Understanding Narrative and Embodied Interactions with "Present-at-Mind"

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Abstract

This workshop paper proposes the theoretical notion of "present-at-mind" as an extension of the Heideggarian categories of "present-at-hand" and "ready-to-hand". We argue that present-at-mind allows us to talk about the semantic and aesthetic qualities of embodied interaction, particularly within narrative contexts.

Keywords

Narrative, Embodied Interaction, Semantics, Theory

ACM Classification Keywords

H.5.2 User Interfaces: Theory and Methods

General Terms

Design, Theory

Introduction

In this paper we consider the relationship between embodied interactions and narrative by exploring how Heidegger's notions of *present-at-hand* and *ready-to-hand,* already adopted into the field by theorists such as Winograd and Flores [8] and Dourish [4], can be extended to incorporate a semantic and aesthetic mode. We argue that this third mode of *being-in-the-world*, which we term *present-at-mind,* is essential for understanding embodied interactions as part of the process of meaning making that characterizes our evolving relationship with technology.

Vorhanden and Zuhanden

In 1986 Winograd and Flores introduced the field of HCI to the phenomenology of Martin Heidegger [8]. Their writings dealt primarily with two modes of what Heidegger called *Dasein*, or *being-in-the-world* [5]. These two modes of being were *vorhanden* (present-at-hand) and *zuhanden* (ready-to-hand) respectively, and they have persisted in HCI as a model for discussing how we interact with the world. More recently, Paul Dourish incorporated the notions into his discussion of the philosophical underpinnings of his concept of embodied interaction [4]. Both modes are connected to the notion of "breakdown", wherein a tool fails to function as expected and thus becomes a focus of attention. Before breakdown, use is seamless and the tool is ready-to-hand, working as an unconscious extension of the person using it. At the moment of breakdown, however, the tool becomes present-at-hand, an object distinct from the user. For Dourish, this phenomenological understanding of how we engage with tools is what allows us to create meaning and act within the world. The world reveals itself to us as being available for action, and through embodied engagement with the world we give rise to meaning.

Narrative Interface and Hypermediacy

Switching from interaction design to narrative and new media theory, we see a connection between Heidegger's categories and Bolter and Grusin's concepts of *transparent immediacy* and *hypermediacy* [3]. Bolter and Grusin describe how interactions with mediated experiences, such as films or video games, can produce a state of *immediacy* unless something intrudes and makes the interactor aware of the mediated nature of the experience, producing a state of *hypermediacy*. In the same way that a tool user passes from ready-to-hand and present-at-hand during moments of breakdown, a person experiencing a piece of media moves between immediacy and hypermediacy when the nature of the experience breaks through their immersion. In digital media, interfaces are caught between these two modes of experience: sometimes interfaces disappear into the interaction, while at other times they create obstacles that must be negotiated in order to accomplish a desired task. In our previous work we discussed the notion of *narrativized interfaces*: interfaces that incorporate narrative sensibilities into their design [1-2]. When an interface becomes a site of narrative meaning, the concepts of immediacy and hypermediacy can no longer fully account for the experience of an interactor. It is important to note that not all embodied interfaces are narrativized, and not all narrativized interfaces are embodied. However there are many narrativized *and* embodied interfaces and it is these that most obviously highlight the need to go beyond the modes identified by Heidegger and Bolter and Grusin to a mode of that engages with the semantic and aesthetic aspects of the interface.

Present-at-Mind Interaction

The oscillation between two binary levels of awareness may be sufficient for understanding acting with tools or engaging with passive media experiences, but we argue that something is missing when these categories are applied to the full scope of embodied interaction. The existing categories do not account for the ways in which embodied interaction exists at an intersection of potential meanings, not all of which are related to "action" or "mediation". The two states described represent functional extremes: either invisibly functioning or presently malfunctioning, either transparently immersive or hyper-aware. We propose

Figure 1. From top: The telegraph key object; All the objects on the tabletop; A participant engaging with the object

that there is a third, related mode of interacting with objects and experiences that is differentiated along semantic lines instead of functional lines. We term this category "present-at-mind". This idea of present-at-mind encompasses the ways in which we slip between different associative awarenesses while interacting with an object, tool, interface, or piece of media. We argue that this notion of present-at-mind may be used to describe any situation in which an awareness of an interaction as a *locus of meaning* occurs. Although Dourish states that embodiment gives rise to meaning via engagement with the world, he does not explicate how this occurs in any detail, and his examples focus on actions and practical tasks rather than narrative, emotional or aesthetic meanings.

