughter 2005).

Bringing foresight, design and design management together could foster and advocate design that operates at systemic levels, invites interdisciplinary collaborations, augments existing synergies, co-creates new thinking and co-design possibilities – and/or use disruption to uncover new ones in unexpected places – and seeds or sets up the conditions for emergent processes of change.

So, how and where could designers and futurists collaborate (better) to intervene at multiple levels of thinking and organization? to explore ways where design thinking can be combined with futures thinking in a way that each approach builds on the other? to sustain people, society and the planet in an age of disruption?

Design thinking, design management and strategic foresight have similar stages and processes. All are well-defined but still iterative, fluid and flexible. All are determined by the quality of inputs, which go through several stages of process work before outputs are provided, tested and ultimately delivered. But the demands of each process are different and the questions asked at each stage are distinctive to each process. Where the foresight process ends with the output of strategy is potentially a point for the design management process to begin.

Designers are practical agents of imagination, both anticipating the future and creating the sensory blueprints for the objects and experiences of tomorrow. Designers/design thinkers are primary agents in articulating the future, and therefore in helping humanity see and negotiate (or refuse) the transition.

Design is about systems, services and practices as much as artefacts: better-designed systems improve utility, cut costs, and improve resource use. Design management plays a key role in organisational innovation processes, including the development of integrated product and services, or inventing new types of value chains, alliances and collaborations.

Fry (2009) and Tham & Jones (2008) argue for design to be applied in ways that emphasise human desire in organisations, business, communities and user-centred thinking. Integrating strategic foresight into service design could allow for a future-oriented solutions-based approach to addressing the critical focus areas of these seemingly insurmountable challenges.

Wood (2008) proposes a way to move design beyond aesthetics by developing a new profession that he calls “metadesign”, “a comprehensive co-design methodology in which the metadesign team also co-designs its frame of reference”. Fry (2009) argues for more rigour in thinking about what is designed, the reasons for, outcomes resolved and materials and asks for greater consideration of the consequences in the interest of accountability and responsibility to a common good. Both have deep connections to the design management process and how design is interpreted and used in organisations.

Tham & Jones (2008) highlight three case studies in which ‘traditional’ design tools and approaches are re-developed and then implemented with the intent to engage in and support higher levels of thinking and synergy and more collaborative practice. The tools that are introduced and documented (including observation, cultural probes, cross-disciplinary participants in workshops, a four-fold integrative framework and five-level process storytelling) delivered a an engagement that was proactive and imaginative with a clear and strong sustainability imperative. This work is clearly informed by foresight tools and processes, which support conditions for learning that is contextual: embedding creativity, design and innovation into individuals, teams and organisations; unlocking opportunities through people-centred approaches; and realising design-led innovation with a longer-term view.

Tham & Jones (2008) suggest that sustainability “invites the designer into more strategic and systemic territories, and into a more complex set of collaborations; working with other disciplines, with users, and with representatives of wider human and environmental concerns, than what ‘design as usual’ implies. It suggests the need for a design that invites its participants to operate with fluidity at a wide range of cognitive levels, and to cross-fertilise ideas of different levels of complexity” (2008 p2). Sustainability is an imperative intrinsically linked to futures thinking, and it should be in design.

Kumar (2009) links design thinking, business and organisation goals to a human-centred approach to innovation, noting that in order to “create innovations that have a good fit with users”, the designer’s focus needs to shift “from products that people use, to what those people do – their behaviours, activities, needs, and motivations.” (Kumar & Whitney 2007, cited in Kumar 2009, p. 92).

Design thinking takes multiple steps forward on the path to human centred outcomes, to futures that are desired and desirable. By aligning futures thinking and design thinking, this could bring together diverse customer needs and business ecosystem capabilities and unite them with strategic foresight theories to deliver the preferred value and values of the birth organisation and society at large.

Arguably designers have long understood and used both emotional and experience elements to enhance the interactions among customers and product offerings. We are now at a point in human development and social continuity of applying this interaction knowledge to all aspects of doing business.

Putting people at the centre of the design process suggests that a deep understanding of users – their behaviours, motivators and barriers – is required. As a methodology, it would include problem solving and explore multiple perspectives. It would start by engaging in dialogue between all those in the process. It would seek understanding of what is known and not known about the problem to be solved. Observational research in a designated learning environment would aid deeper understanding of both spoken and unspoken client wants and needs, and then lead to the creation of new concepts that have been exposed to validation and iteration phases before releasing it as a (new) brand, product, item, service or experience to the marketplace.

Design processes – including design management – would demand explicit information gathering, with more time given to active listening and to leading collaborative discussions. This demands a different mindset, requiring different skills that need to be developed: a collection of capabilities that shares a purpose or vision and can clearly express an organisation's values, yet remain distinctive and authentic to themselves and their individual purposes.

Design is not solely about the thing that is created: it is imbued with the meaning of the impetus for creating it and the meanings of those who use it. Design management is not solely about the process of creating and designing: it is imbued with the meaning of what is driving the management process.

“Design is fundamental to all human activity. At the nexus of values, attitudes, needs and actions, designers have the potential to act as transdisciplinary integrators and facilitators” (Wahl 2008 p. 72). Like Tony Fry's philosophy of sustainment, Wahl (2008) suggests that rather than believing we are capable of designing universally-applicable blueprints to

bring about sustainability or ‘better’ design using prediction and control-based, top-down engineering, we can present design outcome(s) as an emergent property of the complex dynamic system in which we all participate, co-create and adapt to interdependent biophysical and psychosocial processes.

Wahl’s proposed approach has enormous consequences for the way design is viewed, used and valued. As an integrative and transdisciplinary process, it can inform more holistic solutions that promote the emergence of systemic health and sustainability as properties of the system, not just short-term manufactured and potentially destructive fixes. This shift in approach is also emergent from the complex dynamic system that contains culture and nature, and of which we are participants (Wahl 2008). In this system, appropriate decision-making bears complex eco-social dynamics that require us to consider insights generated by a diverse range of perspectives and disciplines, not just our own desires, all of which futures thinking and design thinking theoretically encourage and seek.

But design – and designers – must be conscious of this. The material intentionality of design expressed through “the interactions and relationships formed by consumer products, transport systems, economies, systems of governance, housing and settlement patterns, and resource and energy use” is also the expression of the designer and design brief. Designing occurs within the complexity of a reality that includes social, technological, and aesthetic values spheres: a complexity that cannot be reduced to any one of these spheres (Wahl 2008).

### **Bringing futures thinking, design thinking and design management together**

From every different perspective on design, the nature of design and of nature itself will show up quite differently. Interestingly, many sustainable design approaches are primarily grounded in the science and mechanics of the process. An expanded multi-perspective view can enable designers to more comprehensively address the complexity of today’s challenges by including the individual, cultural and social dimensions that contribute to the creation of possible and preferred futures. A first step is to foster more collaboration across and within the traditional delineation and structure of the design disciplines to create transdisciplinary design (Wahl 2008).

Wahl (2008) proposes that transdisciplinary design will make it possible to create engaging local, regional and global visions of preferred futures, that is ultimately design for sustainability. The underlying goals and

intentions of design solutions based on futures thinking are the maintenance and improvement of systemic health and the facilitation of healthy and cooperative interactions across the whole spiral of human worldviews and value systems, as well as across all physical and temporal scales of material design (Wahl 2008; Zeiler 2009b). This kind of design perspective fosters conscious and responsible design, intended for the creation of healthy societies in healthy environments.

What could be termed 'bad' design is design that negatively affects our complex system of individual, social and cultural perspectives. Bad design possibly comes about because we fail to consider the design within the complexity of the world it is created in and the futures it might exist for. It is only with a change in how we live our day to day lives that design will change; and this is likely to be a far more effective way of problem-solving than the creation of more artefacts and technical fixes (Wahl 2008).

Design can obviously benefit from human-centred action research. Business obviously can benefit from foresight and from design thinking (Ambrose 2010; Best 2006; Brown 2009; Fry 2009; Lawson 2006; Martin 2009b). Both can help them to more-deeply understand customers' wants and needs (spoken and unspoken) and link them to the capabilities of globally integrated enterprises (Pilloton 2009).

Used together, futures thinking, design management and design thinking have the potential to be more than a function in strategic planning or design or innovation processes. So while design management is a means to shape design and innovation outcomes, and design thinking is a tool to help shape business strategies and connect intentions to outcomes, adding strategic foresight can deliver a more valuable and long-term way of seeing and reframing the world for social and commercial advantage.

Many businesses apply a microscope to dissect all aspects of engagement into smaller and smaller pieces for improvement and refinement (Martin 2009b). While examining every last detail can be valuable, design thinking is effective at re-engaging the imagination to see a more complete picture (Brown 2009). Including foresight in a design process is an additional means to ensure that alternative perspectives are part of strategy-making. The principles and practices in most design professions already see, and allows business to seize, the kinds of opportunities that present themselves. Professionals using design thinking know the details are important for success, yet they also have flexibility in the way they see a project: flexibility that allows them to take different views and see how those details support a larger idea individually and as a whole. Design



thinkers constantly change views, and zoom in and out to keep the big idea and the details connected and meaningful. Futures thinking and design thinking enhance this flexibility and make it easier to keep the big idea in mind.

And while design has much to offer, assuming greater leadership roles in organisations will require individual designers to learn a critical lesson. This is where foresight skills are valuable. Keeping the zoom lens to yourself won't help everyone see all the different perspectives. Leadership is about more than having others follow. It's about changing the way people see the world—so that everyone's attention, decisions, and actions move them in the same direction towards a shared vision.

The nature of design is that it almost innately demands empathy, insight and innovative approaches to problem solving but it doesn't always reject traditional means of addressing the same challenges. Design management could be seen to focus less on the human characteristic of empathy and more on the commercial benefit of innovation. But design management can lead to design that creates value and enhances the user experience; it helps design find ways to give meaning to lifeless objects and touch human emotions on a fundamental level. The design process can focus on engaging in future-creating inquiry. The design experience can bring insights from informed practice into a 'real-world' social system.

This could also lead to a more universal artefact by:

- Eliminating design barriers
- Cultivating a vision to improve the quality of life for all people through holistic and humane thinking that builds true human communities
- Fostering development for a continuing culture of understanding that values the holistic vision of human communities by municipal, state and federal entities
- Stringent enforcement of principles and public policies that uphold and drive holistic design

Design has the tools for visualising complex large scale systems and the insights thus derived can be applied to improving the quality of the customer's experience, improve the efficiency of the process and offer benefits across the spectrum of applications (Hargadon 2005). For example, foresight tools could be brought into the design management process to further integrate empathy and a user-centred approach (from design

thinking tools) with process innovation and systems that could be otherwise focused on efficiency and profits alone (for example in commercial cleaning, hospitals and education).

Used together, design management, design thinking and strategic foresight are capable of solving some of the world's most pressing problems. Traditional research and design methods are useful at exposing the explicit knowledge of research participants, but to gain this new kind of data, contextually-focused observational methods are needed to help illuminate tacit knowledge in sensitive ways.

Designers are becoming trusted advisors in helping shape business decision-making, contributing to business strategy with a seat at the table, and cultivating design affiliates who will embrace and invest in design to drive competitive advantage. Futurists do this too, working to innovate and create opportunities for the businesses and organisations they all want to see thrive.

Designers work to understand the culture of their organisations and its connection to the customers and other businesses they serve. The design process is well suited to investigate the emotional and cultural realities of doing business. People buy on emotion and then justify their purchase decision using logic. Understanding the emotional aspect of offering appeal and transactions is pivotal to business success, and design is particularly well equipped to help in this arena of business strategy.

Designers have been hard at in the 'doing' part of humanity for a long time. But thinking is doing too. And designers can be thinkers: futures thinkers. The trusted design advisor helps put stealth foresight at work for a broader holistic benefit that business.

Where to start? Activate emotional intelligence and begin cultivating new models and practices for design. Like connecting the two hemispheres of the brain and aligning the head, the heart and the gut, design thinking and futures thinking can work together.

Human-centred design approaches the task of problem solving by always seeking to understand the end-user's needs and aspirations, goals, and the environmental conditions and constraints in which they live (Ambrose 2010). A design a product or solution can be crated that meets an unmet need or challenge, and, when successful, that becomes good design.

As design (design management most typically) mostly focuses on business needs, applying design thinking and futures thinking must show tangible business benefit. The intrinsic nature of foresight and design is what make what makes them a powerful tool for not only increasing

shareholder value for corporations but also benefiting their customers by providing elegant yet effective products, services and business models. Often the biggest challenge is to identify the real problem that must be solved; this is where using design and foresight methods and tools can help businesses at the early stages of strategy and planning (Hargadon 2005).

Bringing foresight and design into organisations takes this problem solving aspect one step further. Now the tools and techniques from the field of design such as ethnographic research, rapid prototyping and conceptual brainstorming integrate with the pragmatic business frameworks of strategy, analysis and metrics, and the principles of strategic foresight to create and provide holistic and transcending roadmaps for the individual as well as business innovation and competitive advantage. In this context, design evolves away from traditional notions of giving form (and function) to becoming a meaningful and valued part of the self that can also drive business strategy.

Design can give back as much as it takes. It has the potential for sensitivity and to understand the responsibility one carries for future generations. Perhaps foresight can help design (and business) look beyond the immediate gratification of one's own wants to the very real and undeniable needs of those who have nothing. These issues are discussed by the voice of emerging generations, those who entered the online world as adults and discovered the ways we all connect together across barriers of geography, language, culture and time (and who want to co-create the things they use every day).

The issues that face us now - climate change, environmental degradation, poverty, speed of information flow and the ever decreasing size of the world in which we live thanks to ubiquitous communication and technology – are big. Design won't solve them alone. But when it comes to sustainable development and strategies for the future, the sender and the receiver are ready for a message. People are demanding answers to problems that face us all, companies are realising they have a greater responsibility to the world in which they operate. Strategic foresight challenges complexity within the broader context of an entity's system at levels not usually discernable by the entity itself – and design management challenges at external levels that are highly visible and tangible such as form, function, materials and waste.

The solutions to the world's 'wicked problems' (whether linked to design or not) are more likely to be new processes, lifestyles and changes in

meaning, rather than purely material or promotional artefacts. Sustainability is an emergent property of appropriate interactions and relationships among active participants in the complex cultural, social, and ecological processes that constitute life in this century. The necessary shift towards more appropriate and sustainable modes of participation requires that design and education contribute to a widespread increase in social and ecological awareness through transdisciplinary design dialogues.

## Next steps

To explore this further, a framework for further primary and secondary research could include:

- *experiential*. Use direct experience to contribute to data collected on the futures thinking and design thinking processes. What are the differences, if any? How is this manifest? Do different practitioners affect the process? How and (how) does this matter?
- *seeking signs of change*. Using STEEPLE, categorise and seek for signs of change. This requires examining sources for movement in relevant variables. For example, changes in the communication or language style of 'design thinking' or 'futures thinking'.
- *looking for drivers of each process*. How is a futures thinking or design thinking process selected to be used in an organisation or task? Are there perceived differences between the two processes? Is the implementation of either process rigorous and clear? Does this matter?
- *looking for signals of potential events on the horizon*. For example, published research or outcomes based on the impact of design thinking or futures thinking in organisations, changes in education that draw on design thinking or futures thinking
- *looking for forecasts of experts*. Do 'industry experts' maintain we are moving toward a sustainable world in which design thinking plays a significant part. Who are the experts? What are the implications of the expert forecasts in this scan? Who benefits from this narrative? Does foresight have a role?
- *looking for indirect effects*. Many trends or events that do not appear to be or have direct implications for design or futures thinking may have second- or third-level effects. Is 'long range' design actually emerging? Is it a valid perspective? Is the term useful, and if not, what could be?

- *knowing there are no rules.* There are no hard and fast guidelines that lead to 'correct' interpretations.

### *Design can still change the world*

Just not in one project. Or alone.

Strategic foresight is a potential capability in everyone, but it can be most powerful when it is within the capacity of a leader. Designers have the opportunity to lead in the choices they make and the decisions they influence that in turn affect business.

Like foresight, there is often a moral impediment to be overcome in design (Hayward 2003). What actions don't get taken and why? Choices around clients, briefs; studio action, responses; ethics, values; responsibility have to be made: is the individual the biggest impediment in design as it can be in foresight? Is this also an impediment to aligning futures thinking and design thinking? Moral impediments in design can be intensified by commercial focus e.g. choice of clients or projects, but does this have to be the case?

There are many theories and tools for improving business and commercial outcomes and overcoming related challenges in design. It's important to think about the problem and the immediate implementation of possible solutions, but it might be more important to ponder the longer term behaviour you'd like your design to inspire. What about the local issue that's nagging at you? Or the global issue you'd really like to solve. How does design and designers' choices influence process and decisions? Are those choices inevitably turning into the futures we'll experience? When a design is picked, is it usually based on client's desire for possible or preferred outcomes? Is that everyone's preferred vision? And when design creates its 'preferred' future based on what design thinks, whose future is actually being created for whom?

When thinking about these alternative futures, does a design team consider how they leave mark? Or how design has an impact and how certain futures come to pass? What about the things that get designed – are they just a temporary fancy, or can you be proud to say you contributed to the design of a disruptive innovation that changed the way people live? How will your design impact people tomorrow?

## Conclusion

As stated earlier, the problems in our world now are significant – and their number and seriousness is only likely to increase. So what barriers stand in the way to implementing a game changing design? Is it lack of foresight? What paths can you take now to create a preferable future? And how will design shape up in 20 years?

Shifts in global politics and increasing concern about civil unrest and human security take complication and uncertainty to levels almost impossible to anticipate. To interpret such problems science and analytical thinking must be sought and heard. To make sense of possibilities of change, strategic foresight explores multiple possibilities and provides anticipatory strategy and hope. Design thinking provides an adaptive toolkit for creativity and innovation that fosters exploration and conceptualisation of ways to proceed. Design management provides tools and a process to deliver specific, measurable and functional designed outcomes. Together, the characteristics of each become a set of complementary thought processes that add considerable strength and vision to the task of considering and designing for humanity's futures. For design education, new opportunities can be created that bring together the best of all three. New content will be necessary; new processes must be imagined, developed and taught; and new ways of working will have to be learned.

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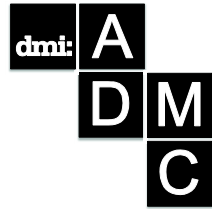
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# Designing for Disruption: Strategic business model innovation

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*In today's world, organisations across multiple sectors are facing the likelihood of significant disruption to their existing business models, driven primarily by the pace of technological change and innovation, but also by changing expectations on the part of their customers. Drawing on recent case studies, we will showcase two main modes of strategic business model innovation, drawing on two different sources of inspiration which we use as catalysts for innovation:*

1. *deeper understanding of the customer and their current needs, for businesses that need new business models for today's operating environment; and*
2. *visualisation of future operating environments based on emerging social, environmental and technological trends that may come to fruition over the next 20 or so years.*

*Our case studies will outline the strategic context of the organisations concerned, the process we went through to stimulate new thinking about innovative business models, and the outcomes in terms of strategic decision-making and organisational capability building. We will highlight how we have applied design thinking methodologies and approaches to these new strategic problem spaces, and also evaluate the challenges and opportunities of leading Executive teams along the pathway of transformational change in the face of current or potential future disruption.*

**Keywords:** *Innovation; disruption; business models; design thinking*

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## **Introduction: The challenge of accelerating, large-scale disruption to business**

One of the most obvious trends in business, and indeed society as a whole, is the rapid and increasing pace of change. Paradigmatic shifts arising from technological change have a long history, of course, of fundamentally disrupting established economic models – consider the many scribes put out of work by the invention of the printing press, the many handworkers and seamstresses rendered superfluous by the spinning jenny, the many blacksmiths and horse-and-buggy makers consigned to history by the invention of the motor car. Nevertheless, for much of the twentieth century, it was possible for the senior leaders of many organisations to operate with a relatively well-entrenched complacency about the risk to their businesses of disruptive change.

As we have moved into the twenty-first century, however, it has become more and more apparent that there is little room for such complacency in the Board rooms and Executive suites of most organisations. Fuelled by the rise of the internet, arguably the most disruptive of new technologies since the Industrial Revolution, but also backed by new technologies emerging on multiple fronts, such as the smart phone and the 3D printer, the incumbent assumptions and business models on which whole industries are based have been subjected to sweeping disruption. At the same time, there has been a major flattening of the marketplace in terms of many of the factors that have previously created competitive advantage – scale and global footprint, efficient supply chains, manufacturing quality, specialist expertise.

These combined factors create a dual dilemma for business Executives, a kind of ‘pincer movement’ which is threatening their very survival – on the one hand their profit margins are eroding as their industries, products and services become increasingly commoditised and they find themselves increasingly at the mercy of nimble competitors; while on the other hand, the fundamental operating models on which their businesses have been predicated are being swept away from under them. Well-entrenched market leaders in industries such as media and telecommunications, for instance, have been seeing their traditional revenue streams in terminal decline and new and unanticipated threats emerging almost overnight.

For those with a longer view of history and economic theory, there is an inherent irony here. Karl Marx preached that capitalism bore within itself the seeds of its own destruction, and focused attention on the inequality of the workers and the owners of capital as the inevitable source of disruptive

tension and reinvention. However, as we move into the twenty-first century, it seems pretty clear that the biggest risk for the destruction of capitalist value is not in the rise of the proletariat, but in the inability of large corporations to break out of the inertia and inflexibility which has arisen from within, from the very characteristics that have made them rich and powerful.

To elaborate on this, consider the reality that the foundation for corporate expansion and success in the age of the manufacturing and the industrial economy has been in the efficiency and scale of the means of production and distribution. First, it was the mechanisation of laborious manual tasks through the invention of powered machines; then the ability to transport raw materials and finished goods across long distances; followed closely by the shrinking of the time it takes to communicate across the globe, first via the telegraph, then the telephone and fax, and now via the internet; and finally, thanks to the rise of the computer and the digital revolution, the ability to translate human skills, knowledge, artefacts and services into 'weightless' packets of bits and bytes.

In short, the industrial enterprise was predicated on its skill at 'exploitation' – taking a new product or service, and delivering it as efficiently and cost-effectively to customers as possible. The primary skillset valued in managers and leaders in organisations was to be able to run a well-oiled and cost effective operational machine. In many cases, the ongoing harvesting of significant revenues – the 'rivers of gold' that flowed into large newspapers, for instance, based on advertising, or into telcos based on monopoly ownership of expensive, fixed line phone networks – could be taken largely for granted. This was still the position taken within one of Australia's largest media players, Fairfax, as recently as the early 2000's, much to their detriment in terms of their speed and agility in reacting to the internet revolution (Ryan, 2013). Given this complacency in relation to revenue, the main focus of management attention was cost, and its close correlative, efficiency.

Rapidly eroding amidst all this focus on exploitation was any enduring capability for 'exploration' and 'innovation', particularly amongst management teams. In an industrial economy, innovation has been conceived in terms of traditional "R&D", a largely scientific and technical set of discipline aimed at generating the next breakthrough product or manufacturing process. Still in Australia today, the national government's innovation policy is framed in these terms (Hendrickson et al., 2013). In this environment, research and development is generally undertaken in a siloed

unit populated by boffins and technical specialists, relatively separate from day-to-day operational management of the exploitation engine.

However, as we move out of the industrial economy and into a knowledge and experience economy, that is all changing. Product innovation is no longer a sustainable source of competitive advantage, since any new product can be replicated with equal features and often at lower cost as soon as it comes out onto the market; nor is scale of distribution and breadth of footprint as big a benefit anymore, because consumers can purchase their products and services from alternative suppliers in distant corners of the world – without the significant overheads associated with a large network of distribution channels.

Instead, innovation and the differentiating competitive advantage that flows from it is moving into new, less tangible spaces, such as customer experience, integrated solutions and disruptive business models. Executives from the large multinationals built off the back of the industrial era and the exploitation model of growth are sensing that the game has changed, but they are hard pressed to know what to do about it. They are casting around with varying degrees of psychological motivation – from hopeful inquiry to nagging unease to urgent desperation – for new ideas and toolkits to enable their businesses either to keep ahead of the curve, or to reinvent themselves entirely. Everyone is talking ‘innovation’, but no one can really agree on what it is or how to do it in this new environment.

As strategy consultants with a strong emphasis in design and design thinking, we have been very intrigued to explore how the precepts and practices of design could be applied to innovation at the level of the enterprise, to rethinking the very fundamentals of the business – why it exists, what needs it serves, how it derives revenue and how it builds a sustainable business model and operating model well into the future. We wanted to know if the design methodologies we have used for more traditional product and service innovation projects could be applied to this larger, mores strategic problem space, and also to learn more about what it takes in terms of leadership and capability to enable organisations to move from exploitation to exploration mode. Using an action research methodology, we have sought to combine our understanding of design theory and process with two real-world situations where clients asked us to help them move into an exploration mode and develop new ideas and opportunities to innovate their business models. This paper details some of the thinking which guided us, the processes we went through and the conclusions we have drawn from these experiences.

## **The shift to third and fourth order design**

One framework that helps us to understand the nature of this shift is Richard Buchanan's four orders of design (Buchanan, 1999). In the Industrial Age, innovation was focused very much at the second order (the design of physical objects), and at what one might perhaps describe as the lower half of the third order (the design of physical processes and systems). Science, technology, and engineering have been the cornerstones of these innovations, with industrial design a latecomer, though as the cost of the mass production of goods has fallen, it has shot to much greater prominence as the creator of differentiating value (iPod, anyone?). Related processes such as Total Quality Management, process re-engineering and Lean Six Sigma have been the 'go to' toolkits for managers and organisations wanting to continuously improve the lines of production and supply chains that have been built off Industrial Age thinking and know-how.

In the new Knowledge and Experience Age, however, innovation needs to occur at the top end of the hierarchy – in the upper half of the third order (the design of human or socio-technical systems and end-to-end stakeholder interaction processes) and into the fourth order (the design of whole businesses and organisations, and of broader social ecosystems). This poses a major problem, however, for business, as there are no well-established disciplines or university laboratories set up for this type of design challenge. At best, there are only a small and somewhat diverse and divergent range of suitable toolkits, from soft systems thinking (Checkland, 1999) and the related foray into cybernetics in the 1960s and 1970s (Wiener, 1965), through to user interaction and experience design emanating from the world of IT (perhaps at its richest in game design), and now increasingly to a new range of tools and processes emerging over the last 10 years under the loose and much contested term 'design thinking'. Though design thinking still clings in the minds of many (not least in university design departments) to its roots in second order, largely industrial design, it has gradually been expanding to fill the vacuum that has been exposed in third and fourth order design.

One relatively subtle but very important distinction between traditional innovation and third and fourth order design is in the mode of thinking that underpins them. By far the dominant mode of thinking in innovations based in functional products and processes is linear, analytical and reductionist. How can we design a product to efficiently perform a relatively mechanical and repetitive task, such as taking pictures, brewing a cup of coffee, playing music, making photocopies, lifting a few hundred people off the ground and

transporting them across the world? How can we miniaturise and reduce the weight of components to make many of these products readily portable or cheaper to operate? How can we design a production line to create the greatest efficiency and the least variation in quality? How can we get relatively bulky products to the other side of the world in the most cost-efficient way (a question that spawned two of the great logistical innovations of the twentieth century, the shipping container and the flatpack)? The key to these design problems is to break the problem down to its individual parts, connect them together into a repeatable, efficient process, and wherever possible, try to eliminate the scope and potential impact of inconsistent and fallible human intervention.

The shift to true third and fourth order innovation is not just a shift in scale but in mindset. In this domain, the dominant mode of thinking needs to be emergent, synthetic and holistic. If scientific precision and quantitative rigour were the keys to innovation in the Industrial Age, then largely foreign and slippery concepts such as empathy, qualitative insight and cultural fit become much more the sorts of dispositions, instincts and capabilities that need to be brought to the task of design. They are certainly not the modes of thinking that are readily found amongst many business leaders and management teams, nor do they reflect the sorts of qualities that universities and research-sponsoring agencies typically give status or funding to. There is a strong argument that the logical homes for this mode of thinking in the university are the Humanities, Media and Cultural Studies and Visual Communication departments, with Design another possible contender if it can break out of its second order focus, and probably also some of the social sciences which haven't been too tainted by either the need to establish its credentials as a 'science' or by a self-defeating descent into impenetrable theory. But who ever looked to these faculties as a source for value-creating innovation in the hard-edged profit driven world of business, and indeed, who amongst the leaders of these faculties actually knew enough about the world of business to be able to recognise the opportunity and make more than a bland claim that studies in the Humanities creates a range of general skills that have useful applications in the real world?

### **Third and fourth order design in practice**

One of the areas of third and fourth order design which has rocketed to the attention of business leaders and management consultants in the last

five years or so is business model innovation, fuelled most notably by the work of Osterwalder and Pigneur (2010), as outlined in their now seminal book, *Business Model Generation*. The primary framework of Osterwalder et al., the Business Model Canvas, has been widely embraced because it allows the organisation as a whole to become, for the first time, a manageable object of design in and of itself. Never before had managers and organisational leaders had a framework that allowed them to design at the third and fourth orders in such an effective way. Unlike earlier efforts to create a view of the elements of a business model, such as Kaplan and Norton's (1996) Balanced Scorecard and Hamel's (2002) attempt in *Leading the Revolution*, the Business Model Canvas invites engagement and play, rather than mere analysis.

The positive reception of the Business Model Canvas highlights a key element for designers working in the more intangible space of third and fourth order design – the need for robust and innovative frameworks and heuristics in order to effectively articulate and manipulate the abstract objects of design that sit at the heart of the work, i.e. organisations as a whole, the primary systems that comprise them, and their relationship and impact on the dynamics of the wider industries and ecosystems within which they operate. These frameworks support the tasks of synthetic and holistic thinking by providing a landscape, vocabulary, and syntax. They create new distinctions of elements with defined relationships that can serve to generally guide the third and fourth order design process.

As successful as the Business Model Canvas has been, however, it provides only part of the answer. The canvas' primary value is the naming of categories and the implicit questions it asks by presenting empty boxes to be filled. It is a form, but does not provoke the development of specific, contextually relevant content. As is true for any powerful framework, it is non-specific and content agnostic.

For many organisations and leadership teams, just being able to represent their business model on a single page, and ask themselves what elements they could change, is a big step forward in strategic thinking. But it is limited by the creativity and imagination of those who spend most of their working lives deeply embedded within the current business model and its underlying assumptions. We need to stretch leadership teams beyond what they currently know and give them an 'outside-in' view of the emerging environment in which they will be operating.

In our practice as strategic innovation consultants, we have used two distinct but related approaches to achieve this outside-in view: customer

insight-led business model innovation, and futures-led business model innovation. To get the best outcomes from this work, we have applied our core skills and capabilities as design thinkers, as well as our strength in synthetic thinking and visualisation, to create immersive experiences which take organisational leaders outside of what they know and challenge them to reimagine their organisations by looking through a different lens. Two recent case studies illustrate our approach.

### *Customer Insight-Led Innovation*

A major Australian print-directory business recognised that its fundamental value proposition, namely the production and distribution of phonebooks, was directly under siege, and had been for some years, by digital disruption. The value small to mid-sized businesses saw in advertising in print directories was rapidly diminishing, and the business was keenly aware of its need to change its business model or perish. Key decision makers in the organisation recognised that the solution was not just to shift their directories business from print to digital, but also to explore new product lines and systems beyond directories.

The project began with an initial phase of intent setting, including the analytical work of building an in-depth understanding of the organisation's history, conducting environmental scans, sizing markets, and executing general trend research, as well as establishing an innovation team to explore and develop new business model opportunities. From the start, the team recognised that they were not faced with a question of further optimisation or greater efforts at exploitation, but rather a generative question of identifying areas in which they could deliver new value. However, they had never been faced with such a question before, and needed to establish a new way forward.

The team decided to pursue a user-centered design approach, beginning with an intense phase of gathering customer insights. The business recognised that its best hope lay in exploring the diverse needs of its key customer segment—small and mid-sized businesses – and looking beyond their customers' well-understood activities relating to print-based marketing. The resulting ethnographic research focused more broadly on questions of what it meant to be a small business, what the key issues they faced were, and the core hopes they drove them. The research generated a great raft of findings, which were then synthesised into a core set of insights. With the Business Model Canvas in mind as a form to be populated, the team needed to figure out how to leverage the insights to produce



concepts for new business opportunities that would be captured by the canvas.

The solution lay in reframing the insights into focusing questions. The simple but powerful technology of question-asking set the requisite creative tension necessary to germinate new ideas. For example, the insight that ‘small to mid-sized business owners believe they have limited networks and learning opportunities’ was reframed into ‘how can we help small and mid-sized businesses look beyond their immediate network and personal experience for ideas and options?’ By reframing the insight into a question, the team was able to provoke hypotheses that attempted to answer the question. ‘Well, we could do x by leveraging y capability...’ became a common refrain. Engaging with these insights and questions helped internal stakeholders develop empathy for the users, expanded their appreciation for the broader customer experience, and provoked the generation of early ideas (nearly 120 in total).

These ideas were captured, synthesised, prioritised and expanded upon until a central set of seven fully-fledged business models were developed. As this stage in the process, we used more traditional business analytics to determine a target addressable market, future competitor analysis, customer segmentation and sizing, revenue potential, potential cost profile, and progression pathway for developing the business model. The result was a set of well-defined business cases, built around business models rooted in deep ethnographic design research, which opened up some dramatically different opportunities for creating new value for customers while leveraging the existing relationships and brand.

### *Futures-Led Innovation*

A major electricity distribution company in Australia was faced with a very real impending disruption in their market, namely the proliferation of at-home power generation by way of photovoltaic cells (solar panels) and the potential emergence over the next 10-15 years of improved residential energy storage solutions (batteries). Regulations stated that the distribution company was required to maintain a distribution network, made up primarily of power lines and poles, that could withstand the peak possible demand of the overall system. The paradox was that peak demand equated to approximately 200% more capacity than the average demand, and happened only once or twice year. Therefore the business was continually struggling to contain the costs of maintaining a network that was rarely ever used to its maximum capacity. The pricing structures for customers were

based off of a combination of system up-keep costs and energy usage costs. Even in the absence of disruption, the situation was fragile and highly political, given widespread community concern about rising electricity costs. But the prospect of having larger numbers of consumers opting to remove themselves from the grid, thereby reducing the pool of consumers contributing to the upkeep of the traditional network and putting further pressure on prices, was creating the potential for disruption not just to the organisation's business model, but to the sustainability of core infrastructure fundamental to the community.

Given this context, the business recognised that it needed to find new routes to sustainability, both of their own business and the electricity grid of which they are custodians. In the short term, there was still work to be done to increase the efficiency of the current network and distribution model ('exploitation'), but as they looked into the future they understood that achieving the desired efficiency would become increasingly difficult. Moreover, they did not want to be investing capital and effort in improving the efficiency of an operation which was going to become increasingly irrelevant. In short, they needed to start thinking in different ways now about their business model and operating model ('exploration'), and get ahead of the curve of technological innovation so that they could be ready and agile in their responses once the inevitable disruption eventuated.

As we engaged with the senior leaders of the business, we recognised that the inspiration for innovation was not likely to be found solely in customer insights. The business understood their customers' needs in relationship to energy consumption, but also recognised that the expansive effects of the impending disruption had the potential to drastically change the landscape of the customer, such that their current view of things may not be relevant to and coherent with the possible future that is coming.

The question they faced was, "How can we leverage the business opportunities of a future that has not yet arrived?" In order to do this, three subsidiary questions needed to be answered:

- What are the current capabilities of the organisation and how does the organisation relate to its customers, industry, and ecosystem?
- What are the impending disruptions and how might those disruptions play out across our industry and society at large?
- What can we begin to alter and augment in our business today to position ourselves to be able to capitalise on the post-disruption world?

The first question was answered by mapping the organisation's core capabilities, the current needs it fulfilled for its customers, and the environment within which it operated. The mapping process was done conversationally with key decisions makers, subject matter experts, and various voices from throughout the organisation. The output was captured in large-form visuals that located the business within the industry (and value chain), explicitly notating the major players on both the supply and demand-side and citing their primary needs. With a single image of the business-in-situ, the organisational leaders were able to relate to the business as a discrete object of design operating with a dynamic industry.

Answering the second question posed a much greater challenge, and required not the analytic thinking applied to the first question, but rather the employment of curiosity, imagination, and creativity. The process began by identifying six potential areas of disruption that could come to pass over the next 20 years, directly affecting the industry and relevant parts of society related to energy production, distribution, and consumption. These areas included massive environmental change, the emergence of ubiquitous customisation through the broad application of technologies such as 3-D printing and virtual presencing, and of course the widespread adoption of high-efficiency PV cells and high-capacity batteries making at-home power generation and storage the standard. Individual groups researched the underlying technologies and trends that sat at the heart of each of these disruptions, then used that understanding to paint a picture of a future where those changes had comprehensively come to pass. What was a day in the life of a customer like when anything could be custom-produced at the press of a button? How does community interaction change when each citizen is individually responsible for his or her own energy production and storage? What do people practically fear and hope for in a world where the environment is drastically different, and far more erratic, from what it is today? The larger group then immersed themselves in these potential futures, exploring the experiential changes of their customers across various facets of life.

The faculties required to productively participate in such an engagement ran directly counter to the typical skill sets of organisational leaders. Nowhere was the question of efficiency the primary focus. Leaders need to empathise, imagine and engage with narrative to richly inhabit these futures. The result was the naming of new business opportunities that could

potentially exist in these futures. A wide-open field of possibilities was identified, and the business then needed to consider how to respond.

Thus was prompted the answer to the final question, “What can we do today to position ourselves for ongoing relevance in tomorrow’s world?” Having selected the most promising ideas for future business models, the design team started looking for current, small-scale opportunities that could serve as the seeds, the proto-versions, of the full-blown ideas imagined in each of the futures. These nascent business opportunities were first compared against the core capabilities of the organisation as articulated earlier in the process to determine their general feasibility. They were then mapped onto the business model canvas to further develop thinking. Finally, the group outlined the assumptions built into each of the ideas in order to create a list of next steps (e.g. planning how to test key assumptions, building high-level valuations, etc.) that could help the business decide where to focus.

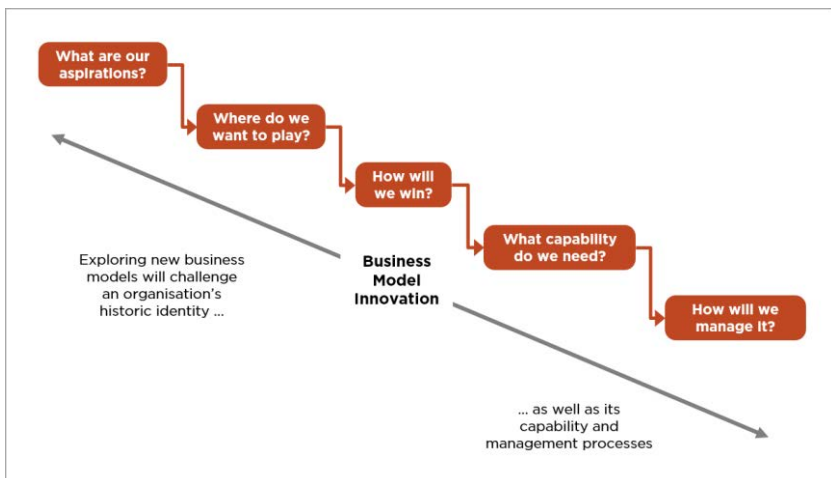
As a result of this work, the organisation now has a portfolio of potential business model innovations and has established a small dedicated team to continue developing these concepts. These range from installing and maintaining microgrids to supplying mobile electricity solutions to customers with short-term needs. The organisation recognises the long-term characteristics of business model innovation, progressing with the understanding that the effective development of a new business model can take months, if not years. Along the way, some ideas will fall by the wayside, while others will metamorphose into something different. The intent was not to rush to market with a new set of value propositions, but instead, given that they had a longer lead-time to disruption than the telephone directory company, to be able to carefully develop new ideas, prototype them on a small scale, learn and build new capabilities through the process, and then be ready with mature ideas and a variety of options for new revenue streams when the inevitable disruption arrives.

## **Business model innovation in the context of a broader strategic agenda**

As demonstrated in the case studies, the process of business model innovation can be greatly enhanced with the application of design thinking. The form of the business model canvas can be populated by the content of creative design practices, which can in turn be supported by the tools of business analytics to create robust arguments for new ways forward.

However, the forest of organisational strategy must not be lost in the trees of business model innovation. As the object of the business model is being designed, the larger context of the broader strategic agenda must always be kept centrally in mind. As with the design of traditional artefacts for manufacture, the larger processes must be kept in mind as the designer progresses, lest the result is a beautiful but unviable product that is ill fit for its purpose.

An option for a new business model sits within a larger strategic context, and it is important to create a coherent view of the whole, rather than just proliferating new but divergent ideas. If we take one framework for strategic decision-making, Martin and Lafley's (2013) Cascade of Choices, we can see that the business model is a central element in the sequence (see Figure 1).



*Figure 1: The Cascade of Choices*

A concept for a new business model can be seen as a response to the third question, "how will we win?" At its heart, this is a hypothesis about how to create new value for customers, and therefore new revenue, amid tectonic shifts in the operating environment. But it needs to be positioned in creative tension with the questions on either side. What we have found in our work is that the generation of new business models creates fundamental challenges to how the organisation answers Martin's first two questions, "what are our aspirations?", and "where do we play?". Or to put it in other terms, the prospect of embracing new business models forces the organisation to ask fundamental questions about its identity and the domain

of its business. Usually, the most challenging issue a leadership team will have to deal with is not how to come up with different ideas for new value propositions, but how willing the organisation is to change itself into something other than it is today. The weight of history, combined with complacency and/or risk aversion, can be a deadly millstone around the neck of an organisation that is not really willing to reinvent itself, to move past what it knows and is good at, to survive in a more ambiguous future where its proven capability and track record may not count for very much. Clearly this sort of myopia is a core reason that even highly profitable global brands like Kodak can fall victim to disruption. If the leadership team is not willing or able to conceive of the organisation fundamentally changing from what it is today, no amount of creative ideas about new business models will rescue it.

Equally, the generation of new business models will pose some significant questions in terms of the organisation's systems and capabilities. Implementing new business models is not just a matter of repositioning the organisation within its marketplace, but of redirecting and reconceiving its core competencies. Take the electricity distribution company, which has relied for decades on its strong engineering ability to maintain a large-scale electricity network as its fundamental skill-base. While technological know-how will remain a necessary element, it will have to develop broader capabilities to deliver desirable products and services to customers in an open marketplace, rather than just maintaining a major piece of infrastructure in a monopoly environment.

## **New thinking requires new leadership capabilities**

While it is relatively obvious that new business models will require organisations to develop new skillsets and invest in new systems and processes to deliver them, the subtler shift that is required is in the capabilities and mindsets of the leadership teams, including Boards. When you are in an exploitation mode and enjoying a relatively stable operating environment, the focus can be directed to driving efficiency and performance using traditional management tools (KPI-driven performance reporting, data analytics, business case processes) and business improvement processes (TQM, Lean Six Sigma), and decision-making can be based on a more-or-less reliable cost-benefit analysis (not that it stops many organisations from wildly underestimating the costs and overestimating the benefits of major investments and system upgrades).

When you are operating within or contemplating a likely future of disruption, however, the mode of thinking and decision-making has to change. Instead of choosing some strategic priorities and running hard to execute them, a leadership team needs to be able to explore a set of options, and hold each of them tentatively as prototypes for new value propositions that may or may not ever see the light of day. Since we cannot predict either the timing or the specific form which marketplace disruption will take, we cannot and should not place a large early bet in the hope that we can pick a winner. Rather, we should take whatever lead time the market will afford us to learn from other players in analogous fields who are already leading the way, to develop low-cost prototypes that we can test and improve before we face a crisis, and to make small investments that can enhance our understanding and capability rather than looking to make a bold move into a new area that we barely understand (an approach that Rupert Murdoch would have done well to embrace before he paid \$580 million for MySpace).

One should not underestimate how significant a cultural shift this is for most management teams. It requires a fundamental rethinking of core management processes, such as the product development cycle, the business case process, the measurement and reporting on strategic initiatives, and the ongoing governance of investment in innovation (Jenkins & Golsby-Smith, 2013), as well as a change in disposition, from expertise and execution to exploration of uncertain future states and holding possibilities open. Management teams and investors who thrive on certainty and action will have to get used to ambiguity and learning, and embrace new toolkits such as design thinking and visualisation, rather than analysis and spreadsheets. They will have to become more like venture capitalists, willing to invest diversely in interesting opportunities that may lead to future pay-offs, even while accepting that many of those investments will fail to deliver, other than in the lessons learnt along the way.

Perhaps the biggest cultural shift will need to be in the question of who leads disruptive innovation and how to engage the organisation in the learning journey. Top-down, hierarchical management may work in an exploitation environment, but not in an exploration environment. The freshest ideas and most interesting new perspectives are likely to come from those who are relative newcomers to the organisation, rather than the old hands; from the edges, rather than from the core; and from younger, rising leaders of tomorrow, rather than from today's management team. Not only are they more likely to be better connected to and more excited

about the future that is emerging, but they have the strongest vested interest in building an organisation that will be relevant and sustainable well into the future. When undertaking business model innovation projects, we strongly recommend engaging a wider group of individuals than are typically involved in strategy processes, and to use the exercise as an opportunity to build new dispositions, capabilities and tools that will stand them in good stead when they become the leaders of an organisation that may look very different from the one today.

To adapt to this new reality of ongoing disruptive change, leadership teams must learn to look at the world differently, cultivate empathy for their customers and their needs, exercise imagination about what the future might hold and demonstrate the ability to rapidly synthesise their emerging insights into a holistic view if they ever are to capitalise on the emergent opportunities appearing in the world around them—opportunities which will eventually eclipse the value generating ideas and activities they have traditionally cultivated. One study estimates that 70% of tomorrow's value will come from investment in new value propositions that do not exist today; if this is the case, then organisations and leadership teams need to embrace a culture of exploration and develop the dispositions and toolkits that they will need to ensure they maintain their relevance and value to their customers no matter what disruptions the future will bring (Nagii & Tuff, 2012). Learning how to work at the third and fourth orders of design will need to become a core competency, and business leaders will have to become adept at living in two worlds, able to deliver today's business model efficiently and profitably, while also building the new value propositions and organisational capabilities of tomorrow. The implications not just for management practice, but also for business education and leadership development, are far-reaching.

No business leader wants to go down in history as the myopic Executive who failed to anticipate or successfully ride the wave of disruptive change, who misses the moment and who ends up destroying the brand and value that had been up over decades before them. While we can never predict the future, we certainly do have tools and processes at our disposal, drawn to a large extent from the world of design, which can generate a much broader set of strategic options and significantly increase the prospects of long term survival – if only we learn how to use them and embed them successfully into organisations as a new type of strategic conversation and an indispensable and engaging creative capability.



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— Chapter 6 —

**Design Management  
Education**

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# Editorial: Educating Design Managers for Strategic Roles

Richard BUCHANAN

The theme of our conference is how management and design are changing in an era of disruption such as we find early in the 21<sup>st</sup> century. In turn, this special themed session seeks to address the question of how we may better prepare designers and managers to become future leaders, working at higher strategic levels in business and other kinds of organizations. This is an important question whether we are teaching (1) management in design schools or (2) design in management and business schools. Seldom recognized, however, is the further possibility: (3) using the ideas of a new vision of design to reach across a variety of disciplines, building on the potential of design to become a new liberal art of wider scope in the university community, furthering a new kind of leadership whose features we may only dimly perceive.

The papers collected here are written primarily from the perspective of design schools. The one exception is a paper written from the perspective of an engineering program—though it, too, focuses on design process. Perhaps this is a reflection of the term “design management,” which emerged several decades ago as an effort by educators in design schools to respond to new opportunities for leadership in business and industry. The term persists, though the emergent ideas of design as a new practice of management are changing both design and management. The Design Management Institute sits at the crossroads, encouraging design schools to engage new issues such as strategy while also well aware that schools of management and business are moving into new territory that is no longer encompassed by the old term.

This difference is reflected in the rich variety of papers collected here. There are interesting discussions of how to conduct design workshops in design research (Storvang, Clarke, and Mortensen), the limitations and value of ethnographic tools in product development (Galli, Pino Ahumada Alejandra, and Maiocchi Marco), the phases of design process (Lachmayer, Weiss, Deiters, and Lippert), the patterns and strategy of ideation in the development of service concepts between experts and novices (Hu, Geo, Ji,

He, and Galli), and what ‘designerly leadership’ may mean for the development of products and services (Yuille, Varadarajan, Vaughan, and Brennan). There is an equally interesting paper on the learning experience of business students participating in a strategic design module. As the authors, Sadowska and Laffy, note: “Within the UK higher education landscape, the undergraduate design management curriculum ... tends to be firmly within the design school environment.” They go on to explore the innovative contribution of design methods to business management education. (*Action Research* is one way that management schools have introduced design concepts almost without direct awareness that this is what they have done.)

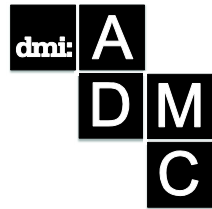
There are other papers that also nudge at the boundaries of old practices and point toward new opportunities, often across old disciplinary boundaries. One paper discusses the possibility of introducing design students to the concepts and techniques of “Big Data” as a way of speculating on “future conditions” and finding ways for designers and managers to work together to steer the course of innovation (Richenberg). Another explains the current place of “strategy” in design management education in the UK, comparing ideas here with ideas drawn from management research and pointing toward the development of new interdisciplinary approaches (Kent and Inns). Continuing on the theme of strategy, a very interesting paper approaches the teaching of strategy from a transdisciplinary perspective, offering a method for bringing together students from a wide variety of design disciplines but otherwise without any knowledge of design strategy. This paper identifies some of the key tools of design as well as ideas from strategic design, management, and design management theory (Wildman).

A final group of papers push out in quite new directions, some very practical, others more theoretical. One paper discusses the development of a design curriculum for rural entrepreneurs—in the Eastern Caribbean (Noel). A reader would be justified in believing that this is strategy directed at design education, itself. Another paper explores how design thinking could be embedded in higher education for significant change. This involves a review of existing literature in an area where there has been a “current dearth of research into design thinking in higher education” (Madden). Hints of a new liberal art are here, for sure. The final paper in this organization of the collection speculates on the possibility of a new shape and constitution of the Design Ph.D. (Murphy and Jacobs). Have the new challenges that introduced this themed session of the conference brought

us to the point of a different approach to the education of educators? To be educated and not merely trained? In an era of disruption, it is encouraging to imagine that new possibilities are before us.

