Experience Design, Interactive Art Environments and the Sense of Becoming

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ABSTRACT
Experience Design is a contemporary form of design, which appertains to the field of interaction design. In relation to Interactive art environments, it suggests that potentialities are actualized by those actively participating within physical, virtual and mixed works. It could be argued that every design approach is a dynamic process of making experiences; nonetheless we do not ‘design experiences’ we design for them. An experience emerges from a variety of potentialities, a significant part of which cannot be organized and predetermined by the design procedure; the outcome is considerably depended on matters beyond its design. In the frames of digitally interactive artworks people interact and actively participate in the course of an event. It is Aristotle that introduces becoming as a concept that describes our experience of interaction with the world, expressing the notion of change in the course of life; the ceaseless evolution in space and time. Consensus as to what constitutes effective experience design, this paper argues that understanding both design and experience as verbs, rather than nouns, could help our understanding of the practice. This paper transcends the boundaries of art and design theory; it puts emphasis on the fact that becoming cannot be predetermined, and how the notions of design, art, experience, becoming and space are intertwined in the subjective experience of artworks.

Keywords: experience design, aesthetics, space, mixed reality, interactivity, becoming

1. INTRODUCTION
Experiences are space and time situated; as Merleau-Ponty [1962, p.252] argues “being is synonymous with being situated.” It arises from our interaction in physical, emotional and cognitive level with the surrounding world. This dialogue involves a form of contact with people, objects, and places in time. According to Forlizzi and Battarbee [2005, 261-268], it comprises “a constant stream of self-talk”, indicating our awareness of our attachment to the course of life. Each moment, an activity is completed and another one is evolving as we speak. Our perception involves stimuli we have just

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interacted with in the immediate past, while our next movements are being organized and performed within the flow of time. Our experience of the world is not fragmented; it follows the course of life, by keeping a peripheral vision in the past and the future.

Particularly, the term *experience* expresses this notion of evolution as it has a twofold import, as being both noun and verb. *Experiencing* refers to our consciousness regarding the constant stream of our actions, thoughts and feelings in our everyday life [Hassenzal, 2010]. It is a dynamic process en route, while *an experience* concerns a whole story, a complete narrative concerning an event; it describes a course of affairs, which was or may be completed in spheres distant from the present – in the past, the future, or even the potential and the imaginary. And although they are organized by people and designers, the final outcome is conditioned by numerous potentialities, which open up every moment, during the process of *becoming*.

2. EXPERIENCE DESIGN AND MIXED REALITY TECHNOLOGIES

Experiences are designable. Since the time we played as kids, up to the anticipation and organization of our personal and social life as adults; our objectives involve our living desirable experiences. In case of art and design, every creative process involves moments of inspiration, expression and communication between the creator and the audience. Specifically, experience design is a novel practice of designing products, processes, services, events, and environments with a focus placed on the quality of the user experience and culturally relevant solutions [Marzano & Aarts, 2003, 46]. This specific field links ideas from various research fields, like marketing, psychology, entertainment, computer science, information systems and interaction design, as it requires a thorough cross-discipline perspective to develop a holistic consideration of the user’s experience [Paluch, 2006]. It sets the frame where people share common experiences, and interact with a specific content and probably with each other. By designing frameworks of interaction, it creates ‘moments’ of engagement for the participants, aiming at optimizing the overall impression and creating positive memories.

Hence, experience design pertains to interaction design, therefore defines the structure and content of interplay among people to communicate with each other in their everyday life. By nature, people interact with their surroundings and most of our communicative processes (verbal or not) are interactive. Interaction designers strive to create meaningful relationships between people, products, services and environments, aiming at enhancing our communication and interaction. Specifically, experience designers, like architects, are concerned with people and their interaction with the environment and with each other. It focuses on designing behaviors in which human entities are involved directly or in mediated forms of interaction.

Every design approach is a process of making particular experiences. However, an experience emerges from a variety of potentialities, a significant part of which cannot be organized and predetermined by the design procedure; the outcome is considerably depended on matters beyond its design. According to Sanders “we cannot design experiences as they are occurring in the inner world of people, we can design for experiences, by realizing a field where people have possibilities for creating their personal experiences” [Sanders, 2002]. Additionally, Forlizzi and Battarbee share the same view when they say that designers can only design tools and situations that people can interact within [Forlizzi & Battarbee, 2005].

