Towards design-driven innovation: designing for points of view using intuition through skills

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ABSTRACT

Design-driven innovation aims to release the business potential of a new type of innovation, based on a radical shift of meaning. In order to do that, it is essential to achieve a deep understanding of what meaning is, how it is possible to create (new) meaning and develop transferable methods that empower designers to transfer meaning and to design radical shifts in meaning to leap innovation-wise. In a one-week Master's class, we have approached this exploration from a phenomenological perspective, where meaning is created in interaction. The class trains students to deeply scrutinize the design of meaning. Respecting the phenomenological approach, it implements the integration of different points of view and supports the use of intuition, enabled by designing from one’s own (bodily) skills. We explain by means of an example - the skill of snowboarding - how these different elements concur to enrich a design process and build the basis for a richer result in terms of meaning and therefore innovation. Starting from the design knowledge created during the class, we designed two concepts of design interaction, a knife and a dial mechanism for phones, to show how our method can lead to disruptive shifts in meaning. We illustrate the different ways that the class’ results can be translated into design, to give insight on how to achieve radical innovation, both short term and long term. We conclude by explaining the practical impact of our method for industry.

Categories and Subject Descriptors


General Terms

Design, Experimentation, Theory

Keywords

Design, phenomenology, meaning, point of view, skills, intuition, innovation, design-driven innovation.

1. INTRODUCTION

Roberto Verganti shows in his book 'Design-driven innovation' (2009) the business potential of a new type of innovation, based on a radical shift of meaning. This type of innovation is not obtained by scrutinising user needs, which generally leads to incremental change of meaning, but by developing a strong vision based on new meaning. Verganti shows that in order to realise such leaps, industry must build upon so-called interpreters, i.e. "the community of players - from artists to technology suppliers to design schools - that surround every product and deeply understand and influence how people give meaning to things." (cover, Verganti 2009).

At the department of Industrial Design we aim to educate such “interpreters”, more specifically designers who can develop disruptive systems, products and related services that can transform society. The term “disruptive” in our context implies the absence of a well-established frame of reference for users or the market. Not only the system, product or service as such is new, but it also has a radical new meaning for the user.

But how does one educate such interpreters? In 'Developing the competence of designing intelligent systems' (Hummels and Vinke, 2009), we answer this question by describing how we tailor our educational model, process, methods and tools towards obtaining the competence of designing disruptive systems that can transform society. Our educational approach uses a constructivist learning approach in which it is the learner who creates meaning (for development), affected by and reflecting his socio-cultural environment (Piaget, 1971). So, it is a learner-centred approach in which novice designers learn to learn (what, how and why) and teachers facilitate their learning (Doll, 1986, Hummels and Vinke,
2. MEANING
What do we define as meaning? We adopt the phenomenological perspective, in which meaning arises in interaction: “How we think about the world is ... rooted in how we interact with it before we think, and so our intellectual thoughts cannot be used to explain away that pre-reflective experience. We move about the world, make use of the objects in it, respond to situations emotionally, act in order to change it, and so on. All these and other ways of interacting with the world give rise to its meaningfulness, so that the meaning of things in a sense, exist neither ‘inside’ our minds nor in the world itself, but in the space between us and the world, in the interaction” (Matthews, 2006, p.33).

The core of phenomenology as Merleau-Ponty (2002) describes it is ‘être au monde’, which means not only being in the world but also belonging to it, having a relationship with it, interacting with it, perceiving it in all dimensions. Perceiving is an activity and our body and skills are an inextricable part of this perception. We perceive the world in terms of what we can do with it, and by physically interacting with it we access and express this meaning. Perception, through action, precedes cognition: reflection is a consequence of action. Moreover, we do not perceive ourselves as one more object in the world; we perceive ourselves as the point of view from which we perceive other objects.

A phenomenological perspective has consequences for "designing meaning" in systems and products that are based on a radical shift of meaning. To understand the implications of phenomenology for design-driven innovation, we believe it is important that our students experience and understand (1) the effect of their point of view and (2) the role of their body and experience. As we will explain in the next two paragraphs, we required them to implement the latter by inducing students to trust their intuition, and to unleash it, by applying their own skills.

2.1 Points of view
Because designers perceive themselves as the point of view from which they perceive systems and products, they are a part of their designs. They are designing from a first person perspective and their designs will be meaningful for them in a different way than for someone else. We believe that it is essential for students to experience this concept of ‘point of view’ to “prehend” the concept of meaning, where we see “prehension”, both as mental understanding as well as physical action (Sennett, 2008, p.154). To emphasise “prehension” of their point of view, every student starts in our class with one of their unique skills, e.g. cooking, snow boarding, video gaming and dj-ing.

