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# Integrating conceptualizations of experience into the interaction design process

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**Abstract**

From a design perspective, the increasing awareness of experiential aspects of interactive systems prompts the question of how conceptualizations of experience can inform and potentially be integrated into the interaction design process. This paper presents one approach to integrating theoretical perspectives on experience in design by formulating conceptual constructs that can guide design decisions.

**Keywords**

HCI, interaction design, pragmatism, user experience, engagement.

**ACM Classification Keywords**

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

**Introduction**

The increasing interest in experiential aspects of interaction design has resulted academic contributions that present a variety of ways of framing and addressing the notion of experience in relation to interactive systems. Being a researcher with a focus the interaction design process, I have a particular

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interest in exploring the question of how theory and research in experience can affect the design process. My reading of contributions addressing experiential aspects is therefore - for better or worse - coloured by this interest in using conceptualizations of experience to inform design.

One type of academic contributions that interaction designers can draw upon is that which establishes definitions and frameworks for understanding the concept of experience, e.g. [7], [12]. These understandings can inform designers by establishing an awareness of the importance of addressing the notion of experience in the first place, by offering a frame for doing so, and by articulating salient aspects of experience and their interrelations.

Another approach is to focus on exploring specific traits of experience with technology. In this vein, Löwgren [9] has argued that the field of interaction design would benefit from the articulation of particular experiential qualities of digital artifacts. Löwgren himself provided examples of this approach in discussing the qualities of 'fluency' [9] and 'pliability' [10], and a similar approach found in McCarthy et al. [13] with regards to the notion of 'enchantment', and in Leong's work on serendipity [8]. This type of contribution offer insights that designers can employ to e.g. design user interfaces that are intended to be perceived by users as fluent or which lead to serendipitous encounters.

This is evidently not an exhaustive literature overview, rather brief examples of how interaction designers might use conceptualizations of experience to inform their work. The above-mentioned contributions have served as a source of inspiration for recent work that

my colleagues and I have carried out in recent projects in which we have worked with the notion of 'engagement' with interactive systems, primarily mixed reality installations, e.g. [4], [5]. In relation to the two approaches to bringing conceptualizations of experience into design sketched out above, the way in which we have brought the concept of engagement into the design process in our recent work represents a third approach, which I will outline in the remainder of this paper.

### **Means of engagement as a theoretical construct in the design process**

In our work, we have not articulated engagement as an experiential quality on par with e.g. fluency or pliability. Rather, we consider it to reside on a higher level of abstraction, as a meta-quality that encompasses a number of distinct experiential qualities. E.g. in a given situation, an artifact with a fluent and pliable interaction gestalt may promote engagement, whereas other situations may be un-engaging in spite of the presence of fluent and pliable gestalts.

Since the interaction design process is our primary research focus, we have explored the notion of engagement in a dialogue between theoretical positions and use studies of interactive installations; the objective of this inquiry has been to develop a conceptual construct that can more readily be brought into design. This has led to the articulation of *means of engagement*. We employ the term means of engagement to denote the resources in a system that inspire engaged interaction and serve as instruments for scaffolding the experience of engagement. This concept draws upon a number of theoretical sources of inspiration, among these Dewey, Borgman and

Verbeek. The concept is unfolded in greater detail in [5], and I shall only touch upon some of these sources here, as the main purpose is to illustrate a specific way of bringing conceptualizations of experience into design.

One theoretical source of inspiration is Borgman [2], who argues that settings that inspire engagement have a certain *unfoldedness* and *depth*; a wealth of experiential properties and their disclosing powers. This can imply both the motivation to uncover or unfold new phenomena in our surroundings, or to explore in more depth seemingly well-known phenomena. Borgman uses the example of the artefacts that inhabit the kitchen of a gourmet cook – burners, pots, chopping blocks etc. – and the way in which the handling of these artifacts disclose their experiential properties. The sound of the pot as food is stirred at just the right temperature. This environment invites people to invest their skills, time and resources and to be engagement in the activity of preparing the meal. Another theoretical perspective that has shaped the concept is the pragmatist philosophy of Dewey, in particular the notion of inquiry [6]. Inquiry denotes the mode of experience and action by which the subject seeks to make sense of challenging situations and resolve or overcome the tensions they present; in Deweyan terminology, this is described as a transformation of indeterminate situations into determinate ones. In this perspective, the subject is an active and integral part of the situation, not an outside party to it. Situation in this perspective encompasses the subject, other people, the physical things in the world, and socio-cultural constructs. The transactional perspective in Deweyan pragmatism highlights the reciprocal relationship between people and the situation – through inquiry

people coordinate and shape the situation and in turn, people are shaped themselves.