Mixed reality technologies afford environments where physical and virtual space coexists in real time processes; they have the capability to blur the line between the physical and the virtual. Mixed reality
involves a spectrum of experience extended between physical and virtual environment, involving augmented virtuality and augmented reality. The former refers to the practice of merging real objects in virtual worlds, and the latter includes real environments whose elements are augmented by computer-generated sensory input, shaping a computer-modified reality. In the context of augmented reality worlds, (inter)action and information is generated within hybrid forms of experience space; forms that manage to surpass the physical limitations of space and time. Fragmented moments and spatial entities are combined to create experiences that are created according to the active participation of those involved. According to Sareika and Schmalstieg, mixed reality turns into mixing realities: “an ongoing process of human collaboration where individuals experience and express realities, mediated by technology and their collaborations” [Sareika & Schmalstieg, 2008]. Hence, we address the concept of interactivity as a feature that encourages the observer to become creative and actively contribute to its content. Technology is introduced as tool of creative process, as a medium of interaction with the participants, and finally a design space for innovating and actualizing experiences in mixed reality worlds.

3. AESTHETICS OF INTERACTION THROUGH A PRAGMATIC PERSPECTIVE

Contemporary notions of aesthetics embrace a pragmatic perspective, supporting that aesthetics is emerging from our interaction with the world, rather than being intrinsic to the material dimension of the surrounding objects and environment. As Löwgren and Stolterman argue, aesthetics is inherent to the way people experience their everyday life within the world, supporting that this view is very helpful when we focus on aesthetics of interaction that does not have tangible properties, like in case of virtual entities and environments [Löwgren & Stolterman, 2004]. Aesthetics of interaction comprise a multidimensional approach on human experience, involving the physical body with the senses, as well as the intellect and the emotion.

In the context of contemporary aesthetics of experience and interaction, aesthetics has been accounted a critical aspect of design, extended beyond the field of the arts to embrace the aethesis of multi-sensorial experiences in the whole spectrum of everyday life and interaction. Shusterman, sharing the shame pragmatic philosophical viewpoint, argues that aesthetic experience is an experience that may occur in every dimension of everyday life, not only in artworks, but in a broader context than the narrow context of fine arts [Shusterman, 1992]. Additionally, Engholm emphasizes on “how certain sensuous aspects affect our understanding of reality in all sorts of contexts, not only in the particular contexts of art or art-related areas” [Engholm, 2010], and supports that “the aesthetic experience, … is capable of taking the individual out of his/her life and everyday context while also returning the person to his or her life” [Engholm, 2010]. Therefore, the boundaries of art and design are diffused with everyday experience in the frames of digital age. As Hileman states “design today is an increasingly social art” [Hileman, 1998], and accordingly, contemporary and evolving forms of design, like experience design, are not further restricted to any limits between art and design; they overflow those borders to make aesthetic experiences for those participating.

Aesthetics is associated with interaction and a holistic sense of experience, forming aesthetics of interaction, which is achieved when the physical, the intellect and the emotion comprise essential factors of creating interactive systems [Petersen et al., 2004]. Although neglected in the recent past, it has been reverted to designers’ and theorists’ attention, affecting the conceptualization as well as the design of experiences. While an analytic perspective suggests the possibility of objectively conceiving people’s perception and design experiences that correspond to their needs, pragmatic aesthetics...
instead concentrates on experiencing the world dialogically as embodied entities. According to Fiore et al: "we are drawn towards an understanding of experience that holistically incorporates thinking, feeling, doing and effecting change within an intersubjectively constructed world" [Fiore et al., 2005].

In this point, it is essential to stress that although experiences are designable, designers cannot predetermine the participants’ aesthetic experience; the latters rather create their personal experience, while interacting within a physical or mixed reality environment. Interactive environments are not necessarily comprehended and used as designed [Crabtree et al., 2002, 265-275]; they are rather appropriated in use. Designing experiences can by no means guarantee or predetermine a meaningful and aesthetically advanced outcome; such dimensions emerge in use, by interacting within the frames of a particular world. Aesthetics stems from a use-relationship, it is “emerging in use; it is an integral part of the understanding of an interactive system, and its potential use” [Petersen et al., 2004]. Although designers try to situate themselves in the participants’ place, they “cannot see through the eyes of another, feel what another feels or develop meaning as any other person would” as expressed by Shusterman’s words, and subsequently, the contribution of both the designer and the user is essential to co-create meaningful and enjoyable experiences around an event [Shusterman, 1992].

