
The Human-Computer Domain Relation in UX Models

Torkil Clemmensen

Department of IT Management Copenhagen Business School,
Howitzvej 60
DK-2000 Frederiksberg, Denmark
Tc.itm@cbs.dk

Abstract

This paper argues that the conceptualization of the human, the computer and the domain of use in competing lines of UX research have problematic similarities and superficial differences. The paper qualitatively analyses concepts and models in five research papers that together represent two influential lines of UX research: aesthetics and temporal UX, and two use situations: using a website and starting to use a smartphone. The results suggest that the two lines of UX research share a focus on users' evaluative judgments of technology, both focuses on product qualities rather than activity domains, give little details about users, and treat human-computer interaction as perception. The conclusion gives similarities and differences between the approaches to UX. The implications for theory building are indicated.

Author Keywords

User Experience models; User Experience domain; aesthetics; temporal User Experience

Introduction

Recently there has been a call for more theoretical considerations [1] and better concepts and structural models for research in UX, as a basis for giving design

guidance [2]. This paper argues that UX research should review its conceptualization of the human, the computer and the domain of use. In the standard UX definition (ISO 9241-210) [3], the relation between the user and the technology puts the user as a subject, who as a result of actual or imagined use of some object (the piece of IT), perceives something that is then called UX. There is consensus about what is uncontroversial and agreed about in relation to UX: focus is on experience with use (i.e. not all experiences), individual UX (not collective, social, organizational), temporal aspect (the user experience can range from moments to months), and finally, that emotional aspects are important (distinguish UX from usability) [1, 2, 4]. In an attempt to challenge this consensus, this paper analyses the relation between the user and the technology in some of the many UX models.

Method

This paper build on a close reading of two influential lines of papers that represent important aspects of UX research: a) three papers on aesthetics of websites [5-7] and b) two papers on temporal UX of mobile phone use [8, 9]. Karapanos et al. [8, 9] argue that by looking at the longitudinal perspective, their papers employ a *holistic* approach to UX, while those who simply measure UX before, during and after a single interaction episode, using the same scales, employ a reductionistic approach. I accept that argument and take the papers by Tractinsky et al. [5-7] as representative for a contrasting *reductionistic* approach.

Analysis of two approaches to UX

The UX concept. The approach by Tractinsky to user experience is mainly with a focus on visual aesthetics, which he sees as a major HCI-design variable in itself [6]. For Tractinsky, aesthetics is an antecedent to UX, and UX is mainly about emotions. This distinction appears to reflect a theoretical development; while the 2004 and 2006 papers discuss aesthetics as one of the dimensions of UX, in the 2011 paper there is a clear distinction between aesthetics as the antecedent and UX as the outcome. In contrast, Karapanos states that his research is about UX, and he uses the concept in the title of his papers. However, also in Karapanos papers it is hard to find a definition of the concept of UX. The 2009 paper appears to be about "prolonged use" [8, p. 729], "temporality of experience" [8, p. 730], "longitudinal studies on product adoption" [8, p. 730] "adopted and incorporated" [8, p. 731], "non-instrumental aspects of experience (e.g. stimulation & identification)" [8, p. 731]. The 2010 paper has a bit more direct focus on UX when talking about "the dynamics of users' experiences with interactive products" [9, p. 328], "one's experiences with a product" [9, p. 330], and "users' idiosyncratic experiences" [9, p. 333]. It becomes most interesting when concrete UX concepts to study are proposed: "... novelty... daily rituals, personalization, and self-identity..." [9, p. 329]. Reading these two papers, 2009 and 2010, however, it appears quite strongly that the research consist of "longitudinal studies on product adoption" [8, p. 730]. Thus, Karapanos main theoretical inspiration is the study of the domestication of technology, which Karapanos uses to develop a framework for how user experience changes across time.