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## Design Shift, System Shift: A design thinker's multimodal approach to urban education

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*Design Shift: System Shift: A Design Thinker's Multimodal Approach to Urban Education examines and links, via a multimodal lens, the ways in which systemic solutions can be reached in urban education through the design process. This paper aims to imbue and transpose design theory in the educational space. When viewed critically, the lineage of designs that have resulted in our contemporary urban educational systems are ripe with flawed, inequitable, bureaucratically entrenched, systemic short-comings that do not adequately serve or address the needs of all students, families, and communities. This paper utilizes diverse texts to trend pervasive sociopolitical, socioeconomic, and axiological tensions and discusses how the design of public education is ill equipped to halt this continued trend. It also critiques the current design of public education, offering a salient alternative—a design methodology marked for its ability to frame complex problems and utilize a multi-disciplinary, collaborative style to create solutions which could help best fit the need of those who interface with systemic design flaws. Design—a term defined by John Heskett in *Toothpicks and Logos: Design In Everyday Life*, most often relegated to aesthetics (p. 1)—is subverted in this context, moving away from commonplace boundaries of design into a sphere where the sophisticated nexus of human behavior, desires, values, and interactions are tapped.*

**Keywords:** *Urban design and Education; Integrative thinking and Urban citizenry; System scaling and Education; Participatory design; Democratic design; Social justice and Design; Design and Relational trust; Ethical design; Education and Choice*

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## Introduction

Design Shift, System Shift: A Design Thinker's Brief Multimodal Approach to Urban Education

*This is the paradox facing urban school reformers. On the one hand, urban schools are producing academic failure at alarming rates; at the same time, they are doing this inside a systematic structural design that essentially predetermines their failure. This is where the urban school reform rhetoric has missed the mark. It has presumed that urban schools are broken. Urban schools are not broken; they are doing exactly what they are designed to do. (Duncan-Andrade and Morrell, 2008, p. 1)*

It is potently clear that the success of equitable and effective urban education lay on the success of its design. However, it is also clear that when viewed critically, the lineage of designs resulting in our contemporary urban educational systems are ripe with flawed, inequitable, bureaucratically entrenched, systemic shortcomings which do not adequately serve or address the needs of students and families. In *The One Best System: A History of American Urban Education*, David Tyack (1974) spends an exorbitant amount of time framing continual tensions provoked from a threat to socio-political power structures. This, at its very core, is our history of urban education. From the civil unrest of location and authority in the village system, to the rural-school reformer's initial move of bureaucratization (p. 24), to the perpetual fight of oversight and delineation of power within an ever evolving hierarchy of governance—all the while marginalizing women (p. 60), Irish and German immigrants (p. 86), the poor, and minorities.

In *The New Political Economy of Urban Education: Neoliberalism, Race, and the Right to the City*, Pauline Lipman (2011) presents a fierce critical analysis of the dominant economic, political, and philanthropic structures which from her vantage perpetuate inequalities (p. 4), reconstructs social values and identities toward a free market, neoliberal society (p. 11), and politicize and pathologize space in order to simultaneously ameliorate and gentrify low-income neighborhoods (p. 33-8)—concluding with a bleak and nuanced prediction of continued pluralistic tensions resulting in an ability to heal public education on a broad scale. In *So Much Reform, So Little Change: The Persistence of Failure in Urban Schools*, Charles Payne (2008) discusses the consistent failure of reforms in urban education and acknowledges the

*Design Shift, System Shift: A design thinker's multimodal approach to urban education* design is flawed, and further, how the broken design fundamentally predisposes or rebels reform through he terms as “social barriers” (p. 26), “curriculum anarchy” (p.33), “relational trust” (p. 36), “structured irrationality” (p. 65), and “fate control” (p. 110)—all anchored in the ineffective design of public education to neutralize barriers and equally serve all students.

In “Urban Education in the Globalizing World,” George Noblit and William Pink (2007) discusses the significance between the “urban” (pg. xv) as a generalization of geography and presumed assumptions and the “urbane” (pg. xv), classified as the cosmopolitan hub of sophistication and culture. Noblit and Pink approach analysing how one can view the urban-urbane spectrum around six conceptual viewpoints or lenses—“multiplicity, power, difference, capital, change, and intersectionality” (p. xviii). In their analytic exercise, they present a radical notion that as public education remains broken and in flux, so do the critical spaces which encapsulate them. The urban-urbane spectrum, a fluid construct, displaces one’s assumed conceptuality about urban space and frames an alternative and much more nuanced way of viewing how critical space effects urban education.

In “The Urbanization of Everything: Thoughts on Globalization and Education,” Rob Helfenbein presents a significant analysis utilizing critical geography to discuss the redefining/restructuring of urbanization as a process versus the urban as a lived experience (p. 319). In his analysis, Helfenbein sheds light on the nuanced way youth, adults, community members, and schools “make place within the intersections of space, power and identity” (p. 320) utilizing a theoretical framework of critical scale and discussing the ever present tension between those in power and those outside of it. A nested construct in our society, Helfenbein discusses power plays within the globalized reformations of cities, foregrounding how bound and bruised cities remain, and how schools remain in flux because of it.

“The Shifting Geography of Urban Education” by Eric Freeman in a way provides a specific case study to what Helfenbein presents in his discussion of critical geography. Freeman focuses on the shifting geography of Atlanta from the 1970’s to present, and reveals consequences for school systems regarding the urban poor. He also illuminates continual tensions around power associated with space and reveals a power notion of an urban problematic, where in which the “urban” is used as a construct not locale which can follow someone or a group to “suburban” space stating, “What is notably different about the population migration we are witnessing today is

that many people are moving to the suburbs with little or no expectation of leaving poverty behind (Frey, 2005; Jargowsky, 2003; Singer, 2004). Unlike previous transplants, these 21st – century migrants bring their “urban” problems with them, blurring or dissolving the social and economic boundaries that once made the plight of central cities distinct from the conditions of suburban sprawl” (p. 678). Freeman’s construct reveals how public education faces the same issues of inequity no matter its locale, convoluting further the idea of geography, but also the clarity of a broken system.

In “Communities and Schools: A New View of Urban Education Reform,” Mark Warren focuses on the revitalization of communities as a necessary tool for the success of urban education. Thus, his case studies revolve around various ways community-based organizations can interface with public schools. Warren discusses frankly the practical ways schools and community organizations can partner to improve interpersonal connections, social capital, social trust, and parental engagement. Foregrounding his notions of relational power versus unilateral power as key for urban education reform, stating, “community organizations can play a valuable role as an independent force in collaborations with schools and in the political arena. But they require strategy to build trust and cooperation with school staff in order to build relational power” (p. 138). However, as a bi-product of his argument, Warren also reveals how these opportunities have been incessantly missed or siloed in that they may help in concentrated areas or neighbourhoods, but haven’t been designed to scale widely and handle the differences and challenges each community will inevitably bring.

My reaction to the readings, like some contemporary scholars and reformers, unequivocally leads me to believe that the design of urban public education is flawed, unjust, and inequitable. Thus, as Tyack (1974) asserts, any change for a more socially just educational system “will take persistent imagination, wisdom, and will” (p. 291). Therefore, in interrogating both seminal and contemporary texts on urban education, it is clear that if the success of equitable and effective urban education lay on its design, then the success of the design lay in reforming social and theoretical paradigms toward an education which is people-centered, malleable, and interdependent.

## **Design Thinking**

*The need for transformation is, if anything, greater now than ever before. No matter where we look, we see problems that can be solved only through innovation: unaffordable or unavailable health care, billions of people trying to live on just a few dollars a day, energy usage that outpaces the planet's ability to support it, education systems that fail many students, companies whose traditional markets are disrupted by new technologies or demographic shifts. These problems all have people at their heart. They require a human-centered, creative, iterative, and practical approach to finding the best ideas and ultimate solutions. Design thinking is just such an approach to innovation. (Brown, 2008, p. 92)*

In order to approach and critique the current design of public education with the intent to offer a salient alternative, establishing a foundation of design thinking is necessary. Design thinking is marked for its ability to frame complex problems and utilize a multi-disciplinary, collaborative style to create solutions which best fit the need of those who interface with design flaws. Design, a term most often relegated to aesthetics, is subverted in this context or expanded, moving away from banal boundaries of design (Heskett, 2002, p. 1) into a sphere where the sophisticated nexus of human behavior, desires, and interactions are tapped. Tim Brown, CEO and president of IDEO—one of the most successful consulting firms in the world— defines design thinking as “a methodology that imbues the full spectrum of innovation activities with a human-centered design ethos. By this I mean that innovation is powered by a thorough understanding, through direct observation, of what people want and need in their lives and what they like or dislike about the way particular products are made, packaged, marketed, sold, and supported (p. 86). In short, design thinking views innovation as an interactive and iterative process where human behavior is the source to begin considerations for change.

Typically termed as “end-users” or “practitioners,” those individuals who interface with a system daily, are viewed as content and systemic experts. Design thinkers play a sophisticated role of anthropologist, facilitator, researcher, critical viewer, and problem solver—looking at the system as a whole to develop ideas which are constantly honed, reviewed, and re-seen. Roger Martin’s article, “How Successful Leaders Think,” articulates the necessity of design thinkers (or as he terms integrative thinkers) to view systems holistically and critically asserting:

*Integrative thinkers don't break down a problem into independent pieces and work on them separately or in a certain order. They see the entire architecture of the problem—how the various parts of it fit together, how one decision will affect another. Just as important, they hold all of those pieces suspended in their minds at once. They don't parcel out the elements for others to work on piecemeal or let one element temporarily drop out of sight, only to be taken up again for consideration after everything else has been decided. An architect doesn't ask his subordinates to design a perfect bathroom and a perfect living room and a perfect kitchen, and then hope that the pieces of the house will fit nicely together. (p. 66)*

Thus, design thinking is very similar to other reform approaches in that it seeks to find relevant solutions, however what makes design thinking distinct is the way in which it approaches and arrives at solutions—through the design process. “The design process is best described metaphorically as a system of spaces rather than a predefined series of orderly steps. The spaces demarcate different sorts of related activities that together form the continuum of innovation” (Brown, 2008, p. 88). The spaces represent clarity of scope and problem, the activity represents cognitive tools to help reveal and resist possible solutions. These cognitive tools or strategies are given many names, but the most commonly known and used are identification, ideation, and implementation. Identification is rooted in recognizing a problem or opportunity which motivates a need for solutions. Ideation is the process of “generating, developing, and testing ideas that may lead to solutions” (p. 89). Implementation is steeped in applying those generated ideas as a solution to the initial problem. These tools are fluid with the expectation of moving through the cycle of identification to ideation to implementation multiple times to develop the right solution or solutions. As is the case with most large scale, systemic issues, multiple forces are at play making the solidification of success all the more problematic.

Design thinking gives us both a conceptual and practical process which can handle the scale and sophistication of systems, namely in this context, public education. Design thinking is imbued with what Noblit and Pink refer to in “Urban Education in the Globalizing World,” as intersectionality—“looking through multiple lenses at the same time in order to bring urban education in the sharpest focus possible” (p. xviii). In contemporary discourse it has been noted that multiple solutions are needed in order to successfully transform public education. Noblit and Pink state that “the

*Design Shift, System Shift: A design thinker's multimodal approach to urban education* reform of urban education, independent of context, must rest on multiple rather than single interventions" (p. xviii), Payne states that "[t]he patient has multiple diseases, and any of them can be fatal" (p. 45), and in "Organizing Research and Development at the Intersection of Learning, Implementation, and Design," William R. Penuel et al assert:

*An enduring goal of research in education has been to identify programs that can reliably work in a wide variety of settings so that such programs can be scaled up to improve system-level outcomes. But the observed treatment effects of nearly all programs vary significantly from setting to setting, and even the most promising programs have proved difficult to scale up. Improving educational systems, moreover, requires more than the adoption of effective programs; it demands alignment and coordination of the actions of people, teams, and organizational units within a complex institutional ecology. (p. 331)*

Design thinking provides a sophisticated process to understand and frame these multiple problems in order to generate successful solutions. These solutions are pushing for a social and theoretical paradigm shift toward education which is people-centered, malleable, and interdependent. Additionally, design thinking can adapt to the nuanced scales and levels of the public education system—be it policy, administration, how schools interface with city services, the school board, the school itself, teacher unions, the neighbourhood, or a combination of all the above. Because design thinking is a process steeped in people-centered design, it is transferable to all levels, all circumstances, and all combinations.

## **People Centered**

For decades, policy researchers have observed that strategies for producing alignment and coordination only from the top down rarely work (e.g., Cohen, Moffitt, & Goldin, 2007; Elmore, 1980; Rowan, 2002). Berman and McLaughlin (1975) observed that teachers' adaptations of programs at the classroom level, not policy makers' plans, largely determine programs' effectiveness. Implementation problems evolve, moreover, as programs go to scale, as a consequence both of the adaptations teachers make and of changes and variations in environments (McLaughlin, 1987). Successful scaling, most policy researchers agree, depends on local actors—especially district administrators, school leaders, and teachers—who need to make

continual, coherent adjustments to programs as they work their way through educational systems (Weinbaum & Supovitz, 2010). (p. 331)

In the readings discussed and analyzed, it is evident that educational paradigms influence actions which result in a top down approach and resist any move to being people-centered. For example, Tyack's (1974) *One Best System* illuminates tension which arises from those conducting and implementing policy with regard to how school should be run versus those who are actually teaching and learning. Furthermore, larger implications around power and oppression are referenced with regard to who can and cannot legislate based on race, sex, religion, and class. For example, Tyack (1974) discusses the tension which arose among Irish Catholics and Protestants within New York and Boston stating, "This quest for Catholic power aroused as much consternation then as the demand for black power today. When the Catholics sought successfully to eject the Protestant Bible from the common school, Protestants thought they were attacking the very basis of American institutions. When they demanded the removal of biased textbooks, citizens and school officials thought Catholics were trying to control the curriculum" (p. 86). This pluralistic tension between Protestant and Catholics is a symptom of an underlying systemic flaw—policy which is inequitable and informed from a limited, hierarchal approach and not generated with the community. The advent of the Catholic school system did not diffuse tension within the urban educational landscape, it simply compartmentalized it. A move to shifting ideology from top down to center out must occur before successfully framing and resolving systemic flaws in the design of urban education.

Payne's (2008) *So Much Reform, So Little Change*, furthers this thought by discussing how educational paradigms of top down thinking are ineffective. In his poignant case studies on the deficiencies in urban educational reforms, Payne describes a particular story of a principal's efforts to turn around Boston's Mather School. He tells the story of Mr. Kim Marshall, a successful and seasoned educator who is tasked with increasing "collegiality and collaboration among teachers" (p. 32)—a common reform effort in the 1990's according to Payne. Mr. Marshall tries repeatedly to implement changes by bringing in "curriculum consultants, searchin[ing] for better assessment tools, increase[ing] the quantity and quality of professional development, and consider[ing] a range of whole-school reform options" (p. 34), however teachers consistently approached these resources with pessimism and disregard. This is due to what Payne describes as lack of "social trust" (p. 35) among the many interpersonal and often bureaucratic



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levels of relationships in public education. The teacher's dissension also illuminates ignorance on the part of reformers who operate from a top down paradigm. As made evident by Payne's case study, without a clear understanding of context, from the practitioner's point of view (i.e. teachers in this study), reforms in public education are doomed to fail as he asserts:

*Much of what Marshall tried to implement was sensible and appropriate. These were good ideas being pushed by a serious and well-informed principal, yet most of them went nowhere for a long time. Time and again, he found that the kinds of structural changes he could make did not affect the core dynamics of his school. Repeatedly, the most difficult barriers proved to be the warped character of social relationships. The moral of the story is that good ideas will not save us. Just bringing good ideas into schools with severely damaged social infrastructure is tantamount to bringing a lighted candle into a wind tunnel. (p. 34)*

The question then becomes, What besides good ideas will in fact save us? The answer, of course, is not simple, but is rooted in what Payne alludes to as the "severely damaged social infrastructure." Teachers, administrators, parents, and community members are all practitioners within the damaged infrastructure, therefore investigating the causalities of deficiencies from their point of view, a practitioner-centered point of view, is the paradigm shift which needs to take place in order to truly frame the nexus of factors which undergird apathy toward true reconstruction of public education.

Lipman's (2011) *The New Political Economy* again reveals the impact of educational paradigms which perpetuate a top down approach to policy. She makes a sound case as to how "neoliberal economic policies and practices produced a massive transfer of wealth upward to a tiny group of global superrich, benefitted a top sector of professionals and managers, and widened economic inequality within and between countries on a world scale" (p. 10). She also convincingly established that neoliberalist beliefs influences economic policy toward urban development which results in gentrification and displacement of working class and low income communities, politicizes race by pathologizing urban poverty as "ideological ground to warrant dismantling homes and schools" (p. 16)— thereby justifying supplanting them with "mixed income solutions" (p. 16), and "constructing consensus for neoliberal education policies through the

advocacy of “corporate actors” (p. 16), and the exploitation of “‘grassroots’ actors” (p. 16).

Lipman often discusses the neoliberal strategy of politicizing rhetoric so that any alternative or resistance to neoliberal moves is fore grounded as resistant to change, citing poignant quotes from both US Secretary of Education, Arne Duncan (p. 45) and President Obama (p. 12). However, Lipman admittedly reveals a nonexistent counter to neoliberal’s rhetorical strategies asserting:

Yet if neoliberals have succeeded in appropriating the discourse of change, in part this is because the power to act as a consumer has resonance in the face of entrenched failures of the welfare state model and administration of public education, particularly in cities (Pedroni, 2007). There is an urgent need to transform public institutions, starting with a thoroughgoing critique of the racism, inequity, bureaucratic intransigence, reproduction of social inequality, reactionary ideologies, disrespect, and toxic culture that pervades many public schools and school districts that purport to serve working class and low-income children of color. This critique was long made by progressive critics of public education (e.g., Anyon, 1980; Apple, 2004; Irvine, 1991; Kozol, 1992). The resonance of the neoliberal discourse speaks to the failure of progressives to frame a counter discourse and vision of a more inclusive, democratic, robust “public” that brings to the fore perspectives, interests, and visions of marginalized groups: women, people of color, immigrants, sexually marginalized people, and so on (Fraser, 1997, p. 65)

Although the dysfunction of the welfare state model of education has created opportunities for more choice/free market solutions to public education—particularly urban public education—a perpetuation of top down thinking is pervasive in the neoliberal model as well. As Lipman states, “In the absence of alternatives, wading into the system of mixed-income schools, choice, and charters at least allows for some individual agency for those able to exercise it” (p. 99). Thus revealing that the neoliberalist influence on public education is a harmful vehicle to perpetuate inequality and co-opt public systems as a new platform for capital gain, but also the practitioners most involved in the system (administrators, teachers, parents, community members) are not necessarily stakeholders in reform, but “actors” (p. 16) who essentially are choosing the lesser of two evils at a particular moment in education.

The top down approach in both the Keynesian/welfare state and neoliberal economic models further reveals the lack of a people-

*Design Shift, System Shift: A design thinker's multimodal approach to urban education* centeredness in education policy. Lipman positions public systems, namely public education, in a space void from any role in perpetuating failure for poor, working class, and communities of color, however often alludes to their complicit role in failing urban communities, as she asserts:

*The predictable failure of school districts to meet NCLB targets set the stage for corporate and state actors to move the discourse of education markets from a side role in urban education to the main event. Policy makers justify these moves by a narrative of unaccountable teachers and schools and unresponsive and change-resistant public institutions. There is a lot of truth to this account for some parents and community advocates who have been fighting persistent battles to get real change in their public schools (Pedroni, 2007, p. 46)*

Lipman also attacks the board structure under Chicago's mayor-controlled system asserting that "decisions are made by unelected corporate bodies and rubber stamped by appointed, corporate-dominated boards, while democratically elected bodies are supplanted by appointed advisory boards," (p. 72). Unfortunately this does exist, however Lipman positions this attack without also identifying the same can be said of traditional, democratically elected school boards. She also fails to further analyze board structures of charter schools which exist outside of a mayoral controlled context in which charter school boards are traditionally community member heavy.

However, Lipman's stance that neoliberal economic policy "masks the inequity it actually produces" (p. 144) is valid namely due to the philosophy or belief systems of oppression Lipman successfully argues undergird neoliberal economic policy. In addition, education policy within the welfare state is also complicit in perpetuating inequity. Thus, both schools of thought, sans a paradigm shift to developing policy beginning with constituents, are problematic. Without shifting philosophical paradigms of urban education to a people-centered approach, the system can never truly be healed.

## **Malleable/Iterative**

Urban institutions are characterized by rigidity, that is, a stronger commitment to the maintenance of the status quo than to change. As populations and the complexity of organizations increase, bureaucracies

develop and become entrenched. Again the paradox—large scale complexity demands flexibility, but to function and survive institutions must have continuity, consistency, and stability; not only are these institutions characterized by rigidity, but the people they serve also show rigidity in their behavior—adaptation and change are hard to come by. (Gordon, 2010, p. 203)

The design of public education must also be malleable to the demands of a contemporary urban and increasingly global society. Tyack (1974) unpacks educational leaders following a trend of appropriating capitalistic models (both factory and corporate) for systemizing urban schools stating, “[E]ducational leaders in Boston were also fascinated with the thought of applying the factory model to the systemization of schools. Like the manager of a cotton mill, the superintendent of schools could supervise employees, keep the enterprise technically up to date, and monitor the uniformity and quality of the product” (p. 41). Imbuing schools with a regimented, hyper structured framework certainly fulfills the modernist sentiment of efficiency, however is extremely problematic when dealing with pluralism and equity. For certainly, this approach could work for some students, however not for all. Instead, a move to the malleable must undergird thinking around urban education design. As Gordon (2010) states, “[T]he capacity to adapt and readapt in the face of contradiction and change emerges as a crucial survival skill in urban society. Perhaps adaptation in relation to change may be the most important human skill to develop, as the population becomes more urbanized and more interdependent within modern society . . . people must develop the capacity to adapt, to use themselves in creative ways in response to the varied stimuli that are increasingly present and the pluralistic standards to which all people are increasingly held” (p. 192.) If adaptability is key to the development of people within a modern society, so too must their systems.

Noblit and Pink also articulate the crucial need for malleability in framing systemic flaws in public education. Their solution to seeking the malleable is through viewing public education through a series of analytic lenses” (p. xviii)—culminating into a multi modal view defined as “intersectionality” (p. xxxiii), stating:

*This construct can be seen in the movement away from the idea of linear, cause-effect thinking central to social science grounded in positivism, to thinking in post-positivist social sciences, the naturalistic or interpretive paradigm, that acknowledges both the social construction of reality and the existence of multiple and*

*Design Shift, System Shift: A design thinker's multimodal approach to urban education simultaneous causality (Lincoln & Guba, 1985). The thinking in play here, of course, is that life is experienced differently because individuals are different. . . This sensitivity to the ways in which individual and group characteristics both interact simultaneously and play out differently in different contexts has enabled a significant shift in our understanding of the variability of the day-to-day lived experience. The examination of intersectionality of these characteristics, the recognition that such characteristics are never in play alone but always function in concert with each other, opens up new ways for us both to understand how urban education functions and to conceptualize new ways of attacking the long-standing problems associated with urban education. (p. xxxiii-xxxiv).*

Noblit and Pink (2007) intrinsically have responded to their findings of moving toward people-centeredness. By anchoring their research on viewing practitioners in education, they have determined that the experiences of those in education are varied and impacted by “multiple and simultaneous causalit[ies]” (p. xxxiii), therefore effective solutions to meet these needs must also be multiple and simultaneous. This presents a sophisticated and nuanced response to framing systemic educational problems because the “problem” is both pervasive and allusive. Pervasive in those common patterns of racism, inequity, bureaucratic obstinacy, reproduction of social inequality, stale ideology, disrespect, and dysfunctional culture exist, broadly speaking, in most urban schools. Allusive because the factors contributing to these systemic problems are specific to each school and each community, therefore the solutions warrant specific attention, but often are products of generalized policy—thus revealing a lack of malleability in policy decisions, therefore resulting in a lack of iteration with regard to implementation.

Payne (2008) speaks to this in failed attempts of reform taking on a one-size-fits-all approach to best practice stating:

*The discourse around Best Practices is problematic for just this reason. The basic idea is that we should identify those practices that seem to make the most difference for children and replicate them as widely as possible. As usually practiced, it can be a pretty decontextualized way to think about change. If you are in a school with a culture of faculty cooperation, inquiry-based learning, let us say, can look like a really good thing. Try to export that to a building where faculty don't help one another solve problems, and you may*

*not recognize the result. . . That is, the Best Practices discourse lends itself to decontextualized thinking, reducing the problem of urban schooling to a cognitive one: if only our teachers and principals knew how they do it in the Big City. In fact, taking the idea of organizational irrationality seriously means that we have to be careful about all reforms that are essentially cognitive, that is, all reforms which take the form of saying that we just need to get some particular information into the heads of people in schools, and that will make a fundamental difference. (p. 63)*

Pushing reform on a school system is not productive, however working with practitioners to frame issues in order to work collaboratively toward a people-centered solution is; however neutralization of power structures and the disentanglement of sociopolitical, socioeconomic, and sociocultural webs becomes a very real outcome. One cannot assume that public education has endured over a century with entrenched inequality if it did not benefit what Lawrence Goodwyn refers to in *The Populist Moment* as the “established order” (p. xviii). By engaging practitioners and citizens in framing issues around public education, power structures are challenged and folk are empowered and informed. Thus, the consistency of those in power, remaining in power becomes threatened.

For example, in *Real Education* by Charles Murray, he asserts that NCLB is inherently flawed and that children in fact are guaranteed to be left behind due to not adequately having an opportunity to demonstrate excellence in their predisposed strength. A believer in Howard Gardner’s multiple intelligences—bodily-kinesthetic, musical, interpersonal, intrapersonal, spatial, linguistic, logical-mathematical, and naturalistic—Murray claims that schools are only held accountable to how well students perform linguistically and mathematically. Although Murray’s theory on student expectation and scholar identity are problematic because they threaten to reinforce racist tenets such as eugenics and academic tracking, he uproots the rigid relational structure between policy and high stakes testing. NCLB, a large, top-down driven policy, is created in such a way that malleability to meet the specific needs of all urban schools is almost impossible. State departments of education have hardly any room to iterate, and as the hierarchal trail finds the superintendents, then principals, and finally teachers and parents, the small instances of flexibility become nil. However, there are solutions which can be framed at each level (nationally, per state, per city, and per neighborhood) by engaging in collaborative work

*Design Shift, System Shift: A design thinker's multimodal approach to urban education* with practitioners to frame issues and deliver solutions which are centered around people's needs and developed to be malleable, anticipating that people's needs will inevitably change.

## Interdependent

What sense does it make to try to reform urban schools while the communities around them stagnate or collapse? (Warren, 2005, p. 133)

One measure of social capital in a neighborhood is the number of gathering places where residents meet to talk and interact—shops, coffeehouses, libraries, bars, bookstores.”(Grant, 2009, p. 59)

The design of education must push for interdependence with other urban systems. The perpetuation of schools and districts attempting to meet the needs of students and families due to larger socioeconomic issues has plagued schools for over a century. As Tyack (1974) notes:

*Superintendent William Maxwell felt deeply about the suffering of the poor. He knew that thousands of children came hungry to school each day and that stomach pains gnawed at them as they tried to study; he thought providing cheap lunches in schools 'most pressing of all school reforms.' He proudly told of a principal on the lower east side who was so loved and respected that as she picked her way through the crowds and the pushcarts on the street, children smiled at her. He helped to install baths in schools so that children who had no water in their flats could get clean. He marveled at the ability of teachers who instructed pupils who could speak no English; in one school alone there were twenty-nine different languages or dialects. (p. 179)*

Any contemporary educator, administrator, or scholar knows well this passage is just as applicable today as it was in the early twentieth century. Issues around need—food, clothing, shelter—the power of exceptional school staff who push into the community, and the need and demand for quality ESL teachers is still a very present need for most urban students and families, yet systemic shifts in how schools can improve these services in concert with publically funded entities or leverage other public services seems to still be allusive at best.

In “Communities and Schools: A New View of Urban Education Reform,” Mark Warren echoes a similar sentiment stating, “children cannot learn well if they lack adequate housing, health care, nutrition, and safe and secure environments, or if their parents are experiencing stress because of their low wages and insecure employment (Duncan & Brooks-Gunn, 1997). Urban schools must do a better of educating inner-city children, but it is patently unreasonable to expect that they alone can compensate for the effects of poverty and racism (Rothstein, 2004)” (p. 134). Warren’s insightful claim speaks to the framing of how systemic flaws in public education are perpetuated or nurtured by lack of orchestration with other public systems. Be it health care, mental care, spiritual opportunities, the safety and upkeep of public space, accessibility to healthy foods, public transportation, security of neighborhoods, housing availability, or employment, public systems can be powerful resources to help support public education, however without clear and aligned partnerships, they can become difficult and threatening spaces to navigate—creating further obstacles for parents and students.

Shifting conceptions around school—what it looks like, what it does, how it operates, and how it is structured—must be viewed again and again with a critical lens, a postmodern sentiment, and a radically persistent energy. However, at the crux of this move—toward a system designed for the people, by the people—rests finding the hegemonic sweet spot between structure and agency, efficiency and democracy, accountability and autonomy, and authority and equality. As Helfenbein (2011) asserts:

*Only recently in the history of educational research have scholars concluded that the tendency to think of schools as a bounded system—systems that begin and end with four walls and the sounding of school bells—was simply not enough. Schools, in fact, are very complex social systems that are all bound up in a ‘tangled web of practices’ that include connections to government (local, state, and federal), community as a set of material conditions, historical context, economic structure and shift, and fluid notions of community, culture, and identity. Attempting to understand practices in educative spaces requires the embrace of multiple levels of analysis and inquiry. (p. 319)*

By positioning urban schools in a broader sociocultural, sociopolitical, and socioeconomic context, it becomes clear implications around the source of negotiating the hegemonic tension between structure and agency lies not



*Design Shift, System Shift: A design thinker's multimodal approach to urban education* only in the realm of the spatial, but also in the realm of the personal where the delicate work of individual change must occur.

For example, in the readings analyzed, powerful connections to the city as critical space illuminate just how successful schools are dependent on the recognition that public systems must be interdependent. Payne (2008) recognizes this in his discussions of city agencies enabling “encrusted, tradition-bound institutions” (p. 126) and noting that “[t]he fragmentation of city agencies means that there is less coherent planning and more unevenness and inefficiency in the distribution of services” (p. 126). Warren (2005) also expresses his concern with public urban education’s lack of interdependency to community organizations as he claims, “the stark reality of most urban schools is one of isolation and disconnection from the neighborhoods they serve. Most teachers and staff commute to their schools and have little understanding of, or connection with, the lives of their students outside of school, in their families and neighborhoods. School leaders seldom see their school as one of a set of institutions that can anchor poor neighborhoods in partnership with other community organizations” (p. 136). And Lipman (2011) reveals how lack of interdependence among public institutions is a power strategy for perpetual displacement of the low income, working class, and people of color stating:

In the United States and elsewhere, the cycle of neglect, racial containment, and redevelopment of central cities is justified by the pathologizing racial discourse of the “ghetto” (Gulson, 2007; Moyhihan, 1965). Urban “blight” as a discursive category is applied selectively to areas of the city that have been abandoned by capital and public investment; generally they are African American, Latina/o, or immigrant (Weber, 2002; D. Wilson, 2006). . . displacement from schools and communities is more than physical disruption. It breaks a web of human connections in which the social and cultural practices of daily life are rooted, race and class identities are formed, and community is constituted. (p. 34)

By viewing the city as a critical space, implications around displacement as a result of inequitable economic policy become more severe and the importance of alignment between public systems all the more significant. Without an alignment to public systems within a community, one becomes fragmented and isolated mirroring the structure of stratified public systems themselves. This fragmentation, as Lipman states above, collapses relational development and trust—the essence of community and one’s identity in it—thrusting a simultaneous trauma on both an individual and their community.

This trauma often results in the urban space being transformed for some into a dangerous ground to navigate. Social capital and the social trust necessary to build it become broken and in the context of schools, this can be devastating. As Robert Putnam notes in *Bowling Alone: The Collapse and Revival of American Community*, “Child development is powerfully shaped by social capital. A considerable body of research dating back to at least fifty years has demonstrated that trust, networks, and norms of reciprocity within a child’s family, school, peer group, and larger community have wide-ranging effects on the child’s opportunities and choices and, hence, on his [or her] behavior and development” (p. 298). Payne (2008) echoes a similar opinion stating, “High quality human relationships are strongly predictive of whether or not a school can gather itself together to get better. When one controls statistically for the usual suspects—racial and class composition of the student body, stability of student body, school size, teacher credentials and experience, and concentration of poverty in the neighborhood—the relationship between trust and school improvement remain strong” (p. 37). Therefore, viewing the city as a critical space which nurtures networks and support systems is crucial when considering the impact of public systems being an interconnected component of framing issues regarding public education.

The alternative to interdependence of public systems, namely public education, results in characteristics which have pervaded urban schools. In *Hope and Despair in the American City: Why There Are No Bad Schools in Raleigh* Gerald Grant provides a rich history and deconstruction of how interdependence on public systems, specifically housing and economic policy, is crucial to urban education reform. Most notably, Grant unpacks his logic with accessible data and potent stories. One in particular, an investigation into teenager’s experiences in Westcott, New York, demonstrates how a lack of orchestration of public systems leaves urban youth neglected in multiple ways as he states:

The aim of the research was to assess the social capital of these teenagers and to discover how they negotiated their world. Each teenager was conceptualized as being at the hub of a wheel, and each relationship or bond the teen had with another person was a spoke in that wheel. We were particularly interested in what supportive relationships teenagers had with adults—parents or guardians, mentors in youth organizations, coaches, music teachers, ministers or people at work who took an interest in them. . . . Several teenagers we interviewed had jobs in fast food joints and cited someone at work they could turn to for help, maybe. But other than an

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occasional employer, no one was holding these kids accountable, expecting them to work hard or measure up to any ideals. (p. 45-7)

As evident by Grant's work, the consequence to public systems which do not take into account the impact of interdependence, is hollowed urban cores which continue to be racially and economically stratified.

## Conclusion

*Education is life and death. Period. (Stovall, 2011)*

In interrogating both seminal and contemporary texts on urban education, it is clear that if the success of equitable and effective urban education lay on its design, then the success of the design lay in reforming social and theoretical paradigms toward education which are people-centered, malleable, and interdependent. Tyack (1974) encapsulates this same sentiment—a push toward shifting dominant ideologies and paradigms, and moving toward a more sophisticated view of public education, asserting:

*Effective reform today will require reassessment of some cherished convictions about the possibility of finding a one best system, about the value of insulating the school from community influence, about the irrelevance of ethnic differences. To succeed in improving the schooling of the dispossessed, educators are increasingly realizing that they need to share power over educational decision-making with representatives of urban communities they serve, that they need to find groups, that they need to develop many alternatives within the system and to correct the many dysfunctions of the vast bureaucracies created by the administrative progressives. (p. 290-291)*

Tyack's suggestions intrinsically hit on some of the cognitive tools of design thinking and push for a more nuanced viewpoint in framing the issues which have plagued urban education as well as insight on how to develop viable solutions.

Noblit and Pink (2007) discuss the work of Gerald Grace, noting his view that “situating an analysis of education in an intersectional interrogation of the cultural, economic, historical, political and social relationships in a given society” (p. xxxv) is crucial. This again speaks to a cognitive tool of design thinking—people centeredness. And disentangling the complicated nexus of

urban space and the many layers of its meaning serves as a strong and difficult task which requires a multimodal approach. As Noblit and Pink explain, conceptualizations of urban are problematic, and proper interrogation of the terms and conditions which led to their meeting is the source for transformation, as they assert:

*Some argue that urban can be demarked by the size and density of populations, which, while true, misses the mark entirely. If urban is a context, it is a context that is nested, constrained, and constructed. It is nested in that urban must always be relative to suburban and rural. A city is nested in a state, as state in a region, a region in a world. It is constrained in that an urban area is usually bounded by other geopolitical borders. It is also constrained by the cultural and economic assumptions about what the city is and how life proceeds therein. It is constructed in that any city is made over time by people and by power. Cities are constructed by the deep-seated beliefs of residents and dominant classes and by multiple and intersecting forces of change. It is nested, constrained, and constructed in and by local interests, public policies, worldviews and ideologies, global capital, and most importantly, by the necessities of everyday survival. The urban context so defined offers little definitiveness—it remains a problematic to be studied, to be interrogated, and hopefully transformed. (p. xvii)*

This problematic requires a cognitive style and practical sensibility which design thinking offers—a collaborative belief and action system which creates a methodology to put people and their views as the foundation with which to generate possible solutions. Design thinking provides an infrastructure to simultaneously define and negotiate urban as place, urban as space, urban as locale, urban as process, and urban as construct. And in doing so, can adapt to the ever evolving and increasingly globalization of cities, cultures, communities, and urban schools.

Lastly, Lipman (2011) gives a beautiful guide into what the shift in social and theoretical paradigm should consist of. A guide that is both “concrete and metaphor” (p. 167), both ethical and systemic that will demand much change within ourselves in order to seek change in our society. She reminds us that our country’s public systems are products of an imperfect and unethical framework which houses deeply entrenched oppressions declaring:

*Design Shift, System Shift: A design thinker's multimodal approach to urban education*

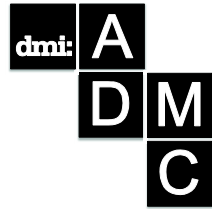
*This insight opens a space to rethink the struggle for democratic public education by reframing what we mean by 'public.' There is no point in romanticizing public schools or other public institutions. While they have provided free universal education and been spaces where one can make claims for justice and are sometimes empowering and liberating, they have historically been raced, gendered, classed, and sexed spaces complicit in the reproduction of social inequalities. (Apple, 2004, 2006; Fraser, 1997; Pedroni, 2007). Exclusionary, paternalistic, disrespectful, event brutal treatment of African American, Latin[a/o], and other people of color and women at the hands of public housing authorities, public hospitals, the police and the judicial system, public welfare agencies, elected officials, city agencies, and schools make public institutions deeply problematic places. (p. 145)*

Lipman, as well as a majority of writers mentioned above, are pushing intrinsically for a people-centered approach, a term representing the keystone of the design thinking process concentrated on identifying challenges, framing opportunities, managing complex situations, and generating new approaches. By engaging in the realm of the personal as a conduit into the realm of the public, Lipman questions the very ethics of our society, of us as citizens and encourages us to re-see, rethink, and re-shift our notions of progress, of consciousness, of solidarity. And from that raw and vulnerable place begin the process of constructing a purely humanistic, unconditional social imaginary (p. 159). This social imaginary, as evidenced by the writings discussed, is possible, is necessary, but requires a multitude of solutions which are anchored in people, place, and community.

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## Education in Cross Enterprise Engineering Design

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*The past projects in the discipline of Cross Enterprise Engineering have successfully resulted in a simple 4-phase model for university use. This model is provided for general application in the initiation of projects in the university group and team work, both locations based and independent for a domain. The procedure, which is characterized by technical grown boundary conditions, is applied to a sample project accomplished in interdisciplinary cooperation between designers and engineers. Core aspect is the cross domain combination of the procedures of a designer and an engineer in project work. A comparison shows the critical points and significant characteristics of both approaches. After analyzing the project, conclusions for following tasks are shown and key elements for the integration in the curriculum are presented. A final outlook shows incentives for further projects, combining new domains in the curriculum next to the interdisciplinary team work.*

**Keywords:** Engineering Design; Industrial Design; Cross Enterprise Engineering; Design Optimization; Cross Domain Cooperation

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## Introduction

It has long been known that the success of a product not only depends on its functional benefits. (Hammad, 2012, p. 25) In addition to a reliable use, the design of a product influences the purchase decision of potential customers. Especially those market segments which are technologically matured and defined by a high competition are affected. Customers have the choice between technologically resembling products from different manufacturers, which mainly differentiate in their design.

To establish a unique selling point for a company, modern products are a priori designed to evoke a positive emotional response of the potential customers. Thus, the design of a product becomes a key to the emotional influence. (Hammad, 2012, p. 25)

*Design is the shape and draft of a product which includes all consciously created properties of a real or virtual object, in its form and function. (Erlhoff, 2008, p. 196)*

The design of a product aims at a number of effects, which are initiated by designer's conscious attitude during the process of product development. In addition to the emotional significance the notion "design" stands for sustainability, growth, function and aesthetics in this project. The tags process, ideas, tools, experience and systems are also associated with the definition of the design meaning. (Hammad, 2012, p. 44) These and other connotations result in the impact of a design, which are subjectively perceived by the customer, such as optimism, physiology/ psychology, personal identification, ergonomics or well-being. Therefore the challenge for innovative products is not only on the technological maturity, but rather on the combination of design and technical functions. The challenge is to set up a synthesis of the both domains to satisfy the customer's needs and therefore to stand out as a company from the competition.

## State of the art

To prepare engineering students for this challenge, the Institute of Product Development ("Institut für Produktentwicklung und Gerätebau") of the Leibniz Universität Hannover is increasingly focusing on the implementation of interdisciplinary projects. The objectives on a meta level as a result of these projects during the engineering studies are derived from the simple basic idea:



- Cross domain cooperation as a key factor for understanding the Simultaneous Engineering process (SE process)
- Motivation through the practical application of theoretically acquired knowledge
- Practical topics of social relevance, such as “Green” (e.g. ecologically), “Grey” (e.g. healthcare) or “Blue” (e.g. efficiency) products
- Students determine the choice of a topic, relevance of a topic to be aware of, bring one's own abilities
- Understanding the project work process, such as research, presentation or scientific documentation
- Technical skills such as drawing, calculating, prototyping

Students of the Leibniz Universität Hannover performed a number of projects that are based on the described meta objectives. Figure 1 depicts an overview of the implemented and planned projects, with different orientations. (Lachmayer, 2014)

Topics	Green	Grey	Industry partner	Objectives
Automated staircase light	●			TW
LED Photo Ring	●			TW
Quadrocopter				TW
Gear unit: Model racing car				TW
Sterling engine	●	●		CEE
Walking frame		●		CEE
Grinder		●		TW
Torsion test bench				TW
Car Key-Fob			●	ID/ED
Bike Lights	●	●	●	ID/ED

Figure 1 Previous projects that took place under the supervision of the Institute of Product Development, Leibniz Universität Hannover. Objectives: Team work (TW), Cross Enterprise Engineering (CEE) and Industrial Design/ Engineering Design (ID/ED)

The topic definition has grown in its complexity in cooperation with industry partners. Some projects concerning the idea of team work, as well

as on the following CEE issue, have already been performed. The continuation of the recent project ends in a cross domain interdisciplinary collaboration, by combining the ID / ED processes.

The conditions were similar for the 10 different projects. In an extent of 3-4 ECTS points, which represents a workload of about 120 hours per student, a cooperative organization occurred. The project work was scheduled for the students in semester 3-8. To ensure a good technical and methodological support, a manageable amount of 20-30 students per semester was taken into account. In small teams of 2-6 members, students organized their own project workflow. These include not only the selection of operational tools such as the implementation of time and resource planning or setting a communication path. Moreover, the choice of the topic and integration of the individual efforts of the students was on their own responsibility. Thereby the specialization was only limited by the specification of the general topic. Hereinafter, the background of the three objectives will be explained.

### **Team work (TW)**

Baseline projects are carried out by teams of students, located in one particular place. Technically oriented topics require a lot of specific knowledge by the students. Furthermore, the organizational skills of the students are being sharpened by the team work experiences. Scheduling, setting milestones, the definition of interfaces and the agreement with the way of communication are essential skills.

### **Cross Enterprise Engineering (CEE)**

Due to the projects in the CEE environment, the domain specific team work is extended to multiple locations. The specialized domains have common intersections and are consistently technically oriented. For the project implementation in the CEE process, the Institute of Product Development relies on its potential of the NTH association ("Niedersächsische Technische Hochschule" - Lower Saxony Institute of Technology), whose members are the technical universities in Hanover, Brunswick and Clausthal. As represented in Figure 2, the NTH alliance partners are specialized in different areas of expertise, which complement each other perfectly in the CEE context. Also the completed projects could benefit from the expertise of the respective locations.

A major challenge for the participating students is the location independent communication. Without having physical contact, the information exchange and the virtual interface problem acquire a special meaning. The application of modern tools, such as web portals, video conferencing or PDM systems, offers a broad spectrum of communication scopes for the students. Unplug the novel teaching process sequence the three universities obtain a great benefit, in form of a teaching balance and a competence enhancement.

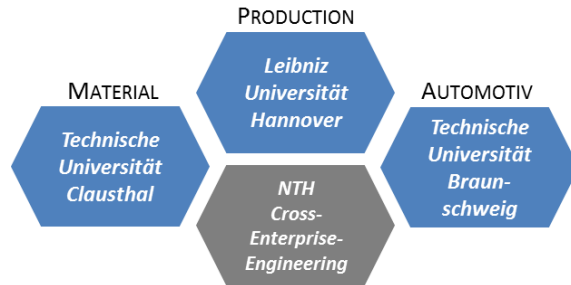


Figure 2 The NTH cooperation focusing on the Cross Enterprise Engineering Process

### **Industrial Design/ Engineering Design (ID/ED)**

The continuation of the location based and location independent domain specific project work is an interdisciplinary orientation. The previously described motivation suggests that this cross domain work consists of combining the design and technical product development domains. The consideration of interdisciplinary as well as the relevant integration in an exemplary application is the subject of the following elaboration.

## **General approach**

As an approach for the TW and CEE processes, the Institute of Product Development has a basic scheme, which is used depending on the orientation and complements for the planning, implementation and application of project work. The phases include all working packages, extends from selecting the project partners, the operational implementation in the student project teams, up to the retrospective consideration of the projects and the final inclusion of the findings into the curriculum. Figure 3 describes this procedure in a 4-phase model. Due to the clearly defined stages the working packages are structured. It ensures that a phase must be completed before the treatment of the next working packages is pending.

The experience of the past projects has confirmed the four stages repeatedly. Clear separation results in a structured and reproducible approach, regardless of the specific project orientation. Because the different phases could be separated analyzed and compared with the phases of another process, a comparison has been reached. The implementation and documentation has an advantage of this strict sequence. Existing knowledge and similar templates can be used in line.



Figure 3 The approach of the CEE application on the meta level

The high abstraction level allows the implementation of the 4-phase model, depicted in Figure 3, to be applied to the different project orientations. So the model is also been used in the given example project (Project 9: Car Key Fob), which provides an interdisciplinary alignment for the first time. Due to the abstract occurrence the phase model is adjusted for the ID / ED process.

### **Stage 1: Plan**

To comply the interdisciplinary spirit and to offer methodological support fundamental organizer are essential. Those decide which basic elements for the teaching content should be involved and which orientation the topics can have. Selecting a subject is of a particular importance, because this factor significantly determines an observance of the meta objectives. In order to avoid designing of purely fictional product concepts, it is advisable to cooperate with an industrial partner, who is responsible for the practical relevance. On the one hand a substantial benefit is the conclusion for the lessons to be learned by the methodological approach. On the other hand there is a gain in knowledge for the industrial partner, who attained innovative concept ideas for its products in addition to the consideration of the methodological development process. Thereby the alliance partners have to cover the skills of engineering and design for the following case study.

The three organizers set the basic framework for the project and agree on meta objectives, which define the content for the students. The objectives also associate in the definition of a project topic. Meanwhile, the operative goals, which should be reached by the students during the project, are defined.

### Stage 2: Initiate

During the initialization phase, the presentation of the project theme for the students takes place. A distinction is made between two separate round of introductions or a common event. The advantage of the separate instructions is that thematic priorities can be communicated to the students. These focal points have to be achieved during the project process. Furthermore, students can be sensitized to the personal advocacy in order to make them represent their own point of view in comparison to a non-specialist.

### Stage 3: Apply

The focus is not the same as in the previous projects on the location independent collaboration in the CEE environment, but rather on the combination of two completely different approaches of problem solving: The approaches of the designers and the engineers.

To illustrate the basic procedure of a designer, the "design thinking" process is used exemplary (depicted in Figure 4). It is defined by iterations and the repeated application of a phase in a multi directional approach, using the trial and error principle. The obtained results are included in the updated product concept indeed, but this is not equal with a gradual development of one model. As the output the design thinking process unfolds several models and their variants. (Plattner, 2011, p. XIV)

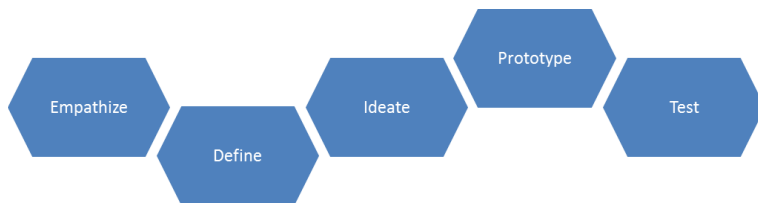


Figure 4 The Design Thinking Process

Clearly distinguished from the design thinking is the problem solving process of an engineer. The widely used approach of the VDI 2221, which is mainly used in Germany, is considered exemplary. The product is defined, designed, realized and finally worked out in its documentation within thorough stepwise process. (VDI 2221, 1993)

Considering the working procedures of the two domains, one of a designer and another of an engineer, reveals different ways of thinking. Figure 5 depicts a comparison of general problem solving strategies with regard to the application level in the aforementioned domains. (Melcher, 2011, p. 148)

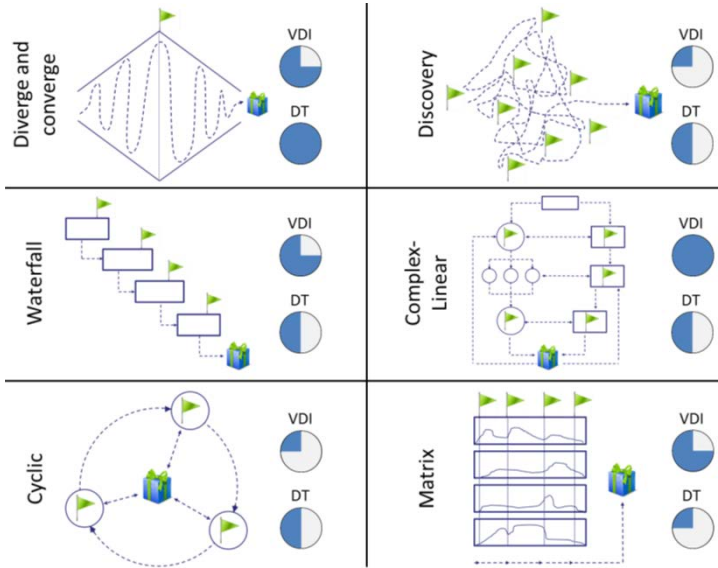


Figure 5 Degree of fulfilment for different ways of thinking, depending on the approach Design Thinking “DT” and VDI 2221 “VDI”

The challenge is to combine the procedures of designers and engineers, in such a way, that not only technically advanced, but also emotionally appealing product could be created. The aim of the latter is that the potential user has to identify himself with the developed product. At the same time, technological developers must have sufficient freedom of action to elaborate an innovative product. Only through this balancing act of combining designing and engineering spheres, the objectives of the two domains can be achieved.

Due to the time constraints of the university administration, the two development processes are not tracked up to production stage. The output is defined as a CAD model, which can be transferred in a physical model for the final illustration, using the rapid prototyping process (RP method). In Figure 6, the exemplary approaches, as well as their phases are represented. Relevant disciplines for the later combination are marked by a boundary.

According to the Figure 6, major phases of designers' work include the processes of empathizing, defining, ideating and prototyping. For the engineers, development of the basic specification, function structures and basic solutions, as well as elaboration of preliminary designs and an early stage of the overall design are sufficient.