Pragmatist perspective has influenced the notion of aesthetics, by putting emphasis on the emotional and sensual part of experience. As the source of the term is the Greek term *aesthesis*, it includes affective and cognitive aspects of experience over the traditional dominance of art and beauty, as “sensuous refers to the emotions, moods and experiences evoked by a particular impact of certain elements and contexts” [Engholm, 2010]. Aesthetics now focuses on the appearance and impact of design, on the perceptions, moods and behaviors it evokes in cultural contexts overall, reflecting a desire to explore how cultural phenomena, like design, operate, rather than whether they contain artistic qualities. Concerning experience design, recent research has also been oriented towards the sensual dimension of experience in specific contexts of use, meaning human interaction in meaningful and engaging contexts. Specifically, McCarthy and Wright, approaching the physical, cognitive and emotional dimensions of aesthetics of experience, analyze four core threads of experience, which comprise our experiences holistically [McCarthy and Wright, 2004]:

- **Sensual thread.** It refers to people’s sensual engagement with a situation. It expresses the level of absorption people have while present and interacting, within a particular environment. Similar to visceral level of Norman, related to human sensory perception [Norman, 2005].
- **Emotional thread.** It indicates “how emotions are intertwined with a situation in which they rise”. It emphasizes the fact that feeling are essentially involved in estimating the value of an object or a situation, like in case of conversing with a person while buying something.
- **Compositional thread.** This one particularizes in the narrative of the experience, the way an event unfolds and how people that participate make sense of the whole event; it pertains to “the internal thinking we do during our experience.”
- **Spatio-temporal thread.** It concerns the spatiotemporal dimension of an experience and the way they affect it, supporting space and time as essential components of experience.

As aesthetics of experience and interaction emerges in-between people and environments, it is a rather dynamic process; “it is continuously going on and changing over time” [Löwgren & Stolterman, 2004]. The factors of space and time are fundamental to interaction [Hallnas & Redstrom, 2002] as space (in physical, virtual, and mixed forms) combined with the concept of time (e.g. movement)
generate types of interaction that resemble situations integrated in the course of real life. In this case a sense of becoming emerges, analyzed further.

Concluding, the pragmatist perspective regards the aesthetics of interactive systems to be tightly associated with the participants’ interaction within. Interactive environments may contain an aesthetic potential, but its release is dependent people’s personal experiences. In pragmatist philosophy, aesthetics is also unconstrained from its unyielding relation with the field of art. Aesthetic experience, like any other type, may not be developed in conformance with the designer’s intentions; it emerges from various personal and interpersonal sensations, emotions and reflections that stem out from the environment in context. Therefore, the role of the designer as well as the participant is equally fundamental to the actualization (becoming) of events, processes and experiences.

4. SENSE OF BECOMING

The notion of being and becoming has been a fundamental issue of philosophy and science, and various perspectives have been raised concerning their essence. In the context of Greek philosophy, being (einaí, ousía in Greek) indicates a “single, permanent, unchanging, fundamental reality, to which is habitually opposed the inconstant flux and variety of visible things.” [Dillon, 2000, 51] This notion denotes that reality is associated with features like unity, eternity (meaning ultimately timelessness), and incorporeality. Hence, being comprises the adverse meaning of our experience of the surrounding world, named as becoming (genesis, gignesthai in Greek). Becoming has been conceived as dynamic process, as embedded practices and events that evolve in space and time, expressing the dynamic nature of human interaction, interplay and relation with the world. In particular, Aristotle defined being and becoming as the principal qualities that comprise reality [Holl et al., 2006]: the first, involves the essence, cognition and idea of reality, while the latter refers to the actual, perceived through the senses, and constantly in motion aspect of the real – expressing the notion of time and ceaseless evolution in life. Thus, he associated the notion of being with form (the appearance of things) and becoming with matter (the transformations that occur in time).

Namely, being is denoted as static process, implying time at rest; a fixed situation, and possibly a completed story. It indicates presence, and our continuous conscious awareness of the world. For Parmenides, being is one, timeless and changeless [Preus, 2007, 67-68]; it can be compared to inertia energy, in the bases of which no change is made and no potentiality may be actualized. On the other hand, becoming implies change and time in motion in various aspects: evolution in multiple levels, kinetic energy and velocity (motion by energy), the transformation of energy from one kind to another, displacement in space, time flow, the order of happenings (cause - effect), the growth-decay of organisms; the course of life. Becoming above all, expresses the bundle of potentialities that emerge within interacting and experiencing the world, the actualization and development of a potentiality. Additionally, Heraclitus conceived that “everything flows and nothing abides; everything gives way and nothing stays fixed”, by setting an example: “You cannot step twice into the same river, for other waters and yet others go flowing on”, while Marcus Aurelius [Murray, 2002, 247] urged to “observe constantly that all things take place by change, and accustom yourself to consider that the nature of the universe loves nothing so much as to change the things which are and to make new things like them.”
4.1 Design, Experience and Sense of Becoming