In light of the pragmatist perspective, we consider means of engagement to have a twofold nature in that they both frame experience and as means of transforming it. In this sense, means of engagement are the structures that are intentionally shaped through design to mediate our engagement in the world. A similar line of thought has been pursued by Verbeek [15], who discusses, from a phenomenological point of view, the idea of how things can mediate engagement. Given our research area, we are interested primarily in the particular qualities of interactive systems that can serve as means of engagement. In this domain, means of engagement can take on many shapes. As an example of means of engagement, we have explored what we label *peephole* installations as a particular type of means of engagement.

#### *Peepholes installations as examples of means of engagement*

Building upon the conceptualization of engagement laid out above, a key feature of peepholes as means of engagement is that they simultaneously instil curiosity and offer ways of unfolding or exploring the depths of the content they hint at. In this respect, peepholes must maintain a balance of tension between recognition / openness and obscurity / concealment. There must be something for a potential user to perceive, and it must be recognizable enough for them not to discard it. Yet, it should also be clear that not all is revealed, and that engagement is required in order to uncover what hides beneath the surface.

A fundamental quality of digital peepholes is the potential of interactivity; loops of feedback and response among user and system can gradually reveal more and more of what the user first got a hint of. The peephole installations we have explored (both in studies of related work and in design processes that we have undertaken) can be characterized as mixed reality or augmented spaces. The term mixed reality is an interesting designation in relation to the concept of peepholes since it underscores the potential of shifting between different realities, or domains of inquiry. In many peephole installations, mixed reality is employed to create what Manovich [11] has termed augmented spaces; environments in which layers of data are added to physico-spatial surroundings. Although this notion applies to many types of situated symbols, digital technologies hold unique potentials for expanding the dynamics of augmented spaces.

Prominent examples of peepholes from related work are the Jurascope developed by Art+Com [1], Chris O'Shea's Out of Bounds [14], and Casinelli and Ishikawa's Khronos Projector [3]. As an example from our own work, we have employed peepholes as means of engagement very literally in our work with the Kattegat Marine Centre to design engaging exhibition installations. The Kattegat Marine Centre is in many respects a typical marine centre displaying marine life from all over the world. The centre is primarily inhabited by large aquaria with glass sides that allow visitors to explore the variety of marine life. As part of our research efforts, we designed a prototype installation for the centre where visitors were invited to construct fish for a virtual ocean. Visitors could assemble their own fish using a physical construction kit with embedded RFID chips. The construction kit

contained the heads, bodies, fins and tails of a variety of existing species of fish. Starting from these pieces, visitors could create imaginary fish that combined the particular qualities of existing species. As visitors created the imaginary fish, they were invited to release the fish into a virtual ocean that was inhabited by the fish that others had created. The only way to explore the ocean was by using digital hydrosopes (picture 1). The hydrosopes provide a view down into the virtual ocean and allow visitors to explore the ocean by pushing the Hydrosopes along the floor surface. The Hydrosopes are a very literal manifestation of the Peephole concept as they provide a visual glimpse into a hidden universe beneath the surface.



Picture 1: Children use a Hydroscope to explore the sea

The hydrosopes exemplify how peepholes as a means of engagement encourage inquiry and have a fundamental quality of unfoldedness at the hidden is gradually revealed. Moreover, the hydrosopes exemplified how peepholes, and means of engagement in general, work as parts of larger situations; the hydrosopes play on the metaphor of the hidden life in the ocean. The hydrosopes, however, do not in

themselves provide visitor the opportunity to change or manipulate fish in the virtual ocean. As such, the engagement is only sustained as long as visitors are intrigued by searching the ocean. To the extent that visitor engagement was sustained at the marine centre, we have to look to the other elements of the exhibition. The construction table, where visitors construct fish for the ocean provided a means for sustained engagement.

### **Conclusion and perspectives**

Although many interaction designers likely consider the experiential aspects of the interactive artifacts and systems they design, the question of how to integrate these aspects into design is a recurring challenge. In this paper, I have shown how my colleagues and I have recently addressed this challenge by developing conceptualizations that are intended specifically for interaction design, namely the notion of means of engagement, and a particular instantiation of this notion, peephole installations. This work can be construed as an attempt to bridge theory and practice (by developing concepts on the basis of theoretical positions and practice-based experiments that can be used in design practice) and design and use (by integrating insights from use situations into the concept means of engagement, which in return results in systems with particular use qualities). Peepholes is one of many potential means of engagement that can inform the design process, and we intend to explore further means in the near future. We have been quite encouraged by how the notion of peepholes worked in the Hydroscope case, but both discussions in fora such as the Critical Dialogue workshop, supplemented by further design work, is necessary in order to help us understand if it was a lucky fluke, or if our approach represents a fruitful way of integrating

conceptualizations of experience into the interaction design process.

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