2.2 Intuition through skills
Matthews (2006), explaining Merleau-Ponty, indicates that meaning is based on experiencing, on acting in the world. Therefore, we consider making (synthesising and concretising) an essential activity of designers, next (or even prior) to thinking (analysing and abstracting). Firstly, people can interact with made artefacts: while artefacts can be experienced, so that people have access to and can express meaning, abstract ideas cannot be experienced or interacted with (perhaps only imaginatively). Secondly, making enables designers to explore the unknown by trusting their senses, exploring resistance and ambiguity and by tapping into their intuition. Dijkstra's and Nordgren (2006) show that intuition, or unconscious thought as they call it, is better suited for dealing with complex matters than conscious thought. Designing, which is based on creating, is the highest form of (cognitive) complexity according to the Revised Bloom's Taxonomy (Anderson, & Krathwohl, 2001).

Intuition is not considered as an “official” modus operandi, because its use does not contribute to make the process repeatable by others. Yet because of the complexity of design processes and of the intrinsic complexity of people – who will eventually use design products – intuition is an indispensible component in design; it is the tool that empowers us to make choices in the iterations of a design process. Because “intuition begins with the sense that what is not yet could be” (Sennett, 2008, p. 201), it involves skills, as skills are our way to make sense of the world and transform it. Intuition is necessary to make leaps, and is “an imaginative experience ... that guides us towards what we sense is an unknown reality latent with possibility” (Sennett, 2008, p. 213). Therefore, training intuition is essential to become skilled in designing systems and products that aim at a radical shift of meaning.

3. DESIGNING FOR POINTS OF VIEW, USING INTUITION THROUGH SKILLS
We have applied the theoretical stand we just described, in a one-week Master's class, in which we let students explore and achieve meaning by integrating points of view using intuition through skills. We will first explain the overall set-up of the class. Thereupon we will describe one of the outcomes of the explorations: Yves Florack’s project.
3.1 Description of the Master’s class

A group of 9 Master's students explored for five days the concept of meaning. The overall assignment for every student was to design an empowering/enabling tool that allows a 3rd person to begin to experience the 1st person’s skills. To be able to design such a tool, the students went through several steps of documenting and reflecting upon their own and each other's skills.

Our aim in giving this assignment was, one the one hand, to see if (a glance of) meaning can be communicated in some way and, on the other, if externalising, visualising, changing and reflecting upon points of view can clarify the concept of meaning, enrich the design process and open up the solution space for design-driven innovation.

Let us first explain the overall set-up of the class.

3.1.1 Documenting one’s own skill

Each student was asked to choose a personal skill to focus on (ideally a physical one) and make a short video documentary on the relevant elements such as: What is the skill about? Why do you do it? What does it mean for you? Why is it important or meaningful? What do you experience and feel when performing the activity? The goal of this first video (video A) was for each student (person 1) to directly reflect on these questions, explore their point of view and their skill, and prepare himself for telling the story to another student. The videos were at this point not presented to anyone other than the lecturers.

3.1.2 Documenting person 1’s skill by person 2

Later that day, another student (person 2) was asked to make a short video documentary (video B) about person 1’s skill, based on a demonstration and explanation of it in the context, documented with an interview by person 2 and, if feasible, by letting person 2 try out the activity. At the beginning of day 2, every video B was presented to person 1 in order to show him a new perspective on his own skill. In this way, they would be able to see and reflect on the point of view of person 2. What did person 2 consider to be meaningful for person 1, what was person 2's own point of view? By showing such a “mirror”, person 1 could scrutinize their meaningfulness and point of view again, thus adding an extra layer of self-awareness. Person 1 was allowed to update their first video documentary (video A) based on their findings.

3.1.3 Designing a tool by person 1 to let person 3 experience person 1's skill

Near the end of day 2, students were asked to extrapolate one significant aspect of their skill, which would be the starting point to design a tool to enable another person (person 3) towards that aspect of the experience of the skill. Since another person that is not skilled can never experience person 1’s skill in the same way, we encouraged the students to explore all senses and to design their enabling tool beyond the boundaries and context of the original skill. They had one-and-a-half day to build such tool and were allowed to test it in-between with person 2.

3.1.4 Documenting person 3’s skill

Person 3 was asked to try the tool and to learn to master the accompanying skill in a time span of one hour, while being recorded on video. Then, person 3 would edit this video to convey on his experience of using the tool and developing the skill, as well as the meaning of this experience for him: video C.