Design and experience are terms with twofold meanings, used both as verbs and nouns. Each of these notions is offering an insight of the depth of their meaning, as well as an implication of their association with the sense of becoming. A design, like an experience, denotes a complete process, a concept that belongs to the past, the future or resides in the realms of imagination. In contrast, a verb underlines the evolution of a situation, or a procedure; the course of an event. Singularly, the infinitive clause of the verb expresses “an abbreviation for *modus infinitivus*, the mode of unlimitedness, of indeterminateness, namely in the manner in which a verb accomplishes and indicates its significative function and meaning”, according to Heidegger [2000, 55-60].

Analytically, design as noun, is the result of a creative procedure, involving products, processes, events and environments. It indicates a static form or shape; a notion which involves the modulation of a delimited place [Mansfeldt et al., 2008], and therefore pertains to the sense of being. On the other hand, designing reflects the creative procedure itself, the opening of all potentialities, in order to organize the demarcation of space, and pertains to the sense of becoming; on open process that has not reached completion yet. The noun comprises the outcome of the action described by the verb, the product of an evolving process, event and interaction.

Besides the grammatical analysis of the words, designing comprises a form of becoming, as it is a creative process, and hence it is motivated by a will for change “by transcending the limitations of the present” [Löwgren & Stolterman, 2007]. Like any creative procedure, it is oriented towards the future, anything new, and innovative; a change which targets on evolution in personal and collective level. In the context of artistic expression as well as in everyday practices, imagination and creation are visions of change that endeavors to make a progress towards the future. Deleuze and Guattari [1996, 239-240] have expressed this notion as *involution*, saying that “becoming is involutionary, involution is creative”. Art and design are associated with the sense of becoming, as they both endeavor to create experiences, especially aesthetic ones, and generate potentialities for future interactions located in time and space. This potential dimension of creation is its magic; as conveyed in their work *A Thousand Plateaus*: “if the writer is a sorcerer, it is because writing is a becoming” [ibid].

Likewise, experience as noun indicates a static entity, an organized event, a complete narrative with beginning, body and ending, which we communicate, describe to another person or design for somebody. An experience is delimited in space and time; every potentiality has already been (or may be) transformed (literally or metaphorically) into specific events distant from the present condition, and therefore it pertains to the sense of being. Even if I describe an event I know or I have actually participated in, I am not currently involved in the course of things. Therefore, I am in position to absorb and widely appreciate everything that occurred (feelings, actions, thoughts) in personal and collective level, and express my conception to others. An experience is an array of moments in life, a slice of time when particular events are bound up with people, places, actions, feelings, and thoughts; they are preserved in memory, recalled in inner processes, and shared with others in forms of stories [Mansfeldt et al., 2008].

Respectively, experiencing an event means “subjectively living through” it [Mansfeldt et al., 2008]. It is anchored to the present and comprises our subjective interpretation of the present state of affairs. Contrary to an experience it cannot be conveyed to someone else, as it is a process en route; a dynamic development occurring here and now, stretched over in space and time, embracing the sense of becoming. Experiencing, as a continuous process, is expanding and evolving in space and time; it is not restricted in particular fragments of space and time. Its dynamic character involves 3
matters that change in time, reflecting the fact that participants constantly change their evaluation of their experiences throughout the duration and evolution of the process:

- **Anticipation of the event.** The subjective interpretation of the outcome may or may not meet the participants’ expectations, formed before its actualization, in conformance with the stimuli perceived from the surrounding environment and further analyzed.

- **Physical, emotional, and cognitive response.** During the evolution of the event, the participants’ conception is continually changing, as their interaction with the surroundings in somatic, affecting and cognitive level is not complete yet.

- **Memories.** After the end of the event, memories are subjectively molded out of the personal experience each participant configured, which are also transformative in time. Our recall of the past is not identical, but is redefined as our awareness is evolving in time.

Experience design is a combination of the analyzed multidimensional terms. It comprises a complete study and proposal of an event located at particular time and place, and therefore a design. Nonetheless, a design in the general use of the term, although associated with the sense of being, may generate static forms of communication and interaction, like in case of graphic design, or dynamic forms, like in case of interaction design. In the context of experience design, the designer cannot in effect predetermine the experience of the people participating in it, as it is dependent on people’s subjective perception and interaction with the environment, among other factors.