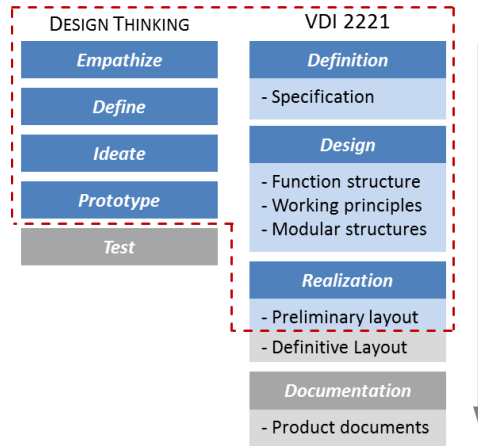


Figure 6 The phases of the design thinking process and the VDI 2221, which are relevant for university application

#### Stage 4: Conclude

In the final phase, the project is analyzed and examined retrospectively with the focus on the compliance processes and their deviations. It is also defined whether the set objectives has been achieved. A survey evaluation, carried out by the student, should provide information about the compliance. The results show how students managed the process handling and what compromises were added to their own approach.

This consideration creates numerous benefits and opportunities for both educational and industrial sphere. On the one hand, it gives some improving conclusions for the future curriculum: the establishment of knowledge reduces the deficits in future projects and completes the educational program of the Leibniz Universität Hannover. On the other hand, this method demonstrates a possible procedure for the acquisition of new ideas. The industrial partners get the expected benefits from the findings, which have a potential to be included into the company's innovation pool.

## Exemplary application

The theoretical application is illustrated by the example project, initiated by the Institute of Product Development of the Leibniz Universität Hannover.

### Stage 1: Plan

For the required support in the domains of engineering and designing appropriate assisting skills are required. The Leibniz Universität Hannover, represented by the Institute of Product Development, takes over the engineering part. For supporting the design aspects in product development the Hochschule Hannover, Faculty III (Media, Information and Design) is chosen as the second alliance partner.

The selection of an industrial partner is based on the potential of possible project topics. A topic with which the students are in contact is considered as useful. Therefore, the cooperation with a company, which is active in the Business to Consumer (B2C) market, is preferred. Searching an industrial partner causes no difficulties. The potential of acquiring innovative ideas is a major incentive for potential partners. Using the students as a source of innovation, creative ideas and unbiased perspectives are disclosed. This resource can be used with little effort and at the same time with high methodological support.

A German company, which produces key and ID transmitter for vehicles, is selected as the industry partner. Depending on the expertise of developing car key-fobs, a holistic system can be treated by the students. This theme allows freedom for the finding of technical functions and also for the forming process. Additional, a key is not an unknown product for the students.

After building the alliance team, the conditions for project implementation are defined (depicted in figure 7). These organizational constraints affect project defining criteria. (Jakoby, 2013, p. 7)

The establishment of a topic and the determination of the targets are performed. In addition to the defined theme the restriction of a scheduling framework takes place. As a consequence of the limited time of a semester, the processing time is defined for 14 weeks. A further condition is the number of participants, as well as the distribution of resources within the team. Due to the novelty of the teaching approach, 15 students per university are admitted, so that a group of 30 participants is created.



The clear division of the two domains further confirms that small project teams, each consisting of one designer and one engineer, can be build. Breaking the group into smaller units ensures that every student participates in the entire project activities and that the students are motivated by their personal goals in form of censorship. Another key element of the planning phase is to define the objectives. The establishing of the objectives is done both on teaching and operational level.

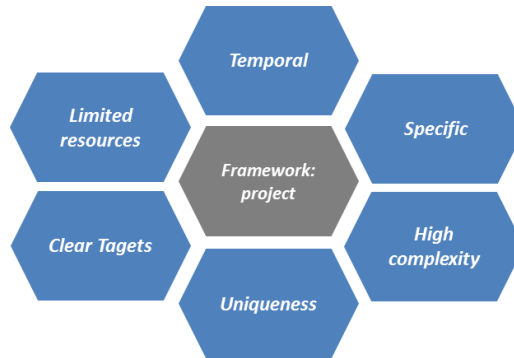


Figure 7 The essential characteristics of a project according to DIN 69901

The combination of design thinking with approaches of an engineer is realized by setting intermediate objectives, which have to be achieved by the students during project work. At this point, the overriding meta objectives are complemented by the operating objectives. Figure 8 gives an overview of the relevant working packages of both domains, derived from the exemplarily described approaches.

Engineering working packages	Design working packages
<ul style="list-style-type: none"> <li>- Technology Roadmaps</li> <li>- Customer needs</li> <li>- Functional structures</li> <li>- Modular approach</li> <li>- Basic designs (individual parts)</li> <li>- Preliminary drafts</li> <li>- Overall designs</li> </ul>	<ul style="list-style-type: none"> <li>- Research: Current situation/ analogies</li> <li>- Hand drawing: Proportions/ ratios</li> <li>- E0 models - Physical coarse models</li> <li>- E1 models - Models show</li> <li>- E2 models - 3D data with A-surfaces</li> <li>- F0 models - Release for rapid prototype</li> <li>- Finishing the final model</li> </ul>

Figure 8 Engineering and design working packages as a definition for the operating objectives

The selection of the working packages has been designed for the mutual influence of both domains, so that iterative improvements can be initiated. In order to realize these working packages, the essential aspects are defined as binding milestones, which will be presented by the students in the project process.

Beside the scheduling control, the milestones set the foundation for the evaluation of the students. In addition to the thematic elaboration, the representation of the process flow is particularly relevant.

### **Stage 2: Initiate**

For the introduction, a separate presentation of the project is carried out for the design students at the Hochschule Hannover and for the engineering students at the Leibniz Universität Hannover. The working packages shown in the Figure 8 are discussed by each part. Also the domain specific priorities become clear to the participants of the project. These are mostly based on two aspects: the aim of a final presentation and on the need to draw up a final document. Furthermore, a portfolio is presented by the industrial partner, who demonstrates current products, integrated technologies and future design developments. The alignment is adapted to the particular participants.

After the instruction, the first collective kick-off meeting, in which the participants make the acquaintance of each other, occurs. To work on a joint product concept, pairs, each consisting of one designer and one engineer, are build. By a first exchange, the project participants should gain insight into the mindset of the team partner.

The partners of a working group determine the communication paths independently. Web portals, forums or server platforms can be chosen as exemplary tools. In addition to the organizational agreement, a project topic is determined within the limits of the target topic: Car key-fobs. In the context of the growing electric mobility, an exemplary orientation of a student group is the area of Mega City Vehicles. Through the freedom to determine a topic, personal interests can be introduced.

### **Stage 3: Apply**

The design students begin with a brainstorming and first representation of early concepts before the engineers start their work. This temporal difference is applied in order to obtain first design variations before a common conception of the functions in collaboration with the engineers occurs. The engineering students are confronted with the ideas of the

designer, without limiting their creativity by technical specifications. The resulting concepts are separated from technical feasibility and therefore aim at a high innovation level.

Afterwards, each working group chooses a basic concept which should be pursued during the entire course. A suitable method is disposed in order to justify the selection. For example, the reasons are aspects of the production, the system security or creating a unique selling point by an innovative design.

To simulate a real project, workflow requirements are specified by the industrial partner. The transformation in technical specification by the engineers allows a structured documentation of all restrictions, which the project partner has to incorporate in the design concepts. This practice aims at an iteration loop of formal structure. Because the first idea-drafts were detached from technical restrictions, these data leads to a revision.



*Figure 9 Engineering and design students in working cooperation at the Institute of Product Development, Leibniz Universität Hannover*

While the design students develop foam models to illustrate actual proportions and to consider the haptic feeling, the engineer students are concerned with the technical description of the system, for example as a general functional structure or an UML (Unified Modeling Language) model. (Unterstein, 2013, p. 76)

Subsequently, the foam models are revised by the design students and transferred in CAD for the further elaboration. The result is a surface model, which must be filled with the “package setting”, as well as detailed under the aspects of manufacture and assembly.

Before starting this technical detailing, the engineer students consider the feasibility of their concept. With the aim to obtain a large variation of different product elaborations, this feasibility analysis refers to specific fields depending on the various project teams. Figure 10 illustrates an overview of some challenges in this cross domain working area. The observation of potential technical error, incorrect indication functions and external negative influences is processed simultaneously.

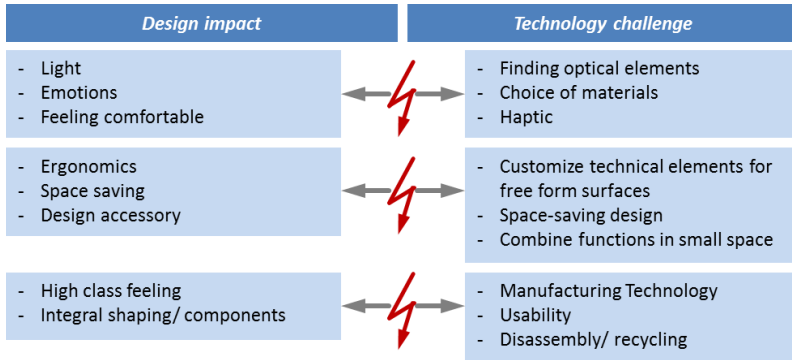


Figure 10 Exemplary challenges between design and technology development

The design drawing is accompanied by the E2 model, in which the surfaces receive the class-A status. The exterior design is largely defined and only detailing is carried out. This model is used by the engineer for the construction of the package components. The product shell, which is generated by the designers, is filled up with the dimensioned components. An interface for the transfer of the design models to the engineer is defined.

From now on two virtual models for each project team are available. The first is specifically made for the representation of the design; the second one shows the package of the necessary components. Both are based upon a consistent knowledge, combine the same functions and result from the same process understanding.

The main reason for this two part preparation is the planned manufacturing in rapid prototyping. The F0 design model is printed on a 1:1 scale, so that the haptic feeling and ergonomics are expressed. The package model is constructed for a larger view of a 1:2 scale. This allows a better recognition and detail analyses of the functions in the final presentation.

In the documentation, the students show the individual project processes. The reflection of the interdisciplinary development process is an important part. Finally, the documentation is used for the review of operational objectives.

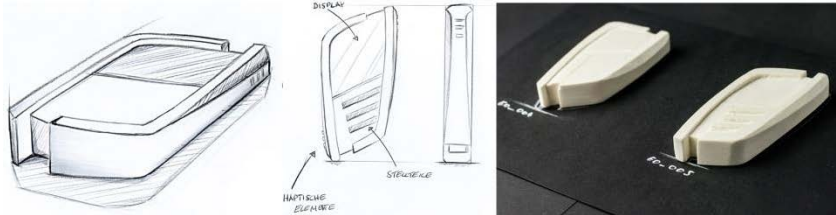


Figure 11 An exemplary design as a hand drawing and the transfer into the E0-Model as a foam shape. Design by the student Silvan Hartig - Hochschule Hannover, Faculty III

#### Stage 4: Conclude

In the last phase, the alliance partners come together for a final hindsight. Potential improvements are discussed and a summary of the benefits is presented which are shown on the operational and meta level:

- Specific results: Design concepts and constructive development of innovative key concepts. Ideas can be integrated in the innovation management system of the industrial partner. Conclusions for the teaching expiration.
- General results: The students gain experience from the difficulty of cross domain work. Raising awareness for future projects and the work environment. Understanding the different ways of thinking of other domains. Cooperation instead of competitive thinking

Also the potential improvements are divided into an operational and a meta level:

- Specific opportunities for improvement: Fear of contact between the domains. Deficits of students in scheduling. Fear to destroy the concepts of the other domain. Students do not respond obvious confrontation themes.
- General opportunities for improvement: The combination of a prior knowledge is difficult. High support effort for the students. A fixed establishment of cross domain projects is conceivable.

The implementation of further projects in Cross Enterprise Engineering Design is reasonable. Even if there is a fear of contact between the students, the cross domain cooperation worked.

Thereby, the emphasis is made on the preparation of the students for professional life, which is an essential and beneficial outcome of the project. Such important requirements as an honest communication and reciprocal respect can be stated. Only if both sides can find a common compromise, a product, that is both technically and aesthetically prepared, can be developed.

Another essential aspect is the cooperative work in the various processes. The participants have to understand that competitive thinking is not the right way. The two development processes should co-exist and intertwine with each other. This linkage can only be achieved through a comprehensive and continuous communication.

## Outcome

The conducted adjustment represents that the 4-phase model can be used for the framework of Cross Enterprise Engineering design processes. In particular, the strict division of the four working packages is very useful. However, the previous shown differences in design and engineering mindsets pose a challenge in the cross domain product development.

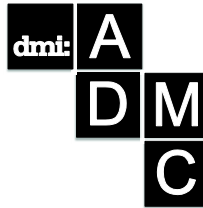
The adaptation of the approach can be used for the benefit of other projects. Based on the general description of the design and engineering process, the initiation of further cooperation projects is useful. The fixed establishment in the curriculum of the Leibniz Universität Hannover and the Hochschule Hannover brings both, the students and the organizers, a considerable benefit.

To simulate a modern enterprise, in addition to the interdisciplinary working process, the local independent method of operation can be brought into focus. For example, the designers and engineers can work at independent locations without having a physical contact. Also the division of a domain into several locations is possible. For example the engineering part can be divided into the competencies of the NTH alliance partner: Automotive, material and production.

On the next level, future oriented projects could aim at the combination of team work, CEE and interdisciplinary in an intercultural context. The association of intercultural ways of thinking can be implemented in cooperation with a foreign university or a foreign industrial partner.

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# Disruptive Attitude: The role of design as anomaly; managing crisis and turbulence, coaching creativity and innovation

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*Design today is a discipline moving between art and method. Despite its involvement within industrial activities and available engineering tools, the role of the designer is always perceived as related to creativity; such a role is commonly felt in the universities. In widening the design action fields from industrial products to communication, fashion, services, and so on (i.e. from material immaterial goods), the complexity of the problems to cope with introduced the use of conceptual tools based on ethnographic aspects, to define constraints and to provide scenarios, from which to derive the proper features. Despite the value of these methods, the results in applying them largely depend on the kind of users the designer is able to imagine, i.e. the method follows a Garbage In Garbage Out model. More, those methods are biased toward the improvement of what is already known, instead of fostering creativity and innovation, therefore perpetuating stereotypes and consumerism. The paper criticises the (mis)use of ethnographic tools, and suggests a different approach, based on formal models, and a disruptive attitude, to provide real innovation possibilities. The discussion refers mainly to the educational processes and testifies experiences in that field, together with examples of the proposed approach.*

**Keywords:** Disruptive design, innovation, creativity, design methods.

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## Introduction

As previously shown in several literatures (Heskett & Giorgetta,1980), (Pevsner, 2005), (Lawson, 2006), the design discipline evolved from craftsmanship to industrialisation and serial production becoming what is presently called “*industrial design*”. This transition brought an increased competition that imposed new meanings and added reasons for convincing customers to buy one product instead of another. The products started to exhibit shapes and styles able to communicate emotions to users; it is what we now call *Design*. A new era started, the post-industrial phase and post-capitalist: industrial production capability and capitals are, in some way, a commodity.

In the same time, the market globalisation, joined with the large diffusion of internet as a communication way as well as a service tool, changed the rules and introduced new challenges. We are now witnessing a common trend, which individuates an unprecedented global crisis. Challenging this view, the following paper considers the possibility that we are simply within a paradigmatic change of the behaviour of an autopoietic new economy that dismantles itself in order to be renewed. This brings to mind a biological model of destruction and renewal of the living systems as proposed by Maturana and Varela (Maturana & Varela, 1974) in which the moment of crisis is related to change. The attention in our case is on how this passage can be better understood and expressed. As a consequence, the role of the design in this process is not marginal, and most of the time creates debris rather than innovation, as it is recalled in the words by Victor Papanek:

*Advertising design, in persuading people to buy things they don't need, with money they don't have, in order to impress others who don't care, is probably the phoniest field in existence today. Industrial design, by concocting the tawdry idiocies hawked by advertisers, comes a close second.(Papanek 1984, p.ix)*

This introduces the necessity to introduce disruption of an already corrupted process that most of the time is essentially self-referential. This stands true in particular in the educational environments that are supposed to prepare students for the “real world” challenges.

Moreover, Design is a discipline between art and method, claiming creativity, aesthetics and culture, and requiring technical knowledge, the former aspect is over-evaluated in respect to the latter, and formalised aspects are largely far from the educational curricula. As already many years ago Alexander remarked:

*Logic, like mathematics, is regarded by many designers with suspicion. Much of it is based on various superstitions about the kind of force logic has in telling us what to do. [...] The use of logical structures to represent design problems has an important consequence. It brings with it the loss of innocence. A logical picture is easier to criticize than a vague picture since the assumptions it is based on are brought out into the open. (Alexander 1964, p.7-8)*

The result is an unbalanced attitude of superficial understanding of the rigorous scientific methods and their often-incorrect application. Moreover many those methods, based on sociology and ethnography, risk to discover user needs already expressed by advertising and marketing, quite unreal, and help to develop new versions of old products, as a further edition of the last smart-phone; so, the goal of the creativity is denied, and no innovation is done at all. The responsibility of the designer toward both customers and society is 'anaesthetised', carrying exactly the direction criticised by Papanek.

In the following we consider the possibility that the changed society and the trends in educational courses on Design can have some responsibility in worsening the quality of the productions, and in a "stereotypization" of the creativity toward superficial decorative aspects, while we think that the role of a designer should be of very high profile in increasing, by innovating, not only the quality of the artefacts, but also of the behaviours and cultures.

In order to engage into an innovative process and leave behind the obsolete mind frames it is necessary to introduce an alternative paradigm based on acknowledging the games of power, influence and corruption, inherent to any environment in which the design process is collocated.

## **From Material to Immaterial: Methods for User-Centred Design**

Design is becoming more and more pervasive, and its declination embraces products, interior, communication, web, fashion, services and so

on. In fact its pervasiveness is due to the, often unexpressed, role of the designer as a mediator between a producer and users.

Nevertheless, only the less formalised methods were used, and the ease of their application allowed their application without many times disregarding their clear role. A survey of some of the widest spread UCD, such as informal usability testing, user analysis/profiling low-fidelity prototyping and scenario-based design, criticizing their superficial application (Hudson, 2000), (Vredenburg, 2002).

Perhaps one of the best-known examples is the personas method “invented” by Alan Cooper (Cooper 1999). His goal however, was not to set up a design tool, but a tool helping him to think, and then to choose. Today interaction and service designers learn to apply it mainly as a project tool reiterating what Steven Portigal calls “the inevitable impulse to misuse them” (Portigal, 2008).

As the method of *personas*, other present similar problems, all of them pivoted around themes related to the User Centred Design: terms as *User Experience* and *Scenarios* are example of conceptual tools largely taught in the design schools and learned as a design tool (Pillan & Suteu, 2010).

Among the various criticisms we could report on the use of those tools (absence of a scientific approach, large dependence on the individual designer, irreproducibility of the results, and other) (Rönkkö, et. al., 2004), (Pruitt & Adlin, 2010), we point out a specific characteristics: all those methods tends to be strongly connected to ethnographic observations, without a further modelling of the results. So they tend to improve or satisfy user expectations instead to create new solutions.

### *An experience*

We base our remarks on specific educational experiences at Politecnico di Milano. During the second year of the master in Design, a mandatory course is the *Second Year Master Course*: it corresponds to an activity in which the students, organised in small groups, carry on a design experience on a specific subject, using the knowledge gained during the studies, slightly driven by the teachers. One of those courses was referring to the development of an application for mobile phones, related to experiences in shopping (fig. 1)

Ethnographic observation on site	Scenarios	Collection of common trends in the use of smartphones & personas		Resulting application
- A large collection of information gathered - The experience of the user resulted into looking at the windows, entering the shop, browsing, choosing, asking for helps, asking for advises, taking pictures, talking with a telephon, possibly buying; - Problems in efficiency and effectiveness were considered as a stress source;	- Designed to cope with the supposed problems observed, respecting the user behaviours, the following scenarios were build, through story-boards. - The possibility of planning the shopping tour online, offsite; - The availability of interactive totems substituting the reduced shop personnel; - The use of virtual mirrors to increase the capability to "try" virtually the clothes;	- The use of "advisors" on fashion (on the model of Tripadvisor) and the spreading of "selfies" were pointed out;	- 30 year old Russian architect (woman) travelling for business; a - 25 year old Chinese woman, tourist; a 30 year old teacher of surf (man), from Milan; - 19 year old student (woman) living in Milan for the studies; - 29 year old fashion stylist (woman) from Milan	A social community for shopping, to share information, experiences, pictures, and so on; shops provided with totems, virtual mirrors and relationships with the community.
<b>SUPERFICIAL</b>		<b>OBVIOUS &amp; STEREOTYPED</b>		<b>"CLEAN" BUT MEANINGLESS</b>

Figure 1 Example of ethnographic tools used in a service and interactive design class

Beside the compliance of the followed method with the learned approaches and the required work, we can observe:

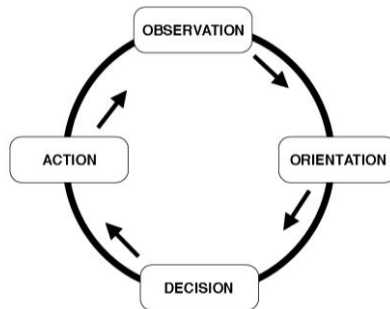
- there is no innovation at all: the application is modelled on actual behaviours; creativity is not enforced by the approach, more, it is inhibited;
- the choice of the personas is quite determinant: the results would have been quite different if a 60 old mother was chosen, or some 40 old housewife, or some young starlet; the method is not suggesting solutions, but is closing chances;
- any aspect of the analysis tended to re-apply stereotypical behaviours, also out from the shopping context.

We consider the Design as the activity of creating things that will change the world, and simultaneously the world that will change thanks to those things, and in this case we find simply and badly a replication of models without any criticism nor responsibility.

If Akio Morita, as a co-chairman of Sony, had based his ideas on such a kind of method, no Walkman, no iPod would had created, and no individual music listening would be visible.

## Disruptive Design

The traditional approach conducted the students to apply a design model in order to provide a service based on the following decision paths by the user:



*Figure 4 The decision process (Source: Joint Publication 3-13.1, Joint Doctrine for Command and Control Warfare (C2W) (Dahl, 1996)*

The user usually observes, gets orientation by the clerks and the friends, takes a decision and acts as a consequence; the designed application amplifies the same path, increasing the capabilities of observation, augmenting the orientation mechanisms (despite possible inefficiencies of the shop), without interfering with the reasons driving the decisions and the related actions. Elsewhere we have shown how the alteration of the beaten path by introducing a conflict situation increases the creative flow in the project groups (Galli, Suteu, 2013). Following the same principle we focus on a different stance, that of the design practitioner carrying on a field study and investigation.

If we consider the role of the design as a way to innovate, and also by disrupting actions, we need to get our responsibility on the project choices, according to our ethical view.

In this sense, we can provide a different service, following a modified decisional path, carrying the user to criticize the current model and to change the behaviour paradigms. The, we modify the scheme of fig. 4 into the following:

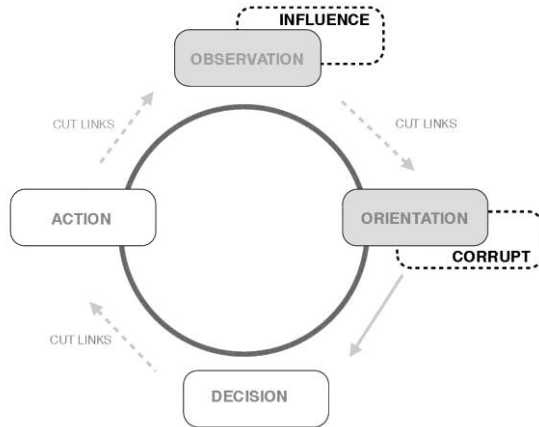
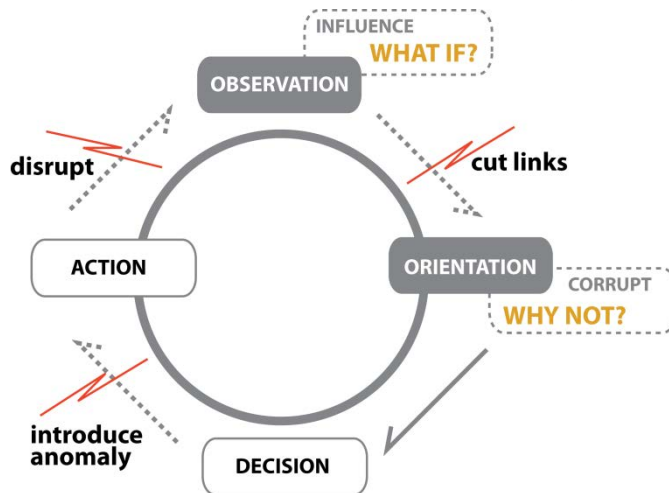


Figure 5 The decision process modified according to war theories

So, our application should provide:

- some kind of filter influencing the observation; those filters should be defined according to a specific ethical view, we decide: it could be related to attention to emerging nations, or to the reduction of consumerism, or to some no-logo attitude, and so on;
- some action “corrupting” the orientation phase: in some way, according to the chosen ethical point of view, the application should make evident the negative interpretations of a possible choice;
- the application should be designed not only in order to make some choices unacceptable, but also to provide positive emotions, and possibly the same observed as required, through the ethnography: for example, it should make the user proud of the non-conventional choices, aggressive in violating usual trends, and so on.
- as a consequence of those design choices, the behaviour of the users is supposed to change, and in a more conscious way. The process sketched (fig.6) imposes the designer to take a strong responsibility, and accept the violation of usual rules, trying disruptive actions, with unpredictable effects.

*Disruptive Attitude: The role of design as anomaly; managing crisis and turbulence, coaching creativity and innovation*



*Fig.6 The decision process adapted to support a disruptive design approach.*

## **The role of design as anomaly: conscious and scientific models as a way for creativity**

In the study of processes improvements carried on, initially in Japan, in the frame of the Total Quality (Powell, 1995) approaches, two different kind of actions were supposed:

- *kairyo*: a dramatic change in the production process, often due to new materials/technologies, can have huge impacts on the quality of the products, and the costs and on the efficiency of the processes;
- *kaizen*: the continuous process improvement; by modelling the actual production process, measuring the related performances and proposing small improvements, it is possible to get results in better quality, cost reduction and efficiency; many small improvements can provide advantages as a breakthrough change.

The methods referred in the previous chapter seems to be useful for some *kaizen* in the artefacts, but are absolutely useless if we ask to the designers something new, some *kairyo* in the proposals.

What we propose, for the same kind of design area, an approach more based on scientific and formal methods.

### Modelling ethnography

Starting from the same investigation, we start to model what we observed. Through semantic networks: roughly, we represent the observed elements as the nodes of a net, being the nodes connected by oriented arcs referring a relationship we observed (Maiocchi, Pillan 2014). In our case:

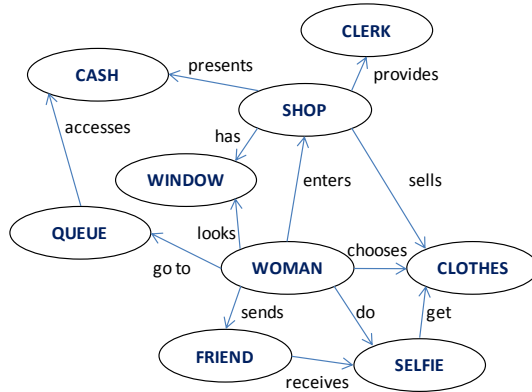
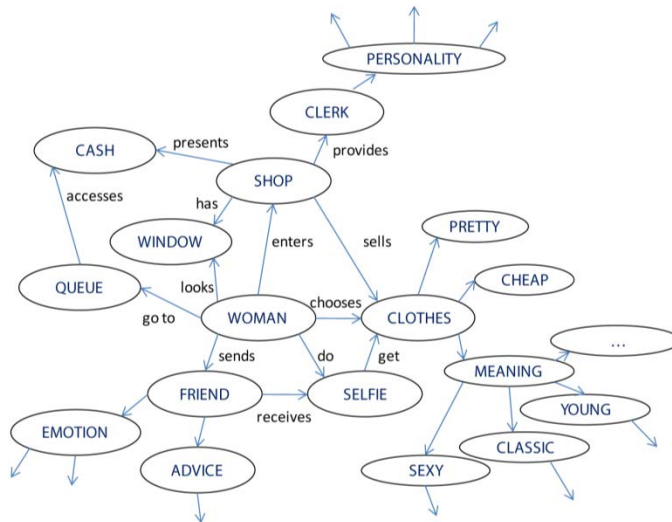


Figure 7 The semantic network representing the ethnographic investigation

This representation reflects simply the facts, but not an ethnographic interpretation of those facts; we can add some properties of the observed elements, in order to understand the implicit motivation of the behaviors:





*Figure 8 The semantic network with new elements of interpretation of the facts*

This network represents no more only facts, but also the point of view of the designer: why those persons were buying clothes? What those clothes were representing? Which characteristics were relevant? Which role and character was the clerk playing? Why the persons were calling friends? Which emotions they needed?

Of course, it is just a partial, not completely exploited example, that should be amplified according to the designer's perception and thought.

### *Evaluating emotions*

If we want to verify and design the user experience, we need to define exactly what does it means. In our mind, what qualify the experience are just the felt emotions. So the question is turned into what an emotion is. We cannot, from our point of view, accept an intuitive definition of "emotion", and refer to what neurosciences say on the subject.

According to neurosciences, the human brain can be schematized into three layers, with different seniority in the species evolution. In the inner part (*reptilian*) primary emotions arise, related to survival (seeking, fear, anger, etc), in the middle part, (*old mammalian*) typical maternal emotions take place, while the upper part (*neo-cortex*) is related to rational and logic processes.

Following the more recent and simple model (Panksepp,2012), there are seven basic emotional systems:

- *Seeking*: makes creatures interested in exploring, and in getting excited when they get what they might desire;
- *Rage*: aroused by frustration, tends to freedom of action;
- *Fear*: leads creatures to run away, or, weakly stimulated, to freeze;
- *Panic*: governs social attachment emotion, specifically for the absence of maternal care when babies;
- *Lust*: involves sex and sexual desire;
- *Care*: maternal love and caring;
- *Play*: pushes young creatures to facilitate learning.

Without entering in a detailed description of the aspects of emotional design (Maiocchi, Pillan 2014), we can now add to our schemes the emotions we suppose involved:

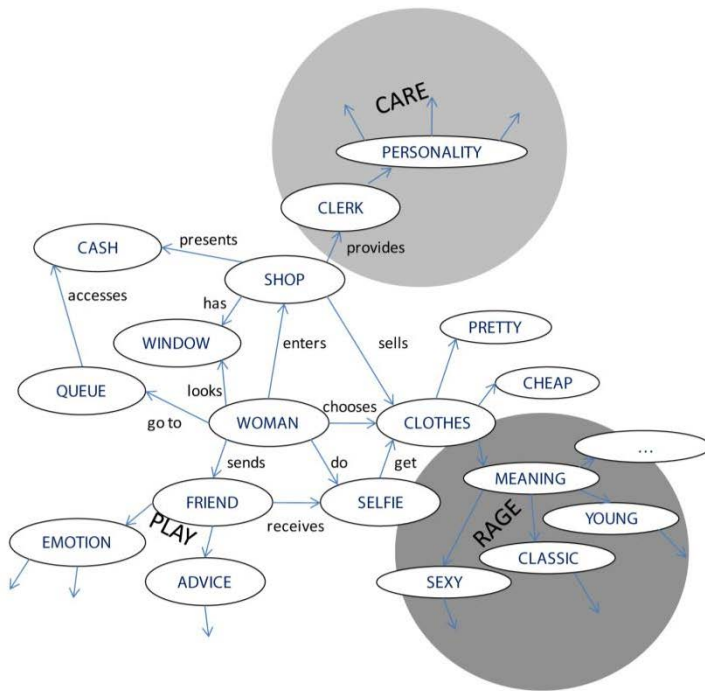


Figure 8 The semantic network with new elements related to the supposed driving emotions.

We added CARE (of course, the net is roughly cut just for exemplification purposes) in the relationships with the clerk, because we suppose that a maternal embracing behaviour is what the customer feel missing; in the same way we added RAGE near to the meaning, but it could be better modelled, according to the fact that sexy clothes prevail on classic, and so on (in any case, the choice is related in some way to the need of self-assertiveness); we added then PLAY to the contact with friends, as the goal is the social approval with happiness.

Beside the fact that the description provided comes from the same ethnographic observation, there are three fundamental elements that differentiate this approach from the previously presented one:

- the model is formalized: we can say whether or not the descriptions are well formed;
- the model is unambiguous: for each node, for each arch, it is possible to argue if we agree or not on that;
- the emotional impacts are not vague and naive, but refers to a choice on a possible well defined menu.

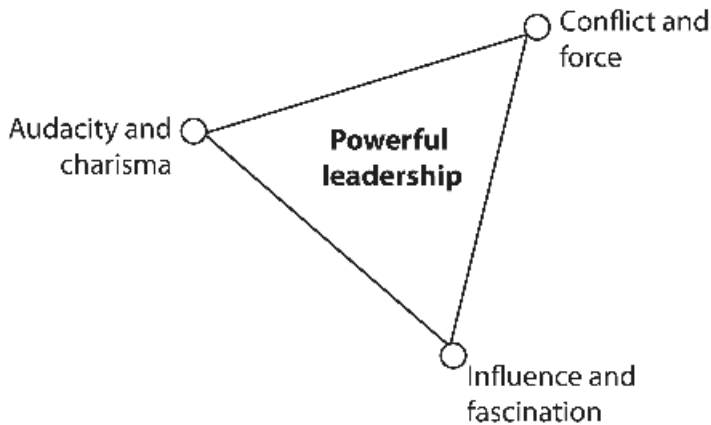
### *Interpreting the result*

The emerging user is a person, in the rough example a woman, with the need of success, of social approval, of affection. It seems a clear evidence of the representation of the *Cinderella complex* (Dowling, 1990).

If we want design to produce innovation, we should provide solutions contrasting with the ethnographic evidences, fighting the intended stereotypes. As an example, (but it is just a preliminary rough hint), we could sustain Rage by refusing the need of sexy and pretty attitudes, to support Care by changing the role of the friends from consultive to participative, to introduce Play by biasing the communication on the beauty and the sex appeal (previously refused) with irony.

These tensions, specific to the real life environment, can only become evident through the acknowledgement and visualization of the dynamics of power and influence, and all the stimuli that are provided by the economic and cultural context in which they emerge. Looking from this perspective the implications for the design intervention are strongly related to the generation and management of influential ideas and the power expressed into articulate, scientific reasoning rather than the blindfolded application of borrowed ethnographic tools.

## Final Remarks



*Fig. 10 The three main attributes necessary for a powerful leadership.*

Throughout the evolution of Design as a process the notion of “tools” that can be used according to specific “methods” was always kept in high respect, and declined in the most different interpretations. No matter the material, immaterial or so-called “conceptual”, designers have a deep affective attachment to their instruments and the skill related to their use and adaptation. This keen attachment to the objects mediating the creative process hinders the emergence of lateral possibilities that cannot be anticipated by any method or modelled by the available tools. Although the concept of disruption has only been recently borrowed from the innovative organization literature (Markides, 2006), (Yu & Hang, 2010) into the field of design design, we suggest that this different approach has important possibilities yet to be explored. The paper herein touched upon only a few theoretical insights from neurosciences and war theory in order to bring a rigorous argument to support the disruptive design framework.

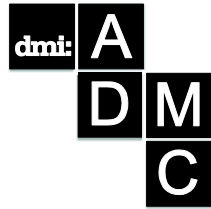
The role of the disruptive design is to demystify the importance of the outcome and acknowledge the true nature of innovative processes based on the breakdown of existing rules, by influencing, corrupting and finally imposing different cultural paradigms. In this process the role of the designer is that of a charismatic, transformative leader (Bass, 1991) (fig. 9) that envisions the possibilities of change where others follow the imposed rules. One of the main objectives of the paper, is precisely to indicate how further research can investigate the possibilities of constructing a different

theoretical framework to analyse disruption for its real value and coach future generations of designers as innovative leaders and not followers.

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## Using Workshops in Design Research

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*Researchers in the field of design management are often using different kinds of workshops to gather empirical data, either as a single event or as part of a sequence. However, the method is commonly applied with limited reflection on its methodological foundations and often lacks transparency about the choices the researcher makes in the process.*

*This paper presents a framework that contains three important considerations: 1) what role the researcher(s), facilitator(s) and participants play in a workshop; 2) how the workshop is staged; and 3) how and by whom the data are analysed. The framework builds upon a literature review that also links the workshop to focus group research and participatory design. The framework is illustrated by a number of cases where workshops have been used in research processes.*

**Keywords:** Workshops, research methods, group research

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## Introduction

Workshops are increasingly being used in design management research as a way for researchers to gather a group of participants who, under the instructions of a facilitator, can discuss a specific subject. At the CADMC 2013 design management conference, 18 of the 56 papers referred to workshops as part of their data collection and, in many cases, as the primary empirical source. However, only a few of these papers actually presented a theoretical foundation for the use of this research method. So even though the staging of workshops may come naturally to many researchers with a creative background, the methodological choices made in the process are, in most cases, not transparent. This is reflected in articles with little or no description of important elements like 1) what role do the researcher(s), facilitator(s) and participants play in the process; 2) how the workshop is staged; and 3) how and by whom the data are analysed. Therefore, there is a need for the design management community to apply standards to the use of workshops that are normally expected of similar empirical research methods.

This paper seeks to answer the following research question: How can workshops be used as a scientific method to gather empirical data, and what are important considerations for the researcher when planning the research process? Workshops used in a research process can be linked to focus group research (Morgan, 1996), as well as the Scandinavian participatory design tradition (Buur & Larsen, 2010). However, in our view, a workshop can be used by researchers regardless of the ontological and epistemological assumptions they hold, and it be staged and used at various phases of a research process as a way to utilize the collective knowledge and creativity of groups. Workshops can be used at different phases of a research process (Arbner & Bjerke, 1997), including determining (a problem), describing and explaining a phenomena, forecasting or guiding, and playing a role in both divergent and convergent parts of the research process.

The paper is structured in the following way. Firstly a methods section explains our general research approach, and how the literature reviews, case studies, and the framework are connected. Secondly, a brief literature review explains the current theoretical understanding of workshops in a general sense and how their use in a research process can be linked to focus group interviews and participatory design. The rest of the paper builds around a framework divided into three parts: 1) the roles the researcher(s), facilitator(s) and participants can play in a workshop, as illustrated by case examples; 2) how the workshop can be staged; and 3) how and by whom



the collected data can be analysed. Finally conclusions are made with regard to workshops' application within design management research as well in the broader research community.

## Method applied

The framework presented in this paper has been identified through a systematic combining process (Dubois & Gadde, 2002) that contains a movement between empirical engagement and analytical and theoretical work. Comprehensive experiences from using workshops in case studies have led to the finding of new theoretical sources. The literature review builds on several scoping literature reviews (Jesson, 2011), where systematic searches and snowballing have been combined to get an initial overview of literature connected to workshops. To illustrate the central aspects using workshops in design research under different conditions, four case studies have been applied. The choice of using the case study methodology is related to the notion that *'the interaction between a phenomenon and its context is best understood through in-depth case studies'* (Dubois & Gadde, 2002, p. 554). Case studies are a unique method to build and utilise for understanding an empirical phenomenon with a view to developing a theory (Harrison & Easton, 2004). The four cases have been selected based on variations (Miles & Huberman, 1994) in terms of how the facilitation is planned and who is facilitating the workshop. The case studies include 1) a design consultation workshop, 2) a network workshop, 3) A PhD workshop and 4) a product development workshop. The cases have been investigated through workshops, interviews, network activities and observations.

## Literature review

Workshops have primarily been described and applied outside of the academic world. However, there are several academic research methods that have properties that are comparable with workshops. Within the social sciences, business studies and participatory design, researchers have applied research methods that focus on the gathering of a group of participants and having this group focus on a specific subject. In the sections below, we will present definitions of how a workshop is generally defined and examples on similar features from the focus group and participatory design literature.

### *Workshops*

Although the term 'workshop' is commonly used, only a few studies have tried to define what it actually means. Kousholt (2011, p. 168) defines a workshop as 'a group of people are put together at an agreed time to work intensively with a particular set of problems. The workshop is thoroughly planned and plenty of time is allocated. Thereby a more focused concentration is achieved than by holding a general meeting'. In Standfield's (2002, p. 4) view, the term 'workshop' has several common meanings, such as including group discussion of an issue, a brainstorming and organising session in a group, a meeting that is longer than usual, a public forum providing information, or discussing an issue and a conference where many experts give presentations. A workshop can also provide a basis for a mediating dialogue where different viewpoints can be discussed, learned and augmented in order to learn about the present or the future (Thyssen et al., 2010). According to Inns (2013, p. 42), different workshops share common characteristics such as '...the hosts bring networks of participants together from very different disciplinary backgrounds. Participants in each event have a common interest, and are all motivated to develop solutions that deliver impact'. In this view, the researcher, the facilitator and the participant have important roles and they are significant when staging the workshop, as well as choosing the setting, tools and data collection techniques.

### *Focus groups*

One way to use group studies in scientific work is by using focus groups. Within business studies, Goldman (1962) was one of the first to describe the depth interview where marketing professionals used inspiration from psychotherapy to moderate groups, and used the interaction between the participants as a way to bring opinions into focus that would not have been revealed through a solo interview. The focus group was reintroduced in the social sciences in the 1980s with Morgan and Spanish (1984) among the pioneers. They pointed out that the focus group could be conducted by all social scientists as a supplement to existing methods, and that it could function as a bridge between the focused solo interview, where there was now interaction with others, and observation of interacting groups in their natural context, where the researcher couldn't chose the focus of the discussion. Morgan (1996) later presented the following simple definition of a focus group: 'focus groups as a research technique that collects data through group interaction on a topic determined by the researcher' (p. 130).

The limitations by using this method are that, although the researcher is interested in the group's opinions, the focus is not so much on experimentation, development and learning among the participants in the group. A more experimental approach where the researcher is interested in how things can be changed was developed parallel from the 1970s and onward in business and social science as the participatory design workshops.

### *Participatory design*

The Scandinavian tradition of participatory design put the focus on conducting action research that could help industrial workers take part in the design of the machines for which they would be the end-users (Ehn, 1993).

The staging of such workshops on the researcher's initiative could be seen as an active step to gather data on a specific situation and to try to change it through this type of intervention (Brandt, 2004). Central to the traditional participatory design workshop was the interaction between the participants, the role of the facilitator (a term preferred instead of moderator in this context), and the use of different boundary objects such as models, sketches, prototypes and games that could help the participants express their opinions about possible design solutions. During the 2000s, methods from design workshops started to get a broader applications (Buur & Larsen, 2010). Then, the focus shifted from using the boundary objects in the workshops to discussing the design of specific products, to using them in a more general sense as mediators between wider groups of stakeholders to help them discuss and generate ideas for abstract subjects, such as business models, by having a physical object that represented it.

To sum up, there are several similarities between a design workshop and the broader definition of a focus group that has been applied in business and social science since the 1980s. However, the main difference lies in the fundamental assumptions behind the idea that the participants can help in the creation of the solution. Whereas the traditional focus group has been focused on gathering data on a specific subject through the interaction among the participants, a design workshop approach adds another layer. The participants can discuss not only 'what is' but also 'what might be' and the facilitator and available design tools can support this process.

## **Framework for using workshops in design research**

In the following sections, we will present a framework for using workshops in design research. This draws on our practical experiences from conducting workshops as part of a research process, as well as the literature presented above. The framework is divided into three parts: 1) the roles the researcher(s), facilitator(s) and participants can play in a workshop, illustrated by case examples; 2) how the workshop can be staged; and 3) how and by whom the collected data can be analysed.

### *1A) The roles involved in a workshop*

A workshop used in a research process involves three main roles in the form of the researcher, the facilitator and the participants (Inns, 2013). The researcher will be the one who initiates the workshop and decides the subject to discuss. The facilitator will be the one in control during the workshop to enable participants to work engaged and motivated and to express and develop their ideas. The participants are different stakeholders with knowledge about the workshop subject such as end-users, lead-users, experts, specialists, consultants, and professionals. However, the three roles will often also be mixed, and the same person can hold more than one of them at the same time. For the researcher, it is important to reflect upon the choices made in regards to all three roles and how they influence the workshop and the research process in general.

### **The researcher(s)**

The researcher(s) can be very actively involved in conducting the workshop and be the facilitator, but he or she can also chose to have a more traditional role as an observer if another person does the facilitation. If the researcher has chosen the role as observer, this can been done as: 1) the complete observer, 2) observer as participant or 3) participant as observer (Burgess, 1982). The researcher must sometimes switch roles during the process, which can be challenging for the researcher and influence the output from the session. The researcher can influence the participants by becoming part of the group and participating on equal terms with them, or the researcher can place him or herself in a more neutral role and observe what is happening and how things are evolving in the process. Therefore, the researcher must be aware of the advantages and disadvantages of these choices.

### **The facilitator(s)**

Facilitation is a way to support collaborative processes towards a common goal by using a variety of methods and tools (Kolfshoten et al., 2007). The facilitator's task is to enable participants to work engaged and motivated to express and develop their ideas (Grinyer, 1992). In this sense, a facilitator can be compared to a conductor whose purpose is to get the orchestra to deliver a sublime concert together (Hayne, 1999). According to Bens (2008), facilitation is a way of providing leadership without taking the reins. A facilitator's job is to enable others to assume responsibility and take the lead, and the facilitator must therefore act as a catalyst in the effort to get the participants to work well together in the development of something new (Westley & Waters, 1988). When the facilitator takes on the role, he or she should be aware of the possibilities for influencing others in specific directions. But the facilitator's task is at the same time also to make sure that all interests are heard and opposing voices are not overlooked.

Every process is different which makes the role as facilitator even more challenging. And as Biddle (1986) points out, the facilitator's role is only to some degree defined in advance and must therefore be developed and learned over time by the role taker.

### **The participants**

The participants will be different stakeholders with knowledge about the subject that is the focus of the workshop. Freeman (1984) describes the concept of stakeholders as any group or individual who can affect or be affected by the achievement of a project or in the case of the workshop or the subject that is being explored. Different stakeholder categories have been proposed. The stakeholders can be the owners, customers, suppliers, financiers, management, employees, distributors and state and local authorities (e.g., Laine, 2010). But there is a difference between whether stakeholders are only those who benefit from the outcome or stakeholders who have something at stake and who can voluntarily or involuntarily contribute to the activities (e.g., Post et al., 2002). Depending on the aim of the workshop, the range of interests and the number of participants can vary from one workshop to another. In the following sections, the roles of facilitator and researcher are considered and less focus is given to participants. This is done as the researcher's and facilitator's roles are defined through their specific tasks in the workshop process. In the following sections, a framework is presented that helps researcher(s) and

the facilitators(s) to make decisions about their specific role in the workshop process.

### Interplay between the roles

Figure 1 describes four ways of viewing the interplay of two of the roles described above in the form of the researcher(s) and the facilitators(s).

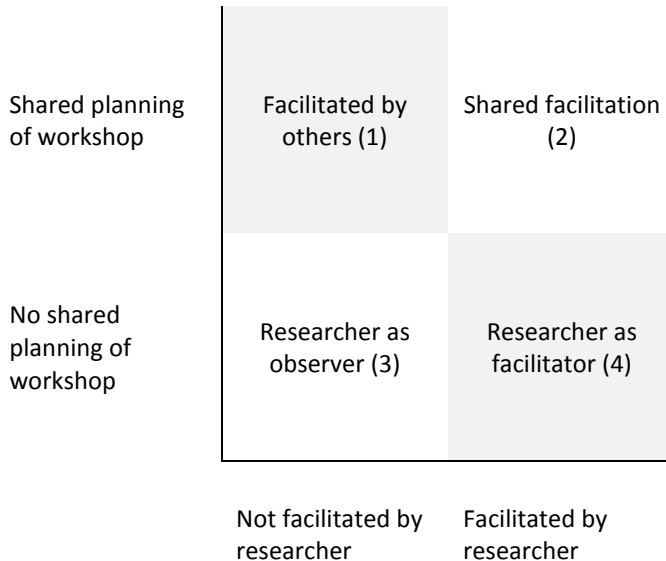


Figure 1. Interplay between roles involved in a workshop.

In quadrant 1, the workshop is planned with the researcher, but others do the facilitation of the workshop. In this case, the researcher must ensure that the facilitator will address issues that relate to and revolve around the research subject. In quadrant 2, the workshop is planned with the researcher, but the facilitation of the workshop is shared between the researcher and others. In this case, the researcher can ensure that issues that relate to and revolve around the research subject will be address. In quadrant 3, the workshop is an observation-based research approach (Burgess, 1982). In this approach, the workshop is not planned with the researcher and not facilitated by the researcher; in other words, it is a 'random' workshop being conducted within an organisation the researcher studies. In quadrant 4, the workshop is facilitated and planned by the researcher, and the researcher is therefore in total control over the conduction of the workshop. The

approaches in quadrants 1, 2 and 4 are all action research-oriented approaches (Marsick & O’Neil, 1999), whereas workshop 3 is based on observations. All four approaches will be further elaborated in the cases below.

### 1B) Case examples

In the following section, we will look into four different cases to illustrate the various workshops: What is the aim of the research? Who participates? How is the workshop plan? How and with what boundary objects are the workshop staged? How is the workshop analysed? The cases represent: 1) a design consultation workshop for a diving centre, 2) a network workshop in a B2C network, 3) a PhD project on developing guesthouses for researchers and 4) a product development workshop on how to create new concepts and product for environmental initiatives and new technologies for people who live in apartments.

The workshop processes have been a part of two different research programs: a PhD research project on user involvement in the construction industry and the research project ‘D2i, Design to innovate’ ([www.D2i.dk](http://www.D2i.dk)) that is a study on how small and medium-sized companies in the southern region of Denmark can develop their businesses by using design thinking.



Figure 2. Photos from the design consultation workshop

#### 1. Consultant workshop for a diving centre

The workshop was planned with a researcher, but a design consultant facilitated it. The aim of the workshop is to look at how the company can change the internal communication challenges between staff and management and between management, staff and customers to create more transparency in the organisation.

## 2. Network workshops for B2C network

The workshops were a part of a longitudinal study that was planned as shared facilitation between researchers and others. The aim of the workshops was to look at B2C branding challenges and how to create more events and activities in the shop and on the Internet through design thinking and a focus on networking.



Figure 3. Photos from workshop on development of guesthouses

## 3. Product development workshop on new technologies

The workshops was planned and facilitated by a facilitator. In this case, the researcher functions as observer. As a part of the planning, the researcher was asked to participate and observe. The aim of the workshops was to develop ideas on how to create eco design, concepts, technologies and products for new environmental initiatives for people who live in apartments.



#### 4. PhD project on developing guesthouses for researches

The workshop was planned and facilitated by a researcher. The aim of the workshops was idea generation on value and concept development of guest accommodations and research housing in relation to an existing exhibition and conference centre on sustainability and energy on the island of Samsøe.