3.1.5 Reflection

The final presentation took place in the afternoon of the fifth day. Every presenter (person 1) would show simultaneously videos A, B, and C and his design (experiential tool), and meanwhile explain the process and reflect on it. This explanation included a reflection on the connections between the points of view and how this influenced his “prehension” of meaning. The class was concluded with an overall discussion on use of points of view, personal skills and intuition in the design process.

3.2 Towards intuitive leaps

As said, with our assignment we wanted to explore two questions. Can (a glance of) meaning be transferred to someone else in some way? Can externalising, visualising, changing and reflecting upon points of view clarify the concept of meaning, enrich the design process and open up the solution space for design-driven innovation? We will try to answer these questions by explaining Yves Floraek's process and design based upon his snowboarding skill. In order to do so, we use Sennett's four stages of intuitive leaps: reformating, adjacency, wonder and gravity (Sennett, 2008, p. 209), to describe Yves' project. At the end we will reflect on the possibility to transfer (a glance of) meaning and how our approach as described in § 3.1 can clarify the concept of meaning.

3.3 Sijme's Scissorhands

Yves Floraek loves snow boarding, and he explored, through video A, what makes snow boarding meaningful for him. After he saw video B by Mark Thielen reflecting his perception of Yves' skills, Yves refined video A and designed a cutlery tool for Sijme Geurts to experience a glance of his concept, perception and meaning of snowboarding, which appeared to come close.

3.3.1 Reformating

Reformatting is the first intuitive leap Yves made. By definition, reformating is “the willingness to see if a tool or practice can be changed in use”; it is the abstraction phase. In order to design a tool that would allow another person to begin to experience aspects of snowboarding like he does, Yves tried to analyse relevant elements of his experience with this sport: the adrenaline rush of speed, jumping and landing, the hedonistic component of acrobatics, and so on. Because this specific experience, like most, is extremely context dependent, it was necessary to abstract the essence of these aspects in order to isolate one salient element, thus operating the reformating leap.

From Yves’s perspective, snowboarding essentially allows him to mould the world around him through an artificial extension of his body (or prosthesis). In order to master this skill, the person needs to reconsider the relationship between his/her body and the environment, because there is a shift in the physical possibilities and constraints. The snowboard, due to its form and material properties, allows Yves to constantly flatten and carve the snow surface in order to travel down smoothly and quickly. At the same time, the board constrains the independent movement of his legs forcing them to act as one entity, and, therefore, imposing a different way of using waist, hip, knee and ankle joints.

The salient element in Yves’s snowboarding experience, and eventually his design focus, is therefore the moulding of a material through the mastering of new possibilities and constraints.
provided by an artificial extension of the body. This became his design brief.

3.3.2 Adjacency
The modelling of the material by means of a prosthesis, should allow smoothness and speed of performance to emerge and should empower feelings of control and power, qualities that Yves explicitly described as being important for his experience. In order for the intuitive leap to take place, the designer set an adjacency. “Adjacency occurs when two unlike domains are brought together” (Sennett, 2008, 210). In this case Yves searched for a material (to be molded, i.e. carved, crushed, cut, compressed, scattered, melted, mixed, …) with similar qualities as snow; he chose to work within the (soft) food domain. In order to transform edible ingredients (the material) into food (the moulded material), a person needs to acquire a level of mastering of kitchen utensils (tools that become an extension of the body).

In this domain, we can find some of the characteristics of snowboarding that Yves found relevant for his experience: speed, the act of showing off, danger, and, especially, the smooth interactive interplay between Man and matter. From this point, Yves had the foundation for the design of his empowering/enabling tool. The final design consisted of a pair of glove-like extensions of the hands with different kinds of knives, forks and kitchen tools embedded (figure 1). By wearing them, fingers would be unified and hands would acquire a new set of capabilities, with which the person would learn how to master in order to complete the task; in this case, making sandwiches.

Figure 1. Sijme Geurts is trying to learn the skills of making sandwiches with Yves Florack’s tool.

It is through abstraction that Yves could understand the aspects of his skill that bring the experience to life in order to use them as the foundation for his design direction and decisions. By going through the adjacency leap, iterating between cycles of abstraction and concretization, a designer is able to reach innovation, not through re-designing, but instead, because of the shift in domain, through looking at activities and designing for them from an experience perspective.