Every experience is characterized by a rate of relativity, and nobody can predict the outcome, as it is affected by numerous factors (personal, social, environmental, cultural, etc.), like every step on the way in our everyday life. An experience designer actually suggests strings of interaction in space and time; he/she proposes a bundle of potentialities, and the participant decides which ones will (be)come into existence. Nobody can predetermine becoming, as it is constantly evolving in time, but we can be prepared and organize a part of the components that contribute to its actualization. We design for becoming; we propose an aggregate of potentialities to be actualized in space and time, and participants act and interact respectively. The role of the designer and the participant are not as distinct and fixed as they used to be.

### 4.2 Space as Becoming in Mixed Reality Environments

The notion of becoming expresses displacement, change and evolution in somatic, emotional and perceptive experience, our flow of existence and interaction in life, as individuals and societies. In the context of postmodern philosophy, Harvey, in associating the processes of being with the notion of space, and time with the processes of becoming, rejects the first as contrary to the latter’s account [Harvey, 1989]. In his perspective, space expresses the notion of stability, located outside the realms of time, while time reflects any growth and decay, the evolution in life. However, the qualities space in the frames of virtual and mixed forms of reality urges to reconsider this view. According to Roy Ascott, “cyberspace is the very stuff of transformation; it embodies being-in-flux, constituting a kind of artificial becoming. But its primary importance is that it stimulates change in ourselves, transforming aspects of mind and behavior, bringing forth cyberception, telepresence, altering the ration of the senses” [Ascott, 1998]. 4dimensional virtual environments have specific features, which distinguish them from the sense of being, and therefore, as we will analyze further on, they pertain to the sense of becoming. Virtual, physical and mixed reality environments are media which potentially provide dynamic forms of expression and communication, although they share similarities, as well as differences, in the context of design and art practices.
Virtual, physical and mixed reality environments are spatiotemporal systems, which afford contact, communication and interaction in physical, emotional and cognitive level, while they comprise the material and the locus for creative and artistic expression. 4d environments denote a sense of becoming as they are dynamic fields, where processes, experiences, and interactivities are integrated; where stories are intertwined among people, places, time and events. They are never static. They are products of relations which are constantly evolving; relations that compose the environment itself as a field of interaction, as well as relations that emerge between people and their surroundings, while interplaying within. Interactive environments of any kind, comprise Relational Spaces, meaning products of processes, events and interactions, as relational in the words of Massumi [2002, 192] denotes: “intensively cross-referencing disparate planes of experience”.

Rafael Lozano-Hemmer, an electronic artist, developing large-scale interactive installations in public space, has created a series of projects named Relational Architecture, emphasizing not only on topology but also on associating people with artworks and spaces in a configured relationship [de Kerckhove, 2001, 68]. In his words: “I like to call my work ‘relation-specific’ in the sense that the emphasis is not on the essential or even ‘important’ characteristics of a site, or on the narratives that power elites may bestow them, but rather on the micro-politics of new temporary relationships that may arise from alien interventions” [Ranzenbacher, 2001, 243]. He usually applies new technologies and custom-made physical interfaces to provide "temporary anti-monuments". In the context of Relational Architecture 14, “Pulse Park” (2008) involves a matrix of light beams located at the central oval field of Madison Square Park. Their intensity is entirely regulated by a sensor sculpture installed at the North end of the Oval Lawn that measures the heart rate of participants. These inner, personal rhythms are conveyed as pulses of light generated by strings of spotlights and placed along the perimeter of the lawn as each participant makes contact with the sensor. “The result is a poetic expression of our vital signs, transforming the public space into a fleeting architecture of light and movement” [Lozano-Hemmer, official website]. In this project, Lozano-Hemmer translates people’s pulse into light, which vibrate the park with visual stimuli, and creates a space where the participants’ inner world and public space coincide.

Moreover, in the frames of the art and design, every kind of interactive environment may comprise a potential world, by integrating elements and symbols. Artworks (materialized and virtual ones) belong to a third place lying among reality, subjective perception, memory and imagination; a place that keeps references from the physical world, but extends its boundaries to include the realms of creativity. According to Aristotle, this concept was expressed by the term chora, the fantasy world where the constraints of reality are surpassed. Any design approach, in physical or digital substance, belongs to a third place between reality, potentiality and imagination. By surpassing the physical restrictions of space and time, virtual reality affords a place that we have not foreseen, where experiences are not predetermined, but open to evolve, while people interact and actively participate within. As Negrotti [2010, 28-36] quotes, “the realm of the artificial truly consists in a ‘third’ reality that lies between nature and conventional technology. It cannot but swing between these two realities, since it can overlap neither the former nor the later unless it loses its peculiarity”. This is the place of art, design, of the infeasible, where all potentialities are open to numerous creations and infinite forms, and thus inheres in the process of becoming.