Table 1. The roles, the staging and the analysis of the four workshops

	<b>Roles</b>	<b>Staging</b>	<b>Analysis</b>
<b>1. Consultant workshop</b>	3 Design consultants Company owner 3 Staff Researcher	Design Consultation Tools: Mapping, Brand image Post-its User travels Brainstorming IDE KU tool Mock Up Persona Presentations Evaluation	Facilitators Design consultants Company Owner
<b>2. B2C Network</b>	Variation of 4-7 companies with 1 to 3 participants represented 3 Researchers Various guest presenters	Network workshops: Idea generation Branding Games Design Capacity model tool User travels Short guest presentations Evaluation	Facilitators Researchers
<b>3. Product Development workshop</b>	10-12 specialist participants in the fields of technology, energy, housing and design	Product development workshops Energizers Mind maps Picture associations Rotation on	Researcher Facilitator

		developing others ideas Presentations Evaluation	
<b>4. PhD project</b>	20-25 participants: End users Lead users Specialists Architect Engineer Advisors Manager Chairman of the Board Other participant researchers Researcher	Idea generation and value creation workshops: Story telling Picture associations Post-its Prototyping Lego Serious Play Analysing context in 1:1 Visualisations Presentations Evaluation	Researcher Colleges PhD students Students

As it is demonstrated in the four cases, the roles for who is participating and who is planning and facilitating the workshop changes from one case to another, depending on who is relevant to involve in the specific process and whether the researcher takes the role as facilitator or not. In relation to the staging and the use of tools as boundary objects to help communication, this also varies from workshop to workshop, and who is a part of analysing the workshop afterwards also changes. As we have already looked into the roles in workshops, we will look further into the staging and the analysis of workshop data.

## *2) Staging the workshop*

After having decided on the focus of the workshop, some of the first decisions are about who is going to be the facilitator and what role the facilitator is going to play. Secondly, who are the participants going to be? So the three roles we have described as the researcher, the facilitator and the participants are important roles to determine in the staging process of a workshop.

The next element that is important is the choices about the guidelines for the facilitator and what type of 'screenplay' is going to be written for the

workshop process? This involves planning the workshop and decisions about what the focus should be, how the data should be collected and what boundary objects to use to support the dialogue among participants. The boundary objects can help the facilitator to push the process forward and help the participants to understand each other. Throughout the workshop, research data is produced both in the dialog that takes place among the participants and the facilitator, but also data created through the visual communication tools such as drawings, models, prototypes, written texts, visualizations, games, etc. that are being used as boundary objects in the process of making sense of all the data.

Finally, decisions on how the workshop is going to be documented is important since this can be done in many ways as, for example, video, recording of dialog, transcription of conversations, notes, observations, photos, etc. Inns (2013) uses an analogy of a workshop as a theatre, yet we have in the action-oriented approaches not found much direction for how to set the scene in a workshop. We also only found little direction for how to work with the participants in different contexts and how to introduce and chose various types of boundary objects in the process.

Summing up, we have in our work with workshops found that there are three central aspects that must be addressed in the planning and staging of a workshop, which can influence the process and how the workshop should be facilitated. These aspects are: A) who should be involved in the process and who should not; B) what are they going to do in the process when they meet and C) where is the session going to take place and what objects can the participants use in the process? This we see as three categories of what needs to be staged, which are further illustrated in Table 2.

Table 2. The staging of the process in a workshop

	Issues
<b>Participants</b>	<p>Who should be involved in the process and why? Stakeholders, users, experts, lead-users, professionals, others?</p> <p>Network and relationships?</p> <p>What briefing information do the participants need?</p> <p>Roles to be played?</p> <p>Who is the facilitator?</p> <p>What will they be doing?</p> <p>Exchanging knowledge and negotiations between participants?</p> <p>Mutual learning across professional skills?</p> <p>Push participant's opinions and development of tacit knowledge?</p>
<b>Social process</b>	<p>Building and changing network?</p> <p>Random interaction, facilitated process, rules for communication and interaction?</p> <p>How will the workshop be broken down into activities that move through divergent and convergent thinking processes?</p> <p>What information will fuel the discussions?</p> <p>Size of groups, mixture of participants and individual work?</p> <p>How can the individual and the group be developed?</p> <p>What will the participants get out of the process?</p> <p>Context, time and place?</p> <p>How will the space be arranged and the furniture, walls, etc. be used?</p> <p>What type of workshop: Dialog, meeting, focus group, group session, study trip, conference, etc.?</p> <p>How should the activities be designed to facilitate knowledge capture?</p>
<b>Technical considerations</b>	<p>How will media be used during the workshop?</p> <p>Technology available: computers, media, illustrations, drawings, photos, video, modelling material, prototypes, pen, paper, props, games, sales material, leaflets, brochures, posters, articles or other types boundary objects, artefacts and things to think and work with etc.</p> <p>Will the participants have food, beverages and snacks?</p> <p>How will the material, information and insights be developed?</p>

We regard this table as a planning tool for both the facilitator to plan and conduct the workshop. But the tool is also relevant for the researcher to analyse the data and later to discuss and reflect with others about the data collected in order evaluate the workshop. The tool for staging the process is further relevant since the data will consist of many different types of data such as discussions among the participants, situations that have changed, material handed out that has transformed the direction of the discussions, material that the participants have created, developed or tested.

The data collected can be different kinds of statements and observations from the social processes, and it can also be the materials and prototypes produced in the workshop process such as various types of materials, drawings, commented visualizations, prototypes, Lego models and concepts, etc. Furthermore, the data can consist of the researcher's notes, recordings, photos and video documentation that need to be analysed. The many different kinds of information, statements and objects could also be used to validate each other. It can be challenging for a researcher to translate and interpret all this collected data across uneven types of materials.

To be able to reflect on these events, the researcher must have some kind of tool to help categorise and compare data. Buur and Larsen (2010) point out that categorising data is a process of learning and creating new meanings, which is an on going process that takes place throughout the whole process. These cycles and loops of learning are closely related to the research question. This process is described both in experimental and the critical reflection approach in action learning such as reflecting, learning and analysing (Pauleen et al., 2007). The focal point in this process of evaluation is how the data should be treated and how the participants' point of views could be analysed so that patterns are found, prioritised and weighted in relation to the hypothesis or research question in this process of gathering, analysing, understanding and creating new data that becomes new theory. In the following section, we will look further into how the data was analysed.

### *3) Analysing the workshop data*

In this phase, there is a need for assessment and a long-term critical reflection for the researcher to be able to analyse the data. In this process the researcher must make an evaluation as an audit or a review as described in the scientific approach (Altrichter et al., 2002). This is done by a deep 'assessment of the validity of the presuppositions of meaning perspectives, and examination of sources and consequences' of the experiments

implementation in practice (Marsick & O’Neil, 1999). This refers to the mental pre-disposition that the researcher brings to the situation (Marsick & O’Neil, 1999). Doing this takes deep reflection, analyses and evaluation of the new experience, which relates back to the hypothesis or research question.

At the same time, this will change the researcher’s pre-understanding to a post-understanding of the problem. Gummesson (2001) described this as going ‘from pre-understanding to understanding to a new level of understanding and so on; and from substantive, specific data to concepts that serve as vehicles for reaching more general theory levels’. The researcher can, in this process, use the framework for the staging the workshop to analyse and evaluate it and the data gathered. In order to get a holistic and deep understanding, the researcher must be able to switch between different kinds of learning gained throughout the process. The focal point in this evaluation is also how the data should be treated and who is going to be the interpreter of the data collected.

Table 3. How to analyse data from a workshop

	How
<b>Researcher</b>	The researcher interprets and codes the raw data himself through traditional approaches or software.
<b>Participants</b>	Some of the participants from the workshop help interpret and code the data in a raw or modified form.
<b>Experts</b>	Experts on the subject from theory and practice (e.g., fellow researchers, psychologists, designers) help interpret and code the data in a raw or modified form.
<b>Outsiders</b>	Outsiders who are not experts on the subject (e.g., students, random selected groups) help interpret and code the data in a raw or modified form.

When operating with workshops in research, there is much data and it can be hard to get the data analysed due to its amount and complexity. One way to operate with the coding of data is to use software coding tools like Nvivo or Leximancer to make categories, units, themes and classifications of

things that are closely related to each other. However, since the amount and complexity of data is high, we argue that it can be necessary to make a controlled analysis in different ways to get a broader perspective in the condensation of meaning by discussing the data with others to understand their interpretation of what is happening in the workshop. The reason for this broader approach is described in Kvale and Brinkmann (2009) as three levels of interpretation: 1) self-understanding: the interpreter attempts to summarize what is said, 2) common sense: attempt to interpret what is said between the lines in a larger framework of understanding by being able to argue and prove one's interpretations and 3) theory: a theoretical framework for interpretation.

The multiple perspectives on an interpretation of a situation are also presented in Goffman (e.g., 1959, 1974) as the front-stage and back-stage when he argued that we present ourselves in the role that best suits our perception of the situation and what is required to comply with social norms and values. So the questions remain about who should interpret the data and how. Should it be done by the researcher alone or in a team of researchers? Should external people also be involved in the interpretation of the data? This discussion is summed up in Table 3 that suggests how the researcher and other stakeholders can do different forms of interpretations of the data.

## **Discussion and conclusion**

This paper set out to answer the research question: How can workshops be used as a scientific method to gather empirical data, and what are important considerations for the researcher when planning the research process? We have looked at three different aspects of this question: 1) the role the researcher(s), facilitator(s) and participants play in the process, 2) how the workshop is staged and 3) how and by who the data are analysed.

We have seen the role of the researcher in different situations in all parts of the process, such as in the planning, staging, facilitating and analysing, but as such the researcher's role depends on the researcher's scientific standpoint. Important also is that the researchers consider themselves as learners of the process, which is described in action learning (Marsiek & O'Neil, 1999).

As we have seen from the four cases, the participants had several roles to play as different stakeholders in the process such as the end-users, lead-users, experts, specialists, consultants, professionals, etc. They were all

important roles because they represent different roles and as such they had various parts to play in the process. In the analysing phase, the participants do not have a particular role to play other than being the source of the data. But since they have important knowledge of the process and what happened in the process, the researcher can use the participants to do some preliminary interpretations.

The workshop approach can be applied in different stages of a research process, which is reflected in the illustrative cases. Workshops can have a holistic approach that is also a learning process of how it might be in the future. This because the workshop approach is interested in developing a change in collaboration with the participants, whereas the focus group is more concerned about the participants' views of a specific problem.

The workshop can therefore be used in the pre-understanding of a research process, the understanding of a process or the post-understanding. It can be used to validate and explain other empirical data gathered from other types of research techniques (e.g., interviews, surveys, focus groups, observations, etc.).

In scientific work, it is therefore also necessary to plead both to the scientific approach but also for researchers to be more open to different action-oriented experiments and events (Marsick & O'Neil, 1999), which also depends on the purpose of the research and the type of information that the researcher is looking for and to make sure that the data is valid and reliable, but the researcher in this performance must also consider his or her own role. Further research could also look at the interaction between workshops when they are done in a sequence, and what role the different involved actors play in this process.

Overall, our research suggests that design management researchers should be more transparent about their choices when using workshops in the research process. This kind of transparency could also result in that the methods developed within our discipline would have a greater chance of inspiring researchers in other fields of research.

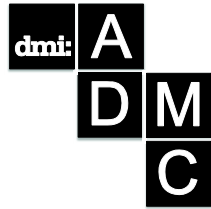
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## Affinity & Ambiguity in Designerly Leadership

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*This paper discusses a new theory of Designerly Leadership in response to major disruptions in the ways that products and services are designed, made, and distributed. We outline an experientially derived framing of what it means to lead in a designerly fashion, particularly focusing on how leaders modulate their perceptions of affinity and develop extended methods for working with ambiguity. We then propose a series of ways that programs wanting to educate design managers for strategic roles could build and support this capacity in their graduates.*

**Keywords:** Experience; Ambiguity; Affinity; Rhetoric; Artifacts; Designerly Leadership

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## Design → ← Business

For some time now, business discourse has identified that leaders with designerly approaches offer strategic and tactical advantages over those approaches espoused and taught in traditional MBA and business leadership curricula (Brown, 2008; Fraser, 2012; Liedtka, King, & Bennett, 2013; Liedtka & Mintzberg, 2006; Martin, 2009). To clarify *designerly*, we refer to Cross (2006, 2011) and his discussion of an approach to design that privileges discourse around & *through* making, aesthetic sensitivity, and human-centered perspectives.

In response to this, we have seen an uptake of design discourse and concepts in the traditional leadership curriculum. MBA's (and business schools more widely) have adopted design as a point of differentiation in a crowded market (Rottman, Case Western, Oxford, HBS, CBS etc). STEM programs have reclaimed design skills and attitudes as a way of crossing silos and addressing ill-framed professional situations (Olin, MIT).

Another response for building designerly capacity has been to house design on its own, structurally independent from institutional silos (dSchool, HP institute), or as a separate organisational entity, working in start-up / incubator mode (AC4D, Strelka)

Some initiatives by government agencies (British Design Council, Singapore Design Council, AIGA Designer of 2015, CIIC Valuing Australia's Creative Industries) approach this issue from a designerly perspective, arguing for the value of awareness, use and integration of design within traditionally separate industries. Concurrently, more traditional establishments of design education: schools of Art & Design (CCA, SVA), have extended their curricula to explicitly address topics of business, innovation, and leadership.

The common thread in these developments is the recognition that design and business have different ways of framing knowledge, and that each has value to the other. The examples above are tactics for achieving the strategy of bringing design and business together to achieve better outcomes for graduates and the fields these graduates move into. Some principles that tie these designerly leadership tactics together are reflected in the design thinking literature, including a "bias toward action", a particularly tangible take on the literary adage to "*\_show\_ rather than *tell**" (Brown 2009), that students of any discipline need to develop their *confidence* in responding creatively to learning situations (Kelley & Kelley 2013), and that Business will benefit from reviewing the emphasis on

*knowing* to also address the *doing* and *being* of leadership (Datar et al. 2010 p7-9).

How might design contribute to this development? To bring us back to the task at hand for this conference thread, we frame this leadership as *designerly*: a human-centred, aesthetically sensitive, artifact mediated practice (Cross 2006, 2011), and now move on to discussing what *being* designerly might entail.

### *Being Designerly, & the Experience Turn*

Any useful discussion of designerly leadership requires an holistic interrogation of this role, and a subsequent reframe of it in terms of the disruption that we are gathered here to discuss. The shift from thinking about business & design as a process of ideating and creating *things* to framing it as ways to support people's experiential *needs, wants and desires* is useful here. The turn to experience as a way to frame what it is that products & services *do* can be seen across business (Ulwick 2005, Christensen et al. 2007) design education (Davis 1999), interaction design (McCarthy & Wright 2004) and wider professional design practice, evidenced by the identification of mental models as a key factor in product design (Norman 2002 & 2005), the rise of fields like user experience design or UX, and much of the design thinking discourse mentioned in the previous section.

In light of this, we propose that people responsible for designerly projects (designers, managers, teams, networks of stakeholders) are only ever designing to support human experiences: constructed through the lived perception of the people who engage with said projects (Dewey 1934, Merleau-Ponty 1962). Designerly leadership begins with this as a grounding principle: that framing what we do in terms of the experiences it supports is as applicable to the design of products and services as it is to the design of projects, organisations and workplaces. In other words, leadership.

In all these designerly contexts, artifacts are used to mediate shared understandings, across various types of space, with a range of stakeholders, or people. The bias toward *showing* over *telling* described earlier is an explicit and deliberate tactic in this experiential turn. We will now explore how this way of working brings a qualitative change in the way teams create meaning. Experience is the key frame, and artifacts are how that frame is enabled, so it is important for us to have a closer look at the way artifacts do what it is we ask of them.

### *Artifacts as Experiences*

The work of John Dewey is closely associated with ways of framing experience in the context of design. Dewey's 1934 book, *Art as Experience* was a compulsory text set by Moholy-Nagy at the Institute for Design in Chicago (Findeli 1990). In particular, the chapter *Having an Experience* formed a cultural backbone to the interaction design program at Carnegie Mellon University (Buchanan 2011). This adoption of Dewey's ideas by two major design schools, coupled with the strong influence Dewey had on pedagogical thought (Schön 1992), make *Art as Experience* a useful place for us to examine how artifacts and experience are connected.

Dewey's (1934) model of experience opens the way for subjective and constructivist approaches to understanding the world. He frames experience as a perceptual act, where the person having the experience perceives a relationship between what they do, and what that means, or in Dewey's words: the *perception of a relationship between doing and undergoing* (p44). Framing experience in this way introduces levels of abstraction between the person having the experience and their material reality: to experience, I am perceiving a relationship between something I have done, and what that doing does to me. The doing and undergoing are grounded in actual physical things in the world, but, according to Dewey, the relationship between them is constructed by my perception. Perception is *created* by the beholder (p54).

A constructive perceptual framing of experience is particularly relevant to design management when we begin to discuss artifacts for communicating experience. Again, Pragmatist philosophy has some ideas to help us frame this. For Dewey, experience *is* construction: involving "both action and its result" (p82). Concentrating on the result side of this framework he examines the *thingness* of expression, or how experience manifests in artifacts of human activity: what he refers to as *objects*. Dewey distinguishes two classes of object: **statements**—objects that communicate "the conditions under which an experience of an object or situation may be had" (p84), and **expressions**—objects that *are an experience*. In doing so, Dewey hints at the different kinds of agency that artifacts command in a situation, foreshadowing ideas of non-human agency at the core of actor network theory (Latour 2005), and material hermeneutics of Verbeek (2005) that were to emerge much later.

The important aspect of this turn to experience is the explicit move toward incorporating experience as a conceptual model for understanding design situations. Experience driven approaches have always been an

important part of design practice and education. Schön (1983) describes, in a conversation between teacher and pupil, how a designer “anticipates the experienced felt path of a user” (p95) as a way to frame reflection-in-action. This (often) intuitive leap being made by designers, results in an appreciation of the experiential perspective held by the people for whom the design is intended. The turn that we refer to, and its implications on the practice of design management in particular, is more deliberate and methodical in the way it approaches human experience.

For example: the social sciences are one place design has turned to for theoretical perspectives on understanding and representing experience (Forlizzi and Battarbee 2004, Kimbell 2011). Geertz (1983) uses *experience–near* and *experience–distant* concepts as a framework for understanding the difference between accounts of a situation that the inhabitants of that situation might “naturally and effortlessly use to define what he or his fellows see, feel, think, imagine” and accounts of the same situation that communicate what an expert or specialist might use to “forward their scientific, philosophical, or practical aims” (p57). Either approach to experience has its pitfalls, from being drowned in a sea of highly contextual detail, to being divorced from the situation of concern by professional terminology and abstract concepts, but this framework is useful when thinking about communicating experience in design management practice. It also maps quite closely to Dewey’s expression/statements dualism.

However, design management differs from anthropology and its relatives because it is concerned with *using* an understanding drawn from social science methods to inform action. In this sense it is no surprise that we might find pragmatist ideas at its core. This turn toward experience has changed the kinds of things that design managers pay attention to, and this then changes the way they communicate what it is they see.

### *Communicating Experiences*

As design managers become more interested in how people experience a product or situation, they need ways to identify, communicate, analyse, and evaluate the often intangible concepts that this approach reveals. This shift in focus has resulted in different approaches to the issue of communicating experiences. Many approaches are best described as *cookbooky* (Simon 1963), presenting how-to examples of design projects as demonstrations of best practice. For example: Dan Brown’s (2006) *Communicating Design* focuses on the creation of deliverables, or the graphic and industrial design

artifacts that are used to describe different stages and understandings in an interaction design project.

Other authors combine theoretical views of design with practical methods for undertaking design. Bill Buxton (2007) draws on many sources to make a distinction between sketches and prototypes, an approach that resembles Dewey's expressions and statements. Buxton uses this foundation to develop a way of communicating experiences that focuses on the evocative and explorative sketches of design process rather than the didactic or descriptive prototypes associated with design specification.

In a more anthropologically defined example, Indi Young (2008) proposes mental models, a method for analysing and representing how people conceptually understand a situation that bears close resemblance to the hierarchical model of Operations, Actions and Activities proposed in Activity Theory by Leont'ev (Koschmann et al, 1998).

Another arm of design discourse directly addresses the material that designerly leaders work with: Jonas Löwgren and Erik Stolterman (2004:3) suggest that interaction design is an act of shaping a "material without qualities". Richard Buchanan (2011) states that "Interaction design has no material of concern", going on to propose that the primary materials that interaction designers work with are the "purposes and desires of the people we serve".

While experientially driven practices like interaction design use graphic and industrial design to create project and management artifacts, the outcomes of interaction design are not in these artifacts. The outcomes of these practices are seen in the networks of actions that surround these artifacts, and the people who undertake these actions. Buchanan's third order of design (1992) draws on the artifacts of second and first order design to do its bidding.

Designerly leadership, as we have discussed earlier, is a similar practice, concerned with the connections between the experiences people have in a situation and the things that people make to change that situation. Designerly leaders use artifacts to materialise and surface the intangible, experiential knowledge created during projects. As the materials of designerly leadership become more intangible, design managers use new types of artifacts, in novel ways, to construct, represent and communicate their understandings of a situation. It makes sense to next explore the way this happens, and the capacities that designerly leaders bring to the role.

Bringing this argument back to address *being* designerly, we want to draw attention to the way designerly and business approaches to the world



don't always share similar models of what it means to act in a rational manner. Many business processes seem overly positivist to a designer, while design methods can often be perceived as fluffy or arbitrary (or both) to someone in business. We propose to view design from the perspective of what it is that designers perceive, and how they modulate this perception. This shift allows us to move towards the experience of *being* designerly, by addressing the role of perception in designerly leadership, rather than overlooking it "in favour of the object perceived" (Merleau-Ponty 1962). We particularly focus on the perception of two complimentary qualities: affinity and ambiguity.

## **Perceiving Affinity**

What we do as designers is grounded in how well we can harness our skills at identifying affinity between objects and the systems those objects create. Many design methods explicitly involve some sort of affinity parsing, or search for isomorphic relationships between disparate and unfamiliar objects.

Card sorting, affinity diagrams, mental models... these are but a few of the many methods and tools designers use to work out what's going on in a situation, and what to do about it.

We propose three ways that the perception of affinity is modulated in designerly leadership; affinity *spotting*, *seeking*, and *making*. We describe these three manifestations of affinity ability using a cyclical model, with one leading into the other, and use this cycle to highlight the role that our perception of affinity plays in design processes.

### *Spotting Affinity*

We begin with spotting affinity, because this is the most widely understood manifestation of this ability. Sense-making tasks such as card-sorting, mental modelling or analysing coded recordings are good examples of affinity spotting. This analytic ability works with a set of collected data, identifying groups of elements that share properties or structure. In many cases, like mental modelling or card sorting, the process of spotting affinity between elements also helps to make sense of the larger set of data by implying categories or taxonomies that help us to understand how to further cluster the elements. Its a process that feeds back on itself, and it's important here to remember that design invokes Herbert Simon's (1963) *satisficing* to set a breakpoint in this potentially infinite loop. (p 64)

Affinity spotting can be found in the analysis stage of many design projects, as a bridge between researching the situation and changing the situation. To borrow from Simon again, affinity spotting sits between designers using *afferent*, or sensory channels to gather information about a current situation, and using *efferent* or motor channels to move toward a preferred situation (Simon 1963, pp 55,66).

Affinity spotting is the most easily understood form of affinity perception, and examples of it can be found in most forms of education. Humans are, after all, well know for their pattern matching proclivities. For this reason, we use *spotting* as an anchor to help describe two adjacent, and less widely discussed, perceptions of affinity.

### *Seeking Affinity*

Affinity seeking encompasses activities that help to build that set of elements used for *spotting*. Methods and methodologies including contextual inquiry, ethnography, cultural probes, focus groups, surveys, and even eye-tracking are all examples of affinity seeking.

The link between these kinds of research methods and affinity becomes clearer if we look at these activities as the means to gather a better set of data in order to spot affinity rather than goals in themselves. In this way, I'm framing evaluation and observation in terms of how they help us ask and answer questions like "how can I identify and solve this problem?" or, more specifically, "what should people do here, and how can we bring that about?" It is interesting to look at how affinity ability can help us be better at researching a design situation.

Many methods that we clump under *affinity seeking* talk about the need for the designer to distance themselves from the situation, to "leave your assumptions at the door" (Young 2004) in order to objectively perceive elements in the situation (behaviours, objects, beliefs, actors) without subjective biases.

Many methods have been designed to help us fake objectivity and build a data set that satisfices requirements for variety, so we can then apply our natural pattern-recognition ability in the spotting phase. We might look at this faking of objectivity as a suspension of the affinity spotting activity. Turning that part of our perception off, so we don't bias the outcomes with our previous experiences. Of course this is impossible and it might make more sense to think of this process as a suspension of affinity, somewhat akin to the *suspension of disbelief* we encounter with the movies or fiction.

It is also worth remembering that *not* applying something doesn't necessarily imply its absence.

Affinity ability is *required* to suspend affinity spotting, and therefore we suggest that a designer can become better at seeking affinity by developing a more sophisticated understanding and control over how they modulate their perceptions of affinity. Some great examples of seeking affinity are the many permutations that research methods undergo when they are applied in design practice. For example: *guerrilla* or *quick and dirty* versions of anthropological methods like rapid-ethnography (Norman 1999, Millen 2000)

### *Making Affinity*

The activities previously described help design managers and teams understand the world, but at some stage designerly leaders need to put something back into that world, to make changes. This process of creating things that solve problems can be framed as *making* affinity with a perceived *gap* that exists in the design situation. It is important to note that many people think this is *all* that design does, because it is the only part of design that most people experience. For this reason, it's not surprising that this is the part of design most students sign up for.

Making affinity is one way to describe what's happening when designers respond to the "job to be done" (Ulwick 2005, Christensen et al. 2007) of an ill-framed design situation. It is demonstrated by descriptions of intuitive interfaces (affinity with what we know already) or innovative services (affinity with perceived opportunities and latent mental models). This is where Kolko's (2011) *magic* happens, and it's from here that our theory of designerly leadership builds.

When designerly leaders use artifacts in the service of a project, they *make* affinity with the problems they have framed. The cyclical/iterative nature of these affinity perceptions becomes apparent if we view the framing process as one of making affinity with the "problem of the problem" (Schön 1984), or the *gap* that the design problem has not yet been usefully defined. We can see that affinity perception occurs at different scales and stages of a designerly process, when we seek, spot and make affinity with different elements of the situation.

Framing the designerly use of artifacts as a perceptual act lets us move to discussing the choices presented when a designer, design manager, or designerly leader puts something into the design situation. In this act, they affect the situation, and the perceptions of everyone involved. We propose

this act can be conceptualised as a craft, and that designerly leaders may develop their capacity to successfully lead in the same way they develop capacity in any craft; through deliberate practice, informed by a sensitivity to how the things they put into the world engage other people (co-workers, stakeholders, partners, clients, users) to move a project forward. In order to examine this aspect of leadership, we now turn to a perceptual complement of affinity: how we perceive things to be different or unconnected; namely, ambiguity.

## Using Ambiguity

In this section we lay out strategic approaches to using ambiguity as part of a designerly practice. We identify these approaches as *pragmatic*, *critical*, and *enterprising*. We begin with the pragmatic; an attitude that resonates with the widely held perception that the purpose of design is to solve problems.

### *Pragmatic*

A pragmatic approach to designerly leadership seeks to *reduce* and *excise* ambiguity. Leaders & designers who use this approach aim to minimise the effects of cognitive load and reduce conceptual friction or dissonance in order to design things that are intuitive and usable.

We use the term pragmatic for two reasons: firstly, this approach to design is ultimately interested in fitting a design to its intended use, and users. There is a pragmatism associated with this approach that acknowledges design has a job to do, and that job is best accomplished by designing things to be as unambiguous as possible. This approach is related to a modernist aesthetic of rational simplicity, and the removal of complexity. Its agenda is the excision of ambiguity, often through understanding the user.

Secondly, theorists and practitioners of this approach often refer (as we have) to Pragmatism for models of experience and perception. Design literature that describes this approach has a strong scientific background using models derived from perceptual psychology and cognitive science (McCarthy & Wright 2004, Buchanan 1992, Norman 1988, Cooper 1995).

The kind of artifacts and actions often used to reduce ambiguity include explanatory and specification documents, mental models (Young 2008), wireframes, strategic plans, prioritisation exercises, & affinity mapping.

### *Critical*

Conversely, a critical use of ambiguity seeks to *use* or *exercise* ambiguity in a project, often to draw attention to the relationship between an artifact and its context. This approach re-frames design as an agent of critical reflection, where artifacts are intentionally designed to be ambiguous, in order to encourage people to interpret the artifact and situation for themselves (Gaver et al. 2003). The *re-frame*, or using a design to redefine its own boundaries of agency, is one core design move of a critical approach.

We take the name critical from Dunne & Raby's *Design Noir* (2001) in which they propose critical design as a strategy of using design to "...stimulate discussion and debate amongst designers, industry and the public..." (p58). A critical approach to ambiguity aims to make questions where none were perceived before, either to critique the situation or lead to a deeper *conceptual appropriation* (Gaver et al 2003) of a designed artifact. It is where we problematise the situation and invite our colleagues to be part of it.

We see critical uses of ambiguity in artifacts and actions including exhibitions (Dunne & Raby 2001), cultural probes (Gaver et al. 1999), bodystorming (Oulasvirta, Kurvinen, and Kankainen 2003) and other forms of experience prototyping (Buchenau and Suri 2000)

### *Enterprising*

A third approach uses the second to achieve the first. An enterprising approach to ambiguity employs the ambiguous to scaffold mutual engagement engagement in a shared goal. It uses ambiguity as an invitation to negotiate and construct *meaning* between different stakeholders in a design project. Here, the term enterprising refers to Wenger's (1998) concepts of *shared enterprise*, *mutual engagement* and the duality of *participation* and *reification*.

We have deliberately avoided using a term like participatory, because of the disparate and potentially confusing connotations that this term implies. We are not referring to Participatory Design, as the field of research and practice is called, although many of these ideas may have application in that field.

We propose that these three ways of using ambiguity in design are useful for thinking about what it is that designerly leaders do: persistently flipping back and forth between exercising ambiguity to open up a discourse, and excising ambiguity in order to decide on the next course of action.

As the model of rationality shifts through out a project, the designerly leader modulates their perception of affinity to respond to these shifts. Artifacts that open up discourse at one stage of a project will close it down in another, and vice versa. The challenge for designerly leaders is to not only master the skills of understanding, representing and influencing what is happening in a project or organisation, but to also to adapt their actions to make affinity with the current model of rationality their team are inhabiting.

## Designerly pedagogy

So. How can we teach this? Or, more accurately: how might we create experiences that help to build these capacities in our graduates? Following are a set of provocations intended to develop discourse and hopefully influence actions in design, business and leadership programs.

We believe that programs wanting to educate design managers for strategic roles should...

### *Learn (more) about learning*

It's all well and good for us to say "we should teach our students how to perceive affinity and perform ambiguity" but before we begin writing courses like *Affinity Perception 101* or *Introduction to Ambiguity*, it is important to note that the worlds of business and design aren't the only ones disrupted by the experience turn described earlier. Education, or to frame it more experientially; *learning* is in the throes of several paradigm shifts that are relevant to our topic.

To begin - there's the *Neuro* turn, or looking at how our understanding of the brain (arguably the physical material of cognition) might impact what we do to encourage different forms of cognition (learning). Most interesting here are theories of neuroplasticity, commonly understood in terms such as *fire and wire* or that the brain continually changes throughout our lifetime and that learning is a physical process of repeatedly stimulating a network of neurons. These theories, pioneered by Hebb (1949), have been recently popularised in more widely received works by Doige (2007) and Coyle (2009). Works of note with specific relevance to education include Dweck's (2006) discussion of how growth versus fixed *mindset* plays a key role in academic (and extended) performance, and Perkins' (1995) discussion of ways that intelligence may be framed as learnable, leading to his theory of dispositions (2000). Perkins (2010) formulation of authentic learning experiences as "playing the whole game" resonate with much of what Datar

et al. (2010) list as unmet needs of MBA programs: particularly the reliance of traditional education toward *elementitis*: putting off holistic integrated experiences of practice because teaching the separate elements in isolation is more efficient; and *aboutitis*: teaching about something instead of teaching to do the thing itself.

These and many other works repeatedly discuss the importance of changing the way we teach and assess (Bohemia & Davison 2012), to not only support the way we *actually* seem to learn, but also to develop new *forms* of intelligence that contemporary society deems useful. However, design and business programs persist with antiquated models of learning. Lectures, tutorials, classrooms, briefs, exams, portfolios, rooms that *reset to zero* each teaching period: all these forms privilege 19th Century models of knowledge that is transmitted, or if we're being generous, 20th Century theories of skills that are evident in things produced. These modes of intellectual (dis)engagement make it very difficult for educators to evaluate the perceptual capacities of our students. Let alone allowing the students to experience what it is like to *do* or *be* the practitioner they aspire to.

In short, if we want to change the kind of graduate our schools produce, we need to change the way these schools produce graduates.

### *Drill, train & coach for perceptual sensitivity*

Drilling, training and coaching aren't new to business, leadership, or even design programs. This is great, because the organisational infrastructure and practices are already there. We propose a slight tweak in the way these activities occur: a shift to explicitly addressing the perception as opposed to "that which is perceived" (Merleau-Ponty 1945).

To drill students seems antiquated, and at odds with the statements above. Surely we should all just get dedicated studios with idea-paint walls, movable furniture and throw students in the deep end of doing designerly leadership? Possibly, as Barry and Meisiek (2014) show, the jury is still out on studios.

The path to graduate programs is narrow and stressful. Moves toward standardised testing across OECD education systems means that by the time our prospective designerly leaders reach us many of them are already broken. Broken to the increasingly competitive and objectivist testing regime current secondary and tertiary systems put them through. Some small changes are afoot (see previous section) but there remains the other key challenge to 21st Century education: that to get ourselves out of the pickle we've designed ourselves into, we need to develop designerly

leadership capabilities in all types of people, not just the ones who already 'get it'.

### *Develop rhetorical capacity*

Our final point is directed equally toward design and business programs: designerly leaders should have a sophisticated knowledge of, and ability with, the rhetorical agency of artifacts & actions. Graduates should know *how to do things with things and words* (after Austin 1962). We aren't just talking about convincing clients or stakeholders to agree with our decisions on what colour their logo needs to be, although that could be a good place to start. We also refer to how designerly leaders can develop conviction in the people they work with. How a leader can convince a team to stop trying to *solve* things and start trying to *see* things, how leaders can help their teams and stakeholders to re-frame issues, and extend designerly capacity throughout organisations.

Rhetoric, and its Aristotelian triangle of logos, ethos and pathos, is a useful rubric to help us see where curricula can be tweaked. For instance: design students wanting to act in strategic roles might need to develop their *logos* (no Logos?), or methods for appealing to logical rationality. These include not only methods of analysis but also capacity in perceiving what *rational* actually means in the design situation. Business students wanting to act in strategic roles might need to develop their *pathos*, or ability to appeal to emotions and affect. This includes not only methods of synthesis, but also the expertise with affinity and ambiguity we've described earlier.

## Conclusion

In this paper we've focused on the designerly act of *making affinity* with a perceived gap in the design situation, and subsequent choice to dial the *ambiguity* of the situation up or down to drive a project forward. We haven't yet explored what this implies: that there are ways that designerly leaders can put things into the world and affect the perceived ambiguity of a situation; or that artifacts have performative potential.

We propose that any programs wanting to educate design managers for strategic roles should consider: expanding their pedagogical palette; explicitly attending to perception in the syllabus; and developing appreciation of, and skills with, the rhetorical agency of artifacts and actions.

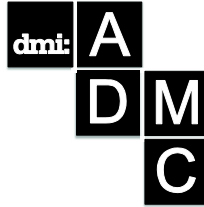


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# Re-Conceptualising Strategy in Design Management Education

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*The aim of this paper is to explain the current place of 'strategy' in design management education in the UK. The research questions concern the extent to which design management education meets the needs of future strategic roles in management and secondly the ways in which design management education is keeping abreast with current theory and practice of management strategy. The paper draws on research from a UK research council project, The Metamorphosis of Design Management Network (MDMN). The methodology uses a qualitative approach to analyse the transcripts and activities undertaken in symposia over a five year period from 2007-2012, with a focus on four events held from 2010-12. The findings on education and strategic designer development were matched against the content analysis of strategy in conference papers presented at British Academy of Management from 2009-13. The findings demonstrate the exposure of students to organisations and different design contexts. However other strategic management developments in strategy-as-practice, dynamic capabilities and scenario building provide new opportunities to extend design management education. The conclusion summarises the opportunities for design education and the development of students as strategic designers through new interdisciplinary approaches.*

**Keywords:** design, education, strategy, strategic management

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## **Strategy in Design Management education**

### *Introduction*

The aim of this paper is to explain the current place of 'strategy' in design management education in the UK, its relationship to strategic management, and relevance to future design leadership roles. Design Management has consistently emphasised the need to engage at the highest levels in organisations, to lead and influence strategy (Oakley, 1990). It is important for businesses, for as Liedtka (2010: 9) observes, firms need to overcome barriers between design thinking and business thinking because "business strategy desperately needs design ... because design is all about action and business strategy too often turns out to be only about talk ...." It is significant in a research context, Cambridge Academic Design Management Conference in (2011) concluded from an analysis of papers that strategic design remains a key concept.

However this paper is concerned with current management thinking on, and uses of, strategy, and its potential application to design management, and the relationship between design management and strategy in terms of student learning. Consequently it draws on Borja de Mozota's (1992) convergent model that takes a managerial perspective to enhance design impact in organisations by accommodating management concepts. Moreover, it is positioned to inform the development of future new business models, new tools and management frameworks to rapidly respond to emerging challenges identified by Cooper (2012).

### *Literature Review*

The development of strategy in business and management practice and research has been characterised by four approaches, rational, processual, evolutionary and systemic (Whittington, 2000). From a dominant concern with planning and control embedded in economic theory, strategy over time became more engaged with the processes of engagement outside the strategic centre. The role of the organisational structure in the implementation of strategy (Chandler 1962) and more generally the problem of implementing strategy has remained a significant theme (see for example, Johnson et al. 2008).

Strategy as process, a more evolutionary, political and experimental learning activity provided the opportunity for adaptation and crafting allowing for more flexibility and shorter response times to external changes.

While each approach tends to reflect its economic and social zeitgeist - evolutionary, a 'survival of the fittest' approach particularly influenced by the 1980s economic climate - the systemic is notable in another respect: for the influence of sociology and the study of 'practice' arising from structuration theory (Schatzki et al.2001).

These approaches have tended to determine the focus of strategy and strategic management. One important research topic in strategic management is competitive advantage and the concept of value and the value chain at the core of Porter's (1985) work has been significant in design strategy. Underpinned by transaction cost theory (Williamson, 1975; Williamson, 1985) the value chain enables firms to analyse the structure and performance of their activities. It can be used to highlight the strategic relations of one firm with another within the framework of a "value constellation" (Normann & Ramírez, 1993). Similarly the "value network" is used by Christensen (1997) to define groups of suppliers and distributors and their value-adding activities outside the organization.

Design is frequently understood as a resource (Oakley1990) and Hafeez *et al.*, (2002:87) highlight the significance of three alternative approaches to market structure analysis of competitive strategy: Resource-Based View (RBV), Competence-Based and the Dynamic Capabilities. The RBV of the firm is one of the most widely accepted theoretical perspectives in the field of strategic management According to Ray (2004: 23) the RBV "asserts that firms gain and sustain competitive advantages by deploying valuable resources and capabilities that are inelastic in supply". The basic principle is that the firm has a bundle of resources at its disposal, but it is the correct application of these resources that can lead to competitive advantage (Barney 1991).

The 1990s also witnessed the development of knowledge management as a distinct discourse (Nonaka and Takeuchi, 1995). This is closely related to the RBV view because the ongoing creation of new knowledge is seen as fundamental to the inimitability of resources and competences. A further internally focused area of enquiry in strategy has been organisational culture. Dominant strands of the cultural strategy literature are summarised by Mintzberg et al. (1998) as examining values and beliefs in organisations, power, organisational learning, complexity, decision-making styles, and culture as a driver or barrier to change.

The competence-based perspective contends that it is the core competencies of a firm that leads to competitive advantage. This contrasts with the resource-based view that argues that competitive advantage

derives from discrete, individual assets (Araujo, Dubois and Gadde 2003). Hafeez *et al.*, (2002) stated that core competencies are the result of a firms' collective learning processes and are manifested in business activities and procedures. This perspective focuses on the improvement of the chosen core competencies of a firm to gain long-term success and ultimately sustained competitive advantage (Hamel, 1991).

The dynamic capabilities approach asserts that resources and capabilities are recurrently adapted, integrated and/or reconfigured into other resources and capabilities, i.e. the resources available constantly evolve to meet the changing environments of the firm (Teece et al. 1997). Eisenhardt and Martin (2000) explain that the main difference between the resource based view and the dynamic capability approach is the attention given to the relationship between the resources and capabilities and the implementation of the business strategy.

These approaches are concerned with the use of resources to create competitive advantage. Design and its strategic management, as both an intangible and intangible resource clearly has a capability to determine the direction of an organization. Turner (2013) concisely summarises its contribution as a critical business resource, that can manifest a strategic idea which if managed properly (sic) make strategy tangible. As an intangible resource it leads into design thinking and leadership, organization and implementation.

These approaches underpin the place of design through four modes: design as strategy, design in strategy, design strategy, design facilitating strategy (Cooper and Evans 2011), and in a sectoral specific form: Design FOR and Design IN strategy (Pitsaki and Rieple 2013). Junginger (2009) reinforces an emergent perspective for design's role in strategy development and the influence of Borja de Mozota (2011) in explaining the value of design. Design in the organization adds one of two competitive advantages: as "differentiator" with a focus on external products, processes and markets or as "coordinator or integrator" which uses organization specific processes and resources to build distinctive advantage. Value is the essence of what organisations are for and also because it is the aim of design activity, bringing value to society and to human beings, focuses on strategic design discourse grounded in strategic theories. For Borja de Mozota, there are four value roles for design, each linked to a different system level. In a variation of this value approach, Cooper et al. (2011) sees it delivered through three levels of design management: design vision, design function and design action.

The system of levels are articulated in strategic design management by Lockwood and Walton (2008), and that “many strategy theorists” (p. 27) agree on 3 levels of strategy within corporations. Strangely they only cite Johnson and Scholes (1993) for this assertion, and the adoption of their corporate strategy, business strategy, and operational strategy levels. They argue that for Design Management to be more fundamentally aligned with corporate strategy it must have an effect on all three levels. And at the highest level, influence at the ‘top table’ that has for long concerned design strategists, Lockwood and Walton propose that Design Managers adopt a new “the perceptive approach” towards the management of corporate strategy. From a consultancy perspective, Topalian (2013) proposes that design professionals contribute to strategy in business at six levels of formal planning, from thinkers, challengers and interpreters to champions and facilitators.

The dominant theoretical bases for strategic design management lies in values, resources and organizational levels. However, Kimbell (2009) notably engages with the systemic approach to strategy, drawing on Strategy as Practice (SaP) and developing a practice based theoretical framework for design. SaP calls for examination of how practitioners act, what work they do, with whom they interact, and what practical reasoning they apply in their own localized experience of strategy’ (Jarzabkowsky, 2005, p. 9). Johnson et al. (2007, p. 3) write of a concern with what ‘the people engaged in strategizing actually do and how do they influence strategic outcomes’ with implications for researchers and their methods (Watson 2011).

Reflecting both strategic management and developments in design strategy, design management educationalists have focused on appropriate course and curriculum design, and the teaching and learning to be derived from it.

An important objective is to create design leaders, facilitators and producers and that designers in industry need to form and re-form learning activities and interactions in an emergent way in response to the dynamic context in which they operate. (Murphy and Baldwin 2012). The balance between generalisation and specialisation , the development of ‘T- shaped’ skills and knowledge (Peters 2012; Trummer & Lleras 2012) remains a contentious issue. More broadly Bencuya (2012) summarises the range of educational issues, juxtaposing the problematic relationships between design and business, specialisation and generalisation, collaboration and independence, adjustment to current economic trends and entrepreneurialism.



## *Methodology*

The literature review demonstrates a well established engagement by Design Management researchers with strategic values, resources, levels of strategic planning and management and points of intervention in the organisation. However, the prevalent concern with levels and by implication, hierarchies in Design Management strategy requires some qualification in the context of post-economic recession organisation. Therefore the research questions that arise from the literature are in what ways can current theory and practice of management strategy defined by Management researchers be applied to design, and secondly, in what ways might these be applied to design management education for future strategic roles in management.

The paper draws on research from a UK research council project, The Metamorphosis of Design Management Network (MDMN). The project demonstrated that in the complex rapidly changing field of Design Management there are critical knowledge relationships between practice, education and research.

The methodology used a qualitative approach to analyse the transcripts and activities undertaken in symposia from four AHRC funded four events, 2010-12. Over sixty participants in these event comprised of researchers, practitioners and educators and postgraduate students. The analysis was undertaken in two stages, the first providing an overview of key themes and subsequently a second one focusing on a symposium about the role of design management education. This was particularly informative about the place of strategy in course design, aims and experiences, and transcripts from presentations from six UK universities and the symposium discussions were coded and analysed for key themes (Miles and Huberman 1994, Coffey and Atkinson 1996).

To contextualise these events, an analysis of research papers from the Cambridge Academic Design Management Conferences in 2011 and 2013 demonstrated the relatively limited range of theoretical frameworks applied to research problems in Design Management. The literatures and platforms of knowledge that inform contemporary design management courses are varied. Whilst there is clearly a core literature on branding, product development, strategy and the key texts written on design management, other readings, for example service design, sustainability and organizational change were particular to specific courses.

The findings on education and strategic designer development were matched against the theoretical content of conference papers advanced by researchers in strategy at the British Academy of Management (BAM) from

2009-13. BAM was purposively selected for its involvement, by definition, in strategic management, its size, over 800 delegates, and support for research in all areas of management. 190 full, developmental and round table proposals were coded and analysed at Abstract level using Nvivo 10 for each year and for the full content in 2012-3, due to problems with the archived materials in 2011. The Academy did not hold records for papers delivered at the 2010 conference, so these could not be included.

### *Findings*

The findings from the MDMN symposia demonstrate the exposure of students to organisations and different design contexts. The types of context were typified by their variety and included large and SME organisations in both the public and private sectors. More broadly there was a focus on the importance of environmental and organisational change and specifically external environmental changes, the global scale of contexts and rate of change.

There was evidence that students were engaged in the strategic level of design, and that this relates to leadership, strategic direction and implementation of design through the organisation. Another significant group were motivated to develop entrepreneurial skills. These findings have a resonance with current theoretical advances in strategic management, in scenario development and organisational change.

The location of strategy in design management courses is explicit in the course design and in various degrees implicit in their aims reflecting Master's level descriptors: Global strategies and Project planning, Brand strategy, Business, marketing & design strategy, strategic design and innovation, and Design Futures. These appear in first or second semesters (or stages) where each course leads to a third stage individual project. More broadly strategy can infuse the course, an aim can be to "articulate the strategic value of design, and to 'speak' the language of business" It's implicit in projects undertaken as consultancy, "we always get our students to use a business model canvas..... service (design) is totally predicated on the business model".

One presenter explained that students are encouraged to understand everything about the system and have to start with the vision and the mission of an organisation. They critically scrutinise what the current vision and mission of the organisation to provide a 'vision to strategy' opportunity to create an innovation space within which students come up with new products.

### **The role of theory**

A generally espoused aim is to engage with advanced design management theory and its relationship to current design management practice. However the Design management is a discipline of “fragments and islands” defined by different foci, theoretical perspectives, and disciplinary contexts. Both externally and within the organisation, competition and collaboration form an important element of strategy formulation and also its implementation. Very few strategic management theorists were evident in the analysis, but in this context Kim and Maubourne’s (2005) Blue Ocean Strategy was used to demonstrate the move from competitive, ‘red oceans’, to competitor-free markets, ‘blue oceans’ and the designer’s role in collaborating to create niche strategies:

*...Obviously we’re operating globally now so the global aspect to underpin it is very important. We’re integrating creative ideas and insights to establish knowledge. And also, if you look at the changing nature of design, also consequently changing the nature of design management in the way it first started, where design management is going into broader global contexts.*

In terms of design and its contribution to the internal management of strategy, a three-level model is commonly adopted, evidence that Borja de Mozota’s role in determining the integration of design management. The strategic level concerns long term decisions and organisational vision; the tactical or functional level is understood to relate to mid-term decisions for strategy implementation and the operational level deals with immediate impact and short-term decisions for the completion of day-to-day projects.

The three stage model of strategic implementation effectively relates to the organisation of design and its organisational context. Junginger argues for a systemic view of organisations and that designers consistently act and work with these kinds of systems: “.....unless you get to this fundamental assumptions and values, beliefs and norms and all that in an organisations you will merely manifest current beliefs and existing manuals so your innovation capabilities are quite limited”. Drawing in and strategically involving members of the organisation in projects enables both students and organisational participants to learn. The students experience in the organisation themselves what the obstacles are, what the opportunities are then can use this product development approach as a vehicle for changes.

Discussion of leadership and strategic decision-making (who makes or influences the strategy) is contiguously located with implementation, and

therefore, the organisation of teams and tasks. Some students are interested in both design and strategy, with designers moving from a very practical operational level towards a strategic level, which brings into focus issues of leadership and authority. A common feature of Design Management courses is that they reflect operational-project level design activity to strategic management of design portfolios, arguably with less attention paid to the intermediate tactical, functional level.

A second dimension of strategic management is the need to create strong foundations in key subject areas for students arriving from diverse disciplinary backgrounds. Design Futures described as “a vast, broad module, sort of embracing many diverse, emerging aspects of design and design management practice, like Corporate Social Responsibility (CSR), service design, design against crime, so in a way we are large box you know sort of there’re lots of issues can be explored”.

The place of strategy as a specific element in Design Management education reflects the tension between theory and practice: “the ethos of the course is informed by practice, and the role of the design management practitioner in organisations”. As strategy is always concerned with analysis of the external environment, typically at macro, industry and micro levels, helping students to contextualise their professional work must form some element of Design Management education.

Collaborations provide an important means to contextualise strategy, and collaborations and partnerships can be formed between different courses, design and management specialisations. Some courses demonstrate a specific business school relationship because in “many cases design management education and research reinvents, explores and develops concepts such as innovation, strategy, and brand and even project and project management without taking into consideration what is happening in the business school.”

Collaborations also serve a broader purpose, encouraging further exploration into design for a better world, in sustainability, ethics and other emerging fields. A universal feature of curriculum design and course implementation is collaboration with industry practitioners and “real world” problems. “Live” projects with design consultancies and their clients have been a defining feature of design courses at a project or operational level. A more strategic intent concerns engagement with other agencies, partners and industries with a national and international scope.