3.3.3 Wonder
Retrospectively, it is possible to clearly see in Yves design the adjacency leap, or domain shift, from moulding snow to transforming food. During the process, though, these steps were not necessarily done consciously. His intentionality in and through design was based on trusting his intuition. At this point in the process, the actual making and trying-out phase was the moment in which Yves “dredg[ed] up tacit knowledge into consciousness to do the comparing [and was] surprised” (Sennett, 2008, p. 211). As Sennett reminds us, the word wonder, in ancient Greek is embedded in poiein, a word that indicates the act of making, which is also the root-word for poetry.

Ultimately, we are dealing with Beauty: when another student, Sijme Geurts, tried Yves Florack’s gloves for about 1 hour, what
came out of his actions was beauty, the beauty of dexterity. The feeling of a smooth swiftness that a snowboarder achieves was successfully translated into the cutting and preparing of food. This moment of “wonder”, for both the designer and the observers, emerged after Sijme Geurts learned to master this new tool. The intended ease of movement was achieved and a clear dexterity was acquired: these scary scissor-hands - gaffer-taped scathing tools piled together - empowered Sijme Geurts with a beautiful swishing interaction quality and allowed him to cut a bread in half as if he was using a regular knife; with similar ease and speed but with other aesthetic qualities. We were able to look beyond a traditional sense of beauty and aesthetics (that of a static form), ignore the fact that the tool was made out of cardboard and taped utensils, and truly find another kind of beauty, the beauty of interaction.

3.4 Reflection on the class’ results

There are many perspectives we can use, many hats we can wear, in order to evaluate Yves Florack’s design. If we look at values such as ease of use, market possibilities and even formal quality (static form), this design is neither informative, nor sellable, nor beautiful from a traditional point of view. The intention was not to come up with a new proposal for designing kitchen utensils or snowboards for that matter. Instead, it is a starting point to reconsider how we design from an experience perspective.

Because of the change in points of view, students were able to not only get more insight into their own skills by looking at them through someone else’s eyes, but also found ways of communicating through experiential designs, what those skills mean to them in relation to the overall experience. According to what Yves Florack wrote in his reflections, Sijme Geurts’ documentary conveyed the resemblance of using the enabling tool and Yves’ experience of snowboarding. Yves Florack though complained about Sijme’s inability of using the gloves in unexpected and acrobatic ways, as you do in snowboarding (e.g. jibbing), but this plausibly may have happened if Sijme had the time to become more skillful in using them. All this shows that at the very least, a glance of meaning was in fact transmitted through externalizing, visualizing, changing and reflecting upon points of view. Most importantly, Sijme Geurts learned an aspect of Yves Florack’s skill and felt a small part of the feeling that he gets from snowboarding because it did not stay in the abstract realm of words and cognitive messages and was made concrete, by making it experiential. Because we believe that meaning emanates from (inter)acting in the world, words would not suffice and making becomes crucial. Since the students were able to see from different perspectives how they can create and communicate meaning through design as well as experience it through action, we believe that they are one step closer to becoming sensitive towards the concept of meaning and will, from now on, change their approach towards design, as several of them wrote in their reflections.

In the next paragraph we will explore how this experience also opened up the solution space for design-driven innovation.

4. TOWARDS A RADICAL SHIFT OF MEANING

“Intuition begins with the sense that what isn’t yet could be”. This could also be said of innovation. The intention of our class was to explore how to create and communicate new meaning, i.e. new (inter)action possibilities and qualities, from an experience perspective, integrating different points of view and unleashing intuition through skills. The results we have obtained can be translated into design concepts in order to clearly show what impact this approach can have on industry.

Results can be applied in different ways: they can be used in the original context of exploration in order to design new products (forms) dedicated to the snowboard industry. The second possible application of our results is to use them as a tool to design “completely disruptive” products. This can be done in two ways: directly translating the obtained results into a new product that has the same functionality of the enabling tool, but is endowed with richer formal and interactive values (new cutlery). The second way consists in abstracting the interactive qualities of the initial activity (snowboarding), and track how they evolved in a new field of application (preparing food), to design the same shift of meaning in interaction in a product that has a completely different functionality.

In the next two paragraphs we present these last two possibilities, illustrating them with examples.

4.1 Contundenza curvata

An immediate translation of Yves Florack’s exploration is designing cutlery. The experience of cutting, endowed with a swooshing swift quality of the action, can be translated into a shape that affords this type of movement and materializes it into a form that evokes the quality of the movement itself.