For example, Blur Building was an essential component of Braincoat; a semi-realized project made by Diller and Scofidio (2002) in the frames of Swiss Expo. Situated at Lake Neuchatel, the concept involved a wearable WiFi person-detection and identification system given to each participant. Before entering the area, visitors would complete a detailed questionnaire, information from which would
then be given to corresponding computer systems. In advance a wearable electronic wireless device would alert individuals to the proximity of other visitors with whom their personalities and tastes might compatible. While moving around a place blurred of fog, individuals would essay to find a person with common interests moving towards or away from them through the mist, through vibrating pads and a wearable electronic wireless device implanted in the plastic raincoat. As participants were walking towards the building via a particular pathway, visual and acoustical signals were gradually fading away, until the environment was entirely vanished into fog and the sound of waves of the surrounding lake. Hence, focused vision is not achievable - raising issues for our dependence on it - inviting participants to explore this disoriented scenery; a field without depth and mass, out of any social contentions, where sense of scale disappears, and space becomes a third, inconceivable place.

However, space, in the context of digitally enhanced interactive environments, is differentiated from the physical world, by nature. For the objectives of this paper, it provides participants with more bundles of potentialities to experience, opening up new dimensions of becoming. Mixed reality worlds are based on both temporal structures and spatial manifestations, like physical ones, but they afford a locus for creative expression beyond the physical restrictions of space and time: Initially, time is not necessarily experienced as linear and continuous, like in physical reality; it is rather fragmented, like in case of a movie plot, as incidents are presented in random array\(^4\). In mixed reality worlds, participants are able to navigate from one spatial unit to another, via for example telepresence and links, disrupting in this way the continuity of space and time. While navigating, for example in virtual immersed environment, participants are not imposed to follow a particular array of choices; his/her experience is forming a sequence of past, present and future according to the decisions and actions made. Moreover, participants are able to experience moments and situations that are distant to the present - in the realms of the past and even of a potential future - through applications of mixed reality environments. Digital media offer the opportunity to transfer in time, like never before, changing participants' perception of the feasible, and enriching designers artistic language.

For instance, Scott Snibbe, a research artist and computer scientist, has focused on shadows as material for creative expression. In his project, *Make Like a Tree* (2006), as participants walk in front of a wall with a forest trees projected on it. Their shadows are recorded and integrated on the same misty place, moving between tress in several levels of the foreground and background. Shadows in motion return randomly on the landscape, in various combinations among them, to fade out and disappear again. Moments in time are folded and experiences are associated, forming random narrations of this collective experience. According to Snibbe “my artistic vocabulary relies on subtle changes in timing that unfold as projections or mechanical objects reacting to viewers” [Bullivant, 2007, 69]; information regarding the past is integrated in places of the present. In this potential place of art and design, the notion of time, like space, is also mutated, as our experience in imaginative virtual worlds overtake the feasible. Our perception of time is altered to embrace feelings and concepts that surpass the present and embrace realms of time beyond the present, and our conscious; in Harvey's words “a beautiful object is to link time and eternity in such a way as to redeem us from time’s tyranny” [Harvey, 1989].

In addition, the rate of progression of actions and events can also be adjusted depending on participants' needs and those of the application, independently of limitations of physical time. The time needed to accomplish an action in mixed reality environments is not equal to the time

\(^4\) Although the movie itself comprises a linear narrative form.
participants would need to achieve it within physical reality. According to Youn-kyung et al, the adjustment of the speed of artifact behavior indicates the dynamic aspect of people’s experience in mixed reality environments [Youn-kyung et al, 2007]. The fact that designers and participants can appropriate the time needed to complete an activity is introduced, in cases like the notion of ‘slow technology’ [Hallnäs & Redström, 2001]. It emphasizes on slow movement and transition, while interacting in digital worlds, in order to give participants time for reflection and contribute in this way to the aesthetics of experience. Hence, mixed reality worlds involve alterations in the notion of time itself, therefore a sense of becoming, as time is not restricted to the linear flow of life.

Meanwhile, in case of mixed reality, space is discontinuous as well [Charitos, 1998]. By navigating via active points (like links and teleports), or by using equipment that augment his/her experience (like HMD), the user has the option to be transferred to another place, or even to another form of reality. In the frames of digitally enhanced worlds, two or more environments (or spatial entities) may be connected, but clearly their linkage does not include spatial proximity, as in case of the natural environment. Space has lost its continuity, as fragmented parts are linked together without actually being physically contiguous, to create places of interaction. Participants can navigate among these disjointed, immaterialized places in a way that it gives the impression that space is back folding to itself, to connect places that are not adjacent in the physical world. Our experiences in this kind of environments are located in spaces with potentials that change in conformance with the technology advancement; places that are not restricted to the physical constraints of spacetime. The space itself is becoming a relational field, one of potentials and interaction, which is continuously changing in the frames of digital age, to provide participants with experiences that surpass the feasible.

