Chapter 7

Interaction *Per Se*:
Understanding "The Ambience of Interaction" as Manifested and Situated in Everyday & Ubiquitous IT-Use

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ABSTRACT

Interaction is a core concept in the fields of Ubiquitous computing, Ambient systems design, and generally in the fields of HCI and Interaction Design. Despite this, a lack of knowledge about the fundamental character of interaction still exists. Researchers have explored interaction from the viewpoints of user-centered design and design of graphical user interfaces, where interaction stands for the link between technology and humans or denotes the use aspect. A framework is proposed for exploring interaction as a design space in itself between a human and the technology. It is proposed that this framework for interaction as a design space for Interaction Design, in which the very form of the in-between, the interaction, be explicitly targeted. It is an opportunity to go beyond user and usability studies to seek answers to fundamental questions concerning the form and character of interaction as implemented in today's interactive systems. Moreover, this framework is an opportunity to expand and explain a new design space for Interaction Design. The proposed framework, anchored in two exemplifying cases, illustrates the character and the form of interaction as it situates itself in online, ubiquitous and everyday IT use.

INTRODUCTION

The ambience of interaction as the seamless flow of turn-takings between people and computational materials highly integrated in our everyday lives is a fundamental and crucial aspect for any practical design and use of interactive systems. As new digital technologies are rapidly blending themselves

into our everyday lives to the extent that they are becoming inseparable, ambient and ubiquitous we need a fundamental grounded understanding of this ambient character of interaction per se as it situate itself as an everyday activity.

From a scholarly viewpoint, the notion of interaction *per se* is a core concept in the fields of Ubiquitous computing, Ambient systems design, and generally in the fields of human-computer

interaction (HCI) and Interaction Design, as it is about the interplay between humans and the digital technology designed to support us. For over 15 years there has been an explicit focus on design for interaction, from the publication of "Designing Interaction" (ed. by Carroll, 1991) to the publication of "Designing interactions" (Moggridge, 2006). Beyond that, the focus on interaction has been central since the birth of Human Computer Interaction as an academic field of research and as a profession.

With this focus on interaction we have, as a community, invented and developed a number of methods and approaches to interaction. We have developed approaches for Interactive Systems Design that are technology-centered, including approaches for requirement analyses (e.g., Mylopoulos et al., 1999; Kawaguchi, 2003), interface design (e.g., Miller, 1997; Souza et al., 2000; Oliveira & Rocha, 2005; Blackwell, 2006; Ruthven, 2008), design guidelines (e.g., Häkkilä & Mäntyjärvi, 2006) and UI principles (e.g., Beier & Vaughan, 2003). There has also been a long tradition of research into usability studies (e.g., Gould & Lewis, 1985; Nielsen & Molich, 1990; Jeffries et al., 1991; Sauro & Kindlund, 2005; Hollingsed & Novick, 2007; Frøkjær & Hornbæk, 2008; Pilgrim, 2008) and methods for evaluating user performance (e.g., Card et al., 1980; Kolehmainen et al., 2008) and UI efficiency (e.g., Amant et al., 2003).

From another point of view, we have developed methods for analysis that are human-centered approaches to HCI and Interaction Design including user-centered design (e.g., Vredenburg et al., 2002; Mao et al., 2005; Keinonen, 2008), participatory design (e.g., Muller & Kuhn, 1993; Shapiro, 2005), and design ethnography (e.g., Huges et al., 1992; Hughes et al., 1995; Simonsen & Kensing, 1997). In line with this focus, analysis instruments and techniques including task analysis (e.g., Pinelle et al., 2003) and techniques for designing interaction technologies as a scaffold for human activities and computer supported collaboration, have been developed. Recently we have seen how human modeling techniques, including e.g., Persona descriptions (Chang et al., 2008; McGinn, 2008) are growing in popularity as a way of presenting an image of the user as the focus for the design. Given a clear focus on Interaction Design with the human as focus, we have seen the growing interest in user experience design (McClelland, 2005; Forlizzi & Battarbee, 2004).

Working as a bridge between user-centered and technology-oriented studies of interaction technology design, the field of design-oriented research (e.g., Dahlbom & Mathiassen, 1997; Fallman, 2003; Zimmerman et al., 2007) has filled an important role. It has advanced our knowledge of how to work with prototypes in interaction research, how to move from empirical user studies to design and how ethnographic observations can lead to, or work as, a method for identifying implications for design. The latter approach has recently been criticized by Dourish (2006, 2007).

From a review of these methods and approaches to HCI and Interaction design, we can see that these approaches address either the technology or the human side of HCI and sometimes both. However, while doing so, these approaches still fail to explicitly address the "in between" aspects of human-computer interaction, i.e. to explicitly focus on interaction *per se* as a form element in which Interaction Design becomes the form making of the interaction itself, as a temporal element, and how a specific interaction form should be understood, implemented and communicated to its potential users. This paper explores that specific issue.

In more detail, this paper proposes a new way of approaching interaction, as a form element in itself based on an identified need for understanding the essence of Interaction per se, i.e., what the design space interaction *per se* constitutes. There are a number of advantages in explicitly focusing on the design space between the user and the technology: 1) Concentrating on interaction *per se* as a new design space that can be identified,

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