### Management research findings

The second part of the analysis was directed at current directions in research in management strategy. An initial assessment of the conference organisation demonstrates an interest in three themes, each large enough to support its own conference track: Strategy, Foresight and Strategy as Practice.

Table 1 British Academy of Management conference papers by track

Year	Strategy	Strategic Foresight	Strategy as Practice
2013	25	0	21
2012	28	11	19
2011	22	6	13
2010	NA	NA	NA
2009	28	7	10
Total	103	24	63

The emergence of Strategy as Practice (SAP) research presents a number of new research directions. Firstly interest in SaP is stimulated by the strategy discipline's growing engagement with activity and secondly, its fit with a wider 'practice turn' in contemporary social theory since the 1980s (Schatzki et al. 2001). From this perspective, strategy has been defined as 'a situated socially accomplished activity, while strategizing comprises those actions, interactions and negotiations of multiple actors and the situated practices that they draw upon in accomplishing that activity' (Jarzabkowski et al, 2007:7-8). By recognising the critical roles that both individuals and society play in determining strategy, it returns research to its original purpose of understanding and improving the work of practitioners (those who do the work of strategy).

As well as the broad parameter of *practitioners*, the Strategy as Practice perspective studies *practices* the social, symbolic and material tools through which strategy work is done. Strategic praxis, strategic practice and strategic practitioners and subsequently, professions combine into a theoretical framework that integrates organisational strategic activities with the actors on whom activity depends. In contrast to a view of organisations implementing strategy through levels and hierarchies, and strategy explicitly stated upfront, it sees the organic emergence of strategy, that takes shape and infuses itself into the everyday actions of individuals and institutions (Chia & Holt, 2009). Moreover it recognises that organizations and strategic

processes are understood as dynamic phenomena. Larsen et al. (2013) discuss wayfinding through the meshwork to enact strategy in sensible ways: strategic processes can be understood as actors' ability to handle unpredictable, dynamic and non-linear processes. These elements are missing currently from the hierarchies approach commonly adopted in Design Management education.

The second major research theme arising from the strategy papers, picks up the interest in dynamic and unpredictable environments, processes and above all, "capabilities". CADMC conferences have briefly touched on dynamic capabilities. Rosensweig (2011) sees design as a dynamic capability to create competitive advantage through "difficult to replicate" expertise within the organization, formed by its intricate blend of personalized imagination and highly interactive activities. The theme has formed a significant body of research in strategy and provides a number of perspectives for DM research.

The constraints imposed by the external environment oblige an organisation to extend and modify its existing resource base to generate a new set of valuable resources, which can then be used to retain or improve its competitive position. This requires the development and deployment of dynamic capabilities throughout the organisation. There is a need for more understanding of the dynamic capabilities of proactive environmental strategy which can lead to opportunities for the assessment of emerging fields of interest (Wong et al. 2013), for example in green issues, and identifying dynamic capabilities which enables the development of green service delivery practices.

'Dynamic' refers to a process. The problem of dynamic environments is reflected in the organisational context by the need to change and adapt to the external environment. Managers routinely encounter the "conundrum" of strategic agility – the seemingly contradictory goals of remaining strategic whilst acting quickly and adapting to a fast- changing environment (Rhisiart et al. 2013). There is also another flaw in the existing dynamic capability models, namely, they are especially relevant to large, multinational enterprises while the European business is dominated by the small and medium-sized enterprises (SME) sector.

To processualize the resource-based view, time needs to be added to the research agenda. This can be done by building on the concept of 'routines' and practices, which in turn resonates with the SaP focus on agency and micro-environments. These tensions between the short and long term appear in the concept of strategic ambidexterity where short-term profit

and longer-term investment have to be managed at the same time (Bednarek et al. 2012).. The use of explorative and exploitative knowledge in ambidextrous relationships provide a hitherto unexplored positioning opportunities for design in the organisation.

A third element of strategic management research arising from the analysis concerns the middle layer and the middle managers themselves. Recent strategic management research demonstrates that middle managers roles have changed and they are affected by many factors that were not considered earlier (Christodoulou et al. 2012). Middle managers can be strategic actors in strategizing, the manager's work, encompassing the continuous practices and processes through which strategy is conceived, maintained, renewed and executed. Social processes can be particularly relevant to a micro-level understanding of how middle managers act and interact in the strategy making sequence.

In some senses middle managers can be understood to be 'performing the conversation' and 'setting the scene'. However these activities are more associated with making sense of and selling existing strategies, rather than validating those strategies and/or proposing new ones. Micro-practices such as 'preparing and orientating', 'generating and working with strategic content', and 'reflecting and validating', appear to correspond with strategy development (rather than strategy selling) activities (Meadows & O'Brien 2013). How they do this with design would form an interesting new line of enquiry for researchers and students.

The final area of strategic management that offers interesting insights for Design Management is the development of strategic scenarios. Strategic Foresight was run as a separate track at the BAM conferences until 2013, and provides opportunities to explore uncertainty in the business environment. Intuitive logic methods create scenarios as plausible images of the future in order to engage participants in strategic conversations. Sensemaking remains an important area for research with opportunities for visualisation of contextual scenarios.

## **Conclusion**

The findings demonstrate the exposure of students to organisations and different design contexts. The types of context were typified by their variety and included large and SME organisations in both the public and private sectors. More broadly there was a focus on the importance of environmental and organisational change and specifically external

environmental changes, the global scale of contexts and rate of change. There was evidence too that students were engaged in the strategic level of design, and how they can set the direction for design in an organisation. Another significant group were motivated to develop entrepreneurial skills.

Returning to the research questions, the findings demonstrate a range of opportunities for Design Management educators and students to use relevant theory and practice of management strategy.

- SaP opens up new lines of enquiry into understanding the intermediate, middle management level of design, which was shown to be problematic on Design Management courses. Its focus on practitioners, practices and praxis, at meso and micro organisational levels and engagement with both internal and external actors, provide a new framework to examine the integration of design into organisations. Research questions can be framed around activities of strategists, and their links with tactical and operational level processes to gain acceptance of design in any of its strategic forms. Design thinking that opens up new perspectives in knowledge - ways of thinking and acting - ties in with practice based approaches to strategy.
- The findings demonstrate that SaP, but other strategic approaches too can be applied to the relatively neglected area of middle management. There is a need to explore theoretical frameworks that assist in understanding changes that have taken place in organisations, particularly during the economic recession from 2008. These have led to reductions in workforces, declining middle management numbers and their changing role. An assessment of design roles and organisational relationships for this group of managers is relatively unexplored. Bucolo et al.'s (2012) proposal that design leaders are advocates contributes to this field of enquiry by observing that the role requires a deep understanding of operational requirements, business needs, and strategy.
- Innovative capabilities are dynamic capabilities because they are directed at the creation of future valuable resources. To what extent is Design Management part of this resource base? Design Management can be an innovative capability, to create valuable future resources. How can it be understood as part of the process of creating, extending and modifying an existing resource base?



- The visualization of uncertain business environments and the envisioning of future states offer a new theoretical basis for design-led activities.

The second question asked in what ways might these be applied to Design Management education for future strategic roles in management. The answers to the first question answer this in part: strategic management theories derived from the study of activities and procedures provide accessible points in the organisation, from which to access problems of leadership and the implementation of strategy. Above all, they provide an alternative perspective to the assumed hierarchical structures between corporate and operational levels. The approach is particularly suited to studies of SME organisations, and the messy strategy making and implementation of small businesses. On the other hand it should also be noted that the findings demonstrated very limited research into corporate strategy.

Related to these issues, is the need for research into networks and alliances outside the organisation, the location of design in these extra-firm activities and their application to student learning. Finally, and almost completely ignored in the strategic management literature, big data, and physical and virtual world convergence have rapidly become important strategic issues. This applies too to Design Management education and the strategic implications of convergence on design strategy, the distribution of design management and its integration, at organisational and project levels.

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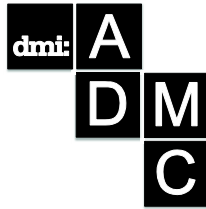
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# Exploring Learning Experiences of Business Undergraduates in Strategic Design Module

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*The paper explores the delivery of a strategic design module within an undergraduate business education in UK. In light of the recent discourses to promote change in design education (Friedman, 2001; Cassim, 2013; Norman and Klemmer, 2014; Souleles, 2013), the learner's journey and their decision-making process undertaken in the strategic design module are being investigated to highlight the potential of design process in contributing to business and management education. The paper follows participatory action research and draws on observations of learners' engagement in a design process substantiated by insights from staff delivering on the module. The aim is to understand the nature of decisions the learners undertake in order to generate more effective learning and teaching strategies highlighting the value of strategic design. The insights gained illuminate learners recognition of the value of decisions grounded in empathy in addressing contemporary organisational challenges, whilst highlighting their avoidance of risk in decision-making and lack of perceived interconnectedness of those decisions. Thus, it is argued that the resulting awareness around decision-making can become a very useful tool in helping learners conceptualise what strategic design requires and understand their own learning experience.*

**Keywords:** *design thinking, strategic thinking, decision-making process, Strategy Dynamics, design management, business management education*

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## **Introduction**

Norman and Klemmer (2014) argue that design education must change. They arrive at this conclusion from the belief that design taught as a craft does not prepare design practitioners for involvement in 'creating, challenging, and advancing practical theory' (Norman and Klemmer, 2014). On the other hand, Herriot (2004) (cited in Souleles, 2013) argues that design curriculum should include subjects such as '... psychology (cognitive theory, perceptual processes, human interaction, problem solving, strategic thinking) ... [and] marketing and business (identification of an audience, the creation of a message, environmental factors, budget and scheduling) ...' to prepare design learners to respond to the complexity and uncertainty of the current working environments. Moreover, Curedale (2012) argues that although '[t]raditional design education has cast a designer as a type of artist who essentially works alone and places personal self expression above all else...' in reality, design methods and processes are very much part of the complexity of the projects they contribute to. 'The methods stress design as a collaborative activity where designers respect and have empathy for the other development team members and where design is informed by an understanding of the perspectives of the people who will eventually use the finished design' (Curedale, 2012).

Within the UK higher education landscape, the undergraduate design management curriculum, which is the focus of this paper, tends to be firmly nested within the design school environment. However, there are exceptions to this, for instance where a business school offers an undergraduate management degree with a pathway in global business and design management. Such a decision is being driven by the premise that the curriculum should prepare its graduates for employment opportunities by positioning design as an important factor in strategic management of businesses organisations. Moreover, in an on-going recognition of the potential of design methods in contributing to business management education, the authors argue for the value of applying design processes to management challenges leading to innovative thinking.

To investigate the impact of this environment on the learning experiences of the business management learners, the authors explore the delivery of an undergraduate third year elective module enabling learners to immerse themselves in the innovation process infused with designing and strategic thinking. Throughout the module learners are asked to engage with not only creating a particular solution (feasibility) but also to ensure that it meets the needs of the customer (desirability) as well satisfies

business needs (viability). However, most importantly the purpose of the module is to enable learners to develop working processes that combine decision-making and divergent thinking as a means to respond to a given problem by exploring its complexity within an uncertain broader context.

The paper draws on observations of learners' engagement in the process of innovation substantiated by insights from staff delivering on the module. The aim of the paper is to understand the nature of decisions the learners undertake while immersing themselves in the process of design, in order to generate more effective learning and teaching strategies for business management learners, whilst exposing the value of strategic design. The paper is located in participatory action research methodology to ensure its academic rigour.

Reason and Bradbury (2001) define participatory action research as '... a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes' (p. 1) Thus, it is a systematic approach that seeks knowledge for social action (Fals-Borda and Rahman, 1991). 'Action researchers reject the theory/practice divide and believe that applied research can both build theories and solve problems' (Brinberg and Hirschman, 1986). Ozanne and Saatioglu (2008) argue that '... action research is demanding because researchers are expected to both develop knowledge and work toward social change' (p. 424). It is an appropriate methodological choice as the investigation focuses on solving a practical problem, namely helping learners to gain confidence from decision-making process involved in developing innovative business proposals. It also contributes to the development of knowledge around the integration of design and strategic thinking into a business education curriculum. The research pursues '... a spiral [of] self-contained cycles of planning, acting and observing, and reflecting' (Kemmis & McTaggart, 2000, p. 595), which aligns with the participatory action research design. This research design is applied through reflection on module delivery to delve into issues identified in teaching. The analysis and insights are then fed back into the next round of teaching, followed by further post-teaching reflection. This investigation started in summer 2009 and has been an on-going process of observations, evaluations, actions and reflections year on year this module has been delivered. The resulting analysis has lead the authors to gain important insights as to the nature of learners journey and their decision-making processes, which are discussed below.



## **The teaching and learning context of the strategic design module**

### *Teaching*

To date the teaching supporting the module has been informed by concepts such as ‘comfort zone’ as a teaching and learning metaphor (Brown, 2008)<sup>1</sup>, the design thinking model (Brown, 2009), Blue Ocean thinking (Kim & Mauborgne, 2005), Strategy Dynamics (Warren, 2008), the Applied Empathy Framework (Knemeyer, 2006) and emotional design (Norman, 2004).

Originally, Luckner and Nadler (1997) argued that, ‘[t]hrough involvement in experiences that are beyond one’s comfort zone, individuals are forced to move into an area that feels uncomfortable and unfamiliar – the groan zone. By overcoming these anxious feelings and thoughts of self-doubt while simultaneously sampling success, individuals move from the groan zone to the growth zone’ (p. 20). Panicucci (2007) further elaborates: ‘[e]xperience has shown that learning occurs when people are in their stretch zone. Intellectual development and personal growth do not occur if there is no disequilibrium in a person’s current thinking or feeling’ (p. 39). However, Brown (2008)<sup>1</sup> argues for the notion of comfort zone to represent a metaphor of ‘... how we might think about learning and growth’ (p. 11). He maintains that it is through emotional safety, security and stability rather than emphasis on increasing risk that students learn the most. Brown’s (2008)<sup>1</sup> argument offers a very useful lens through which to understand the context, process, and participants’ learning experiences on this module, suggesting a far more constructive approach to zones of discomfort that learners traverse when immersing themselves in design process.

Brown (2008)<sup>2</sup> defines design thinking as ‘... a discipline that uses the designer’s sensibility and methods to match people’s needs with what is technologically feasible and what a viable business strategy can convert into customer value and market opportunity’ (p. 86). In particular Brown’s (2009) insistence on a harmonious balance of desirability, feasibility and viability is of interest to the teaching as it provides learners with a solid framework for reviewing and reflecting upon their proposals. It is also a very useful tool in prompting learners to acknowledge the complexity of a given challenge as part of the decision-making process.

Blue Ocean thinking (Kim & Mauborgne, 2005) and Strategy Dynamics championed by Warren (2008) provide an overall business platform for this elective module. Kim and Mauborgne (2005) introduce a practical range of

tools and techniques such as the Strategy Canvas to highlight what is important to current and potential customers and the Four Actions Framework to help them identify such opportunities. A Strategy Dynamics approach fosters the mapping of interaction between organisational resources. It explains how business performance has developed up to the current date, and how to develop and implement strategies to improve future performance. The approach emphasises building and sustaining the resources and capabilities needed to succeed. As part of the module learners have to customise a centrally defined model constructed in Sysdea – software that enables the resources mapping. They amend this model to meet their own context, whilst exploring their strategic decision-making process.

An Applied Empathy Framework (Knemeyer, 2006) engages ‘... customers through very thoughtful and intentional design that deeply considers the needs and desires of people—independently of the business and strategic goals that usually define the products we design’. This theorising is further expanded by the work of Norman (2004) focusing on emotional design. Norman argues that ‘[b]usiness has come to be ruled by logical, rational decision makers, by business models and accountants, with no room for emotion’ (p. 10). This is often evident in the nature of business education. In the context of this module, the emotional design prompts learners to engage with visceral, behavioural, and reflective design (Norman, 2004) bringing the emotional dimension into the design process. In turn, such understanding enables learners to begin developing linkages between the emotional and analytical aspects and their impact on the decision-making process.

The use of the above theoretical frameworks in teaching of this module is critical in the way it supports learners in developing and testing their innovative propositions as well as how they respond to the project brief.

### *Learning*

From its inception, the module in question has been based on a single project, which is broken up into four stages: the brief, the initial proposal, the design mock-up and the business case. However, through the process of questioning the curriculum and resulting learning experience, a metaphor of a journey was developed as a tool to help learners grapple with the conceptual complexity of the assessment. Therefore, learners are expected to respond to this brief by starting on a journey consisting of a number of decision-making moments and their own reflections on these decisions.

This format broadly follows a design process as defined by seminal works of Nelson & Stolterman (2003), Cross (2006) and Lawson (2006) of formulating, representing, moving, evaluating and reflecting. Moreover, it also acknowledges that this ‘... process consists of distinct yet interacting mental acts in which [learners] establish relationships with the real world with a view to creating ... [particular] outcomes (Cassim, 2013). Thus, through the analogy of a journey, learners are asked to imagine they are the equivalent of settlers traveling from ‘New York’ to ‘California’. They have the general direction and four points of reference. They are aware that this journey will be a challenge, but at the same time they cannot predict the precise nature of the experience nor what is awaiting them along the road they will travel. The only way to know is to undertake the journey.

In the initial iterations of the module, learners embark on the journey by commencing with defining of a possible offering and then moving onto defining the customers. However, this approach has not proven very successful, hence it has been adjusted, where learners have been required to define their customer first and then identify a need to shape their proposal. Following this format, two pedagogical approaches were explored: (1) learners were not provided with a customer archetype, but rather were given free reign to choose who the customer was and (2) learners were given a broad archetype to offer a starting point for their development. The first approach provided learners with the ability to make their own choice and five cohorts have used it as a means to embark on their learning journey. However, over the five separate deliveries, this process of developing the customers has always caused most difficulties and has been the most trying part of the learning. As a result the second approach has been developed and trialled in the 2014 module delivery. In this case learners have been provided with a starting point of who the customer could be. The below analysis focuses on the observations and lessons learned from the most recent delivery of Spring 2014, as compared to the previous five iterations.

## **The challenges of the decision-making whilst undertaking the project journey**

In order to explore the decision-making processes that shape learners experiences throughout the module, this section begins with a brief overview of each of the four stages learners need to progress through on their journey. The remainder of the section offers account of the challenges

learners face and grapple with as they go through the process of decision-making.

Over the years the observations of the learning and the way learners make their decisions while going through the journey, have led to an in-depth analysis of not only the outcomes of the journey, but also the process between each outcome stage. In addition, the investigation of the process has identified three broad domains where learners make majority of their decisions while on this journey. These are: formulating who their customers is, utilising the Brown (2009) design thinking model and applying Strategy Dynamics to finalise their business case. Thus, the section utilises these broad domains as an investigative lens to unpack the challenges learners face as well as to put forward an argument of the value in exploring new ways of engaging other disciplines in strategic design education.

### *The brief*

The challenge here lies in what appears to be a rather minimalist set of guidelines. The more prescriptive environment in some other modules can discourage learners from taking full ownership of project brief, and developing confidence in their own interpretation. The learners often see the perceived lack of constraints as a 'problem' as they have potentially so much 'space' to play with (compared to their normally more constrained and directional management briefs). This can lead them to jump to a particular solution as a way of reducing the uncertainty, and it can be very difficult to free them up from this initial 'anchoring'. It is important however to note, that the brief set is more aligned with briefs these learners would encounter within professional practice, rather the more directional briefs often associated with the educational contexts.

### **Formulating who the customer is**

The brief not only introduces learners to the parameters of the project, but also sets the tone as to how they perceive their future customer. When learners in the past would spend a certain amount of time focusing on who the customer could be and what problem should be addressed, the introduction of the archetype has helped reduce this time, and created space for delving into the formulating of the need. However, that has also resulted in anchoring of the definition of the customer where the archetype seems to be all encompassing and hampers learners to add to its description.

The time between the introduction of the brief and the presentation of the initial proposals thus focuses on decisions around identifying the customer and forming some sort of affinity for them. However, as the customer is still seen as ‘moving picture’ of research information, assumptions, stereotypes and abstract definitions drawn from previous knowledge, often learners stay away from concrete decisions in favour of more broad approach to managing the risk of not getting it right. As a result, at this early stage, the emotional investment into the project is low making the ‘what if’ types of decisions much more difficult.

### **Utilising the Desirability, Feasibility and Viability model**

Main focus at this stage is on desirability in terms of trying to flesh out the customer and what appeals to him or her. Thus, the decision making process tends to focus on one aspect rather than shift between the detailed view and the helicopter view of trying to achieve the balance between all three aspects. Moreover, the challenges in the decision-making process at this stage can include projection of themselves onto the customer, or conversely not getting ‘under the skin’ of the customer. There can be a reluctance to engage with the customer’s reality, preferring to distance themselves from this by research statistics and demographics rather than engaging in an ethnographic research to better engage with them.

Successive presentations and exercises in class, along with on-going feedback from lecturers encourage learners to both challenge their own stereotypes and push beyond ‘one-size fits all’ decision compromises to come up with a coherent view of the customer. However, particularly for those groups given an archetype, sticking too close to the initial ‘skeleton’ seems to be an additional challenge. Rather than using this as a jumping off point to iterate an evolving picture of the essence of the customer, learners use the archetype as the fixed set of rules to comply with when making their decisions. The very freedom given to experiment (in contrast to most other briefs they experience) seems to encourage relatively small iterations rather than big leaps of faith.

In some instances, learners also have the viability aspect of the model in the back of their minds, so they contrive views of the customer that would lead to larger (and hence more viable from a monetary point of view) customer groupings but this tends to lead to rather amorphous meta-sets of customer characteristics, which are not very helpful in development of creative solutions.

### **Applying Strategy Dynamics**

Although the majority of focus at this stage is about developing a picture of the customer, a key question from the point of Strategy Dynamics, is how many customers are there. Learners are encouraged to make explicit assumptions rooted in their research, as to how many individuals would meet the criteria they are developing. Learners often fear that if they define their customer too tightly they will not have enough 'numbers' to make the project viable downstream. This process of decision-making, whilst being weary of the impact on the future aspects of the project tends to stifle the innovative aspects of the process as often learners trade off the creative detail for 'safer' fits all solutions. Although they are encouraged to avoid compromise views, and go down one route or the other and live with the implications of that choice, learners perceive such approach as high risk and only note its value within the reflective stage of the project.

### *The initial proposal*

In developing the initial proposal, learners often tend to settle for the first idea to deal with the uncertainty of the starting point. Often they rely on their own perceptions of what is new, thus attempt to bring already existing concepts with which they are personally familiar into what they believe is a new environment. The challenge is to push a lot further to identify truly new opportunities. It has been observed that learners who have pushed their own boundaries and developed ideas beyond the familiar have a much better chance to succeed in the later stages of the journey. It is the learners who best 'get under the skin' of potential customers who do best at this stage, and indeed the project as a whole.

### **Formulating who the customer is**

The benefit of the initial proposal stage comes from drawing the line and forcing the learners to make a commitment to their customer choices. This is done in a non-threatening environment of formative feedback to help reflect upon progression to date. Thus, they are aware that their view of the customer can still change. At this stage the key is the feedback they receive and ways in which this will prompt their development and understanding of the customers. This particular stage is also a first reference point in terms of their progression in the learning process, which allows learners to reflect on where the opportunities are and how to capitalise on them. However the reality is, that they hedge their bets as they are trained within business education to be risk averse. Thus, it is at this point; they often fall back into

their more abstract approaches modelled through overall business management education than their design thinking approaches introduced to them in the module.

Moving on from the initial proposal stage to the design mock-up stage, learners tend to particularly struggle, as they need to traverse from the world of business to the world of design as noted in Figure 1. Hence move from a comfort zone through the 'no-man's land' and into the world of design that they are familiar with but not as fluent in. In most cases, this process enables learners to redefine their customer and to become more creative about interpreting their needs and desires.

### **Utilising the Desirability, Feasibility and Viability model**

For the initial proposal learners are asked to utilise the Desirability, Feasibility and Viability model as a point of reflection. They are asked to note which are the key driving aspects and how they will develop their approach from this point onwards. The lecturers' feedback reveals that there can be a number of different outcomes at this stage. It highlights that there can be a lack of sufficient coherence in the view of the customer, and/or the offering, or in the linkages between the two. Alternatively groups can have a reasonably coherent 'first stab' and then need to be encouraged to develop even further, fleshing out the customer and concept.

After the initial proposal submission, the process of having to construct a physical 3-dimensional mock-up is useful as it encourages different ways of thinking about the customer and the offering. The trade-offs in the decision-making at this stage tend to include both desirability and feasibility as key elements, where learners try and decide what needs to be in the physical space to appeal to potential customers, while seeing what is practicable in this space.

### **Applying Strategy Dynamics**

Although the focus is on the development of the design mock-up, learners are still being asked to work through some of the key numbers implicit in their project, in order not to lose sight of the ultimate need to build the business case. The questions prompted by Strategy Dynamics approach reveal either they have too few customers to be viable at the projected revenue per customer, or they have potentially too many. Critical elements from this stage for the later modelling in the Sysdea software include a refined view of the customer, how many of them there are (total market size), what they will do in the created space, and the maximum

capacity (a key element of the business model). It also helps imply the cost structure to support the offering, as sometimes the cost structure learners develop may over burden the business. So the decision-making process involved in creating the design mock-up offers an alternative route to help resolve some of these contradictions, which in turn will feed back into the development of the upcoming business case submission.

However, learners are often tempted to dilute the purity of the view of the customer in an effort to get larger numbers, but this is strongly discouraged. The focus should be on what drives their customer, and even if this is a smaller group, money can still be made if the offering is compelling. Thus, decisions made should reflect this thinking helping learners combine the design process with strategic business thinking.

### *Design Mock-up*

The process of design implementation of the proposal often gives the project a second wind. As this stage is deeply rooted in creative processes, learners are able to rethink their proposal from a different perspective and develop their ideas even further. As the outcomes are based on a process of developing a physical mock-up, this set of activities generates challenges of its own around actual designing of a 3-dimensional outcome. However, the nature of the engagement provides learners with embodied tool to deal with uncertainty offering potential for alternative interpretations.

### **Formulating who the customer is**

The requirement of producing a design mock-up also means that learners need to embody their ideas through a different communication medium enabling them to gain new insights into their customers. However, this process is not always successful. The authors have observed that where learners chose their customers, this process enabled them to focus on who the customer is and how they can meet their needs. It often meant learning something about the customers that challenged learners' perceptions. This process of challenging the perceptions enabled learners to understand their possibilities and open up their understanding of what is actually doable and how far they can push their projects and how much more scope they have to play with. However, the introduction of the archetype has resulted in learners losing sight of how they have defined their customer. There have also been cases where learners managed to focus their proposals but again the customer has become more abstract. Hence at this stage, learners have been enabled to decide what the needs are and how to refine their



propositions, but the customer has become much more part of the background.

In the time between the design mock-up and the final submission, learners embark on a narrowing down process where they must engage in some very practical choices around their customers in order to formulate their final business case for the proposal. This focuses a lot more on numbers and use of Sysdea modelling software (Figure 2) to map the business characteristics. This is a stage where learners reacquaint themselves with their customers. The process forces them to actually get to know their customers because they have to make those very concrete decisions around the size of the market, how to convert their unaware potential customers into real customers, or what are the costs of running the business and how revenue is actually going to be generated.

### **Utilising the Desirability, Feasibility and Viability model**

For many learners, the design mock-up and resulting feedback is an opportunity to re-engage with the project and the customer/offering mix, particularly if they were seen to be wide of the mark with the initial business proposal. At this stage, in particular, they rely on the balance between desirability and feasibility as a point of reflection in their decision-making process as they review their embodied ideas in the design mock-up. Moreover, for those learners that had done well at the initial stage, the mock-up generally offers the opportunity to take their view of the customer and offering to the next level. It often proves to be the 'A-ha' moment of the project, where the mock-up crystallises what the offering is, and precisely what about it appeals to the customer. Although it may have meant some re-jigging of the key facets of the customer and/or elements of the offering, to rebalance the relationship between desirability and feasibility, now with the preparation for the business case, viability comes to the fore.

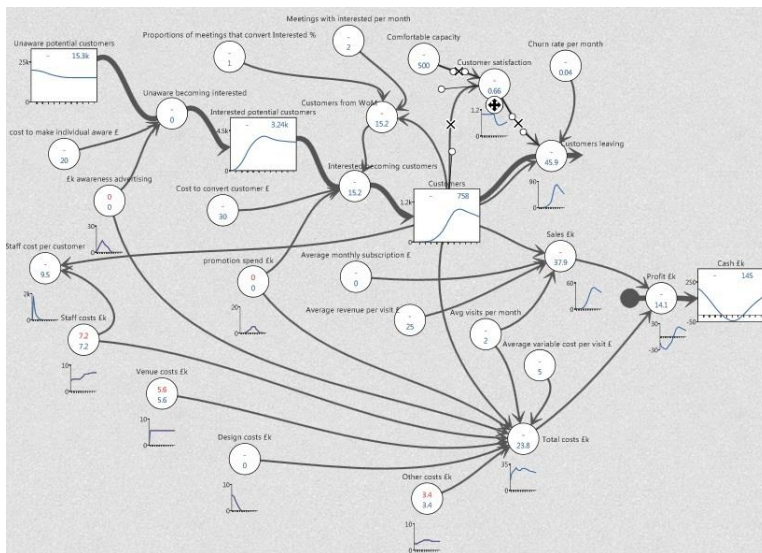
At the same time, there is a danger at this stage that if anything the 'numbers' take too much of a hold on the decision-making process, and there can be a temptation to go for bland views of customers. Such decisions are often made in an effort to make the 'numbers' work rather than keep the distinctive view of the customer. Moreover, learners have to deal with the practical issues relating to how to reach customers (advertising/promotion and word of mouth) and how to construct a business model capable of satisfying their needs profitably. So they tend to have to iterate between viability and desirability, with feasibility a rather

subordinated consideration as they progress from the design mock-up to the business case stage.

### Applying Strategy Dynamics

As the design mock-up often crystallises the view of both customer and offering, the Strategy Dynamics comes to the fore to iterate a business model that works with these insights, tweaking them if required to end up with a workable compromise. Up until this point learners have in effect been refining views of key elements of the model without exposure to the model itself. They are now shown the centrally designed Sysdea model (Figure 1) and how to customise it, and then invited to populate the model with the numbers they have been generating thus far in the project.

**Figure 1: Sysdea modelling software**



*Figure 1 Screenshot example of Strategy Dynamics approach modelling organisational resources for the final submission.*

*Source: Laffy (2014), applying Sysdea software (www.sysdea.com)*

There are two main elements to the model that learners need to engage with: the customer pipeline and the associated revenues and costs (Figure

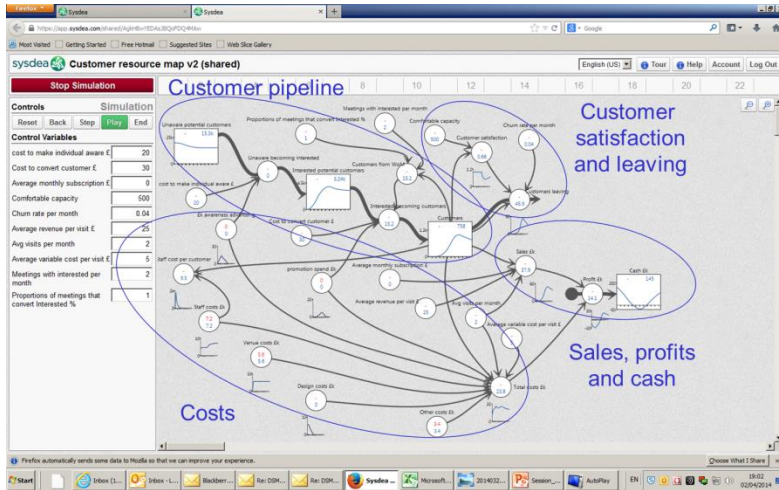
3). In the first instance learners have to ‘translate’ what they have decided so far about their customers and the offering into a workable customer pipeline. Once the pipeline is broadly set, learners need to decide on the associated revenues and costs to see whether the resulting strategic architecture makes sense from a business perspective. Learners can iterate and refine their decision by varying various parameters (e.g. advertising spend, revenue per visit etc.) and experiment with the effect on the business provided that they always follow the logic resulting from the decision-making process.

### *The Business Case*

The final stage of the project requires learners to develop a convincing business case that not only presents a truly innovative idea, but also meets business criteria. The challenge here is not only to learn new software Sysdea that allows such modelling (Figure 1), but to also demonstrate confidence in the proposal and in making decisions around issues of business viability.

Business case submission is a point at which learners come to an end of the journey and the module. In effect it is their goal, but at the same time it is not an end of their learning process. The nature of the process tends to extend beyond this point as often these experiences only begin to make sense once they have been completed or applied in future contexts. At this stage, learners have finalised their decision-making in defining their customers and arrived at a level of confidence as to who they wish to target and what needs and desires they wish to address. When making their business case for the offering, understandably viability seems the key element coming across in the learners’ decision processes – but this is only coherent and sustainable if they have given appropriate attention to desirability and feasibility along the way to get here. Figure 2 is an example of the complexity of the interrelation of these elements that learners need to tackle for the business case submission.

**Figure 2: Customer pipeline and the associated revenues and costs**



*Figure 2 Screenshot example of one of the projects as represented by Sysdea software.  
Source: Laffy (2014), applying Sysdea software (www.sysdea.com)*

In terms of Strategy Dynamics, the business case brings together all the elements of the model. Often learners can over invest in the Sysdea element of the proposal rather than other elements of the required presentation. Also a number of groups seem to delegate the working of the Sysdea model to one or two members (generally the ones more comfortable with ‘the numbers’). While this tends to give the model itself an internal coherence it can lead to a slight disconnect with the insights gained from the previous stages in the project, or from the insights of the rest of the team.

In summary, the above discussion on the journey learners undertake highlights not only the development process of their proposals, but also the starting point of the brief and its impact on the development process as well as myriad of decisions learners undertake. The narrative points to the initial brief and its bearing on the capacity for decision-making, empathy and resilience of concept in later stages of a design development process. The

analysis illuminates that as the learners do not engage in the process of questioning the meaning of the information contained in the brief, they often end up anchoring to its meaning and limit their innovation opportunities. In addition, the discussion illuminates the key areas where learners are prompted to make those decisions to complete the project, which are: formulating who the customer is, the use of the desirability, feasibility and viability model and application of Strategy Dynamics to build a business case. Moreover, the narrative also indicates how the decision-making focus shifts between these areas depending on the particular needs learners are required to respond to in a given moment of the journey. The narrative also highlights the interconnectedness of the domains of decision-making exposing a rather complex network of decisions and the links between them that populate the design process. The resulting awareness around decision-making process can become a very useful tool in helping learners conceptualise what strategic design requires and understand their own learning experience.

## **Insights gained and conclusions**

It is clear from the analysis of the learners' journey on this module that in the short space of a twelve week semester, mixed groups of business students engage in a complex series of decision-making process that enable them to develop strategic approaches not only to design outcomes, but also in creating viable business proposals. Through the investigation of this process, the authors have observed linkages between decisions made about both the customer and the offering. In effect learners are being encouraged to construct decision trees in these separate, but linked, dimensions, so that decisions about the customer (needs, demographics etc.) interact with the decisions about the offering (size, costs, activities etc.). Depending on the context and the timescale of these decisions in the overall project, learners may choose to keep one relatively fixed while they flex the other (for instance stick with a particular customer and flex options around the offering or vice versa). However, due to a reluctance to fully fix the decisions made in either dimension, this choice leads to more iterations between both, and complicates the overall design process. As a result of this interplay, the authors have identified the following insights: (1) learners begin to recognise the value of decisions grounded in empathy (customer) in addressing contemporary organisational challenges (offering); (2) learners are risk averse in their decision-making in particular when required to follow

'what if' scenarios; and (3) learners often do not explicitly perceive the interconnectedness of their decisions and the resulting flow of logic.

The practical import of the above insights is liable to vary across the different context within the higher education landscape. Nonetheless, in particular educators would benefit from exploring the impact of the brief on the ways it sets up the context of the whole learning experience. The paper suggest that management learners who are used to more clear directives on how to commence their projects and what is expected of them, benefit from more vague briefs of design process where the call is for more innovative outcomes. This study indicates that combination of the two enables more creative outcomes, yet allowing learners to manage the perceived risk of business viability. Furthermore, the authors argue, where learners have truly engaged with the decision-making process as a tool of managing the uncertainty of their journey, this process has always led to new discoveries and insights enriching their learning experience and pushing those proposals beyond obvious solutions. Their involvement in acknowledging of the decisions-making process can also lead to increased level of ownership of their learning experience and a much better understanding of the role design can play in developing strategic solutions. Thus the authors argue for the importance of this acknowledgement to become explicit within the learning and teaching strategies and frameworks.

Souleles (2013) argues that '[t]he intellectual tools of the knowledge economy are the tools of scientific enquiry, and the distinction between 'doing' and 'knowing' is not applicable, for designers need to know both' (p. 253). Moreover, Friedman (2001) maintains '... what designers must know is that giving physical shape to an object is a small part of the design process... [and inclusion of] skills for leading, understanding of the human world, knowledge of the artefact and ability to embrace the ever-changing environment' is vital for the contemporary design education to address the complexities of modern world (cited in Souleles, 2013, p. 253). However, the authors argue that embedding management of design process, as part of business management education is just as crucial. It demonstrates how established techniques from design education can be used as a means of educating future business managers the value of strategic design management, thus enabling them to recognise the broader value of design in contributing to contemporary organisations.

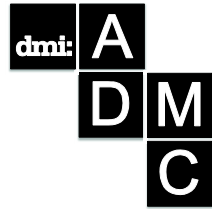
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## Design Pattern and Strategy in Ideation

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*Since design is an innovative work, design process is hard to capture, being different from time to time, from person to person. After design education and practice, designers build up their preferred design thinking models which contain convergent and divergent design activity universally. This paper investigates how a service concept is completed, concentrating on the distinction between expert and novice. This research conducts protocol study to analyse team-based design process. During the unconstrained thinking process, the responses were recorded and semantically analysed in order to study the participants' thinking processes. Coding scheme is used to explore key nodes in ideation process and pay attention to Need & Want (NW), Feature (FEA), Solution (SOL) and their corresponding Decision Activity (DEC). Quotations attached with them are extracted and then transferred to journey maps. Seven design patterns are concluded and the results show that design thinking patterns are different between expert and novice, which has different degrees of divergence and convergence in the three key nodes - NW, FEA, SOL. Further, based on seven design patterns, four kinds of design strategies were abstracted. Through the study, the outcome would guide how to help accelerate the promotion process from a novice to an expert.*

**Keywords:** Design Pattern; design strategy; novice and expert; service design

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## Introduction

Focused on service design, this study mainly concerns the ideation period, which is the initial stage of structuring a complete design concept. As a rapid development of information industry, the objects in design field have been undergoing the process of gradually changing from tangible products into intangible service. During the conversion, the concept of service design finally comes into being. Service design that beneficially creates new services or promotes existing services is a totally new, integral, cross-discipline and comprehensive field, which greatly facilitates the satisfaction of customers to impress them with the experience of its being more useful, familiar and effective to the organizations (Moritz, 2005). Principally relying on the tangible and intangible media, from the experience's perspective of creating more brilliant concepts, designers expect to improve the integral service starting from the system and process respectively (Vinay & Simona, 2014). To conclude, nowadays, people endeavour to develop the design from "products" to "things", from elements of individual system simply to integration of system relationship comprehensively, and more significantly, from internal factors of system to integration of external factors. Concentrating on the service design, distinct from different design disciplines such as product design and visual design, the overcome of it universally is sort of solution which characterizes as intangible and diversifying. Therefore, service design completely changed thinking not only provides tangible products but enhance the values through emphasizing on improvement of the service concept. Without focusing on the beauty of sketch and 3-D model, the evaluation of a service is totally concentrated on the novelty of the concept itself.

Considering the domain of design education, compared with the design activity in commercial design, the design activity in school is mainly propelled with a purpose of education, helping students to grow from novice to expert. The creativity has been divided into two types according to Kirton, adaptor and innovator (Li, Hu and Galli, 2012). It could also be viewed as disruption and destruction. The latter one is inclined to ignore present norms and rules and raise audacious ideas, since the former one is focused on improving current situation. In this sense, education-oriented design is closer to the innovator type and endeavour to cultivate innovator. In consequence, this research discusses about the service design in the field of education, focusing on the most mysterious process in designing-the generation of concept.

## **Divergence and Convergence in Design Process**

For designers, if specifying demand can be determined into leading demand, design experts will generalize specific demand on this particular design problem and go beyond the specific context of this problem, which can become a design strategy in his future design activities (Suwa, Gero & Purcell, 2000). Therefore, the design strategy is above the design knowledge and experience and is a concentrated expression of the designer's thinking. Designers solve design problems and output specific designs by performing the deconstruction of design problems and restructuring and extraction of design knowledge in specific context and situation of design.

When scoping the problem's space, it's widely recognized that design problems are always ill-structured (Cross, 2006). Therefore, the strategies of solving problems are difficult to unify since the problems designers encounter are usually not clearly defined. Although they adopt different design strategies, the diverging and converging process are ubiquitous. Designers create various choices to diverge in the ideation process and conduct selection to converge to get the best result. Besides, another way to describe the characteristics of design process is using decomposing and recombining (Dubberly, 2004).

Alexander propose a model of structuring problems and systems, which structuring a problem into sub-problems and problem elements (Beitz, 1985). Solutions could be found more easily in this way, and the sub-solutions are then combined into an overall solution. But this model is problem-focused, rather than solution-focused. Banathy, Cross and Pugh models all stand from the perspective of solutions, extract the feature of divergence and convergence during the process of pointing the results and are attributed to the problems of iteration. The mode of Banathy (Banathy, 1996) describes the iteration essence of design process, which is repetitive divergence, convergence, analysis and synthesis. However, Cross commits to the notions that design process is always convergent and design has to enter into the final stage of evaluation and detailing (Cross, 2008). But in this process, there are proper and necessary diverging steps to expand thoughts. Different from the two models presented above, Pugh Model (Pugh, 1991) emphasizes the gradual, regular advancement in concept generation and evaluation process, which is a continuous and repetitive process of convergence and divergence and gradually reduces the solutions to get better design results.

## Different Design Patterns in Team-Based Ideation

### *Novice and Expert*

Many studies on the structure of the design process demonstrate that it really does not follow strict rules. Due to the complexity of the service design process, there do not exist any precise and fixed formulas. Educators of design are very clear about this fact. Actually, what makes them interested in are the keys of successful generation of a creative concept and excavation of design strategies of experts. Design experts highly efficiently use heuristics in service design process and this is a significant difference that distinguishes them from novice. By observing and studying expert pattern, heuristic teaching method targeting at novices could be gotten practically, which helps them create diverse and innovative concepts when confronted with different design problems and situations.

Similarities and differences between novice and expert designers are (conceptual) early stages of the design process and how they take advantage of the overview of strategic knowledge. From individual learning strategies of design to their skillful master of design knowledge, they eventually form their own application mode of various heuristics.

### *Protocol Analysis of Design Pattern*

The thinking process of design cannot easily be captured, likewise, design knowledge and innovative methods are always tacit. The study of design process are usually accomplished by protocol study. Through the method of think aloud, the participant is required to speak out while he/she is doing a specific task. Rigorously proposed by Simon and Ericsson first, protocol analysis has been widely used in social sciences, including psychology and sociology. In the domain of design, protocol analysis is used in usability test and design education to know person's thinking. After doing semantic analysis of recorded utterance, the thinking process of designers would be perceived.

Gero and Neill (1997) presented detailed approach of design protocol and introduced their coding scheme and coding method. To explore reflective practice of the teams, Valkenburg and Dorst (1998) surveyed two design teams' activities by coding captured video, who were in Philips Design Competition in Delft University. Atman, Chimka, Bursic and Nachtmann (1999) used protocol analysis to assess the various methods to teach design, understanding the differences between freshman and senior engineering students. All these studies above discussed about the concrete

practical procedure of protocol, and concluded the distinctions between novice and expert, visualizing the abstract designing process or the design activity of a team.

*Table 1 Coding Scheme.*

coding	definition	example ( conversation in protocol study)
NW	Put forward specific needs of users which can be from personal living experience and others' feedback	I think it should like this. When I encounter something needing reflection, I will make comparison them with what we usually get used to...
NW (dec)	Determine whether the demand is trustable, reasonable and the continuing development of needs is necessary or not	A: is there a need like this? B: Yes A: is it true? B: there is such a demand that exactly exists in the reading process and I think it is probably more closely tied to ....
FEA	Put forward typical functions and features	That also means we can help him to imagine and, if necessary, provide a tool to transform his imagination to concrete images.
FEA (dec)	Determine whether features should stay or not	It will be less attractive if we just provide them with the function of "tags".
SOL	Put forward concrete process of concept of service design involving process of usability and interaction	A: It will appear when you mark them. B: for example, it will recommend something to me when I think it is interesting, otherwise, it will never recommend anything to you.
SOL (dec)	Make a deliberate decision about the details of service design	A: Will it be better if it likes this B: I wonder whether it exists or not, I am just not sure whether I will do like this B: Sure, there is a feature like this in Kindle.

In this paper, based on the “divergence - convergence” model, through the analysis of derivative path of concept in service design process, this research wants to get the differences of design strategies used under this “divergence - convergence” framework between designers. In service design, we usually need to put forward three kinds of deliverables, the first are Need & Want (NW), the second is Feature (FEA) and the third is

Solutions (SOL). Every service product has its own target group, solving specific problem or provide new experience for users. Different from current products, it must has it uniqueness, which make it stand out among a large amounts of services. Finally, it need concrete use flows, end products, user interface and so on. Therefore, this research observes the development of conceptual convergence and divergence of NW, FEA and SOL.

The protocol study in this paper adopts team design. Through the observation of teamwork with two persons working in pair, our research recorded their co-design processes and analysed their interactive behaviours. One plus one structure in team cooperation could induce plentiful discussion compared with fulfilling a task by a single person, and lead to well-presented data which is processed more clearly when compared with team more than two designers. A combination of different students and designers with different levels of proficiency has been done (table 2). The coding of raw data was finished by two observers with the ATALAS.ti. The two coders have been tested for Kappa coefficient before official starts of coding and reached an agreement on the code system. After making utterance analysis of nine groups participating in the experiment from three levels, this research uses the methods cognitive map (Roy, Castiglioni, Kraemer, et al. 2012), mental maps (Gould, White, 1986), analytical inductive method (Znaniecki, 1934) to conduct a preliminary analysis of the data and the resulting coding rules are as follows.

Table 2 Participants of the protocol analysis.

	Designer	Grade	Expertise Field	Duration Time Ix D	Workshop on p Experience	Internship p Experience
G 1	D1	3rd year graduate	motion graphic, interaction design	5 years	4 times	Yes
	D2	1st year graduate	interaction design	3 years	2 times	No
G 2	D3	1st year graduate	interaction design, industrial design	3 years	3 times	No
	D4	1st year graduate	interaction design	3 years	2 times	No

G 3	D5	1st year graduate	motion graphic	1month	1 time	No
	D6	4th year undergraduate	interaction design	2 years	1 time	No
G 4	D7	2nd year undergraduate	—	—	0	No
	D8	3th year undergraduate	service design	1 year	0	No
G 5	D9	3rd year graduate	interaction design	3 years	2 times	Yes
	D10	4rd year undergraduate	interaction design	2 years	2 times	No
G 6	D11	senior designer	interaction design	7 years	—	—
	D12	manager of UX	user experience, interaction design	10 years	—	—
G 7	D13	founder and chief editor of a technology blog	internet expert, China Internet Strategist	9 years	—	—
	D14	2nd year graduate	interaction design	3 years	2 times	Yes
G 8	D15	3rd year graduate	interaction design	5 year	3 times	Yes
	D16	1st year graduate	interaction design	1 year	1 times	No
G 9	D17	designer	interaction design, motion graphic	6 years	—	—
	D18	senior researcher	user experience	10 years	—	—

### Seven Thinking Patterns

Through drawing the journey map of concept generation (Figure 1), the author generalizes and extracts ten-group of design thinking modes through

the method of mental map and analytical induction and finally summarizes seven categories. As a result, they are listed as following: **weaving type**, **node type**, **petri dish type**, **funnel type**, **adsorption type**, **fission type** and **metabolism type**.

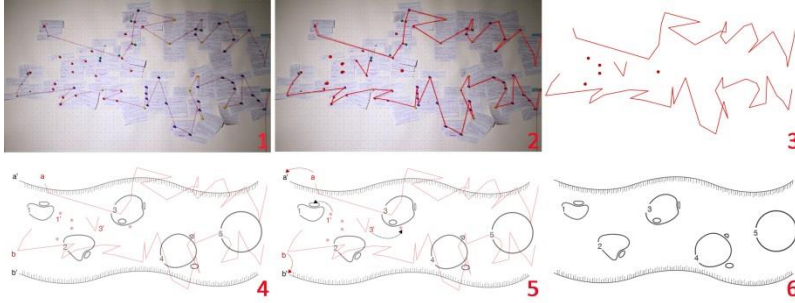


Figure 1 The evolution process from journey map to thinking pattern (Take metabolism pattern for example)

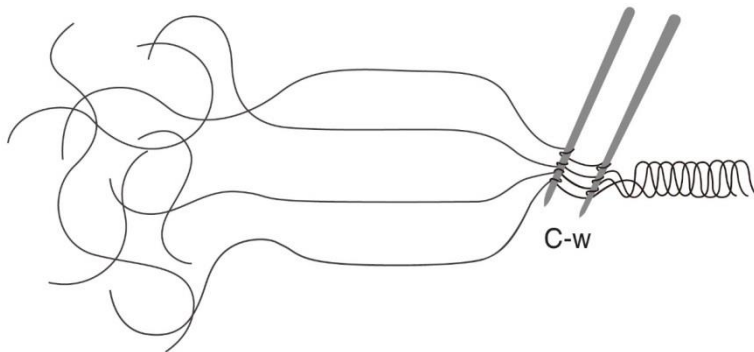


Figure 2 Weaving type

The weaving type: Its biggest feature is that the process of divergence is complex and messy, but the design process has a good grasp of the situation to converge (C-w), which can connect all features designers raised before. The specific situation eventually makes concept holistic and lively. For example, participants in group 1 put forwards a series of relative problems and demands from their daily life, and then, made the decision of several popular directions for design, which contained sensors, content-focused place and searching, immersive reading and simplicity. However, they couldn't think out what they can provide for what kind of user based on



those principles. In the continuous brain storming, they raised a scenario which was really meeting the four points above, museum, derived from their experience in LotusPrize Exhibition. Then, their following solution has been well driven and developed by this scenario.



Figure 3 Node type

The node type: The main characteristic of this kind of group is that they have less discussion at the phase of need & want. After determining the need & want, they directly begin develop features and solutions along possible use flow in the future. Their design pattern contains a lot of similar "Neuron" nodes and each of them contains fast and targeted divergence (D-n) and convergence (C-g) with the determination of a specific part of the concept in a short time. Moreover, the confirmation of each node has become the prerequisites of next stage of divergence and convergence. When participants in group 2 needed to decide the question for children in their APP, they came up with five questions and quickly chose one of them and entered into next step.