The human in UX research. In Tractinsky's work, people are referred to as people, users or consumers, and occasionally also as web users, sophisticated consumers, online consumers, or IT users [5-7]. However, he also takes a discussion of the aesthetic judgement of "...naive users..." or "...laymen...." vs. that of "...experts and practitioners ...", i.e. "...expert designers, philosophers, ...critics of aesthetic artefacts..." [5, p. 291]. In the studies by Tractinsky that are analysed here, the participants were university students, specifically undergraduate engineering student and undergraduate business students, and "ordinary users in their natural (web) environment" [5, p. 287], specifically people who used forums on Israeli web sites [5]. In Karapanos work, people are referred to as people, individuals, humans, users, persons, "loved persons" [8, p. 736], and participants. In the studies by Karapanos that are analysed here, the participants had a "technical background" [8] and were management, design, natural science and engineering students at a technical university [9]. In both Tractinsky's and Karapanos work, the human users are described on a very general level; mostly the participants are described as students, age, gender, and not much more.

The computer in UX research. In Tractinsky's work, technology is computing products, online shops, and online marketing commercials. Examples of the studied technology include Hebrew (Israeli) and English (US) web sites [5], and book and apparel web stores as examples of e-retail environments [6]. Tractinsky [7] mentions information systems as the example technology when discussing technology acceptance research, but does not discuss information systems in relation to aesthetics and user experience. iPhone and MacBook

Air are named technologies that are supposed to support the argument that aesthetics is important for consumers' purchase decisions and users' general attitudes towards technology [6, p. 6]. Tractinsky does however not study these or similar products. Tractinsky's focus is on web sites. In Karapanos work, technology is discussed broadly as "technology products" [8, p. 731], interactive products, or simply, products [8, 9]. The products are "objects of value" [8, p. 729], and can become a "commodity" [9, p. 335]. Karapanos focuses on one product category, "mobile phones", which includes "smart phones"[9, p. 332]. The only named technology in Karapanos work is Apple's iPhone. Technology, in Karapano's literature review, also includes "information systems" [9, p. 329], but these are not studied. Karapanos focus is on mobile phones.

Interaction: The relation between the human and the computer in UX. In his 2006 paper, Tractinsky develops a general framework for IT aesthetics. In this framework, the human perceive or evaluate design characteristics of IT artefacts and subsequently acts on those, all dependent on a number of additional variables including e.g., culture and task. In none of these papers, interaction or interactivity as an aesthetic quality is discussed. The closest to taking a position on interactivity is when Tractinsky argues that the most common approaches to the study of aesthetics takes the interactionist positions that aesthetic perceptions depend both on the object and on the characteristic of the individual [7]. Tractinsky calls the web an "interactive form" [5, p. 604]; however, it is not explained how the "interactive form" is different from e.g., a postal order brochure in terms of aesthetic qualities.

Table 1. Comparison of two approaches to UX

	Similarities	Differences	
		Tractinsky	Karapanos
User experience	Focus on users' evaluative judgments	Aesthetic evaluations as antecedents for UX	Longitudinal UX as a result of adoption of technology
Human	People are described generally	Naïve users and experts in aesthetics	Users have emotions towards users
Computer	Perception of product qualities	IT products and IT environments	IT products
Interaction	Overall evaluations	Product + User	Product quality

In contrast, Karapanos argues that interaction consist of many small episodes with perceptions of product quality that co-exist within a single time unit, such as a day [8]. Karapanos and his co-authors classify these episodes according to phases of adoption and types of product quality, not according to the interaction. An exception are the episodes called "novel interaction style" and "aesthetics in interaction" [8, p. 730] , for example "when I clicked on the album, I just loved the way it turned around and showed all the songs in it" [8, p. 733]. This citation seems to suggest a high-level aesthetic evaluation of the aesthetics of animated graphics. This is however not analysed as interacting with computers.

Conclusion

The two very different (reductionistic and holistic) approaches to UX appear both to build on a

psychological tradition of research in individual perception and decision making. They share a focus on users' evaluative judgments of technology, a general description of people, and a product view of the computer, Table 1. I do not reject these studies, but I suggest that we in addition should re-visit the context of UX. For example, we may reconsider how 2nd wave HCI contextual theories can inform UX research. In order to develop different UX models, we should add more contextual variables.

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