We have designed and realized a model of an object that has these characteristics, visible in figure 2.
The new knives can be used only if a new motor skill is acquired. Once it is acquired, the movement quality, the physical constraint of a limb and the kind of carving made possible through the knife, concur to produce an experience that is analogue to snowboarding. This leads to a disruptive change in designing knives, both interaction-wise and form-wise.

4.2 gPhone

When looking at the beginning of Sijme Geurts’s process of learning the skill that Yves wanted to transfer through his design, we can describe the overall movements in interaction as tensed, staccato, unfocused, slow and irregular. After one hour of his mastering of the skill through his body, there was a clear shift in terms of movement as intended by Yves. They became the exact opposite: relaxed, fluent, focussed, quick, regular. This shift in the qualities of the interaction is a direct embodiment of the meaning that Yves wanted to communicate.

In order to find opportunities to design a new form of interaction based on Yves’s qualities we scanned current products that through action with them, present those opposite qualities (tensed, staccato, unfocused, slow and/or irregular). Button-operated devices such as telephones present an interesting opportunity since dialling a phone number can also be described with these qualities. Then, can one design a product in a completely different realm than snowboarding for, for example calling someone, based on Yves's intended qualities?

If we want to change the movement qualities in the same way, can we perhaps get an aspect of the original experience (snowboarding) to transcend to yet a different domain: dialling a phone number? Can we get the feeling of speed, quick change in direction, fluency that Yves gets when snowboarding?

If we were to design the dialling of a phone number based on these dynamic qualities of interaction, instead of tapping on numbers, you could drag your finger across, from one number to the other, creating a gesture/signature (figure 3).
way into industry, we need to consider how our set up of the class sets of skills through which they have different experiences that sense. Yet, it is always the case that those same people have other field pertaining that same company which of course, only makes 

People within a company are mostly hired for their skills in the could be translated into a company environment.

In this particular implementation of our approach, we were originally not looking to redesign snowboards or cutlery, but instead, we were interested in seeing how integrating different points of view while using intuition through skills could allow for new meaning to emerge. The process itself is a very valuable tool for a designer to see his own set of skills and reflect on what he actually means within the scope of the experience of the activity. Furthermore, and most importantly, such a starting point for the design of products and systems could potentially allow for a completely new way of creating unlikely connections across experiences and allow for completely disruptive products that have no frame of reference to emerge from.

5. CONCLUSIONS

The enabling tool designed by Yves Florack, but also the ones designed by the other students working on this assignment, illustrate that our aim was achieved: the integration of different points of view and the use of intuition enabled by starting to design from one’s own skills, concur to enrich a design process and build the basis for a richer result in terms of meaning and therefore innovation.

The bodily knowledge of skills contributes to the design scope, because the final result that we show proved to be a rich experience for the person that tested: when Sijme started swishing the sharp gloves on food, moving his arms and hands as in a contemporary dance performance, we understood we succeeded. Of course his experience was not the same as snowboarding, but it was, without a shadow of a doubt, richer and more meaningful than a story told and his view on cutting and preparing food has now changed forever. This result has been obtained not only by starting from one’s own skills, but also thanks to the integration of different points of view. In an ideal design process, in a complex globalised world as ours, the interpreters that Verganti writes about are people with different skills and (cultural) backgrounds. Exploring ways for catalyzing collaborations and multidisciplinary processes in a context of mutual enrichment nowadays is a relevant challenge. The approach developed in this class showed to be fruitful in this sense: we required students to externalize their point of view, to visualize it by means of videos, to refine or change it as a consequence of confronting others with it, to reflect on it, and to design for it, so that other people would be able to experience it. The design applications of the results that we obtained from the class, i.e. contundenza curvata and gPhone, illustrate how our approach served to broaden the solution space for design driven innovation.

The method that we presented in this paper has three kinds of impact on industry: a short term, a short-middle term one and a long term impact. (1) Manufacturing companies can use such method in reflecting on their product portfolio: the method we propose is for instance suitable to evaluate the compliance of products to a specific brand image or to design with respect to specific brand values. (2) Industry can use this approach to explore and sharpen the concept of meaning, create radical shifts and operate innovation leaps, in order to maintain or create a competitive advantage. (3) The third consequence has a long term impact: students/interpreters that are trained to use this approach, will be able to integrate their point of view into design processes, will know how to capitalize on their skills to increase expressivity while designing and generate new meaning and will be able to trust their intuition to face the world’s increasing complexity.

6. ACKNOWLEDGMENTS

We like to thank the participating Master's students for their enthusiasm, skills and inspiration to support us exploring the concept of meaning.
7. REFERENCES