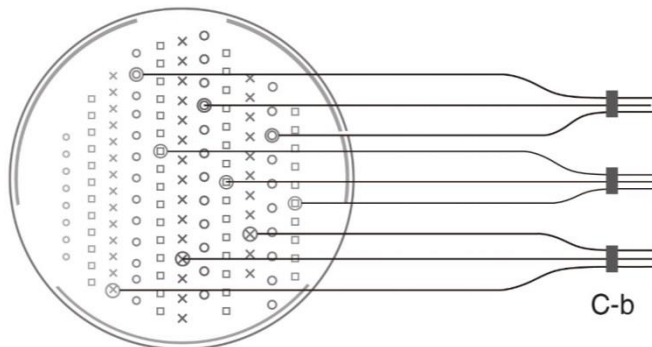


Figure 4 Petri dish type

Petri dish type: Their proposed design pattern is characterized by a very large number and wide range of needs and feature points. While in the implementation of a specific service design, they simply put these small dots together on one mobile service application and obviously lack the clear

direction of their design. Their final solution lacks specific interaction processes of operation. Their early divergence is extensively broad, but excessively simple process of convergence(C-b) leads to an abrupt end to the design.

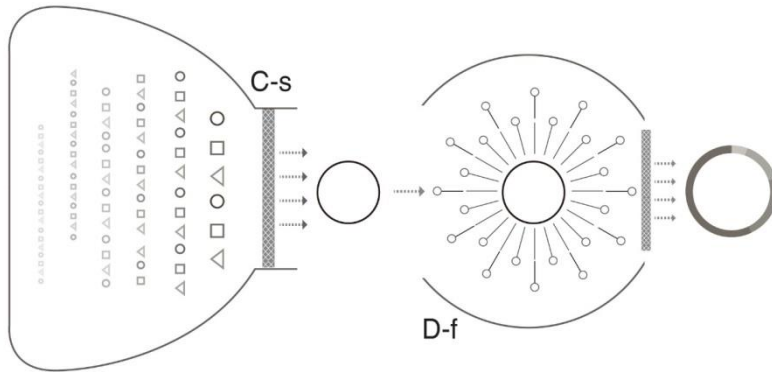


Figure 5 Funnel type

Funnel type: This type of group methodically and rhythmically promotes the design process, especially takes a powerful control of divergence and convergence. One of most significant characteristics is that they can perform the activities of divergence called as “petal model” (D-f) after the process of first screening. Participants in group 6 screened two times in their ideation by adopting prioritize their idea individually and then average outcomes. This method just appeared in this group in this experiment. Additionally, this structure actually resembles an elastic and targeted control.

Absorption type: As far as ultimate design achievements are concerned, all of the divergent design points consequently have a primary and secondary convergence to a final concept (C-a). Their convergence process principally concentrates not only on the analysis of existing products, which belongs to sort of adaptors’ innovation but also on the absorbing process resembling bubble. Owing to the absorption of small function points, they eventually form a huge bubble. Compared with petri dish type, concept of this type could have enough developments of the solution. Designers have a better control of the primary and secondary points, and all these points are related with one theme.

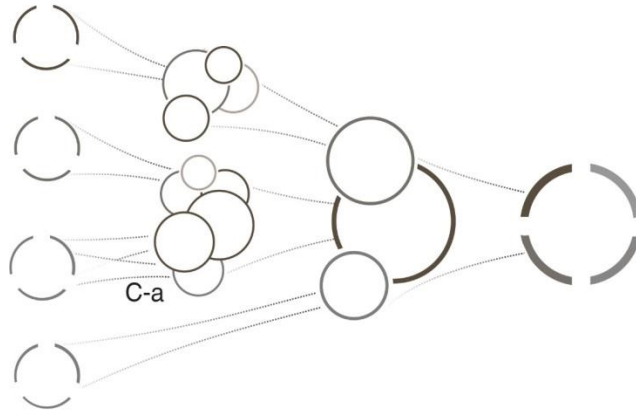


Figure 6 Absorption type

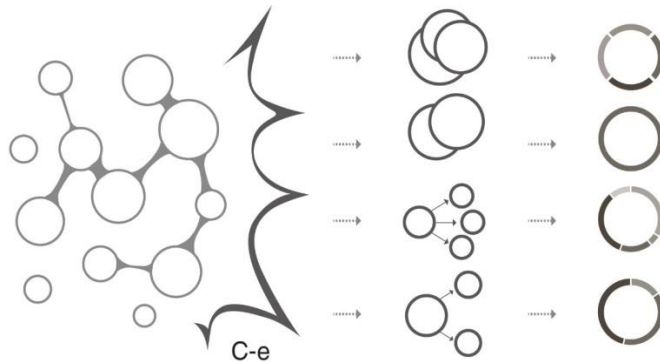


Figure 7 Fission type

Fission type: when this type of group is developing concept, it is clearly evident that most prominent process in this type could be thought as a precise distinguishing and summarizing of farraginous NWs and FEAs and dividing them into some respective directions following thorough divergence of thinking modes and methodical classification. Participants in group 9 could divided their enormous demands into four direction after their brain storming, providing images for reading, expression of emotion, providing useful content according to scenario and extension of reading. The study reveals that these designers are capable of fast absorption, position and understanding of design cases presented by others, equally important,

their abilities of fast modeling ,evaluating and reflecting on both their and others' concept generation are excellent as well.

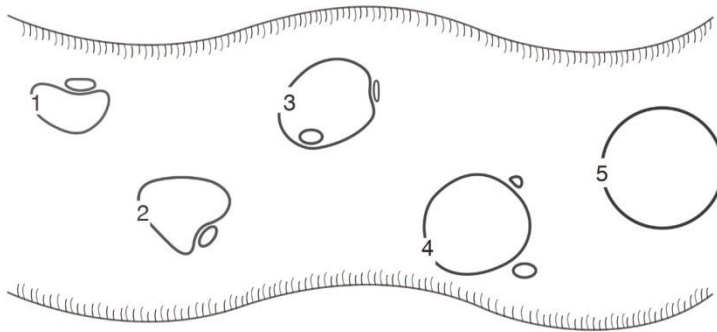


Figure 8 Metabolism type

Metabolism type: the mode of divergence and convergence scarcely seems to be obvious at the development of concept and plausibly presents the feature of gradual exploration. Perfectly as its name mentions, the overall process tends to like that designers, in some time, diverge their thoughts after some initial ones illuminated, however, in other time, they further explores some specific tiny points. Therefore, it's clear that the overall process shows the characteristic of metabolism, which means they acquire useful information from their own knowledge base, simultaneously and constantly abandon unfit contents and eventually form the ultimate concept.

## Design strategies of concept generation

### *Data Analysis*

Kruger and Cross take design activities as an underpinning and divide the designer into four cognitive strategies (Kruger & Cross, 2006): problem-driven, solution-driven, information-driven, and knowledge-driven. We have learned from Kruger and Cross distinguishing the differences between cognitive strategies that after a long period of training, designers normally show their own way to solve the problem in the face of the design problems. Nevertheless, on one hand, they probably change their way accordingly, on the other hand, individuals universally has a tendency due to

the impact of educational background and personal experience accumulated.

Therefore, from the perspective of the development process of service design, based on the pattern of convergence-divergence above, we could see that different group has different focus in their design process, especially presenting diverse divergence and convergence of NW, FEA and SOL. Analysing statistical results of coding (table 3), the differences of the divergent number among these three groups could be clearly distinguished. First and foremost, we principally concentrate on exploring the demands further such as G1, G4; Additionally, we carefully scrutinize authenticity of demands such as G9, G6; Specially, some team has a wealth of vision about feature points on the concept such as G4, G8, while other team tend to be more cautious on identifying the core feature points such as G9; Instead, groups of G2 and G3 spare no effort to operations of concept specifically and devote themselves to construction of process, which makes them determine the needs and feature points more rapidly. From the aspects of the overall balance and fullness of these three in terms of the demand, feature points and solution, these three groups, G1, G5 and G9, are more prominent.

*Table 3 Duration of statements in verbal protocols of the nine participants.*

Group	NW	NW(dec)	FEA	FEA(dec)	SOL	SOL(dec)
G1	51	5	33	19	49	11
G2	7	2	23	9	68	34
G3	5	0	27	4	77	26
G4	21	1	45	6	43	10
G5	17	5	31	19	79	15
G6	8	8	27	8	8	7
G7	8	1	16	8	29	12
G8	7	0	36	5	59	23
G9	12	16	23	19	55	40

Taking the seven thinking patterns and data in the table 3 together, adopting componential analysis (Bernard & Ryan, 1998), they could be simplified and summarized from the process of service design. In table 4, according to their different divergence and convergence in different period of designing, they could be categorised into four kinds, needs-focused

design, content-focused design, design centered on interaction mode and design with overall development.

Table 4 Analysis and induction of design strategies in service design.

	NW	FEA	SOL	Design Strategies
G1	■	■	□	Needs-focused design
G4	■	■	□	
G6	□	■	□	Content-focused design
G8	□	■	■	
G2	□	□	■	Design centered on interaction mode
G3	□	□	■	
G7	□	□	■	
G5	■	■	■	Design with overall development
G9	■	■	■	

### Four Design Strategies

**Needs-focused design:** in the conceptual design process, this type of group puts more efforts on precisely seeking the needs of users and trying to provide totally different services which differs those services that already exist in the market today. This kind of driven mode is mainly presented by repeatedly asking each other "Do you have any needs", "Do you think it's necessary to do this". Driven by this, the designers usually look at their own problems encountered in life and counsel their friends to determine the direction of design. Through horizontal and vertical comparison of existing products, they could find the opportunities which lacks in the middle of design process.

In the education process of service design, teachers usually advocate using the methods of questionnaire and contextual inquiry to locating products. But we often encounter a situation which the needs and competitions, even with sufficient research and understanding, does not seem to play a significant role in the promotion of concept. Therefore, in this model, you need to find the possible design direction form NWs. This "ego" or "known" driven mode centered on need prevails in the service design among students, which, to some extent, is associated with the students' living experience and design capabilities.

**Content-focused design:** these groups have a heated discussion about how to provide users with specific content around the service in the design process. Usually, they quickly enter into the diverging stage of functional FEA instead of paying more attention to the user object of concept and

demand, and in this process, the design concept gradually has been established. Especially in some groups, when they set out to design and start diverging directly from the functionality and features based on the experience in the past and agreement on the design process. After reaching pre-defined time of the divergence, these feature points also accumulate a certain amount, and then they make the convergence through the analysis of their needs behind these feature points rather than intuitively make judgment of them. There exists a countercurrent flow process in our traditional process, and this is interregional behavior.

**Design centered on interaction mode:** in service design, because it involves specific deliverables, and inevitably produce some terminal contact points like APP, Web and other products. As far as designers in the design process are concerned, how the user interacts with the terminal should also be fully and carefully considered. Especially for interaction designers, in the process of pondering specific solutions, they can also make some innovations. After quickly making choices of needs and functional characteristics of the main concepts, they proceed to carefully scrutiny the process of that terminal interacts with people. They delve into the scenario where the user eventually use products and get very detailed and specific solutions.

**Design with overall development:** this type of group can have a rational allocation of time and can have a positive interaction among group members. Moreover, they have sufficient development at three levels within the time prescribed rather than only driven by a single factor, which thoroughly considers the demand and reasonably selects function points, and builds some interaction processes. This model of overall and parallel development, theoretically after taking more factors into consideration, can get a better design results.

### *Comparison Across Different Strategies*

Therefore, when designers are doing service design, in the process of concept generation, there are usually four strategies above, namely needs-focused design, content-focused design, design centered on interaction mode and design with overall development. Each model in the generation of concept will focus on one or more stages of the divergence and convergence. In the limited time, it will lead to design results differing in novelty and integrity. More significant thing is combining these seven thinking patterns, you can infer that concentrating on needs & wants will increase the possibility of novelty. However, because of too much time and

experience spent in the phase of NWs, resulting in the time spent in solving NWs and creating concepts will be allocated much less. This leads inadequate divergence in other stages, for example, such as petri dish type and it is the weakest in terms of the perfection and integrity of overall concept; Secondly, the strategies focusing on interaction mode pay more attention on achieving the service and have more propensities to create new interaction methods on specific operational level such as the node type, each of whose steps will devote plenty of time in contents presented to the user; Thirdly, strategies centered on service contents put more efforts in the location and function of service itself and are more likely to diverge more comprehensive concepts ; Lastly, strategies whose integrity is best can have divergent and convergent at each stage.

When applying these four design strategies, designers never adopt one single strategy at one time and there are more situations where the activities probably diverge at certain stage, while converge in another phase. And we believe what can be used to corroborate and develop the concept is a complex type of thinking and is a comprehensive way of thinking about design concept.

## Discussion

Table 5 Advance process of the nine groups.

Group	Design Pattern	Design Strategy	
G4	Petri dish type	needs-focused design	↓
G2	Node type	design centered on interaction mode	
G3	Node type	design centered on interaction mode	
G5	Metabolism type	design with overall development	
G8	Metabolism type	content-focused design	
G7	Absorption type	design centered on interaction mode	
G1	Weaving type	needs-focused design	
G9	Fission type	design with overall development	
G6	Funnel type	content-focused design	



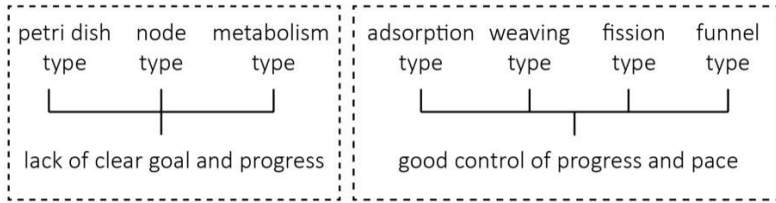


Figure 9 Division and comparison of design strategies.

There are big differences in the construction of design problem between expert and novice designers of service design, especially on the construction of not explicitly defined issues. However, the differences of well-defined design problems are not very obvious. In order to solve design problems, the expert and novice designers use different design strategies of divergence and convergence.

From the perspective of integration and transition in the design process, the nine groups show a progressive trend in Table 5. Petri dish, node and metabolism types always get lost in the mist. Designers of these types tend to have no obvious goals and don't realize to map their road. This unplanned process will lead to a waste of time and inadequate divergence of some periods. Combining design strategies, novice is inclined to depend on their personal experience to identify problems. However, expert is not only pay attention to the problem, but also try to focus on the solution of the whole concept. Novice always have a wide range of divergence, however, from the seven design patterns, we could conclude that taking the initiative to converge could much more push the design process. It is worth noticing that the experts of service design commonly use comprehensive multi-disciplinary knowledge in the process of specific design tasks, which is a new inspiration and challenge for teaching of service design. Therefore, in the education of service design, educator needs to help novice to learn to change their zone, avoiding getting into one aspect for a long time. In present education of design, educators have realized that divergence is critical. Actually, helping students to converge is as important as divergent. In all, educators should endeavour to help students grow up from focusing on sole period of design to jumping between diverse periods, from just extracting existing facts to positively pursuing new concepts, from rarely obtaining skills to actively controlling the whole design process.

## Conclusion

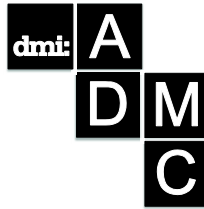
This research focuses on the group's design concept and reflect designers' process of concept generation by tracing the generation process of design concepts. During the process of research, we take group as a unit to qualitatively conclude nine groups of thinking modes into seven categories, namely the type of weaving, node, petri dish, funnel, adsorption, fission and metabolism. However, we believe that the models presented above, and seven modes of thinking can never cover all designers' thinking modes and these are just thinking modes emerged in the last nine set of experiments. Moreover, even the same designer may have different modes of thinking when facing new design problems or designing with a different partner. On the basis of seven modes of thinking, from three stages of development of the concept, four design strategies have been abstracted, namely needs-focused design, content-focused design, design centered on interaction mode and design with overall development. The precise discussion brought the understanding about designer's mind flow and thinking process. Based on all the acquaintance of design pattern and design strategy, educator could have a general overview of students' behaviour in the class, get inspiration about how to systematically and appropriately promote novice into expert faster.

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## Live, Actionable and Tangible: Teaching design strategy

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*Making design strategy actionable and live for inexperienced designers is an ongoing challenge. Often educated around a specific design discipline, and taught to respond to a brief, they have difficulties in setting a strategic intent, and the means by which to get there. The need is to get the balance right in terms of getting them to the right level of competency, ensuring sufficient humility to be effective, being able to see at different scales of view. This paper presents a new methodology for bringing design strategy to students from different disciplines to work together and understand the process of design strategy forming in a transdisciplinary way. The pilot is based upon strategic design, management and design management theory, as well as core design approaches, such as iteration, visualisation, prototyping and sharing. It involved engaging a broad range of design educated students: architects, game designers, social innovation, visual and interaction designers, all of whom were new to design strategy. The challenge was to expose them to a new scale - the strategic scale of thinking; to give them a chance to become familiar and comfortable with the rich variety of tools from design management, and management strategy and methods; to help them become flexible around different perspectives and approaches used by design strategists; and, in addition, to do this in a short period of time. The approach involved group exploration through live projects. The scope of learning was broadened by introducing a wide range of strategic subjects in the form of commercial, not for profit and social businesses. This range meant everyone got to consider different business models and impacts, ensuring a deeper strategic flexibility. In strategic design we can force the design strategy to the point of tangible output. Extending the proposed strategy by making it real allows us to imaginatively share our thoughts on its potential. Overall it is*

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*Live, Actionable and Tangible: Teaching design strategy possible to explore how building confidence allows designers to consider themselves as more than producers, but as authors of strategic futures that extends out into the entrepreneurial space.*

**Keywords:** *design strategy, strategy prototyping, tools, entrepreneurship*

## **Live, actionable and tangible: teaching design strategy**

### *The challenge*

In their core training, designers are not often exposed to the wider context of their work. They are not often exposed to the concepts of and language of business or the variety of impact drivers of a not for profit organizations.

As a result, when asked to think bigger, at a strategic level, they have difficulties in seeing where their work fits in with the bigger scheme of things. They may not be able to see the context in which their design activity operates and contributes. Their inexperience creates additional limits to their awareness of these contexts.

This means that they are limited in their understanding of the power of design to be effective and as such fail to connect their work with the bigger strategic picture.

In this paper the author proposes an approach for teaching design strategy as a literacy for designers explained via a case study. This approach highlights 3 specific aspects of teaching design strategy aimed at expanding the understanding of nascent designers. The case study demonstrates how the process works for nascent designers, the value it brings and that it can be extended to non-designers.

### *Why is it important to bring design strategy to design students?*

In the future we need our designers to be able to do more than just design. We need them to be able to argue the case for design as well as to manage the process. We need them to create a design strategy that supports commercial business strategy or impact-driven organizational strategies. The skills needed go much further than the core set of design education, yet are rarely taught at undergraduate level in any country.

Back in 2006 the Design Council wrote about a new kind of designer needed: “We need designers on the supply side who are “able to think systemically, apply design thinking in broader social, economic and political contexts, collaborate fruitfully with other disciplines, and champion a human-centred design approach at the highest levels.” (Design Council 2006)

Design strategy is a core aspect of the range of skills now called design thinking, and design management education. It allows the designer to be

able to connect the dots between what they are doing and the wider context.

Taking designers into a more strategic practice is not simply about adding skills, but also about developing competencies and literacies. It is also a growing area (Cooper et al, 2011). Design strategy is a core competency for anyone working in design at a senior level, and as we will show, this competency can be initiated earlier and increased over the course of a career.

There exists a range of competencies and literacies of the designer as strategist:

*They can converse in the new language of management; they have a strong structural understanding of institutions and corporate affairs; and they have been taught to be flexible team workers. They do not abandon their platform of design skills or their understanding of creative processes. They bring these abilities and insights to the company, but now they are expressed in a form managers can readily understand. (Gornick 1998)*

Bringing the strategic into an undergraduate curriculum where nascent designers are busy acquiring craft design skills creates a challenge. Helping them to understand the existing literacies they have, and improving upon these requires some new techniques. Developing strategic design competencies in designers is a longer-term goal, requiring additional experience over the course of their careers.

“We need the right kinds of strategic design literacy in both managers and designers”. (Thomson, M., & Koskinen, T., 2012). This applies as much to the educating of managers of organisations who commission design, as it does to the designers themselves - that they are sufficiently skilled to be able to engage the power of design.

We need to provide the structure and frameworks for them to develop these competencies. In a time when MBA students are regularly being offered design thinking, we need to equip nascent designers with the abilities to match their expectations. We cannot wait for them to decide to pursue post graduate education.

“More could be done to help design graduates to engage with design’s role in business as a strategy for innovation in order to help them develop strategic thinking skills for business.” (EU EDII 2012) Indeed, action 6 of the

<sup>99</sup>EU document talks about Design Competencies for the 21st century, and as one of the pilot participant students stated a year after completing: “Learning to work in this way definitely has value for designers. It helps us better understand the interplay between design and business and also gives us more power to advocate for a design-driven approach”. Resp 59

What follows is a case study of the pilot, its rationale and format, and the findings of the follow up feedback project.

### *Case study: The pilot*

The pilot, StrategyLab ran 3 times and included up to 15 in a multidisciplinary group of undergraduate and postgraduate students between 19 and 30 years of age.

It exposed the students to understanding the world of design strategy, being able to see at different scales of an organisation, exploring the value of design, understanding the tools, setting a strategic intent, and the understanding the means by which to get there. Calling the class a Lab, set a stage for more experimental ideas and methods of teaching in a traditional design school.

The curriculum of the pilot was based upon the blending of theory and practice, for instance strategic design, management and design management theory, as well as core design approaches, such as iteration, visualisation, prototyping and sharing.

#### **The aims of the pilot:**

##### **To understand the nature of interest in design strategy**

Strategic design is attractive to a younger age group who can use the skills to differentiate themselves, even if they do not yet have the credibility or confidence to actually practice. We can give them the chance to start to understand this way of thinking and working earlier, so they can develop and hone these skills over time.

##### **To do this together a multidisciplinary group**

Students from different disciplines learned to work together and understand the process of design strategy forming in a transdisciplinary way: including designers, social innovators, architects and game designers. They hear each others different perspectives and together resolve these into

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<sup>99</sup> Growth and Prosperity Report



a new direction. This kind of creative conflict is hard for many, but results in robust, innovative work.

### **Bring commercial and social impact work together**

Working across both commercial and not for profit prevents more silo-ed ways of thinking. In a post-manufacturing digital age, where we have a lively sophisticated social business it makes little sense to concentrate solely on global corporations.

Learning together in the group sessions extended their understanding outside of their interests and experience. In the group critique sessions, everyone explored and understood the dynamic nature of the forces within business and organizations.

### **Building confidence fast**

The purpose was to build confidence fast, to get them up and ready to try things out. This was done by breaking down the design strategy making process into absorbable stages, and starting them off by connecting them with what they already know and skills they already have. For example, by getting them to 'read' strategic intent from products and services they were familiar with. Helping them develop those abilities through small and a larger team based project.

Building confidence helps designers to become open to consider themselves as more than producers, but as authors of strategic futures that extends out into new spaces, including the entrepreneurial space. Five of the students explored their own business ideas through the pilot.

### **Learning by doing**

The combination of weekly activities built to larger projects they produced as small teams such as experience modelling from new experiences of a service. This 'learning by doing' helped them to deeply experience the theory and its application and reflect. (Schon 1987) The group critiques ensured that they all got to hear about different models of doing things, and extended their understanding.

### **A diverse group of designers**

Students were actively recruited across campus as well as through normal channels and engaged a broad range of design educated students: architects, game designers, social innovators, business students, visual and interaction designers, all of whom were new to design strategy.

“It was also really great to work on a team made up of different types of designers.” Resp 95 These different perspectives combined to create a challenging and creative tension from different worldviews of how things are and how they work.

*Everyone came from a different background, which I think really helped us have a well-rounded strategy. I think it would have been more difficult if we each had of been from the same major. Resp 68*

### **Design strategy for the changing nature of business and social innovation**

The nature of business is not a static one, and over the past 10 years has changed significantly. Although the roots of the role of the designer are within mass manufacturing, the role is now far broader and more complex. Many traditional case studies are based on commercial manufacturing companies, some of whom are no longer with us. Contemporary case studies that reflect our digital age, and the dynamic forms of new commercial and social business are thin on the ground.

As a result, new activities were created to explore and understand new kinds of economies such as digital markets, or social innovations, or sharing economy, the impact of social media, the internet of things and phenomena such as the long tail.

The aim was to get them to explore numerous exercises using companies and organizations actively designing products and services right now. For example, exploring three different drivers of sharing economy models with existing car companies. Three groups explored what Hertz, Zipcar or Enterprise could do in the future of car sharing and prioritising profit, social or environmental impacts. They based their ideas on their past activities, brand values and used these to identify alternative positioning or consolidating strategies, and through class discussion articulated the differences. “They were good primer experiences to understand the depth and breath of design strategy” Respondent 59

The goal was to encourage them to get a sense of the workings at the heart of strategy making, and to develop their own perspective on what businesses do. This had the impact of exciting them about this changing nature of design, and encouraging them to use this approach to extend their practice. Being able to understand how things work had the impact of changing their view about what they are, and developed a growing sense of a new, emergent form of their practice as a designer.



Figure 1. Exploring Hertz from new perspectives and envisaging new strategic futures.

### **The success criteria for the pilot**

- Have a vocabulary for translating design decisions
- A process to share with clients and groups
- Show the ability to design processes
- Have processes and models ready to hand to use in their work
- Know how to create design strategy with reference to existing strategies
- Learn the process, and how multidisciplinary design functions work together
- Have a persuasive argument for why design strategy is valuable, especially for non designers
- Demonstrate the ability to deeply understand another's perspective
- Show a knowledge of different evaluation frameworks to evaluate strategy
- Have a range of methods for articulating design strategy

### **The flow of the class**

Stage 1.

*Understand the design strategy space*

The students were introduced to a new scale of thinking – the strategic perspective in design, and how this connects with business and other organizational strategies. Using analytical activities to show them how strategy connects to products and services. Understanding the value of design in helping businesses and organisations in achieving their<sup>100</sup> business goals.

Stage 2.

*Explore and understand the tools used in strategic design*

Here the students were introduced to a range of tools, given tasks to achieve with them, to give them a chance to become familiar and comfortable with the rich variety of tools from design management and management strategy.

Stage 3.

Create a new strategy for a real or new company, or not for profit.

As a group they were required to identify a company or organisation to work with; understanding their goals, exploring possible futures; deciding upon a strategic intent (Hamel and Prahalad, 1994), and developing a design strategy in response. Visualising that strategy and creating a tangible example of that strategy in the form of an artefact, indeed, creating the brief (Humantific, 2011)

Stage 4.

Pitching these strategies to possible ‘investors’. We recruited faculty and visitors to act as investors for the purposes of the events, and they gave feedback to the teams in the form of investment cash and a verbal critique.

*Reviewing the 3 pilot classes*

Evaluation of this pilot was conducted through post-class feedback, immediately at the end of the semester, and through an additional review at 9 months and 18 months.

The results are characterised by 3 *themes*: live - they got the dynamic experience of creating strategy in real time and contemporary; actionable - they could apply it right away, it was easily applied, and they could repeat it

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in different circumstances; tangible – they could embody the strategy in a form that they could design as designers and make it tell a story about that future strategy in action, so that they could share it with others.

### *One: Live*

#### • **Making it Live**

We broadened the scope of learning by introducing a live group strategy project. This project would have a new or existing company or not for profit of their choice as its focus.

Those selected included Amtrak, Pandora, NPR, local food markets, Pebble, Codecademy, Vice and a range of their own business ideas such as Zuum, Pinn Inc and One Finger Studio. This range meant everyone got to consider different other groups business models and impacts, ensuring a deeper strategic flexibility of thinking.

An interesting observation was how the groups moved away from established corporations, and towards new social innovations and not for profits such as NPR, or early stage startups such as Pebble or Codecademy.

#### • **A live organisation to work with**

These companies or non-profit organizations were selected by the groups for a range of reasons: choosing one they could get access to, or were interested in, or were curious about the impact they could have (turning around a company they considered ‘competitor models were more successful’...because I thought it was really exciting, contemporary, and a disruptive technology/service that was challenging the industry that it was a part of.” Resp

During this live engagement they experienced a depth and active interaction to their work that was unpredictable and kept them nimble. It gave them the chance to bump into real language and concepts used by those businesses. It exposed them to the additional scope of understanding required by designers. “We did contact someone who did strategy and design for them. And we used their service directly.” Resp 43

In a class that only lasts one 15 week semester, this kind of engagement is at most basic, but it can be done. Some found that the company of their choice was simply non-responsive, whereas others interviewed COO’s or visited the organization of it were local. Some actually worked with the companies over the short period, showing their work periodically and the final output. As one student reflected: “I think it's a great course, but would

ultimately be most useful if it could be tied in to either real client work, or pretend client work from a much earlier stage of the course.” Resp 77

This component is the key to igniting interest and creating a dynamic relationship with the businesses and organisations out there in the world.

- **A live presentation of the ideas**

Each team shared their final strategies in the form of a pitch presentation, and in this additional stage forced them to tell a different kind of story about the idea, aimed this time at people who might invest in them. “It was really difficult but I think it was a really good thing for designers to have to pitch ideas because we don’t usually get that practice.” Resp 54

This forced them to explain the benefits of the strategy, as well as severely editing their process and thinking.



*Figure 2. Presenting their final ideas with a live audience and the “investors’ gave an edge to the event and the all raised their game.*

*A lot of practice went into it because in the end, the way you communicate your story affects the story itself. “Pitching” the idea*

*made us shape the story in a really different way than how we were thinking about the story from our own perspectives. Resp 75*

Increasingly they needed to be able to tell different stories about their ideas for different stakeholders. The intention was to give them more experience of this. They saw the benefits of the pressure and understanding they had the abilities to re-package the narrative for a new audience and present benefits clearly. Talking about the work and sharing ideas are critical tools for designers. It is not sufficient to just produce the work.

## *Two: Actionable*

### **Start where they are**

When working with inexperienced designers, starting where their own abilities lie, assists them in learning to 'read' strategy through products and services. They already have their own sensitivity to the embodiment of ideas within a designed thing. They were asked to identify what they saw, and also to analyse and critique the difference between what a company says about itself and what it does.

To make the work immediately accessible to them, we needed to seek out any case studies of companies in the press, before introducing more traditional case studies, so that they could connect to this way of 'reading' a story about strategy.

Slowly they were introduced to business concepts. Moving beyond manufacturing and service models of business they explored contemporary business phenomena such as the long tail, sustainable practices, social media and new forms of economies, such as the sharing economy. These are the waters our future design strategists will be swimming in.

We also built on the core practice designers have of iteration as a method of getting to better outcomes. Approaching strategy making as an iterative practise means they could build their understanding over time. It allows them to know that they will find their way there using native and familiar approaches.

Students were given a range of core tools to help them at specific stages of this process. Additional tools were offered for a range of uses including understanding the business, revealing current strategic intent, exploring possibilities, and articulating their ideas as strategies for sharing with others.

### **Tools for strategists**

Design toolkits have become *de rigeur* for design companies and organisations in order to codify their work and approaches. Like magpies, design strategists use a wide range of tools - some sourced from management, design management, strategic marketing and design. We drew from the Design Council's methods cards, IDEOs methods card deck, Nesta Creative Business, Service Design Toolkit, or Luma Institute's Human-Centred Design Planning Cards to name a few.

What's important here is to help students to put together their own kit of tools. They need to know how to select the right tool for the right purpose and knowing why. Ideally they learn how to extend and adapt these existing tools to fit their needs and those of their clients.

### **Clear impacts in view**

As they established a strategic intent for each of their chosen companies or organisations, they were asked to outline the kinds of impacts each strategy should create, across financial, social and sustainable dimensions. This was a stretch for most, but ultimately valuable in being able to consider impact defining as a process. They had to imagine it and thinking about impact fleshed out that vision. These impacts created the targets for the strategy-forming.

*"It was generally fine - sometimes a little difficult because it made me have to expand my imagination and vision for what I could see happening with the company way into the future. Even from when the company didn't exist - and when I didn't fully even understand what my company was specifically going to do." Resp 75*

It is no longer sufficient to measure success of a business solely by financial means, and they were asked to explore additional bottom lines of social and environmental impact. Once unpacked, the different impacts became focal points for specific parts of their strategy-making. This became clearer as the strategy progressed.



## Three: Tangible

### Collaborative strategy

The biggest challenge for each group was to take the leap into considering what their possible strategy might be. Using the <sup>101</sup>possible futures tool they explored high and low risk possible futures for each company.

They made the strategy tangible by making it together step by step on the wall, using the here to there framework given. Huge sheets of paper lined the walls as they discussed and noted possible versions of each stage. They were shown how to create the right scale of work - to work on the wall at least A0 size. Each week the large-scale strategy captured their work in progress on the wall. They could physically stand in the time frame, in the short or long-term future, and to see things from that perspective.

They had clearly different views and need to negotiate the best option in a respectful way. This is a vital skill in practice - to robustly explore an area without personal attachment to any one idea. In building this big vision collaboratively, they could go off and complete different aspects with one conceptual model in mind.

*Some was really good and productive, but some things I found more difficult. This unfortunately really depending in the group of people I was working with during all of those things. The second half of the semester went swimmingly because we were able to feed off of each other's energy, but certain groups I felt like I was pulling teeth to get good stuff out of and then I also didn't get as much out of those exercises because then I got less enthusiastic. Resp 43*

Working together with new people, and exploring new ways of seeing and working can be challenging, and put a pressure on each group to make it work. They were encouraged to explore different perspectives and to use these to develop a common purpose, using the goals and desired impacts as filters to decisions, resolving these together.

The objective was to build their flexibility of thought and develop the ability to think at both scales and to be able to move from one scale of thinking to another with ease.

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<sup>101</sup> Origin Gillian Crampton-Smith, Lecture Royal College of Art, Computer Related Design Tutorial

*When crafting our strategy we started working through the very high level details and goals. Midway through the project we started jumping back and forth between the "fine details" and the "big picture" to begin creating our artifacts. This was really useful to us as a group because it allowed us to make sure we were effectively executing the strategy we envisioned. Resp 53*

They collectively iterated the strategy around the business goals over the 6 weeks until they settled on a best possible strategic plan. Creating the strategy together comes with its challenges and is productive in helping create a shared model of what is going on and what should happen.

*"There was some revelation about the scope of people's imaginations, desires and biases which makes it easier to communicate in a group." Resp 33*



Figure 3. One of the groups presenting an iteration of their developing strategy for class feedback.

As the weeks progressed, they made the strategy into a designed graphic form to crystallize the work done and make it shareable. By codifying their thinking, they needed to make explicit the assumptions they had put into their work, and to make it accessible to others.

### **Creating tangible evidence**

Whilst strategy as an activity remains in the boardroom, its form remains in language until that is it emerges as a set of instructions at operational

levels. Whilst it stays in language, it remains open to interpretation and in that state can become fluid.

In business and sometimes in not for profits, strategy is shared via a Powerpoint presentation, a document or a spreadsheet plan. Design strategy allows us to improve n communication of the work through designed visual materials, such as diagrams and well-designed communications. A shareable strategy becomes an implementable strategy.

*Fluent in visual representation, the strategic designer uses this skill as an important and iterative means of communicating complex, even contradictory, relationships—which would be difficult or impossible to explain in text and numbers alone. (Boyer et al 2011)*

In strategic design we can also force the expression beyond a plan or strategy document to the point of a tangible output.

The students were then asked to make the intended strategy visible and tangible through the selection, design and production of an artefact they thought would embody the strategy as if it had been implemented.

Possible formats of the artefact included:

- a Kickstarter project proposal (or similar platform) with a small video and pledges worked out as incentives for investors.
- a report to real/prospective client
- service evidence of the strategy in active use, such as an invoice, manual or a receipt, an instruction book, or some souvenir of the experience
- a service blueprint targeted to present to an organisation about the new strategy about to be implemented
- a video of the strategic story
- an experience prototype that clearly tells the strategic story
- a diagrammatic/infographic vision of the strategy plus a narrative of the strategic story

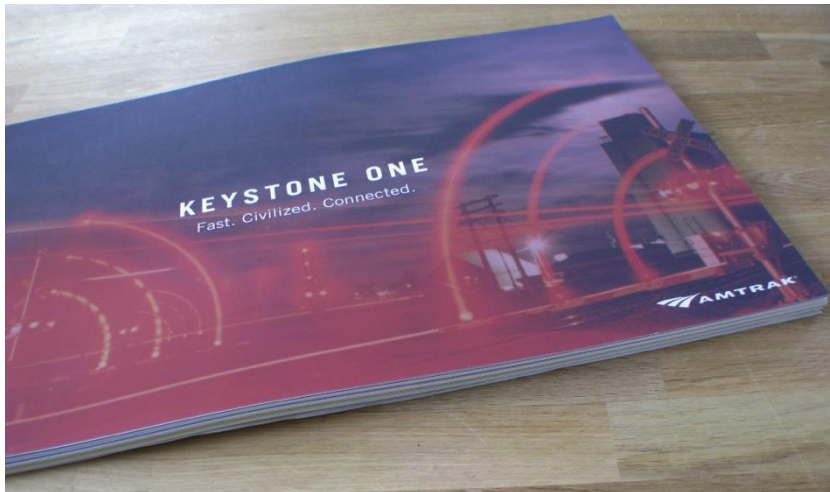
The intention was to get them to express the thinking behind the suggested strategy and to use the core skills they have to express the logic of the strategy. The artefacts took many forms: for Amtrak, it became an application on an iPhone that connected the train planning with other transport systems in a single purchasing operation, and a Report on the companies progress; or Pandora the artifact was a web service showing the

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unique music matching algorithm; for Vice, it was a communications package, Pebble had a promotional video. For Codeacademy, a certificate of completion of a new set of classes, visuals of the new service and a fully working interactive physical cursor were produced.

*To create, turning strategy to artifacts actually took a lot of considerations. You needed to step away to find what was necessary from what you wanted to say. Resp 59*

For Environmental Defense Fund the social media handbook for staff, for Fishes and Loaves, a local food bank, the artefact was the food bank noticeboard which told multiple stories about the future service and how it would appear to users.



*Figure 4. The final output for the Amtrak team was a brochure to accompany the Town Hall meeting from the future. It spoke from the future, when infrastructure investment had been implemented, and this new commuter service could exist.*

*We made a bunch of "iPhones" that people could use to imagine the changes to a service. For us it became a powerful point of imagination. By having it for ourselves, we were somehow able to imagine more about what it could do. Resp 33*

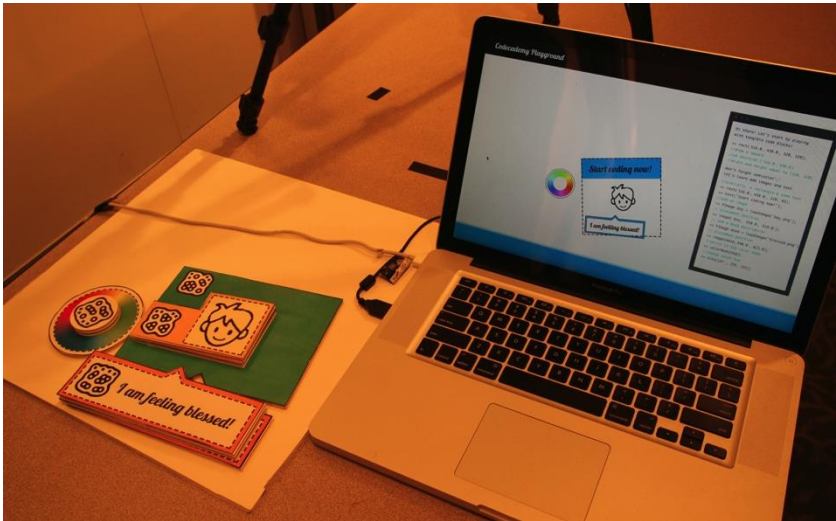


Figure 5. The Codeacademy team produced a working prototype of a new coding service for children, to encourage them to get into coding earlier.

When shared, such prototypes can be used to “...elicit market feedback before final production” (Schrage 1996). They can also be used to engage people imagination in what could be, right across the organization and create to provoke discussion, reveal bottlenecks and trouble spots, or even to attract understanding, support and common models of success.

Students benefitted from making it real: “I learned how much I can learn about something by forging it :)” Resp 89 Using their core design skills in a new way, helps them to value its role in embodying ideas and strategies. It helps them value what they already know well, and how extendable these skills are.

### *Overall impact*

When asked about what they can do now, one of our participants stated her new state. “(I) Believe that I can do this kind of work.” Resp 77 whilst others are more sceptical about their new skills...“Drawing a long-term roadmap of the service. Imagining multiple future scenarios and choosing what to focus. It all boils down to this: designing the future” Resp 89. For others, they have had a literacy of design strategy successfully ignited: “I can backwards think a design intent and strategy. Now (I am) able to understand larger parts and necessary implementation details. I can backwards think a

design intent and strategy. Now able to understand larger parts and necessary implementation details.” Resp 59 Once these capabilities have been initiated, they grow with experience over the course of a career.

### **Encouraging entrepreneurial thinking**

In each of the 3 pilots some students went beyond possible companies and developed their own commercial and social business ideas. They used the methods to develop their emergent business ideas. They were often working alone, which put a huge pressure on them. The methods helped them work out an initial user-centred proposition that they could pitch to the ‘investors’. They re-concieved themselves as designers or creators of new vehicles for their own actions, as well as designers of things. This entrepreneurial possibility rippled through each of the pilots.

### **Confidence building is key**

In the case of recent graduates, where real life experience is limited, it is vital to get the balance right in terms of getting them to the right level of confidence and competency, whilst also retaining sufficient humility to be effective.

“I can't think in any other way without comparing it to my notions of the larger goal. Whenever I hear designers say they like making cool shit, it bothers me a bit. I don't have a good handle over my definition of strategy yet, but I know it's more than just making cool shit, a lot more.” Resp 85

The kinds of design strategists we need in the future are both knowledgeable beyond their core discipline, both humble and confident. Knowing what they don't know but knowing how to find out is an essential skill. “I learned how to dream the future we want to create and sell it to the stakeholders who can help us build it.” Resp 89 is how one participant saw this, but also a rise in confidence emerged: “Besides knowing lots of useful methods, I now feel far more comfortable talking about design and business strategy with senior business colleagues at work” Resp95

### **Building in space for getting better at group work**

Strategy making is a social process, requiring multiple perspectives in order to be sufficiently comprehensive. However, for some, group dynamics can be a blockage to working well together, as they “...really effected the work in this class, maybe more than other classes that I have been in.” Resp 43

Getting practice in this highly valuable skill helps designers to develop better interpersonal skills. These students had not been explicitly taught how to work effectively in groups, but did have plenty of group project experience of differing success. The pilot reinforced just how vital successful team and group work education is for designers.

### *Recommendations*

The case study contains a practical approach to bringing strategic design to nascent designers. Undoubtedly there is a need to produce more strategic designers who can work at multiple levels of thinking, whether they be in commercial or not for profit settings. This approach produces strategic designers who can see the bigger picture as well as the small details, and grow their competencies throughout their careers.

This approach helps them raise their heads above the brief, and to get a connection with the world in which they are operating. In the case of these students, this viewpoint fires a passion for the system they are in - the economic, or social systems they are connected with, and then gives them a sense they can be more active in their participation. As we see, firing up the mind allows them to think bigger, be open to new experiences, and grasp the know how to connect the dots.

It is repeatable in both design and design management education. Our objective is to open it up, and share the approach as fast as possible. It is currently being extended to work with creative entrepreneurs to extend their approaches to creating new businesses, and five new pilots are in process, taking this approach to new audiences.

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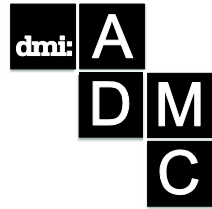
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# Developing a Design Curriculum for Rural Entrepreneurs of the Arts and Crafts Sector in the Eastern Caribbean

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*There is significant research on introducing Design Management and Design Thinking competencies in general Management education which normally examines the use and implementation of design strategies in situations in developed or fast developing economies or environments. This paper focuses on the development of a new design curriculum with a focus on design entrepreneurship and design thinking for rural and semi-rural art and craft entrepreneurs in the Eastern Caribbean. The smallness of the islands forces these businesses to be 'born global' and the reality of their contexts forces these entrepreneurs to play all of the major roles in their businesses from designer to manufacturer to strategist to marketer, among others. In a study undertaken in 2010 by the Organization of Eastern Caribbean states, many of these entrepreneurs expressed an interest in pursuing a diploma in design to support their need for innovation and continued growth. This paper examines the content that would be necessary in this curriculum to fulfill these aims, focusing on design thinking, design management and entrepreneurship, globalization strategies and general management abilities.*

**Keywords:** Artisans; Handicrafts, Eastern Caribbean; Design Education, Entrepreneurship

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## Introduction

How does one develop a design curriculum for 'rural entrepreneurs'?

In late 2010, my colleague Alicia Charles and I conducted a diagnostic review of the Arts and Crafts sector of the Eastern Caribbean for the Export Development Unit of the Organisation of Eastern Caribbean States (OECS-EDU). The islands of the Eastern Caribbean are Grenada, St. Vincent, St. Lucia, St. Kitts, Dominica, Antigua, Montserrat, St. Lucia, Anguilla and the British Virgin Islands. The key aim of the study was to do a baseline study of the arts and crafts sector and the entrepreneurs who work in this sector, and identify the collective aims and needs of individuals of the sector, and to develop a strategic plan and technical assistance plan based on the baseline survey. The OECS-EDU identified individuals who it had a working relationship with, and they were invited to participate in the study. These practitioners were primarily crafts producers of ceramics, straw products, woodwork and textiles, but also included some individuals who preferred to identify themselves as artists. It was identified during the baseline survey that the level of education of some of the artisans was low, and several of the artisans had not completed secondary school, even though they were presently operating their own businesses. The artisans and the researchers recognized the need for greater design and business skills. Given the relationship of the researchers with the University of the West Indies (UWI), a plan to introduce relevant training that could be delivered by the UWI was developed. To be relevant, the proposed curriculum should incorporate the needs of the artisans as well as many of the aims of design education discovered in the literature. Some core issues that need to be answered to develop this curriculum are:

- The aims of the design programme
- The relevant content for a Caribbean design student who is already a practicing artisan / entrepreneur
- The necessary foundation for the target student
- Areas of design practice that should drive the curriculum
- International benchmarks of interest



*Figure 1 Crochet Earrings by Sharon Acosta at San Antonio Green Market in Trinidad, an example of the type of target entrepreneur for the design curriculum.*

*Source: San Antonio Green Market*

*<https://www.facebook.com/GreenMarketSantaCruz> Retrieved 18 July, 2014*

### *Methodology*

During the baseline survey, ninety-eight arts and crafts practitioners were interviewed across the nine islands. The individuals who participated in the study recognized their own need for additional training, including design training and export product development training. The individuals who participated in the programme were asked about their vision for the future of the 'arts and crafts' sector in the Eastern Caribbean and their responses converged around the following areas:

- The development of authentic craft products unique to each island
- The development of an island brand
- Greater recognition by the government and the public of the contribution of the artisan-entrepreneurs to the economy.

Several areas for development were identified in the study under the headings: capacity building, market development, and institutional strengthening.

The artisans themselves indicated the type of assistance that they felt would take them forward under the headings technical training, business training and information services.

Table 1 Technical Training Requested by Eastern Caribbean Artisans

	Anguilla	Antigua & Barbuda	Br. Virgin Is	Dominica	Grenada	Montserrat	St. Kitts & Nevis	St. Lucia	St. Vincent & The Grenadines
Technology Tools and Machinery	✓	✓	✓	✓	✓	✓	✓	✓	✓
Product Design	✓	✓	✓	✓	✓	✓	✓		✓
Technical Skills	✓	✓	✓	✓	✓	✓	✓		✓
ICT for Entrepreneurs	✓	✓	✓		✓	✓		✓	
Trend Analysis	✓	✓	✓	✓	✓		✓		✓
Export Product Development	✓	✓	✓	✓	✓			✓	✓
Quality Standards				✓	✓				
Packaging						✓			
Material Selection / Use of local raw material							✓		

**Table 2 Business Training Requested by Eastern Caribbean Artisans**

	Anguilla	Antigua & Barbuda	Br. Virgin Is	Dominica	Grenada	Montserrat	St. Kitts & Nevis	St. Lucia	St. Vincent & The
Record Keeping and Cash Management	✓	✓	✓				✓		✓
Marketing for Artisans	✓	✓	✓	✓	✓	✓	✓	✓	
Small Business Management	✓	✓		✓		✓	✓	✓	✓
Understanding Business Finance	✓		✓		✓	✓	✓		✓
Export Marketing	✓	✓			✓	✓		✓	✓
Costing and Pricing						✓			
Business Planning		✓	✓					✓	✓
Customer Service		✓	✓					✓	✓
Customer Service					✓	✓			

Table 3 Other Training Requested by Eastern Caribbean Artisans

	Anguilla	Antigua & Barbuda	Br. Virgin Is	Dominica	Grenada	Montserrat	St. Kitts & Nevis	St. Lucia	St. Vincent & The
Product Quality Standards	✓	✓	✓						✓
Website Development	✓	✓	✓						✓
Market Research	✓	✓	✓						✓
Export Market Information	✓	✓	✓						
Web-based Marketing		✓	✓						

Under capacity building the artisans expressed a need for greater design ability and greater business skills.

A literature review was also conducted, with the key question being what kind of design and business education would suit the needs of the group that had expressed this interest, and with a focus on the aims of twenty-first century design education and entrepreneurship education. Key perspectives were highlighted in the review and then the curriculum draft, with the aim of providing a foundation that would allow their businesses to grow and become more competitive and innovative, was prepared taking into consideration the expressed needs of the artisans for greater design ability and business skills, and the recommendations from the expert writers, as well as the parameters of the specific situation e.g. geographical constraints, educational background, present business acumen etc.

*Background on region and target group*

There are nine territories in the Organization of Eastern Caribbean States: Anguilla, Antigua, the British Virgin Islands, Dominica, Grenada, Montserrat, St. Kitts & Nevis, St. Lucia and St. Vincent. The artisans in the survey were primarily micro-entrepreneurs - producers of crafts for the tourism market, primarily female (62%), largely self-taught. A summary of the findings of the survey of the 98 artisans is presented below:

**Table 4** *A summary of finding of the diagnostic review of the arts and crafts sector in the OECS.*

Product and Producer Classification	Products were classified by materials and usage or category: <ul style="list-style-type: none"> <li>• materials – straw, calabash, leather, wood, shell, textiles, seeds and beads etc.,</li> <li>• product category / niche – spa products, home accessories, jewellery, fashion accessories, toys, souvenirs Niches that were under-represented included toys (except for dolls) and educational tools</li> </ul>
Age	Over half the participants are over the age of 35 which implies that the industry has mature/ aging participants.
Gender distribution	Males predominate in woodworking and leatherwork. Both genders are in clay and Fine Art, however females dominate other materials- textiles and straw. The majority of craftspeople surveyed were women – 62%
Race and Ethnicity	The majority of producers being of African descent (69%) and other producers being of Caucasian, Amerindian, Indian and mixed heritage.
Sales & Marketing orientation	There is significant mistrust of the relationship with retailers, especially with respect to their pricing strategies. The main form of promotion is through Word of Mouth, followed by flyers, emails and tradeshows.
Export Orientation	Exports accounted for less than 10% of sales, and only 6 respondents indicated that they exported. Wholesale distribution was also less than 10% of sales.
Technology – Production and Information and Communication Technology (ICT)	The current level of technology (equipment, skills and processes) is consistent across the OECS with other micro-businesses in the Caribbean for woodworking, clay, and textile producers. There was limited use of ICT – mainly for email and research.
Financial information	Over half of the producers had separate bank accounts for their business. Most producers listed limited access to financing for growth (raw material or equipment purchase) as a critical factor.
Educational Background	There is a direct correlation between education and level of sales, with the artisans with a higher education

	being able to fare significantly better than ones with limited education. The majority of artisans are self-taught in their trade, not having any formal art or craft training
Business Development	The industry remains predominantly composed of micro-businesses, which is confirmed by the large producers who operated mostly as Sole Traders and unregistered businesses. There were only 5 incorporated companies among the participants.