For example, under scan is a large-scale public art project of Rafael Lozano-Hemmer in the context of Relational Architecture 11, where spatial entities are associated in order to assimilate people with the shadows of others, and raise issues of identity and embodiment. Specifically, as various people walk around a particular area (like Trafalgar Square), their shadows are cast by digitally enhanced systems. But, instead of having their own shadow lying on the floor, the dark reflection of their own body and posture, video-portraits of different individuals are revealed in their place. These portraits are in motion, comprising an occasion for interesting and potential interactions. For their production, volunteers were invited to represent themselves in any way they pleased and were shot from above, capturing a wide range of performances. In this way, the volunteer’s body and place becomes the shadow of an individual and contacts with him on the public floor; two fragmented moments, two different places are united in a person’s single position, blurring the somatic and spatial boundaries between them.

Besides the fact that the notion of space and time is redefined, offering new potentials of interaction and experience, the role of the designer as well as the participant has become more pivotal. In case of mixed reality worlds, space is a multimedia product of designers and developers, not a part of the physical world. Consequently, every feature or potentiality of this construction is controlled by people and digital media used. In contrast, physical environment follows the course of life, even if people interfere to adjust it to their needs or not. Humans and their surrounding physical and social environment comprise a dynamic synthesis, as they evolve interdependently; humans construct their social environment, which in turn influences their behavior and perception of the world. But the physical environment is not a construction of humans. Its past, present and future state (being and becoming), is not entirely dependent on people’s actions, like the virtual one, in the context of which, the processes of being and becoming rely on the design procedure and the active participation of people involved. As Dodge and Kitchin [2001, 3] state “spatial geometries of cyberspace are very
complex, often fast-changing, and socially produced... space in cyberspace is purely relational. Cyberspace consists of many different media, all of which are constructions; that is, they are not natural but solely the production of their designers, and, in many cases, users”.

In the framework of mixed reality worlds, 4-dimensional space is a non-linear relational place, which lies among the realms of reality, imagination, memory and potentiality. It is a construction co-created by designers, developers and participants with the contribution of technologically advanced media; a place beyond the feasible where people mould their personal experiences and participate actively in the course of events. Digitally enhanced interactive environments provide designers of experiences with the opportunity to create and link together fragments of space and time, and thus to design in turn bundles of potentialities that surpass the physical restrictions of becoming. In the frames of art and design in general and experience design in particular, space has been transformed, becoming itself a scheme of experience and interaction beyond the feasible, a place as process of becoming.

4.3 ...Becoming Participants

Mixed reality environments have been a field of interaction, studied under the broad umbrella of interaction design. Specifically in the context of experience design, participants’ role is essential as contributors to the course of interactivities and events occurred. This concept is not new, as participants are a vital component for events that take place in physical space as well from the distant past, like theatrical plays and concerts. Any kind of performance is presented to an audience that emotionally and cognitively interacts with the play. But in cases like carnivals, where people sing and dance freely, people become actually the co-creators of the collective experience. Actors and performers of any kind and spectators are transformed to participants who actively intervene to influence the course of events and jointly mould their personal and collective experiences. For instance, Augusto Boal [2008, 135] envisioned The Theatre of the Oppressed, a theatrical practice where spectators would not be liberated from the theatre which “has imposed finished visions of the world”, urging for change: “the spectator frees himself; he thinks and acts for himself!”

In the context of mixed reality environments, this third place involves the audience’s active participation as essential component of evolution of events and experiences, during their interaction with the content of the designed world. Virtual environments accommodate events and actions and afford a potential field beyond the limitations of the physical environment, where participants and creators may meet, communicate and co-create their experiences. Fiore et. al. [2005, 129-132] named this collaboration creative act, meaning “an experience which connects designer and audience”. Besides Walter Benjamin, in his work “The Author as Producer” [1986, 220-238], urges designers and developers of new technologies to choose media that turn users and viewers into spectators into collaborators”. He conceptualized that the distinction is diffused between designers-artists and participants, and emphasized on the role of potential participants as personal agents, who contribute to the course of an event-experience. In this way, participants are personally and actively involved, in physical, emotional and cognitive level, in the course of the experience, making critical decisions about the process of becoming.