For example, imagine the relationship between a guitar player and his guitar. While he is playing, he might be transported by the music into a place of transparent immediacy in which the instrument is invisibly ready-to-hand. In order for the interaction to shift toward a present-at-hand mode, something would have to disrupt the playing. A string might snap, or he might miss a note and need to correct his fingering. However, there are other modes of experiencing the guitar and act of playing that do not rely on a breakdown of immediacy. What if the guitarist finds himself reminiscing about the first time he played in front of a live crowd? What if the feel of the strings beneath his fingers and the strap across his shoulder reminds him of playing his guitar at a friend's wedding? What if he owns multiple guitars, each with its own particular story and its own properties? Would playing the Gibson *Les Paul* that he saved all of his money for in college elicit the same associations as the Yamaha Dreadnought that his grandfather had left him in his will?

Tools and interfaces are seldom neutral: they exist in dialogue with our lives and are often impossible to separate from their associative, semantic, aesthetic, and narrative entanglements. When we use tools or engage in interactions we bring our own particular set of associations and awarenesses with us. This present-at-mind mode acknowledges the importance of the specific context and situation in which an interaction occurs. To explore the value of this theoretical notion in the design and analysis of interactive experiences, we describe a system of ours which serves as a case study.

Design Case Study: The Reading Glove

The Reading Glove is an intelligent interactive storytelling system that uses wearable technology, physical objects, and a tabletop display to immerse a reader in a historical narrative puzzle (See Figure 1). Interactors wear a soft fabric glove containing an RFID reader in the palm that communicates wirelessly via xBee radio to a nearby laptop. The physical objects are tagged with RFID chips, so as the interactor picks up the objects, she triggers audio playback of story fragments associated with the object. An intelligent reasoning engine guides the reader through the story by displaying a set of recommendations for which object to pick up next. The narrative of the piece centers around a spy in Algiers during the early 1900s, who discovers that his cover has been blown and must unravel the deceptions and betrayals that brought this about. The uncovering of facts in the narrative mimics the uncovering of story fragments that the readers perform with the objects. We have written about this system more extensively in other papers [6-7]; here we reference it briefly in order to explicate the notion of present-at-mind.

Implications for Embodied Interaction

We believe the Reading Glove is a good case study for the notion of present-at-mind in embodied interaction because its focus is not on the accomplishment of any particular functional task, but rather on coming to understand a narrative via a set of physical objects and sounds. The interaction with the system is straightforward and easily learned; the challenge comes in the semantic untangling of the story and the relationship between the objects. Readers using the system frequently remarked on the power of the objects to engage them with the story. Many of the objects could be physically manipulated, such as turning the crank on the coffee grinder or wearing the goggles and hat. We believe this physical engagement, which functionally did not affect system output, engaged the somatic/muscle memory of the users. Because we selected real, previously used objects from antique stores, the richness of the physical artifacts invited reflection on the specific history of each item as well as personal associations with the reader, inducing a state of being present-at-mind.

We hope this paper provides a starting point for workshop discussion and analysis; we welcome critiques, refinements, and further examples of how to apply these ideas to embodied interaction. Some other points of interest that we do not have space to go into fully here include looking at how new embodied interfaces, such as the Rock Band controllers and Xbox Kinect, put the body into narratively and semantically salient positions, potentially activating a present-at-mind state. There is also more work to be done to explicate the notion of aesthetic appreciation and how the look and feel of an experience contributes to the enjoyment of the interaction, even if the functionality is identical to a less aesthetically appealing version. This can also be seen as a source of the present-at-mind style of engagement.

Acknowledgements

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