The group collectively identified the following goals during the research:

- a) To develop authentic craft products unique to each island
- b) To develop an island brand
- c) To receive greater recognition from the governments and the public of their contributions to the economy.

The aim of the strategic plan that was developed out of the study for the OECS-EDU was to increase competitiveness, increase income and create jobs, and in order to do so it was recognized that an improvement in the quality, design and variety of craft produced at individual and collective artisan levels was needed, as well as an improvement in business skills with a focus on business management such as costing and pricing, recordkeeping, marketing ICT, export orientation.





*Figure 2 Another example of arts and crafts of the Eastern Caribbean region: a wooden salad serving set made by Phillip Arthur Woodwork with design input from Valerio Vinaccia. Photograph by Kerron Riley, Doux Doux Darling Productions. Source: The Caribbean Export Development Agency, 2011*

### *Literature Review*

Fixson and Read in their paper on why we need to blend innovation and design write that it is possible to ‘teach innovation if education combines two very different thought world, traditions and rationales (Fixson & Read, 2012). They go on to write that the ability to identify new opportunities is critical for businesses and the ability to be innovative must be supported to ensure business success. They believe that design and business play a key role in creation innovation leaders.

Angharad Thomas in her paper on Design, Poverty and Sustainable Development recognizes that poor producer groups often do not have design capabilities ‘in the conventional sense’ and little knowledge of market demands of the developed world (Thomas, 2006). These are the

challenges that face some of the artisans of the Eastern Caribbean, who are developing products for a tourism related audience who they may not know enough about, making it difficult for the artisans to develop relevant products for the tourists. Some of the artisans in the target group, as in Thomas's article, had low levels of formal schooling. Thomas suggests that the transfer of skills such as design, product development and marketing skills to producers that may be unrealistic as it can be difficult to expect that design skills can be transferred to untrained workers in a limited period of time. In many development projects, including in the Caribbean region, the design input is from an external source. Thomas notes that the design input from a local source may be of a low quality since local design capabilities are not developed, since there is often little design education available in poor countries especially to the rural poor. Thomas also notes that in some development projects where professionally trained designers work with producer groups in the informal economy, the collaborations can be temporary and voluntary.

In *Rethinking Design Education*, Alain Findeli, points out that everyone agrees on the necessity of including art, science and technology in a design curriculum, but disagrees on the relative importance of each. Later on in his article on design education he states that there can be no responsible design without a responsible designer and therefore that design education should be directed to the development of individualistic ethics (Findeli, 2001).

Birger Sevaldson, in a discussion on 'what designers need' (Sevaldson, 2014), attempts to create a list of what designers need, ranking the skills under what all, most, a majority, a minority and a few designers need as follows:

*Table 5 Birger Sevaldson's recommendation on skills required by designers.*

All	Composition skills, synthesizing skills, ethics
Most	Creativity, flow etc. (as described in cognitive creativity research), intuition (as an expert feature described by Dreyfus and Dreyfus Skill Acquisition model), sustainability, design thinking, esthetic skills, some media knowledge, skills in tools and design media, drawing, sketching, computer graphics
A majority	Social skills, empathy, cultural knowledge, cross-cultural understanding, communication skills, business understanding, innovation, systems practice and understanding, product service systems, visual thinking, some spatial understanding, co-designing, facilitation
A minority	Political knowledge, society, statistics, academic writing, management skills, lower level mathematics, coping with thrownness, artistic skills, engineering skills, marketing, advanced understanding of space, ability to redefine and open new fields for design, some basic systems theories
Few	High level mathematics, ethnography, systems theories, information visualization skills

Norman writes in his article on 'How Design Education Must Change' that 'design needs better tools and methods, more theory, more analytical techniques, and more understanding of how art and science, technology and people, theory and practice can commingle effectively and productively'. He believes that new curricula in design must merge science, technology, art and business. For this author, culture and emotion are central as well as 'knowledge of societal issues, techniques for subtle persuasion, and the intricacies of complex, interdependent systems (Norman, 2010).

In the twenty-first century, Zande purports that the basic skills that students must master in order to succeed are 'innovation and creativity, flexibility and adaptability, collaboration and working as a member of a team, problem solving and critical thinking. She quotes the Commission on Skills for the American Workplace as predicting that the that the kind of leadership needed for this century requires "a deep vein of creativity . . . people who can imagine how to use things that have never been available before'. Zande also notes the need for self-directed learners who can analyze new conditions. Design education lends itself to this as students

discover throw practice and learn that ‘many possibilities exist for success’ (Zande, 2011).

The review of the literature could not only focus on design education, but also had to take into perspectives on entrepreneurship education. Boore and Porter in their article on entrepreneurship education for nurses describe an approach where the entrepreneurial content is integrated into the programme, rather than taught as separate modules. The content was developed under key themes including:

- Reflective and Proficient Practice
- Theoretical and Professional Issues
- Leadership and Management
- Communication, Teaching and Learning
- Research and Evidence Informed Practice

(Boore & Porter, 2011).

### *Discussion*

The overarching objective of the strategic plan developed for the arts and crafts sector in the OECS is to increase competitiveness, increase income and create jobs and therefore the aim of the education to be developed in response to the expressed needs of the artisans would need to be compatible with this objective, as well to help the artisan entrepreneurs attain their vision of:

- Development of authentic craft products unique to each island
- Development of an island brand
- Greater recognition by the government and the public of the contribution of the artisan-entrepreneurs to the economy.

This education has to have an appropriate mix of design and business skills in order to meet their needs and in order to result in an improvement in the quality, design and variety of craft produced by the individuals. The education should also allow some of the artisans to recognize the ability of their design education and experience to transcend the production of artifacts and to be applied to problem solving in larger contexts, since the Eastern Caribbean is a region that can be classified as ‘developing’ and there are many developmental and social needs that could be addressed and resolved through design.

The aims of the design programme should be to promote a long-term sustainable design and business ability among the artisans that will enable them to attain or surpass their goals.

The key aims of the curriculum, based on the feedback of the artisans and the review of the literature relevant to the curriculum are presented below:

*Table 6 Requirements for the Design Curriculum based on Artisan feedback and Survey findings and Literature Review (in random order).*

Aims of Design Curriculum (Based on Artisan Perspective and Aims of Strategic Plan)	Aims of Design Curriculum from literature
Improve Artisan Knowledge on Technology Tools and Machinery	Strengthen the local design capacity (Thomas)
Increase Product Design Ability	Promote innovation leaders (Fixson & Read)
Promote Increase in Technical Skills	Develop problem –solving ability (Fixson & Read)
Impart information on how to conduct Trend Analysis	Develop design responsibility / ethics
Include Export Product Development and Export Marketing Methodologies	Focus on innovation and creativity (Zande)
Develop authentic craft products unique to each island	Promote Flexibility and adaptability (Zande)
Include Marketing for Artisans	Promote Collaboration (Zande)
Develop Small Business Management Ability	Promote Communication (Zande)
Include Record Keeping and Cash Management	Promote Social Responsibility (Zande)
Increase competitiveness, increase income and create jobs	Merge science, technology, art and business. (Norman and Klemmon)
Improve the quality, design and variety of craft produced	Impart knowledge on societal issues, techniques for subtle persuasion, and the intricacies of complex, interdependent systems (Norman and Klemmon)

*LESLEY-ANN NOEL*



*Figure 3 "Dish Out" Salad Servers designed and produced by Marlon Darbeau.  
Photograph by Damien Libert*

*Source: <http://marlondarbeau.blogspot.com/> Retrieved 20 July, 2014*

### *The Design Curriculum*

A three-semester foundation Certificate in Design and Business Management is being proposed in response to the identified needs. The proposed Certificate should provide a sound foundation in design and business management that artisans can use immediately in their practice. The aim is to create a curriculum that will promote among the participants innovativeness and creativity and improve their design and business management ability. This in turn will lead them to grow their businesses, become more competitive, increase their incomes (whether or not they remain as artisans) and create jobs. The Certificate should also provide an alternative entry route to a degree in Design, the Visual Arts or business for students who might not normally meet the regular University entry requirements. In light of this, the content must include content that corresponds to the basic entry requirements, such as a written English component e.g. written papers or reports.



*Figure 4 Leather Bowls made by Roland Warner and designed by Lesley-Ann Noel*

*Source: The Caribbean Export Development Agency 2009*

The three-semester programme should be able to be delivered in a blended format part online, with limited residency requirements given the geographic expansiveness of the target region, and the work schedules of the artisans. The artisans indicated that with assistance they might be able to commit to a two-week residency at the University of the West Indies in Trinidad or at a facility of the Open Campus of the University of the West Indies on one of the OECS islands.

The approach that is being proposed for the curriculum is via an interdisciplinary and integrated curriculum in which elements of design practice and design research methods; materials and technology knowledge; business practice; ethics and responsibility and elements of the Caribbean and global context are woven into each scheduled project. The normal course load for this level of programme is 4 - 5 subjects per semester. The curriculum and specific projects would therefore be organized around 5 topics listed above.

Each semester will have a general theme or focus around which students will be required to do group and individual projects. In semester 1 the core theme would be Design and Business Foundations, and as the name suggests, the aim would be to provide a formal foundation in design and



business through problem framing, opportunity identification, an examination of the meaning of objects etc. In semester 2 the core theme would be Export Product Development, with a focus on developing new products, building on the foundation laid in the previous semester. The third semester will take the artisans away from their focus on the manufactured object, and make them realize how design methodologies can be applied to other contexts. The core theme would be Design and Social Responsibility, and in this semester the students would be required to analyse the environmental impact of their products and materials, as well as to tackle social issues through design thinking and using their product development methodologies. The themes and projects over the three semesters would scaffold and lead the students towards greater independence, which would be tested in the independent capstone project. The independent capstone project could be a manufactured project or a project with a stronger social focus.

*Table 7 Draft Structure of the Design Curriculum for Artisans.*

	Theme
Semester 1	<i>Core Theme:</i> Design And Business Foundations <i>Content:</i> Culture, Emotion, Business Planning, Introduction to Marketing <i>Projects:</i> Simple group and individual design projects with a focus on problem framing and the iterative design process and integrating business development in the process.
Semester 2	<i>Core Theme:</i> Export <u>Product Development</u> <i>Content :</i> Design Thinking, Materials & Technology Research, New Product Development & Planning,
Semester 3	<i>Core Theme:</i> Design & Social Responsibility <i>Content :</i> Ethics, Environmental Impact, Designing for ‘the Bottom of the Pyramid’ etc.
Independent Capstone Project: Manufactured product or Socially Responsible Design Project (3 months)	

## *Conclusion*

The draft curriculum presented above, is an attempt to draft a dynamic curriculum for arts and crafts practitioners in the Eastern Caribbean, that will help them to achieve some of their own goals e.g. developing authentic new products and gaining greater recognition from the government and the public of their contribution to the economy, while increasing their competitiveness in business, increasing their income and creating jobs. It is hoped that this type of curriculum will achieve some of these goals, but also afford some of the participants the opportunity to move away from the arts and crafts industries and manufactured goods, as they develop an understanding of how their design thinking and design management skills and abilities can be applied to other scenarios. It is also hoped that the Certificate will also provide a 'stepping-stone' to some of the participants, and open up a whole new world of learning to them, that they may not have had access to, as they may have left the school system at an early age. The process of developing this curriculum is still in progress.

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## The Plasticity of Data

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*Recent advances in the capacity to collect and manage data have been addressed in a wide range of academic journals as well as the popular press. Often, the instrumental value of these processes is emphasized. Pundits and journalists, for example, frequently depict “big data” as a source of innovation, highlighting opportunities that have been derived from the detailed analysis of routine socio-technical interaction. Given the emphasis placed upon matters of application, there has been remarkably little discussion of ways to address the putative value of such analyses from within the institutional context of design education. This paper describes an initiative to prepare design and management students for the data-rich environments in which they will practice. It explains our motivation for introducing these students to basic analytical and computational methodology as well as the framework in which we do so. As exemplified, this approach fosters forms of exploration and experimentation that diverge from conventional approaches to both scientific research and design practice by decoupling the symbolic or referential value of data from their attributes as media. Ways that such training increases our students’ capacity to speculate on future conditions are examined and discussed in light of the larger objective of drawing attention to new ways that designers and managers can use data to steer, as well as to reflect upon, the course of innovation.*

**Keywords:** analytics; data; design; management; pedagogy

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## **Big Data**

Data inform many facets of design practice. Sometimes these data are explicitly used to depict extant forces and conditions, as when an architect calculates the load on a beam or what remains of a budget, but often they are collected and processed in a tacit manner as designers employ the heuristics that shape their practices. Unlike scientists, who must focus upon data in order to formulate and test hypotheses, designers can be productive with limited knowledge of the mechanisms and conventions that bind data to the phenomena they represent. Such protocol is usually of marginal concern to designers because depictions of extant phenomena rarely serve as more than the means to an end. As Richard Buchanan (1992: page 18) suggests, “the problem for designers is to conceive and plan what does not yet exist.” Designers must invariably use data to solve this problem, but often only as a means of formulating steps along the way.

The advent of so-called “big data” gives designers more to work with. The proliferation of networked sensors in products ranging from smart phones to refrigerators to automobiles has enabled individuals to document and share facets of their lives that were previously all but invisible to the world at large. Likewise, organizations can now track their operations in unprecedented detail. Such surveillance, motivated as much by cultural changes as by technological advances, is generating an unprecedented quantity of data. Scientists, analysts, and others who have the requisite training are “mining” these data for insight into a broad range of phenomena at multiple levels of analysis (Mayer-Schonberger and Cukier, 2013; Fayyad et al., 1996). Moreover, they are increasingly using these data to pursue innovation (Lohr, 2012; Beacham and Shambaugh, 2010). Designers can do likewise, but they will not be likely to seize upon such opportunities unless we revisit the manner in which they are trained (Drucker, 2014). Indeed, as the instruments with which big data is used become more sophisticated, conventionally trained designers may find that they have become marginalized, as other practitioners have been deskilled in the past (Wolff, 2006; Greenbaum, 1995).

We believe that it is important to address such opportunities and threats, and to do so in ways that leverage existing design competencies. This process might mirror the expedient manner in which designers have assimilated some social-scientific methodology; though we see little value in training designers to be scientists or analysts, we see great potential in enabling them to use data in ways that amplify the qualities of design thinking that differentiate it from scientific analysis.

## Design Thinking

Just as the popular press has been enthralled with big data, so too with design thinking. The phrase has been used to encapsulate and convey a wide range of processes that pertain to creativity and creative problem solving (Brown, 2009; Korn and Silverman, 2012). Given some of the realms in which design thinking is discussed, one might conclude that these processes are only loosely coupled to conventional forms of design practice, and can be successfully applied in domains that bear little resemblance to those from which they have been appropriated. It is hardly surprising that design thinking has generated interest in domains where creativity is prized. In business, for example, design thinking is often associated with innovation, and innovation with value (Martin, 2009; Beckman and Barry, 2007).

Design thinking may generate value for businesses, but evidence of this is less concrete than is the case in traditional domains of design. The output that is expected of an architect is relatively tangible, as is that of a graphic artist, and while each of these designers may deal with complex issues that can be resolved in myriad ways, they can usually draw upon established routines and benchmarks to guide their progress toward such ends (Rowe, 1987; Dorst, 2003). Few of these time-tested heuristics are likely to be of immediate use in the foreign domains of other disciplines for reasons described below, and what value they have may be difficult to identify. But there is good reason to examine the principles by which designers' heuristics operate because, as some suggest (see Owen, 2006; Buchanan, 2008; Dorst, 2011), these principles are likely to be broadly applicable when tailored appropriately. Our objective is to draw attention to ways in which such principles can be leveraged in data-rich environments. We are most interested in ways in which the process of design thinking can be used to shape the development of these environments, rather than in its ability to produce specific outputs.

Among the most compelling attributes of design thinking is that it can be used to address complexity and negotiate indeterminacy (Dorst, 2011). The challenge of managing complexity is pervasive, and its salience is likely to rise along with our ability to collect and process data. We will undoubtedly find new forms of organization as we sift through these data, but the relative value of one approach over another will always be contingent and subject to negotiation. Such indeterminacy is a hallmark of Horst Rittel's so-called "wicked problems," which are often discussed in analyses of the issues faced by designers and of the potential of design thinking as a viable alternative to the inadequacy of positivist, rational thinking in such

situations (see Buchanan, 1992; Dorst, 2004). Even when objectives are clear, rational approaches may fail simply because it is difficult to obtain a perspective on the many dynamics involved in any given problem space. This, in essence, is what Jim March (1978; see also Cohen et al., 1972) refers to as “bounded rationality”: situations in which actors are constrained by the limits of their information, cognitive capacities, and time. The failure of conventional, rational approaches to such situations may contribute to the allure of design thinking, especially to those whose responsibility involves the development of strategy.

In order to be productive to strategic decision-makers, design thinking must equip them to work toward solutions for problems that do not have clear parameters. Empirical research can provide insight into the complex dynamics at play in such situations, but its value is only fully realized when the insight is actively deployed in the midst of such complexity. It is in this capacity that design thinking offers promise, because this is how designers regularly address the indeterminate problems that they encounter (Farrell and Hooker, 2013). In order to bring design thinking to this strategic level, we must consider the manner in which designers engage the “design spaces” in which they work.

As Schön (1984; see also Rowe, 1987) and others who have studied the ways in which designers work have described, the processes by which designers solve problems are radically different from those found in rational, positivist approaches (see Simon, 1996; Alexander, 1966). In the face of complex problems, often involving multiple parties, designers typically engage a design space without having planned the process to its conclusion and without knowing precisely where it will ultimately lead. They take one step at a time, relying on heuristics as they do so. The parameters of the design space are narrowed in a “step-wise” manner, leading eventually to a satisfactory resolution (Dorst, 2004).

Upon examination, it should come as little surprise that such design heuristics are useful, even if designers cannot explain exactly why. Many of these heuristics originated in the practice of traditional crafts, which were then codified by guilds and refined as disciplines (Epstein, 1998). They have been honed by trial and error over the course of time. There is no immediate need for practitioners to be aware of such dynamics in order to address their immediate concerns; the value of heuristics is evident in course of their use. They function as “black boxes,” increasing the efficiency with which designers can address routine tasks and freeing them to attend to other concerns (Winner, 1993).

It is critical to note that the immediate value of these heuristics is dependent on their co-evolution with the niches in which they are conventionally used (see Yagou 2005; Dorst and Cross, 2001), and that it is not always productive to treat them as black boxes outside of such domains. To effectively apply the heuristics that characterize design thinking outside the realms in which they have evolved, designers must unpack the underlying principles and determine how they work. Research on organizational behavior is helpful in this regard; it offers insight into ways in which familiar heuristics function and the conditions under which such processes evolve (Hannan and Freeman, 1977; Meyer, 1994).

While the rational problem-solving paradigm is solution-oriented, evolution does not have a solution. Neither is evolution synonymous with progress, notwithstanding popular use of the term. Just as designers conventionally employ heuristics to facilitate the emergence of unforeseen answers, those with the technical skills to collect, manage, and analyze data can use design thinking to take an algorithmic approach to complexity, thereby leveraging big data in a strategic manner.

The process of collaborative filtering is a case in point. Although Google refines its algorithms on an ongoing basis, and knows in principle how they work, no individual at Google or elsewhere can specify what results they will generate. The power of this process stems from the participation of a vast number of diverse users, any one of whose activity is likely to be inflected by the activity of others. Despite the fact that the procedural logic of the algorithms is clearly evident, this process is akin to that of design, and suggests ways in which rational problem-solving can co-exist with design thinking.

With access to big data, designers can use algorithms to facilitate such emergent activity. In principle, the use of algorithms is similar to that of heuristics with which they are already familiar. They need not learn to code in order to make use of the conceptual framework associated such computation. Designers must know how such systems function, however, in order to deploy them in a strategic manner (Farrell and Hooker, 2013). With such knowledge in hand, they can address complex problems using a form of meta-design.

## **Meta-Design**

Gerhard Fischer (2003; Giaccardi and Fischer, 2005) characterizes meta-design as a version of participatory design in which designers facilitate an



ongoing design process. In scenarios that he and his colleagues describe, designers prepare users to continue developing products and services after they have been pressed into use. To do this effectively, designers must not only understand the interplay of social and technical dynamics in the contexts of use, but they must also understand how disciplines of research, design, and management can be blended to foster creativity. Fischer and Jonathan Ostwald (Fischer and Ostwald, 2002) encapsulate the relationship of these disciplines in a process they call “seeding, evolutionary growth, and reseeded” in which designers initiate projects, step back to let the projects evolve, and then check in again to provide additional resources or guidance as needed.

Fischer’s (2003) approach to meta-design is strategic in that, like other approaches to participatory design, it reduces reliance on formal research by bringing users with specific domain knowledge into the design process (see Ehn, 2008). Moreover, by training these users to tailor their products and services on an ongoing basis, it indirectly addresses the singular dynamics at play in any particular niche. The value of this formulation of meta-design is limited, however, by its emphasis on the individual-level interaction between designers and users who are engaged in the development of particular products or services. While we appreciate the significance of such interaction, we see no need to ground meta-design in this form of engagement.

Our interest is in using big data to span niches and, in so doing, to leverage extant systemic dynamics. We are less concerned with ways in which meta-designers might engage users in the context of specific projects than with ways in which they might make use of design processes that are already in play. Since the actors who are involved in these processes are already engaged in design, we refer to them as “makers” rather than users. Such makers need not be associated with the so-called “maker movement,” but many who are associated with it personify characteristics that are salient in the systemic form of meta-design that interests us.

Makers may be distinguished from trained designers on the basis of their amateur status alone, but they are usually identified with attributes of the niches in which they work (Kuznetsov and Paulos, 2010). Such niches are invariably the product of many factors, but some will be more pronounced than others in any given case, and these differences are often reflected in the ways in which makers approach their work (McKim, 2014; Tanenbaum, 2013). The heuristics of makers working in urban contexts will differ from those of makers working in suburbs, for example, and likewise the heuristics

of makers exposed to one subculture will differ from those of makers exposed to another. Such contextual variables also influence ways in which trained designers work, but presumably to a lesser degree than is true of makers, who must draw more from their immediate experiences since they are, by definition, less familiar with disciplinary protocol.

Makers' heuristics, and the relationship of these heuristics to the environments in which they are developed, are reflected in big data. In this regard, big data is content; it can be mined for insight into the intricacies of these relationships and how they differ across niches. But big data is not only a way to analyze the world; it is also a way to shape the world. These data can be fed back to makers, indirectly influencing the development of their niches. In this regard, big data is a medium.

In some respects, big data enables designers to interact with makers in a manner that is analogous to the relationship between Google and its users described above. Data both depict and shape the world in both scenarios and, likewise, value is derived from distinctions between the niches in which these data are collected and used in each situation. The primary difference is that, unlike Google, which purports to be a neutral arbiter of such transactions, designers are unabashed agents of change — they can actively engage makers in the process of meta-design.

Though designers may need to consider probabilities in a more explicit manner when engaged in this form of meta-design than is typical of conventional practice, their inability to predetermine the precise way in which a relationship between any particular maker and niche will develop is consistent with other applications of design thinking. Their use of feedback to guide this process is also similar to ways in which it is used in other forms of practice; when designers manage the flow of data among makers, they leverage double-loop learning in a manner that is akin to more familiar forms of prototyping (Argyris, 1976; Schön, 1984).

This process is also familiar to makers; IKEA hacks, a website that is used by makers, is an example of how such feedback can take form (see <http://www.ikeahackers.net/>). Each of these modified IKEA products is a response to the conditions of a specific context. Collectively, they provide a much broader and deeper “catalog” than that which IKEA’s professional designers have developed. But more significant, it exemplifies the way in which big data can enable double-loop learning to unfold on a systemic level; each of the “hacks” may be fed by and may feed other hacks. In this instance, the form of such feedback is likely influenced by the design of the

website itself, but there are other, more powerful ways to leverage the various relationships that have evolved among makers and their niches.

The “free/libre and open-source software” movement (FLOSS) offers an indication of where designers may find such levers. The makers that constitute this relatively loose network are distributed across a wide range of technical and social niches. All have immediate objectives, as do companies that incorporate open-source software in their products and services, but the FLOSS movement has evolved without any specific goal (Demil and Lecocq, 2006). Instead, its growth can be attributed to the adoption of frameworks, such as common coding languages, that facilitate collaboration across divergent niches (Scacchi, 2003; Gasser et al., 2003). It is by developing comparable frameworks that designers can expect to most efficiently mobilize makers in other pursuits.

In Fischer’s (2003) approach to meta-design, designers share their expertise as a means of enabling users to design. When designers employ big data to engage makers, the makers occupy a role similar to that of Fischer’s users, but there need not be a formal relationship between designer and maker. In providing a means to overcome this limitation, big data gives designers a powerful new way to facilitate change.

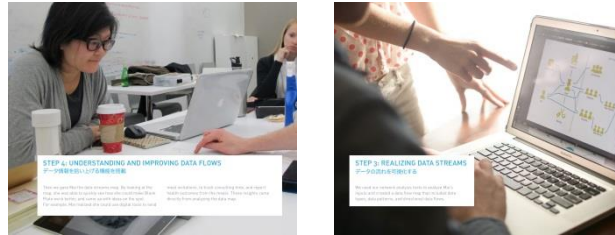
## **Design pedagogy**

Our effort to develop a pedagogy in which systems and design thinking are tightly coupled is motivated by the recognition that the environment in which our students will practice is undergoing a sea change due to the rise of big data (Kitchen, 2013). Not only must these students understand the mechanisms and underlying principles of design thinking in order to use it effectively outside of conventional design domains, but they must also attain such understanding in order to continue using it effectively within these increasingly fluid socio-technical contexts. Our objective is not only to train students on the use of different frameworks and methodologies, but also to train them on ways of developing and tailoring such instruments to future contingencies.

The integration of managerial and design-oriented courses enables us to draw lessons from systems theory and organizational behavior as we prepare our students to use design thinking strategically. The manner in which we teach research and design methodology is similarly motivated; by juxtaposing social-scientific methods with practices such as prototyping, our students develop an understanding of how data are used in different



for the study of complex adaptive systems (Holland, 1995; Kauffman, 1993). It is by developing insight into such fundamental organizational processes that the students are prepared to address the complexities which are intrinsic to meta-design.



*Figure 3 Understanding and improving data flows: “We used our network analysis tools to analyze Mai’s communication, creating a data-flow map that included data types, data patterns, and directional flows. Then we gave Mai the map. By looking at the map, she was able to see how she could make blank plate work better, and came up with ideas on the spot. For example, Mai realized she could use existing data to send meal invitations, track consulting time, and report health outcomes from the meals. These insights came directly from analyzing the data map. ...”*

*Figure 4 Identifying areas for improvement: “Once Mai understood how flows of data moved through Blank Plate’s system, she can start to use the data to make several meaningful improvements to the organization’s impact. She started by quantifying Blank Plate’s ability to improve health outcomes in the community and then used this information for funding purposes. Mai, like many other small community organizations, has a desire to increase her outreach. Armed with a more sophisticated understanding of her own organization’s data flows, Mai is better prepared to scale.*

## Conclusion

Data are generally associated with empirical science, a discipline in which they are used to characterize phenomena of interest, and in which they have no intrinsic value. Data are nothing but proxies in scientific frameworks (Renear and Sacchi, 2010). But designers are not beholden to the scientific method; they may give data substance and use them to shape phenomena. This capacity is central to our conception of meta-design. It also informs our views on the growing significance of big data, and on the need to prepare our students for the attendant risks and opportunities. “Data has no truth,” as Daniel Rosenberg (2013: p. 37) suggests, but this need not be considered

a deficiency; it is a dimension of the plasticity that makes data a useful medium for design.

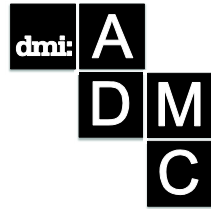
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## Designing a New Design PhD?

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*The higher education sector in the UK is currently undergoing rapid change, and design education is no exception. Higher fee levels, limited grants and self-funding PhD study is becoming more common. Furthermore, there is increased demand for non-traditional modes of study such as part-time provision and flexible learning – especially relevant to designer-practitioners. A greater number of mature students are also entering higher education, many of whom will have significant industry experience. But the design student dynamic isn't the only change we are seeing – the remit of design academics is changing too. There is now an increased emphasis on the economic and social benefits that academia can contribute, and the 'impact agenda' requires research councils (and therefore academic researchers) to show that their work has a wider societal impact in order to sustain funding. Furthermore, design is an ever expanding and changing interdiscipline, and so the make up and shape of the Design PhD is frequently in question. But what do all these changes mean for doctoral design education? Is the traditional PhD model still fit for purpose, or are we changing this beyond recognition to accommodate design? Do we need a new Design PhD? In this paper, we examine approaches in both mainstream design research training (adaptations of the traditional model) and more novel PhD programmes, which could form the grounding for curriculum design experts to further question and develop the notion of the new Design PhD.*

*Keywords: design education, doctoral education, Design PhD, research, curriculum, agile, hybrid academics, industry*

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## Introduction: The changing nature of UK Higher Education: dynamics, drivers and impact

The Higher Education sector in the UK is currently undergoing rapid change. With the introduction of higher fee levels and limited grants, it is becoming more common for students to pay for their own education. This is particularly true for the arts, humanities and social sciences, and in 2012 only 31% of the total number of funded studentships were in these areas, making the self-funding model of PhD study in this field far more common (Higher Education Commission, 2012). Students, aware of either this new funding context, or the weight of paying for their own education, may therefore be more discerning about what they see as value for their money. Furthermore, there is increased demand for non-traditional modes of study such as part-time provision for those working in industry, and flexible learning (Universities UK, 2012). A greater number of mature students are also entering higher education (Universities UK), many of whom will have significant industry experience before re-entering education. These trends mean that the Higher Education landscape is changing, with the expertise of the academy battling with the notion of student as “consumer”, mature students with more life and career experience, and the idea of inter-disciplinary education beyond the academy.

But the student dynamic isn't the only change we are seeing – the remit of academics is changing too. Perhaps as a consequence of the global recession and the sustainability agenda, there is now an increased emphasis on the economic and social benefits that academia can contribute. Postgraduate skills are recognised as *“major drivers of innovation and growth”* (Smith, Smith, Bradshaw, Burnett, Docherty, Purcell & Worthington, 2010) and have been described as *“critical to a high skills, high performance economy.”* (Leitch, 2006). This thinking is reflected in what is now referred to as the ‘impact agenda’, which requires research councils (and therefore academic researchers) to show that their work has a wider societal impact in order to sustain funding. A critical part of this is collaboration with industry and the wider public and private sector. Such activities have in the past been referred to as knowledge transfer, and more recently, knowledge exchange. In the Universities UK report (Universities UK, 2012), it was stated that between 2000–01 and 2005–06 there was very little change in the level of industrial income that institutions were able to attract, but, between 2005–06 and 2008–09 industrial income rose by around 22%. There was a moderate reduction in 2009–10, likely due to the

global recession, but 2010–11 saw a return to growth. (Universities UK). Collaboration between academia and industry is important, but not easy, given the differences in culture and agenda, and in some cases, the inherent desire to compete instead of to collaborate (Murphy, Derksen, Horn, Desbarats & Gray, 2010).

This desire for academia-industry collaboration is now reflected in government policy and calls by the UK Research Councils, which encourage knowledge exchange, impact and cross-disciplinary research as well as funding doctoral training centres to develop multi-skilled postgraduate researchers. Although STEM subjects have traditionally been the focus of knowledge transfer activities, there is a growing recognition that academia can also positively influence the creative economy and that arts and humanities subjects can develop impactful research with wider benefit. (Crossick, 2006).

But what do all these changes mean for design education, and in particular, the Design PhD? The authors have observed, participated in, and are now actively provoking an emergent discussion in design on the concept of the 'hybrid academic', which may be, in part, a reaction to the influences outlined above. In contrast to the traditional 'lone scholar' model of academia, these new academics embody the collaborative space between sectors and disciplines. The authors contend that it is now the case that a successful academic career requires multiple skills, including the ability to move between fields of study, understand the priorities of the private sector and work with non-academic collaborators. This raises questions of whether we should be educating for this new career path, and if so, how this can be achieved. There are individual, sporadic interventions and activities that encourage us to be more agile, but we would like to explore a more holistic and structured approach in the hope to stimulate discussion and assist others who are similarly inspired. In other words, is there a call for a new Design PhD? If so, what is this called, what form would it take, and who is it for?

In this paper, we examine approaches in both mainstream design research training (adaptations of the traditional model) and more novel PhD programmes, which could form the grounding for curriculum design experts to further question and develop the notion of the new Design PhD.

In exploring (proposing) an alternative Design PhD model, it is first necessary to define what could be considered a traditional PhD trajectory. Drawing upon our experiences of Lancaster University's Highwire Doctoral Training Centre and its Creative Exchange project, we will then suggest what

the Design PhD looks like, and use this to outline the fundamental principles of a new Design PhD. At the end of the paper we outline key observations and a call for action to the doctoral design research community to critique our proposals and develop this model further.

### *The Traditional PhD*

Although there are arguably subtle differences from one institution to another, and most definitely differences in approaches across disciplines, there are common features which are generally expected when considering a design PhD. Broadly speaking, a traditional PhD in the UK is geared towards writing an 80-100k word PhD thesis which includes a literature review, research aims and objectives, research questions, a methodology, methods and findings. Although research designs differ considerably across disciplines, there will usually be some kind of written thesis at the end.



Figure 1: The Traditional PhD

But is there such a thing as a traditional PhD? The very suggestion that there is a traditional PhD model implies that there is a traditional way of doing doctoral research. We would question whether this has ever been the

case, but argue that this certainly doesn't stand true today. And so, there are inherent assumptions made when considering the 'traditional' or 'standard' route PhD as a single entity. If one were to gather a group of successful candidates together, it would be unlikely that you would find two who had exactly the same experience of their studies. There are many variables which can affect the course of a postgraduate degree; from the supervisors' working methods, to the nature of the data collection and methodology, to the working style of the individual. This is even more the case when you look across disciplines, which may have very different standards of what constitutes the research process.

As we are moving towards more interdisciplinary research and collaborations with industry, the thesis-based model itself may no longer be fit for purpose. For example in art and design, we increasingly find the need to incorporate practice-based research into the mix, which may mean that as well as a written element to the thesis, there is a tangible object produced which embodies the researcher's practice. So, a doctoral thesis submission could comprise, for example, a written thesis of 60,000 words, and a physical object which is equivalent to 20-40,000 words. But this may only be appropriate when the submitted object is an expression and explanation of the research, and part of a research through design approach (attributed to Frayling, cited in Jonas, 2007, p190; Frankel and Racine, 2010), and not the work itself, which is not always the case.

It is often stated that the common thread uniting PhD studies is that they are a training course to becoming a researcher. However the nature of research is itself changing in response to the pressures outlined in the introduction, the complex nature of the world in which we live, and the wicked problems that we face. There are many different types of research and researcher, therefore by necessity we should have different types of training. As we move towards a more experience-based approach to education, and careers which require skills in multiple areas, we have to be less prescriptive in the research training we offer. A HEC report in 2012 quoted a research-active academic who opined that PhDs "*go too deeply into too narrow an area – and don't have the breadth that I would like to see...*" (Higher Education Commission, 2012, p73), and notes that the traditional PhD model may no longer be optimal for an academic career.

So what are the current alternatives (in reality these are adaptations) to this "traditional" model? When we set out to write this paper, we were proposing the design PhD as an alternative to the traditional model in design. However on reflection, we acknowledge the design PhD model as an

“adaptation” of the traditional model in design. This could make it useful for other disciplines to consider to what extent their own current models are adaptations of the traditional structure outlined in Figure 1.

## What is a Design PhD?

We would like to make it clear that at this point, we aren't trying to dismiss the “traditional” PhD. Nor have we arrived at a neat new model of the Design PhD. Rather, we would like to start a conversation which asks “What is a Design PhD and what does it look like?”, by offering up real insights from our experiences of teaching inter-disciplinary PhDs and project based consultancy models of doctoral research, as well as our interaction with industry. We would like to suggest key principles for development of an alternative PhD model which nurtures the idea (development?) of what we call “the agile academic”; i.e. an academic that transcends the ivory tower; crosses the boundaries between industry and academia, engages in practice, research and teaching, and is motivated to do excellent, innovative research which satisfies not only the REF criteria we are bound by, but also real-world problems and contexts. An agile academic would be just as likely to publish in Design Week as they would in Design Issues. In order to be able to do this, they require a different kind of education; a different kind of PhD. One that values practice-based research and making as well as the academic pursuit of knowledge, values mindful reflection as well as immersive collaboration, and has a wider frame of value than the impact agenda and citations. At Lancaster University, we use several approaches.

ImaginationLancaster is Lancaster University's creative, open and exploratory design-led research lab that conducts applied and theoretical research into people, products, places and their interactions. Imagination's teaching approach is informed by, and interfaces with their research projects. Academics teach across the MRes in Digital Innovation, the MA in Design Management, and the BSc in Marketing and Design. Courses are currently being developed in Design Interactions and joint UG programmes with Engineering and Computing. Because Imagination positions itself as a research lab, and not a “department of design”, this implicitly drives a different approach to how it “teaches” research, in the sense that practice and industry interaction with live projects are a fundamental part of doctoral research. Current doctoral training provisions are provided through

programmes such as Highwire<sup>102</sup>, and through research projects such as The Creative Exchange<sup>103</sup>, and our annual Design PhD Conference. This paper will draw on the former two programmes to convey our position in Design Research training, and to contextualise our notional “agile” model.

## *Our models*

### **1. Highwire**

In this Doctoral Training Centre, students are offered a 1-year taught MRes in Digital Innovation, and then a 3-year funded PhD programme. One author of this paper teaches on the MRes and supervises PhD students on this programme. All students complete a module entitled “Comparative Research Methods”, and in keeping with the interdisciplinary nature of the programme, learn about research approaches of design, management, computing and also debate the edges and intersections of these “disciplines” and research approaches. Students come from a variety of backgrounds – some are just out of Masters or UG degrees, and others are more mature students who have built a substantial career. We have digital artists, practitioners, designers, computing enthusiasts and makers to name but a few. This has helped us consider the question: how do we educate such a diverse mix of interdisciplinary students on the practice of research? The team have focused on the unique nature of design research; that every design research project is different, and therefore requires a different research design each time. So as well as planning and doing design research, students are also designing the research itself. It may be useful at this point to note that our experience of teaching on this programme has shown that when students are working across disciplines, research approaches become more complex, supervisors become difficult to identify, and the challenges of teaching a diverse and mature cohort are compounded.

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<sup>102</sup> Highwire is an EPSRC-funded doctoral training centre based at Lancaster University. Students undertake an MRes in Digital Innovation, and then start a 3-year PhD study which straddles the disciplines of Design, Management and Computing.

<sup>103</sup> The Creative Exchange is an AHRC-funded research project which brings together companies and academic thinkers to explore the potential of the digital public space. 7 PhD students are currently funded under Lancaster University, with a further 8 at Newcastle University, and 6 at the Royal College of Art.

## **2. Creative Exchange**

The other model of Doctoral research at Imagination is through the Creative Exchange research project. This multi-institutional project (led by Lancaster University, in partnership with Newcastle University and the Royal College of Art) is an AHRC-funded 'Knowledge Exchange Hub', and the core principle is that PhD candidates will work on projects that are co-designed with creative industries, and arts and humanities academic partners, forming the data sets for their PhD empirical work. The over-arching topic of all research carried out in this project is the Digital Public Space, and therefore all students are exploring aspects of this broad topic in their theses. Six core themes (Personalisation, Experience, Participation, Connectivity, Narrative and Identity) are also fundamental to this project – and students were recruited based on their interest in these themes. Also of note is the interdisciplinary nature of the cohort (with representatives from fine art, cultural and media studies, computer science and design), many of whom also have significant industry experience before joining the programme. Several issues have emerged from this way of working. For example, how do students incorporate/ weave project-based experience while operating in a traditional PhD context? If a student is expected to produce an 80-100,000 word thesis, where do the project-based outputs fit? How can one interweave a literature review with making, or consultancy with live projects within their research approach? We have observed students who form research problems based on a "hunch" from industry experience, rather than from the literature – however, they are likely to then locate this within the literature, so that a more rounded contribution can be made. Some students are also using action research and grounded theory methodologies, where the research questions or hypotheses are developed in tandem with fieldwork.

We have briefly outlined two models of Design PhD currently being offered at Lancaster University, delivered by ImaginationLancaster, but what are the other available PhD models?

### **North American Design PhD**

Carnegie Mellon University recently held a symposium about what constitutes the North American Design PhD. They have always placed heavy emphasis on the design PhD as practice-based design research – by which they mean "academic research that proceeds by way of the processes involved in the professional practice of designing" (Carnegie Mellon University, 2013:1). They want to take this further and take the program



away from its humanities based roots, and more towards a programme that “conducts research into designing through designing” (ibid), which they believe is “more likely to be more effective for designing. (ibid)” At the symposium, they debated current issues in the field such as artifact vs text, instances where practice isn’t research, how the Design PhD is examined and practitioners as students. Although they don’t offer a direct alternative to the current model, CMU are very much active in questioning the constitution of the Design PhD, and aren’t afraid to critique what’s embedded.

### **Orpheus**

In response to the critique that traditional PhDs mean narrow skillsets, professional doctorates and new route PhDs were created which arguably informed the development of Doctoral Training Centres and Roberts funding for transferable skills training. (Higher Education Commission, 2012). Further to this, to help accommodate a broader skillset which takes account of both academic and non academic contexts, the Orpheus Network has developed a new model of PhD education which is which is being used across Europe. The network calls for a new attitude to the PhD whereby students take more responsibility for the project itself. “They will not necessarily do all the work themselves (previously such an idea was anathema), but they will learn to be managers as well as scholars” (Mulvany & Lackovic, 2012).

### **EngD**

The EngD (Engineering Doctorate) is something of a hybrid doctorate in engineering, where the PhD candidate is based in industry while working on their PhD. According to the Association of Engineering Doctorates, the EngD *“provides a more vocationally-oriented doctorate in engineering than the traditional PhD and is better suited to the needs of industry.”* (AED, n.d.).

First established in 1992, there are around 19 Industrial Doctorate Centres in the UK delivering these programmes (ibid.). This programme is different from that of a traditional PhD in the sense that the candidate is based within a company and the research itself is shaped by the sponsoring company, rather than emerging from literature or investigative empirical fieldwork. Both programmes however, share the basic criteria for the candidate to make a “distinct contribution to knowledge” (AED, n.d.).

Sponsors of the EngDoc, on the Association of Engineering Doctorates have reported a range of gains from the programme, stating that they “get the opportunity to build a relationship with the university where we can

interact with a number of academics, engendering discussion on a range of topics and opportunities while bringing academic rigour to the research process." (AED,n.d.).

### **The Design Doctorate**

Pelle Ehn, of Malmo University, discusses a graduate programme in interaction design as an example of a 'design doctorate' as opposed to a traditional PhD. They describe aspects of this course which differentiate it, which include variations in the content of the thesis, and in action based nature of the research. The interdisciplinary nature of the programme is highlighted, both in terms of the backgrounds of the students, and the production-oriented, studio based environment in which research work is carried out. That this design based programme is practice based but broad in scope gives interesting comparisons to the programmes described above.

We have summarised the traditional PhD, ImaginationLancaster's experiences, and new models that are being developed as a response to, and as a development of the traditional PhD. We will now summarise our findings and propose further areas for development.

## **Findings**

How can these different approaches to and experiences of doctoral research training described above help us imagine Design PhDs of the future? Considering the call for collaboration with industry and contributions beyond the academy, what are the issues that we have to be aware of when proposing a new PhD structure for what we are terming the "agile academic"<sup>104</sup>. What would a new PhD look like to educate someone to become one of these agile academics? We now outline 5 core observations from our experiences, which could be helpful to others in imagining the future of the Design PhD.

### **#1 Embedding students in design methodology: a commonality-based approach which respects differences**

From our experience of teaching comparative research methods to interdisciplinary doctoral design students, one important concept to bring to

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<sup>104</sup> e.g. an academic that transcends the ivory tower; crosses the boundaries between industry and academia, engages in practice, research and teaching, and is motivated to do excellent, innovative research which satisfies not only the REF criteria we are bound by, but also real-world problems and contexts.

students is that of research methodology – e.g. the approach to defining the research and the methods selected. While more scientific disciplines may have more dogmatic approaches to doing research (indeed, some fields of computing may also share this approach), design can be much more complex in terms of the research design itself. While we would not want students to always adopt the same approach, we would expect all students to understand that their research will implicitly have a methodological approach, which embodies their epistemological viewpoint and methods which are geared towards gathering data to answer their research questions (or indeed to form them in more grounded approaches). Design research is an ideal context for embedding both the practical and academic aspects of methodology, because design practice itself has parallels with the more academic philosophical approaches. It just requires alignment of practice and theory. An MRes at the beginning of a PhD programme is an ideal way of doing this. Murphy, co-author of this paper, developed a series of lectures geared towards doing exactly this; locating concepts from practice-based projects and skills in industry with the academic philosophical standpoints of research. Murphy also frequently highlights the need for an academic text book about design research methodology to contextualise the practice-based methods that practicing designers learn in industry, within the academic discourse around research methodology.

Interestingly, this paper all emerged from a discussion around research methodology. In a meeting attended by the two authors, the contrast was noted between the scientific disciplines (where one of the authors' studies originated) and design and social science in the consideration of the philosophical position of the research and how meaning is attributed to data. In design and social science this analytical process is almost a given, whereas in more traditional STEM disciplines it is seldom considered at all. Most scientific disciplines accept deductive research as the starting position of any research undertaking and therefore design experiments to answer research questions, and do not consider inductive and abductive approaches. In contrast, some social sciences and design approaches are largely about designing research approaches which are more generative and allow space for a more grounded approach – and even a contribution to discourse on research methodology itself. In addition, because we have students with a practice-based background, there must be recognition of how this real life industry context can be reflected in the PhD. It should be noted that we are not trying to achieve consensus or homogenisation but are very keen to respect the different approaches to research – whether

that be according to discipline or context (e.g. academic/ industry), in order to enhance the field of design research.

## **#2 Being aware of the expert practitioner/ novice researcher conflict**

While mature students may be experts in their field, they will ultimately be novice researchers. Because they may be leaders in their field of practice, this can be a difficult reality to grasp, and it takes time for students to understand the complexity of doing design research and the need for training – despite their expertise. Lawson (2006) found that novice designers tend to attach themselves to solutions early. In addition, good design research requires a combination of analysis and synthesis, but according to Lawson, it is more about synthesis. Dorst (2001), proposed that more experienced designers can co evolve problem and solution, which might suggest that these more experienced designers may find it more natural to start to solve the problem as they frame it, instead of opening up to initial wide and broad opportunities. This is consistent with Author X's teaching experience.

## **#3: Project management vs research: Roles that have to be managed.**

A key observation the authors have seen in the Creative Exchange PhD student cohort is the necessity to learn skills beyond those which might be traditionally associated with a PhD. In order to collaborate in an agile manner, particularly with those from outside academia, (e.g. practitioners who are running businesses), it is necessary for doctoral students to have skills in project management and collaborative working. These are valuable transferable skills not just to future entrepreneurial endeavours, but also to collaborative research practice now highly sought after for developing funded grant proposals and working in large multi-researcher, often multi-institution projects. It is also becoming more important to be able to communicate research findings to a wider audience, both to work with industry partners and to enable public engagement with research, in order to demonstrate impact and justify public funding.

As part of the Creative Exchange PhD journey, academic mentors encourage the development of these skills, as they are part and parcel of any future academic career – and indeed the new “agile” academics that we would like to nurture will need to adopt more of an entrepreneurial scavenging approach, whereby practice based projects can contribute to

research. Therefore, rather than actively pursuing a particular research agenda, agile academics, (being widely networked and collaborative) will craft the common narrative through a range of diverse projects and collaborations to help them establish and build a research profile. It is this skill of “scavenging” that we actively seek to encourage by using these live projects to form the basis of the students’ PhD.

It is sometimes assumed that these skills are something which require a natural ability, and that some individuals are simply ‘better’ at them. In the experience of the authors this is not the case; these skills are learnt by experience and can be taught. However, the emphasis on this training must not detract from the core function of a PhD which is to train in research techniques.

#### **#4: The clash between satisfying traditional PhD model and satisfying emerging model at the same time. We are still bound by what’s expected**

The authors acknowledge that rather than “tinkering “with the current model, we may first need to outline an alternative. We do not currently have a well- defined new model, but in developing one, would we need to experiment ? This is risky and could impact on those currently in this middle ground/transition. Therefore we need to find new ways without sacrificing their education. There also needs to be awareness that the existing models and structures have survived for a reason, and although it is important to be experimental with new models in order to move forward, there is a danger of abandoning successful aspects of the models along with those which are no longer appropriate, which is counterproductive.

#### **#5: Practitioners’ desires to study for a PhD**

One author of this paper, up until three years ago, was a full-time practitioner in industry. With these connections still active in her academic career, she has come across numerous requests from various practitioners wanting to do a PhD while continuing to run their own practice. There are many reasons for this – for example, some designers and architects want to present some rigour to the research they do for clients – and therefore feel that a research degree may give the research they do some credibility. Would a PhD be the correct path? If practitioners in industry gained a PhD, would this mean they would be less likely to collaborate with academics? This paper calls for further debate regarding the type of research qualification that’s appropriate for such a requirement. If it were a PhD, and

therefore this would be mean practitioners studying at Universities, this could mean more live industry networking opportunities for current students.

### *What could be the legacy/outcomes?*

In developing a new PhD which is interdisciplinary, takes account of practice as well as academic pursuit of knowledge, and is available to practitioners still running their businesses, what could the legacy be?

#### **#1: Nurturing the hybrid academic**

We believe that a hybrid academic is emerging. Someone who is not just inquisitive enough to do research, or able to write, but someone who is entrepreneurial; who is connected with industry and involved with live projects and uses these projects opportunistically to craft that into a PhD. They are not just people who are seeking to be “academics” in the traditional ivory tower sense – but a collaborator with industry and academia in the future.