Particularly, Rafael Lozano-Hemmer creates projects, like Relational Architecture, where “architecture [is] based not only on topology, but also on making sense of media to connect people to buildings and spaces in a configured relationship” [de Kerckhove, 2001, 68]. He states that “I like to call my work ‘relation-specific’ in the sense that the emphasis is not on the essential or even ‘important’
characteristics of a site, or on the narratives that power elites may bestow them, but rather on the micro-politics of new temporary relationships that may arise from alien interventions" [Ranzenbacher, 2001, 243] and adds that “in Relational Architecture buildings are activated so that the input of the people in the street can provide narrative implications apart from those envisioned by the architects, developers, or dwellers. These pieces are sensors, networks and audiovisual technologies to transform the buildings” [Lozano-Hemmer, 2000, 55]. Public participation is an integral part in his work.

Among his recent projects, Sandbox (2010) is a large-scale interactive installation created for Glow Santa Monica. It consists of two spatial unities: an actual beach and a sandbox where people could play and interact with the sand. People walking on the beach where projected on the sandbox as tiny figures and people there could reach out to touch (visually if not physically) these small virtual ghosts. A camera detects their hand movements and projects them back to the over 8,000 square feet beach. This was accomplished using infrared surveillance equipment to film the people at the beach, while at the same time, digital cinema projectors depicted the actions of the people interacting with the sandbox. In this way people share a collective experience in three scales: “the tiny sandbox images, the real human scale and the monstrous scale of special effects,” as described in Lozano-Hemmer’s website. Moreover, as the images of those walking on the beach were projected on the sandbox and vice versa, all participants achieved to overcome the boundaries of their physical presence in the context of a specific place. According to Massumi: “Becoming begins as a desire to escape bodily limitation” [Massumi, 1996, 94]; a desire which under the perspective of Lee “crucially, is not a desire for anything that is lacking [...] Desire is a constituting activity of becoming, it is the individual current within the oceanic mass” [Lee, 2003]. People walking on the sand and people playing with the formers’ representations in the sandbox are interconnected and interact with each other, while sharing the opportunity to intertwine their narrations and co-create their experiences.

In the context of contemporary notions of interaction design, people attending mixed reality multimedia applications are not regarded a mass of people, rather as individuals with subjective way of interpreting reality, having personal desires and needs. This individuality has become a subject of study in various scientific and artistic fields, in an effort to deeply comprehend the way people are urged to participate in common activities and events despite their numerous differences. The conception of a passive audience which passively absorbs audiovisual stimuli is surpassed; people are considered as participants, and therefore a design approach which endeavors to enable active participation in real time events is the key to success. The act of participation makes experience more meaningful as it expresses our need to be creative while communicating and interacting with others. Pine and Gilmore have expressed this alteration: “People who are participating ... aren't audience members anymore. It's not that the audience joins the actors on stage; it's that they become actors - and the notion of "passive" observers disappears”, adding further on that “staging experiences is not about entertaining customers, it’s about engaging them” [Pine & Gilmore, 1999,17]. Designers of experiences regard any action or situation as an opportunity for new opportunities to emerge for action, coexistence and interaction, expressing the dynamics of becoming. They most enjoyable and meaningful conditions are not those imposed or planned for others. Hence, experience design emphasizes on participants responses as they are the basis, the occasion, and the incentive to develop new things, actions and circumstances.
5. Conclusion

Although experiences are designable, they cannot be predetermined. Experience design comprises a complete study and proposal (a design) of an event located at particular time and place, lived through by individuals, who interact in the frames of physical, virtual and mixed reality worlds (experiencing), and shape their own personal experiences. An experience designer actually suggests strings of interaction in space and time, by proposing a bundle of potentialities (sense of becoming), and participants actually intertwine the final outcome. Nobody can predetermine becoming, as it is constantly evolving in time, but we can be prepared and organize a significant amount of the components that contribute to its actualization. We design for becoming; we propose an aggregate of potentialities to be actualized in space and time, and participants act and interact respectively.

Interactive environments denote a sense of becoming as they are dynamic fields, where processes, experiences, and interactivities are integrated; where stories are intertwined among people, places, time and events. In the framework of mixed reality worlds, 4dimensional space is a non-linear relational place, which lies among the realms of reality, imagination, memory and potentiality; a construction co-created by designers, developers and participants with the contribution of technologically advanced media. it affords a place beyond the feasible where people mould their personal experiences and participate actively in the course of events. In the frames experience design, hybrid forms of space have been configured, becoming a scheme of experience and interaction beyond the feasible, a place as process of becoming.

REFERENCES