#### **#2 A walled garden, not an ivory tower**

We have all too often heard the argument that academia is full of academics who regard themselves as “lone scholars”, who prefer to work alone in isolation rather than collaborate “on the ground”. It is our desire to dispel this myth of the ivory tower, where the academic is king – and instead, adopt a more co-creative approach where academics operate within communities of agile researchers. We would like to continue to educate for that model of academia, and not the ivory tower model, where citations and written publication is king.

#### **#3 Education that embraces technology**

We should also pay attention to movement towards interdisciplinary education, and technology enabled education. Again, we are not trying to prescribe a middle course the same for everyone, but rather enable people to carve their own path based on their own particular context. We can't be driven completely driven by these trends – they do not dictate, but they allow us to use our skills and experience to be the authority on a particular type of education. Others may develop their own path based on their own expertise. We are respecting institutional and local expertise.

*How do we move forward?*

Finally, we end this paper with a call to action. We propose that designerly approaches can help to re-imagine the future of doctoral design education. We call for designers, project managers, curriculum designers, and education experts to get together and ask these awkward questions. We would like to see more mashups/hacking of the current model, to help us imagine new ways which take into account the issues that we have mentioned in this paper. Design approaches can help. And thus we now seek to collaborate with people who want to use design approaches (e.g. prototyping, scenario exploration, service design, futurecasting, iterative improvement) to keep this debate going. This begs the question, if we are able to develop concepts and prototypes of new Design PhD models, how do we engender experimentation in doctoral programmes and what does this look like?

*Figure 2: Traditional Vs Practice led research: we advocate an approach that allows for interaction between the two. Image courtesy of Hannah Stewart*

We propose the need for experimental space to do this with doctoral training – who would be willing to engage in such an activity? Who will step

up? Is there space for this in academic training? Is this a periphery thing or is it central to academic training?

We have outlined our experiences, questioned the traditional PhD, and now we are calling on designers and curriculum experts to join the debate and propose new ways. We acknowledge that it's all very well to pick holes but we need something to work from to move forward. We need to develop principles and best practices. Our next step is to engage with others to co-develop a design brief to stimulate this debate, rather than develop a specification. We invite the academic and industry community to contribute.

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— Chapter 7 —

**Workshop Outlines**

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# Workshops Introduction

Anna RYLANDER and Nuša FAIN

on behalf of the workshop organising committee

As the theme of this conference proclaims, we are living in an Era of Disruption. Not only are we facing unprecedented environmental and social challenges, we also need to challenge the ways we think about how we do business and organize our society. In times defined by the forces of globalization, the social implications of technological progress, and the aftermaths of the financial crisis, the ability to handle change and innovation has become essential. Design Management, with its transdisciplinary nature, is well placed to find new roles and directions to explore in this context.

This means we also need to seek new formats for *how* we explore the pressing issues of design management research. By introducing the workshop format we want to encourage conference participants to develop more exploratory and interactive formats for exploring the conference theme(s) than the traditional paper format of academic conferences allows. We called for proposals that address theory development in Design Management, and particularly welcomed proposals that experiment with the workshop format to encourage active participation by workshop attendees.

The workshop format thus opens up for more “designerly” approaches to creatively and collaboratively exploring what the key issues of the field should become and how we might address them, rather than reporting on research that has already been conducted. The ambition is to enable common experiences among participants and create different kinds of platforms for exchanging and developing new ideas.

The call resulted in 34 submissions and a variety of topics were addressed in the proposals. The 14 workshops presented in these proceedings offer proposals of the highest quality that best meet the ambitions and the conference theme.

The morning session on 2<sup>nd</sup> September will host 6 workshops.

Kozubaev and Vollmer will host the workshop exploring how future studies can help design practitioners imagine a functional forward view of future business worlds; create services/products in the contexts of those worlds; understand systemic implications based on the relationship

between the service/product in the future. During this workshop some of the basic concepts of future studies will be introduced and drawing from decades of research in this field, specific future methods will be presented. These will then be combined with more traditional design tools (e.g. design research, journey mapping, rapid prototyping etc.) to demonstrate how futures can empower design to deal with larger and longer-term change.

Rego Mauro and Froehlich from SAP Design and Co-Innovation Center (DCC) will explore co-innovation design and present some of the tools that are being used at DCC to engage with complex user needs. The co-creation workshops are a recurrent tool in DCCs' engagement with customers. However, due the diverse and complex nature of the projects, every workshop has to be designed with specific requirements. In this DMI workshop will be some of the tools and methods presented and experienced by the DCC for designing co-creation sessions. The participants will learn how to build a workshop and to get the maximum value and insights out of it, both for the participants and for the project. The main tool to be used is the Workshop Canvas that enables facilitators to identify questions and requirements for design co-innovation workshops; list methods/exercises; create agenda; measure outcomes/achievements; organize documentation and identify the "value" for participants.

The hands-on session will be accompanied by real case inputs on in Cancer research and energy management projects, which focus on important requirements, tools and elements to be considered when designing co-creation session.

Broadley and McAras' workshop aims to create discussions concerning how practitioners and researchers intuitively mediate diverse cultural settings, artefacts, users, stakeholders, and collaborators. The aim is to elicit and understand the triumphs and tensions inherent in everyday design practices that often go unreported. Through a creative form of knowledge exchange, the objective of the workshop is to capture participants' cross-disciplinary and informal experiences of social engagement and insight gathering. Participants will form small groups to discuss their individual and collective experiences, producing descriptive and explanatory accounts of working across sociocultural contexts within the domain of design practice, management, and innovation. These will be captured through a series of visual storytelling activities and peer-to-peer feedback. By making tangible such peripheral anecdotes and intuitive actions, tacit and reflexive narratives will be shared as a means of identifying practical strategies for managing complex challenges and seizing meaningful opportunities.

Following the workshop, participants' generated images, writings, and dialogues will be disseminated as a repository of inspiration and advice.

Liedtka and Brozenske will facilitate a workshop on The Art of Curation. (Curation is a popular buzzword in business today) and the workshop facilitators believe it to be one of the most promising contributions that design thinking will make to better business decision-making. Yet, design thinking's ability to sharpen business managers' curatorial skills has received little attention. In this workshop curation will be explored and the process underlying it as practiced by experts will be examined. Furthermore, the relationship between curation and a design thinking approach will be discussed. This workshop held in the National Portrait Gallery will include a curator-led viewing of "Virginia Woolf – Art, Life and Vision." Also participants will engage in defining curation and the core activities of a curator; will explore the curation process and curatorial decision-making by joining a curator in viewing a current exhibit and learn about the thinking, choices, and actions that shaped the exhibition; discuss the application of curation to design thinking tools and practices and link all of the foregoing to management activities.

Cotton and Glenewinkel from Gravitytank will introduce participants to key practices and tools for moving beyond thinking to doing. Two modules will expose participants to key approaches: (1) Moving Beyond Conversations. Breaking into teams, participants will explore ways to "design" meetings, building empathy through immersion; and (2) ABP (Always be Prototyping). Participants will explore ways to use rapid prototyping as an impact and decision making tool.

In the 6<sup>th</sup> morning session Gekeler and Sposato aim to answer the following questions: "How may the landscape for design management look in 2030 and what do we have to do today in order to increase its momentum?." This workshop will enable participants to develop scenarios and at the same time get to know each other better. By creating a highly interactive environment, everyone will share ideas with one another in order to identify and analyse influencing factors for design management in the future and ultimately develop advice for action.

The afternoon session will host further 8 workshops.

Murphy and Jacobs will address the issues of future models of design management education. Through an interactive session and by the use of designerly approaches, the aim of the workshop is to identify current models of design management education, to discuss gaps and propose

redefinitions, along with roles the participants might envisage themselves playing in the transformation process.

Chung-Nainby will introduce Collective Imagery Weave, a creative method for encouraging the community to co-design through collective activities of deconstruction, construction and reconstruction utilising collective imagery weave installation alongside performative story co-construction. The workshop also aims at engaging conference participants as a community of practice to explore mutual research interests and connect them to everyday problems.

Whicher, Walters and Cawood will invite participants to engage in co-creating policies for design. Firstly, the delegates will examine their country's Design Ecosystem. Based on the analysis of the systemic strengths and weaknesses, in the second exercise, the participants will brainstorm policy actions for tackling challenges and capitalising on the strengths. In this way, the groups will hope to co-create design policy. The co-creation process should ensure that the policy proposals are realistic, tangible and of high-impact. At the end of the session, the groups will present their policy proposals to other delegates for feedback. The hands-on tools in this workshop have been developed through the EU project the SEE Platform ([www.seeplatform.eu](http://www.seeplatform.eu)).

Arico, Gonzales, Rylander and Whitcomb define the aim of their workshop as: to collaboratively map the current landscape of research in the field of Design and Management and creatively explore possible futures that look interesting. This workshop will be divided into two phases: (1) sharing, questioning and reformulating research issues and insights, and (2) co-constructing a map of future Design+Management research. The ultimate result should be rich in material for future discussions.

Raijmakers and Coelhos' workshop will mimic the design research for analysing and interpreting fieldwork results. Their aim is to explore stories on cycling safety with Service Design and Strategy teams and shed light on how analysis and data support business decisions with structured and rigorous information that inform the design and development process.

Hougan will host a workshop that will examine ageing and ageism in order to gain a better understanding of the problems and opportunities when designing and delivering products and services for an ageing population. The objective will be to explore ageism in design through the physical and physiological changes associated with ageing, our perceptions and realities of ageing, and how ageism is being reflected in the design of



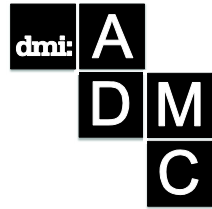
products and services. A specific focus will be on healthcare products and services.

Engeler Newbury focuses on the use of foresight tools and methods for service design, specifically Harman's Fan, a tool that helps in designing divergent scenarios describing how the future of society may unfold. The workshop follows the three steps for using the tool. Participants will use Harman's Fan to develop snapshots of alternative futures and design scenarios. Discussion will include why scenarios are critical but sometimes risky tools in design. Hence, the need for tools for thinking through multiple causalities that produce an array of possible futures. Participants will also be invited to consider how this tool could assist in building an 'anticipatory planning' capacity in design management, especially with regard to identifying patterns, trends and emerging changes.

Aitchison from FutureEd will engage participants in defining a future path for design education. Participants will be presented with FutureEds' work and will deep-dive into one aspect of their study to understand the emerging array of post-graduate curricula being explored internationally and develop ideas on what the future programme might look like.

We hope these proceedings will help the reader choose between the interesting opportunities and to take active part in the discussions. Finally we wish you a great and co-constructive experience on September 2<sup>nd</sup>.

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## Future Worlding for Design

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### Introduction

Design aims to take a comprehensive view in creating value, product and services, as well as to help organizations create mechanisms to deliver and support them. However, very often design practitioners do not have an opportunity to consider the implications of a new service or product in a wider context (social, economic, political). This oversight limits our ability to make a significant impact on how we design and create our collective future.

The goal of this workshop is to demonstrate how futures studies (also known as *foresight*) can help design practitioners: (i) imagine a functional forward view of future worlds, (ii) create services/products in the contexts of those worlds (iii) understand systemic implications based on the relationship between the service/product and the future world. During this workshop we introduce some of the basic concepts of future studies and drawing from the decades of research in this field, teach and practice specific futures methods. These methods will then combined with more traditional design tools (e.g. design research, journey mapping, rapid prototyping etc.) to demonstrate how futures can empower design to deal with larger and longer-term change.

### *Workshop Description*

The workshop consists primarily of group activities with some theoretical background and case studies to help the audience familiarize themselves with the methods of futures and foresight. First, we warm up the audience to the idea of futures with an activity called the Polak Game. In it, we explore how people in the audience differ in opinions of how they feel about

the future and how much control they have over it. This activity is followed by a brief introduction in some of the basic, methods and philosophies of futures studies.

Next, we perform the Worlding and Design activity, in which the audience is divided into teams and be given a description of an imaginary world. The way the worlds are constructed follows a specific methodology, which we also explain. Once the teams read the description of the world they will have to create a service or a product for that world. It is a simple and the same for everyone (e.g. housekeeping or car wash service). What is different is the impact of some of the characteristics of the future world on how the service and product is experienced. The teams present their solutions using a traditional journey map analysis. The point is not to create a completely new service or a product, but imagine how an existing one could fit in a new world.

In the final activity called Future News Report the teams have to create and re-enact a 3-minute news story as if it is reported on television. The story should be related to the concept that they have just presented. It could be an interview of a business owner or an imaginary situation involving the service. The goal of this exercise is to depict wider implications of a service/product that the workshop participants have just designed using a familiar medium such as the TV news report.

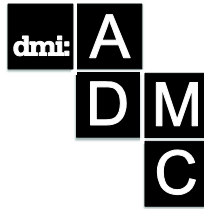
### *Workshop Outcome*

The most useful outcome of this workshop is teaching the participants how to deal with the uncertainty and multiplicity of the future with the tools of foresight, and use these tools to imagine new worlds and design experiences in them. We also discuss how building engaging experiences could help futurists and designers engage their audiences on topics of structural change, risk and uncertainty. Throughout the workshop, we encourage participants to reflect on how the practices of foresight could apply in their work and share these reflections among the participants.

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## Designing Co-Innovation Workshops

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User research is being largely used as an approach to innovation disruption in industry. The method to collect, to understand and to get inspired by the user insights varies due to the questions and the pursued challenge. In the SAP Design and Co-Innovation Center (DCC), we are building customized business software for various large customers from different industries segments. Business processes are often complex and we are asked to build tools and services for experts rather than mass consumers.

The usual research tools often do not fulfill our daily needs, this is why we are constantly rethinking and redesigning our co-creation tools/methods in order to involve, interact and engage customers and to build the best fitting software solutions. The co-creation workshops are a recurrent tool in our engagement with customers. However, due the diverse and complex nature of the projects, every workshop has to be designed with specific requirements.

In this workshop there will presented and experienced some of the tools and methods used at the DCC for designing co-creation sessions. The participants will learn how to build a workshop and to get the maximum value and insights out of it, both for the participants and for the project. The main tool to be used is the **Workshop Canvas**, it is a tool to:

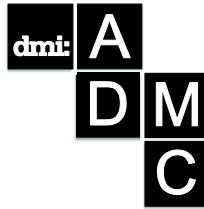
- Identify questions and requirements to design co-innovation workshops;
- List methods/exercises;
- Create agenda;
- Measure outcomes/achievements;
- Organize documentation;

- Identify the “value” for/of the participants;

The hands-on session will be accompanied by inputs on real cases in Cancer research and energy management projects, and will present and discuss important requirements, tools and elements that should be considered when designing a co-creation session.

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## Triumphs and Tensions in Informal Design Interactions: Confessions of a Designer

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The contemporary landscape of design practice, education, and research is in a constant state of flux. Cox (2005) underlines how designerly creativity can propel innovative business strategies and help to revive the British economy, whilst Norman and Verganti (2012) distinguish between incremental and radical forms of technological innovation. Framing human-centred design as a philosophy, they set out its iterative qualities of observation, ideation, testing, and 'getting close to users' (2012: 2, 11). Designers engage with societal complexities on a local and global scale, embracing increasingly collaborative ways of working.

Many attempts have been made to demystify the human-centred designer's role and responsibilities within interdisciplinary relationships (Julier, 2007; Manzini, 2009; Inns, 2010). Kelley (2008), for example, presents ten diverse personas commonly adopted by designers, such as the anthropologist, the set designer, and the storyteller. These multiple roles evoke Steen's discussions of two tensions arising from human-centred design approaches: the decisions that designers must make when balancing user needs with their personal expertise, knowledge and intuition; and their aims to understand contexts as they currently exist, with the goal to inspire innovative change. Steen poses reflexive practice as a means of navigating these tensions and engaging in mindful and socially inclusive design practice (2011: 46–48).

The proposed workshop will create a space for a discussion of how practitioners and researchers intuitively mediate diverse cultural settings, artefacts, users, stakeholders, and collaborators. We aim to elicit and understand the triumphs and tensions inherent in everyday design practices

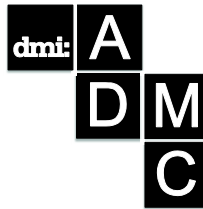


that often go unreported. Through a creative form of knowledge exchange, our objective is to capture workshop participants' cross-disciplinary and informal experiences of social engagement and insight gathering. Participants will form small groups to discuss their individual and collective experiences, producing descriptive and explanatory accounts of working across sociocultural contexts within the domain of design practice, management, and innovation. These will be captured through a series of visual storytelling activities and peer-to-peer feedback. By making tangible these peripheral anecdotes and intuitive actions, we will share tacit and reflexive narratives as a means of identifying practical strategies for managing complex challenges and seizing meaningful opportunities. Following the workshop we seek to disseminate participants' generated images, writings, and dialogues as a repository of inspiration and advice.

Prepare to disclose an exclusive from your research repertoire!

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## The Art of Curation

Jeanne LIEDTKA\* and Rachel BROZENSKE

University of Virginia

Curation is a popular buzzword in business today—and we believe it to be one of the most promising contributions that design thinking can make to better business decision-making. Yet, design thinking’s ability to sharpen business managers’ curatorial skills has received little attention. In this workshop, we propose to explore deeply what curation is, the process underlying it as practiced by experts, why it is potentially so valuable for managers, and the relationship between curation and a design thinking approach. We’ll be doing this at the National Portrait Gallery, in a conversation with the Director and a group of senior curators.

When it comes to information, research has demonstrated that more is definitely not better. More data, in fact, can reduce the quality of decision-making. Yet we live in a world in which the amount of information available to us increases exponentially with each passing day. With the advent of an ever more sophisticated array of search engines, we are literally drowning in data, and the deluge seems unlikely to abate. So welcome to the “Age of Curation.” Because as Wired has described it: “We’re surrounded by too much music, too much software, too many websites, too many feeds...”

Curation is suddenly everywhere, driven by the success of start-ups like Pinterest and Tumblr: digital curation, media curation, social network curation—you name it; somebody is busy trying to curate it. Web pundit Paul Kedvosky called curation “the new search.” Curation aims to improve the quality of the information we use, rather than just the quantity.

Curation consists of a series of activities: gathering, appraising and selecting, presenting and preserving core among them. Inspired by the sophisticated image of the scholarly museum curator producing an

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exhibition, the curator surveys the larger landscape of the relevant artists' work to ensure that all important works are identified, makes a judgment as to the relative merits of each, assembles a combination of the best of these that speak to the desired theme, and then presents the story to a broader public in a way that informs and educates.

So what is the relationship between design thinking and curation? A facility for curation—like one for empathy—is, we believe, a distinguishing characteristic of designers. Just as we've spent the past decade observing designers and trying to identify and apply some of their approaches to the broader universe of design thinking, here we want to take this mysterious, black-box process of curation and identify the recurring tools and processes that seem to happen organically within the curator's domain.

Let's start with the gathering function. Gathering the right information becomes infinitely more challenging when innovation is your goal: innovation is obviously about creating a future that is different than the past—the tricky part is using the only information you've got (about the past) to predict and shape the form that this divergence will take. History is replete with evidence about how bad our track record as predictors of divergence is, with classic stories like Watson's prediction of a total worldwide market for computers of 100 machines as a case in point. Looking intelligently at divergence requires a deeper understanding of the motivation behind behaviors than the superficial cut that quantitative data gathering methodologies like surveys that rely on what people say can muster. Design thinking brings an array of ethnographic tools, like observation and journey mapping that allow a researcher to gather much richer information. People are notoriously incapable of describing what they'd value if it doesn't already exist. Ethnographic methods pay attention to clues like emotion and intention, rather than espousals. In doing so, they provide more useful clues to the kind of deeper insights - those around unarticulated needs and wants - that form the foundation of the most defensible and profitable innovation opportunities. This activity of distilling the essence of what matters, of drilling down through the fluff to the essential, is one of design's greatest contributions.

Appraising the value of what we've gathered and selecting what to pay attention to is another area where design tools contribute to developing a manager's curation abilities. Information gathering is a divergent activity, aimed at expanding our perspective on the situation at hand, ensuring that we have framed our opportunity space sufficiently broadly. Appraisal and selection, on the other hand, aim at convergence—they seek to winnow the

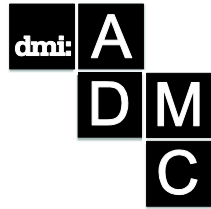
possibilities, discriminating to make some choices about what should be included and attended to, and what should not. This is not about synthesizing and averaging, skills more commonly employed in business; such reduction to the mean often obscures rather than illuminates the opportunities for real innovation, as IDEO's adherence to the study of "extreme users" testifies to. Good choices require clear criteria and here, again, design thinking contributes by insisting that we translate the insights and patterns observed during data gathering into the specification of what the attributes of a good solution look like. Agreement on the desired attributes is much more important in an environment of uncertainty than agreement on the solution, because the cause-effect relationship when predicting diversion is so unstable.

It is perhaps in the presentation stage that design thinking tools are most obviously useful. Storytelling, visualization and prototyping are core tools that help managers make sense of it all and tell their stories in more vivid ways.

Design thinking tools and process, then, allow us to manage the complexity of assembling the right information in the face of considerable uncertainty, make sound choices about what to pay attention to and what to let go of, and then capture it all in a story that makes sense to a largely uninformed audience.

**This workshop will be held at the National Portrait Gallery and will include a curator-led viewing of "Virginia Woolf – Art, Life and Vision."** In this workshop, we will:

1. Define curation and the core activities of a curator
2. Explore the curation process and curatorial decision-making by joining a curator to view a current exhibit and learn about the thinking, choices, and actions that shaped the exhibition
3. Discuss the application of curation to design thinking tools and practices
4. Link all of the above to management activities



## Workshop: From Thinking to Doing

Martha COTTON and Elizabeth GLENEWINKEL

gravitytank

### *Introduction*

At gravitytank, an innovation consulting firm, we have an acronym we use for traditional corporate processes: EEEMP. It stands for: Email, Email, Email, Meetings, Powerpoint. For many of our clients, this is the cadence and flow of getting things done, if indeed they do get done.

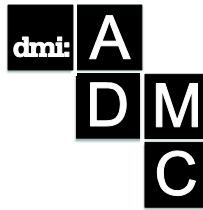
No matter how well intentioned design thinkers are within their organizations, the reality of EEEMP is everywhere, and we believe it promotes more talking than doing. The “From Thinking to Doing” workshop offers 2 modules that focus on bringing design thinking principles into practice, to help participants move from design thinking to design *doing*.

### *Workshop objectives & approach*

The objective of the workshop is to introduce participants to key practices and tools for moving beyond thinking to doing. Two modules will expose participants to key approaches:

Module One: Moving Beyond Conversations. Breaking into teams, we will explore ways to “design” meetings, stepping away from building empathy through immersion

Module Two: ABP (Always be Prototyping). Participants will explore ways to use rapid prototyping as a tool for impact and decision making.



# Creating Futures of Design Management

Moritz GEKELER and Alessandro SPOSATO

SAP Design and Co-Innovation Center, Berlin

## *The goal of the workshop*

When thinking about "the" future and the present it is highly recommendable to approach it by looking at diverse potential future developments, so called scenarios. This will enable us to plan backwards in order to decide what to do today.

As the overall title of this session suggests we will develop different "futures" (scenarios) of design management, and analyse which future scenario would be desirable from the perspective of the participants and design strategic proposals how to facilitate this specific scenario or how to avoid another one.

The overall guiding question for this scenario approach will be: How could the landscape for design management look like in 2030 and what do we have to do today in order to increase its momentum?

This workshop will enable the participants to develop scenarios and at the same time get to know the other participants better. By creating a highly interactive environment, we will get everyone to share their ideas with each other.

## *The approach of the workshop*

In order to do this, we will work in small teams and we will go through the following steps:

1. Identify and analyse influencing factors for design management in the future
2. Build basic scenarios
3. Develop and tell more detailed stories of the scenarios
4. Analyse the scenarios for risks and opportunities.

5. Develop advice for action.

The participants should be as multidisciplinary as possible including researchers, managers, designers, consultants etc. The design of the workshop is a mixture of scientific scenario analysis with design thinking.

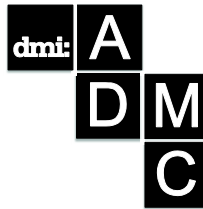
The participants will be guided through the process by the two moderators and will be enabled to create "prototypical scenarios" and visualize the implications. They will be provided with a tool similar to our design thinking Leporello for this purpose.

### *The hosts*

Dr. Moritz Gekeler and Alessandro Sposato are working as design strategists for the design and co-innovation center of SAP AG. Both have a lot of experience with designing and facilitating workshops of various formats. Moritz has a background as a teacher at the HPI School of Design Thinking, Dessau Department of Design and HTW Berlin. Before joining SAP he has worked as a project manager for HPI and as a researcher for the futures studies department of DAIMLER AG. Alessandro Sposato is a visual designer, who gained teaching experience at the Politecnico di Milano and at the HTW Berlin. Before joining SAP Alessandro worked for Zodiak Active as a Senior Art Director and for Jolie ADV.

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## Exploring Future Models of Executive Education in Design Management

Emma, MURPHY<sup>a\*</sup> and Naomi JACOBS<sup>b</sup>

<sup>a</sup> Glasgow School of Art; <sup>b</sup> Lancaster University

It is not uncommon to think of Design Management as something of a hybrid discipline that also transcends industry and academia. Definitions of design management are expansive. Designers can be practicing managers, and managers can be involved in managing design. Research can be conducted across these areas, by practitioners and academics, for various audiences and at different levels e.g. applied research, blue sky research and fundamental research. There are hybrid design management academics; for whom collaboration with industry is nothing new. However, with the research agenda emphasis on impact, industry collaboration is now more common than ever. As this collaboration becomes more visible, design managers in industry may also want to further engage with academics in the name of research, practice, or to develop new services, products – or even business models.

Within this collaborative culture, design managers may also want to further their careers with some form of educational qualification. This could be to help them do more in-house research, or to add some academic credibility to the work they do. Equally, academic institutions may want to develop their portfolio of courses to attract those working in industry.

If we were talking about the field of management, this may mean an MBA qualification. Indeed, more MBA courses in the UK are developing design strands. But if a designer managing design, or a design manager wanted to benefit from some kind of Executive Education, what would an

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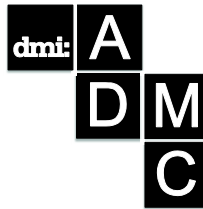
alternative to the MBA look like? How can we educate design managers in a way that transcends industry and academia? Could making better connections between those running practices doing an Executive Design Management MBA and universities provide more “live” projects for other students? What would success criteria for these hybrid ecosystems look like? Who would these courses be aimed at?

These are just a few questions that this workshop will consider, with a view to developing early prototype models for Executive Education in Design Management.

**Workshop Aim: To develop and critique future models of design management education.**

**Workshop Objectives:**

- To identify the current provision of design management education (a map will be prepared in advance and participants can add any further schemes they know of);
- To discuss the gaps, and strengths within the current provision;
- Using designerly approaches (modeling, sketching, mapping, making) develop prototype models of design management education;
- To evaluate each model by considering a) strengths, b) weaknesses c) potential audiences d) resources required e) barriers; and
- For participants to identify the role they would like to play in making one (or more) of these models a reality. Where would they fit in the process and how are they going to act?



# Collective Imagery Weave: Visualising knowledge to co-design with a community of research practitioners

Priscilla CHUENG-NAINBY

University of Edinburgh

*Collective Imagery Weave is creative method to engage community to co-design through collective activities of deconstruction, construction and reconstruction utilising collective imagery weave installation alongside performative story co-construction. We visualise community's collective imagery through a weave installation consists of coloured tags populated with words and visuals of ideas and fact. We invite workshop participants to explore ways to evaluate the method by experiencing it and engage conference participants as a community of practice to explore mutual research interests and connect to everyday problem.*

**Keywords:** Co-Design, Collective Creativity, Cross-Disciplinary Design

## Co-design with Communities

The challenge of designing with communities is in the individuality of creative process. Most co-design tools often overlook such differences and lack a framework in guiding their design. This research aims to identify a design framework for the development of co-design tools and processes (Sanders, Brandt, & Binder, 2010). We seek to understand collective creativity adopting the creative cognition approach to creativity. The work extends the Geneplore model of creativity and the notion of creative imagery (Finke, 1990, 1995) as a theoretical framework to study co-design. Collective Imagery is creative imagery shared by co-designers for conceptual structuring of design solution. The basic concept is that

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*Collective Imagery Weave: Visualising knowledge to co-design with a community of research practitioners*

*“Creative ideas can be structured without being predetermined...some degree of ambiguity in the structure allows new, unanticipated insights to emerge...structural connectedness does not mean that the ideas will be entirely predictable or devoid of opportunities for creative discovery.” (Ronald A. Finke, 1995, p. 304)*

We propose the notion of “collective imagery” as co-design framework to overcome individuality in creative processes (Chuang-Nainby & Gong, 2013). It is especially useful for community-led design, which is often cross-disciplinary and cross-cultural. We run co-design engagements with communities to investigate the formation of collective imagery. (Chuang-Nainby & Gong, 2013)

## **Collective Imagery Weave Workshop**

The workshop is physical and designed to be cognitively distributed. We use tangible props to engage participants so individual’s creative imagery is envisioned, enacted and connected into community’s collective imagery in embodiment. We adopt action research methodology that tools and processes are refined based on participants’ responses. The workshop was developed as ‘Collective Imagery Weave’, which deals with connecting ideas for emergence. It gradually evolved into ‘Mind Weave Theatre’, which includes performative story co-construction as convergence activity. Workshop duration is commonly four days though varies from several weeks at the longest to the shortest of two hours.

Thus far twenty over experimental workshops were carried out locally and globally on various causes and communities. They include engaging farmers at Inner Mongolia to design for village regeneration; bringing public to community with learning difficulty to seek mutual understanding on designing public service; elderly home service design with retired university professors in China; to tourist experience design through social innovation with craft communities.

### *Workshop aims*

Collective Imagery Weave workshop at DMI London 2014 has a research aim to explore ways to evaluate the workshop. We invite design research community to do so by experiencing it. In addition, participants will learn through this embodied experience, a way to collectively engage communities to solve complex cross-disciplinary design problem and to

interactively present solution. The applied aim of this workshop is to engage conference participants as a community of practice to visualise knowledge collectively, to explore mutual research interests, and to connect the research to every day problem.

### *Workshop Logistics*

The workshop consists of a three hours formal workshop and a two days conference participant engagement. Workshop participants will experience the tools during formal workshop and put into practice during engagement. They will take on the role of design researcher to reflect upon a way to evaluate the engagement. We introduce two sets of tools that work iteratively to give rise to an emergence of understanding as design solution: 1) collective imagery weave to visualise and enact creative complexity and 2) performative story co-construction through theatrical sketch or behavioural art. Collective imagery weave will results a community art installation (Figure 1) and adopts an interactive process of deconstruction, construction and reconstruction. Co-design solution is collectively conceptualised in elements of ideas, concepts, facts or fictions in keywords or drawings. Performative story co-construction is an intervention for convergence through narrative construction, in behavioural art or theatrical sketch.



*Figure 1 A Past Example of Collective Imagery Weave as Community Art Installation*

The formal workshop will last three hours during when we will explore research themes emerged from the connections, and to decide on the applied aim to work with conference participants. During break times for the two days conference, workshop participants can choose to put their learning into practice by engaging conference participants utilising the collective imagery weave installation located at common area. Workshop participants will be divided into teams of two or three members. The author will act as *chief interventionist*, who gives verbal instructions to guide workshop by intervening participants' activities using microphone and speakers to reach the participants. The given instructions are structured by phases but with flexibility to change in responding to arisen situation. Every participant will engage with the collective imagery weave areas. We record video of the formation of the installation. Participants are encouraged to record visuals of their processes with internet-enabled mobile phone with camera and upload them to the workshop's social media page as participatory reflections.

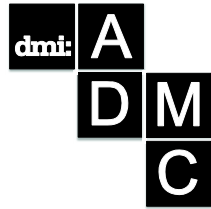
### *Workshop Phases*

Each workshop phase have specific activities to achieve but the flow and timing is situated and opportunistic, giving room for emerging workshop flow. The workshop begins with **deconstruction** of existing ideas, concepts and facts into elements that can be restructure into creative concept. These elements inspire new words or visuals elements. When the table is populated with elements, participants are asked to intuitively thread several elements using bamboo stick and **construct** them into a narrative. Each team then construct a bamboo structure of narrative based on their connectedness. These bamboo structures are then to be attached to the weave that will be **reconstructed** with connections forged between the elements on bamboo and weave. Wool thread is drawn to link tags that are associated. Shapes of the networked elements begin to emerge in the weave. Participants take visuals of the collective imagery weave to inform future writing by linking the content of selected tags into coherent stories to inform **performative story co-construction** which is a convergence activity.

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## Design Policy Workshop

Anna WHICHER, Andrew WALTERS and Gavin CAWOOD

Cardiff Metropolitan University

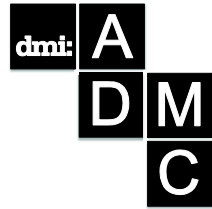
Design is increasingly being recognised as a priority for innovation by governments across Europe. In 2014, the Danish, Estonian, Finnish and Latvian Governments all had Design Action Plans in operation. Furthermore, in September 2013, the European Commission launched its 'Action Plan for Design-Driven Innovation' stating that 'A more systematic use of design as a tool for user-centred and market-driven innovation in all sectors of the economy, complementary to R&D, would improve European competitiveness' (European Commission, 2013, p. 4). However, this raises the question – how do governments develop design policies?

This workshop has been developed as a focus group for stakeholders to co-create policies for design. Innovation policy is based on an analysis of the innovation ecosystem so design policy should be based on an analysis of the design ecosystem. The workshop is divided into two exercises. Firstly, the delegates will examine their country's Design Ecosystem. Previous research has identified nine components of a Design Ecosystem – design support, design promotion, design users, design centres, design education, design research and knowledge transfer, the professional design sector, design funding and design governance (Whicher, 2012, p. 9). Using a prepared tool, the participants will map the strengths and weaknesses of their Design Ecosystem onto A1 posters.

Based on the analysis of the systemic strengths and weaknesses, in the second exercise, the participants will brainstorm policy actions for tackling the challenges and capitalising on the strengths. In this way, the groups co-create design policy. The co-creation process ensures that the policy proposals are realistic, tangible and high-impact. At the end of the session, the groups will present their policy proposals to the other delegates for feedback. The hands-on tools in this workshop have been developed







# Mapping the Future of Design + Management Research

Marzia ARICO, Sara Jane GONZALEZ, Anna RYLANDER and  
Andrew WHITCOMB

DESMA Network

## *Introduction*

The field of Design Management research is at a crossroad. As pointed out in the call for papers to this conference, never has the management of design been more important, and never has there been as many opportunities for design and designers to take on new roles in new contexts. In the current era of disruption we need to rethink the way we conceptualize the meeting(s) between the academic disciplines and professional practices of Design and Management to be able to see and seize the opportunities.

DESMA is a multidisciplinary research network funded by the European Commission, consisting of 12 partners and as many research project ([desmanetwork.eu](http://desmanetwork.eu)). Our mission is to engage academia as well as practice in rethinking how the combination of design and management can drive innovation, competitiveness and social progress in new ways.

## *Description*

In this workshop we invite all researchers interested in joining our mission to collaborate on defining the future research landscape of the field. Rather than defining what Design Management is, we want to explore the possibilities that emerge when different aspects of Design and Management meet in new, and perhaps unexpected, ways in this disruptive era. We want to go beyond the jargon and high-level categories for classifying research (design thinking, service design, design strategy, design-driven innovation and so forth) and instead start from what people are actually researching.

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What are the issues that researchers are looking at in their projects as they investigate what happens when design (in its various forms) meets management (in its various forms)? What theoretical perspectives are fruitful? What new insights can be gained from these studies? Can we see new patterns emerging from these insights when a larger group of researchers come together?

### *Workshop Aim*

The aim of the workshop is to collaboratively map the current landscape of research in the field of Design + Management and creatively explore what possible futures might look interesting.

We hope that the tentative map constructed during the workshop will provide a fruitful platform and starting point for discussions and reflections throughout the conference and beyond, as well as a means and a forum for finding opportunities for new research collaborations.

### *Tentative programme*

The workshop will run for the full afternoon and is essentially divided into two phases:

1. Sharing, questioning and reformulating research issues and insights. In this first phase participants get together in small groups of 4-5 people, based on their research interests. They will share their reflections on their own research and get help from other participants to question the framing of their research and discuss the implications of their insights. The groups will depart from a set of tentative dimensions for categorizing research issues in Design + Management based on the issues that have emerged among the DESMA projects. The phase ends with a plenary discussion where all groups come together and their maps are integrated into a summarizing map.

2. Co-constructing a map of future Design + Management research. After reflecting on the collective map, participants break out in new groups to work on the insights and implications of the map – and what that means for future areas of Design + Management research. This will be a more creative exercise, working with physical materials to construct representations of and metaphors for future areas of exploration. The specific formulation of the exercise will depend on the outcome of the activities and the interests of the participants. This phase also concludes in a plenary discussion where all representations are displayed and possible future directions are shared.

### *Expected Outcome*

The concrete outcome of the workshop is thus twofold; a visual map of key issues in Design + Management, derived from on-going research projects, and a set of physical representations of desired futures. These are in turn expected to provide rich material for continued discussions on the future topic of Design + Management research as well as provide structured opportunities for new opportunities for collaboration.

### *Requirements for participation*

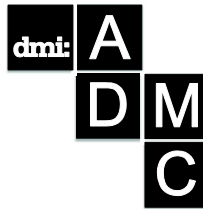
In preparation of the workshop we will ask prospective participants to write a one-page reflection on their current research project(s) responding to the following questions:

1. What are the key issues you are addressing in your current research project(s)?
2. What are the insights they (the key issues) have generated related to the meeting of Design + Management? How have these insights changes your position/view of Design Management?
3. What are the next steps for your research in the field; how are you thinking of taking these insights further in your next project?

**PLEASE NOTE:** Participants are requested NOT to use current catch phrases in the field (e.g. design management, design thinking, service design, design strategy, innovation management, etc.), but to challenge themselves to use more specific and jargon-free terms.

Participants will be selected based on their reflections. As we are looking for opening up rather than closing down the view of Design + Management we are looking for diversity rather than coherence among participants. We are a large group of facilitators within DESMA, so we are open to accept up to 50 participants that will be working in smaller groups, given that there is space available.

In addition to the core group of participants in the workshop, we will open up the discussions online, using social media to communicate ideas and get feedback on from a wider community in real time.



## Analysing Stories on Cycling Safety with Service Design and Strategy Teams

Bas RAIJMAKERS and Mario COELHO\*

STBY Ltd

As designers and innovators of services, we try to step into the shoes of those who will be using and delivering the services we create. We need to empathise with them to understand what value we can create, what problems we might solve or what interactions between people we should facilitate. Observing and listening are important skills to get into these shoes, but they are not enough. We also need to be storytellers, because we must bring the everyday experiences of people into the design and strategy teams that imagine and then help create services. How can we bring the stories to these teams and how can we help them work with those stories? How can we make the stories stick to the design process from start to finish and keep them useful all along? How do we support design and business decisions with clear evidence from everyday life?

Generating actionable insights from ethnographic research is an intense process of repeated exposure and investigation. Every time you go through the documented data, new and more elaborate insights may come up. Every time you review these insights, new ideas on how to improve current services may come to mind. To make the most out of this process of recurrent investigation, it is important to carefully structure the data as well as the process of reviewing. This requires a delicate balance between meaningful categorisation and openness to explore.

Experienced design researchers on both agency and client side may well know this, but many other people within the client organisation don't. Yet

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they are the ones who need to work with the results of the design research, so they benefit from being guided in this process. Ideally they continue the process of interrogating and questioning the data, in order to connect it to the projects, themes and teams they are working on.

Fieldwork data needs to be structured to make it accessible to others and analysed to a certain extent to result in a collection of units of analysis. These units can be used to communicate stories from the field. If the data is captured on film, as in the case of this workshop, the unit of analysis can be a short and concise edited film. Each film tells a single story in two or three minutes, including the participant behaviour (practices) and motives as expressed by themselves. The editing of the film can be done in such a way as to add the findings of the design researchers in the field, which may add more participant motives. Nevertheless, the stories should remain open to further interpretation, as more analysis is to follow.

### *Examples of questions to ask during reviewing film data*

This workshop mimics the Design Research step of analysing and interpreting the fieldwork results. During this step, the teams are seeking a deeper understanding of the practices and motives of the fieldwork participants, often focused on a particular topic such as: 'How do people perceive road safety on a bike?'. Collaborative sense-making with service design and strategic teams gives the best results, because the insights created are then owned by the teams that helped create them.

- What is this person telling us?
- What is he/she trying to do?
- What does he/she want to achieve?
- What drives him/her?
- What bugs him/her?
- Who else is involved with this?
- What role do external circumstances play here?
- What could be improved for him/her?
- What should stay the same for him/her?

### *Continuous process of creating meaning from consumer behaviour*

The analysis of design research projects is often not fully exhausted after the final debrief presentation or workshop at the end of the formal project. The process of deepening insights and translating these to actionable results

can go on within the wider organisation for quite a while. This further expands and deepens a more stretched out process of continuous internal reviewing and additional analysis.

Traditional expectations in client organisations towards consumer research can be to 'just' show up at the final presentation, or collect the report, and then either accept or reject results. This is also a rather individual process, based on personal opinions and assumptions.

Embracing Design Research as a valuable source of inspiration and validation for Strategic Design relies on the other hand on a culture that embraces exploration and collaboration.

### *How to?*

In this DMI workshop we practice the skill of analysing rich data, previously gathered and structured by multi disciplinary teams, in an explorative and collaborative way.

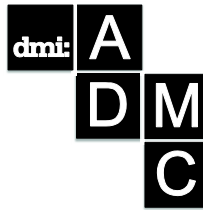
The most efficient way to achieve the proposed results is to combine individual, group and inter-group activities. In practice, each group will perform a series of activities. The activities will follow a pattern: writing down behaviours observed, discussing the underlying motivations of the people in the films and finally transforming these into actionable insights that are shared with other groups.

### *Films Topics: Cycling Safety*

The films to be analysed were created and edited as a part of a project to answer the question: What opportunities exist to improve road safety for cyclists in London? The films resulted from a design research process. They are short (1-3 minutes) and revolve around stories told in the first person by three cyclists. Besides the stories we also asked the research participants to give a live commentary of their journey as they cycled, which was later synced with the video footage. A thing to note is that the films to be used in this workshop are in fact already embedded with analysis, which was performed and delivered through the editing. By putting certain statements and situations together, the evidence for a certain insight arises, and an opportunity emerges from that. Film can be used to not only capture the great outdoors of design, but also to thoroughly understand it and to see what could be done differently: the opportunities for innovation.

### ***Conclusion***

Such deep understanding created by a team, rather than just a few design researchers who are in the field themselves, does not emerge magically all by itself. It requires a solid research methodology, executed with an open mind in the field, which delivers a clear unit of analysis as the basis of joint interpretation by the service design or strategy team. Such a unit of analysis allows for a structured analysis on several levels, from practices to motivations. This can happen more than once, because well-structured research data can be re-used later to answer other research questions. Every time, the results of the analysis support business decisions with structured and rigorous information that informs the design and development process.



## Ageism: Designs Last Prejudice

Glen HOUGAN

Wellspan Research and Design, NSCAD University

The world's population is currently ageing at an unprecedented rate. This demographic change offers opportunities to those designers and businesses that are able to develop products and services that respond to the needs of an ageing population. But before designers can adequately respond to this demographic change, there is a need to first acknowledge and address ageism in our society and how it can prejudice our own responses as designers.

Ageism which is discrimination based on age, is referred to as 'the new bigotry' (Butler, 1969, p. 243). Ageism is one of the least addressed and challenged prejudices in our community and one of the most widespread (Cuddy, Norton, Fiske, 2005, pp. 267-285). A Harvard study on prejudices found that the largest prejudicial bias people had was not towards people of different race or sex, but towards the elderly (Cromie, 2003). In design, this prejudice and stereotyping shows up in the products, services and environments that are designed for our older population. The issue of ageism and its reflection in design not only perpetuates society's negative view of older people but their negative view of themselves (Levy, Kunkel, Kasl, S.V. 2002, pp. 261–70). So how do designers start to design products, services and environments that don't perpetuate ageism or reinforce an unhealthy narrative of our ageing population? How do designers respond to this growing demographic when they may themselves harbor ageist attitudes?

The aim of the workshop is to explore those questions. This workshop will examine ageing and ageism in order to gain a better understanding of the problems and opportunities when designing and delivering products and services for an ageing population. The objective will be to explore ageism in design through the physical and physiological changes associated with

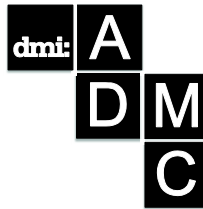


ageing, our perceptions and realities of ageing, and how ageism is being reflected in the design of products and services. A specific focus will be on healthcare products and services.

Combining lectures and participatory exercises, the workshop will explore three main areas. The first area is an exploration of ageism in design. Participants will examine ageist attitudes, language and products through the evaluation of various healthcare products and services. The second area is an exploration of the realities of ageing and ones own perception of ageing. Using 'ageing/ageist suits', which simulates and stereotypes the physiological conditions associated with ageing, participants will undertake a number of exercises that explores their perceptions and attitudes toward getting old and how this may influence their design responses. The last part of the workshop will highlight a number of strategies for overcoming ageist tendencies in the design of healthcare products and services for an ageing population. The outcome of the workshop is to have designers gain a better understanding of ageism, how it can be reflected in design, and ways that they can design and develop products and services that reflect a healthier and less stereotypical view of ageing.

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# Applying Foresight Tools To Design Management

Bridgette ENGELER NEWBURY

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This workshop focuses on the use of foresight tools and methods on service design, specifically Harman’s Fan, a tool that helps in designing divergent scenarios that describe how the futures of society may unfold (Harman, 1976; Schultz). Harman’s Fan is a tool used as part of group brainstorming to facilitate expansive critical thinking over different time-frames. The workshop follows the three steps of using the tool.

Participants will use Harman’s Fan to develop snapshots of alternative futures and design scenarios. Discussion will include why scenarios are critical tools in design as well as foresight but sometimes risky, hence the need for tools like this for thinking through the multiple causalities that produce an infinite array of alternative possible futures. Participants will also be invited to consider how this tool could assist in building an ‘anticipatory planning’ capacity in design management, especially in regard to identifying patterns, trends and emerging issues of change.

## Workshop description

Participants are asked to quickly brainstorm evocative titles for twenty-two ‘snapshots’ of alternative futures related to a specific design problem or brief. These snapshots are *not* fully described scenarios, more like headlines or ‘sound bites’, quick verbal sketches and articulations of varying possibilities.

The snapshots are recorded by participants on sticky notes, preferably in headline form. The completed sticky notes are then placed on a wall or whiteboard so that they are clearly visible to everyone in the room. This

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stage of the process can be done in silence to allow for reflection and consideration. Depending on the outputs, participants may be asked to add in further ideas that are 'wild cards' in the context of the headlines and snapshots already generated. Any and all suggestions are encouraged – especially those considered ridiculous, implausible and impossible.

The group then discusses the snapshots in preparation for ordering or grouping them based on time and conditions: participants will be asked to consider which headlines could manifest closer to present conditions, and which seem to require longer-term, transformational changes based on factors they identify or imagine. As the group discusses these factors, the sticky notes are arranged and re-arranged to form a 'fan' of roughly grouped headlines forming pathways to 'near-future', 'medium-term future', 'long-term future' and 'far future' scenarios. Actual dates or time horizons and known factors or forces can be used, if the group desires this and can agree quickly on what is to be used. A sample 'fan' can be provided as a reference for participants.

Once participants have completed their fan, they are then asked to use the snapshots to tell different stories of how changes and innovations emerge, merge and diverge to produce these scenarios. Each headline is a part of many different paths – like entry points and ways into different futures - that reveal multiple and varied scenarios as they unfold into emergent and divergent narratives.

### **Schedule**

Introduction	5 minutes
Process overview	5 minutes
Process – Stage 1	15 minutes
Process – Stage 2	25 minutes
Process – Stage 3	15 minutes
Process discussion and review	10 minutes
Q&A	5 minutes

### **Requirements**

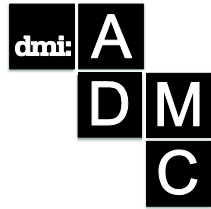
Sticky notes, markers, wall space, whiteboard, AV for digital stimulus, workshop agenda handout with instructions

## Workshop outcome

Participants will experience Harman's Fan as a tool that facilitates the generation and sharing of ideas, particularly emphasising anticipatory thinking, with subsequent building to form bigger ideas that inform scenario development. As a method for design management and strategic foresight, the tool can be expanded to include phases of background research and integrate other methods and processes. Facilitated discussion of these opportunities is part of the final workshop wrap-up, along with open discussion and awareness of the possibilities of intentionally integrating strategic foresight tools and methods in design thinking and design management processes.

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## **FuturEd: Towards a new post-graduate design programme**

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In order to meet the growing demands of organisations seeking graduates with new and more creative skills, universities are increasingly offering new models of education that seek to break down the traditional silos between engineering, business and design faculties.

FutureEd is a Design Management Institute research programme that is mapping programme types; and gaining educator, student and industry perspectives on the challenges ahead, in order to define a future path for design education.

For this workshop, we will deep-dive into one aspect of our study to understand the emerging array of post-graduate curricula being explored internationally and develop ideas on what the programme of the future might look like.

### *Workshop objectives*

The workshop aims to attract a mixed group of programme leaders and lecturers, design education researchers, post-graduate students and industry practitioners who are open to collaboration and keen to:

- Understand the array of post-graduate design curricula emerging to equip students for the increasing complexity of design activity
- Diagnose the challenges in developing and delivering new models of education
- Generate ideas for what the post-graduate design education program of the future could look like

## *Workshop agenda*

After setting the context with an introduction to the FuturEd programme, participants will divide into small working groups for two, one hour long interactive, facilitated discussions. By firstly mapping our knowledge of current course realities, we will create a common landscape of understanding about the range of approaches taken at post-graduate level today and highlight the challenges of successful curriculum design and delivery.

After a group discussion of this current reality, groups will reconvene to develop their vision of the design programme of the future, as brought to life by a visual articulation of its:

- Purpose: it's values, what it seeks to achieve and how it seeks to differentiate
- Disciplinary collaborations: in which faculty it sits, which disciplines it draws from and what collaborations it fosters
- Graduate attributes: what capabilities and skills it seeks to embody in its students
- Learning culture: how students learn, ie. the balance between projects, essays, case studies, seminars, skills workshops, online/offline learning etc.
- Curriculum visualisation: how the course delivery is structured

After summarising learnings and outlining next steps, it is hoped that participants will have a greater understanding of the current landscape of post-graduate design education and have advanced their own thinking about the opportunities that could be addressed within their own institutional or organisational context.

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## The 19th DMI: Academic Design Management Conference Proceedings' Editors



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