A framework for user experience, needs and affordances

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As design of interactive products started to address the whole user experience, User Experience (UX) became an established field of research. Nevertheless UX design presents some risks, such as providing users with experiences that they do not wish. Furthermore, UX methodologies lack prescriptive tools for guiding designers. This paper establishes a link between UX research and Affordance theory and postulates the concept of Experience Affordances. Affordances represent a first step toward the development of prescriptive methods and help preventing designer from imposing experiences to users. Thus, a framework for describing product experience in terms of affordances is exposed and discussed by analysing exemplary products. In concluding the paper, the implications of the framework are presented.

Keywords: user experience, affordance, philosophy of design, product design, design theory

Your most unhappy customers are your greatest source of learning. With these words, in 1999 Bill Gates summarised two of the most relevant aspects underlying the success of a product: the happiness of the customers and the importance of learning from mistakes. More or less at the same time, researchers in Design often tried to assess the quantity of said mistakes: for instance, in 1997 a study pointed out that market failures constitute more than 99% of the submitted projects in industry (Stevens & Burley, 1997).

Another research (Den Ouden, Yuan, Sonnemans, & Brombacher, 2006), highlighted how high is the number of cases where the dissatisfaction of the customers is caused by so called soft failures, when products function according to the specification, but not according to the consumer's expectations. Contrariwise, a recent paper analysed many award-winning successful products, in order to identify the features that distinguished them from competitors (Saunders, Seepersad, & Hölttä-Otto, 2011). Assuming that successful products typically delight customers by satisfying their needs in particularly innovative or unexpected ways, the study found out that, on average, successful products present multiple innovative characteristics, but more than two-thirds of them outperform users' expectations in terms of interaction.

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In the last years of twentieth century, it was already well acknowledged that it is not possible to reduce an interactive product to its functions and its easiness of use. Indeed in 1996 the ISO 9241-11 involved the satisfaction of the user in the definition of usability (1996: p 2), considered as being both objective and subjective. Nevertheless, this definition did not include one aspect that the previously mentioned studies demonstrated to be of prime relevance: the pleasure of the users. Probably this limitation is among the reasons that motivated the shift from the ISO 9241-11 to the ISO 9241-210, which states that the design addresses the whole User Experience (2010: p 7). User Experience (UX) is herein defined as a consequence of the presentation, functionality, system performance, interactive behaviour, and assistive capabilities of an interactive system, both hardware and software. It is also a consequence of the user's prior experiences, attitudes, skills, habits and personality. With respect to the ISO 9241-11, the concept of usability is thus broadened by means of its re-interpretation from the perspective of the users' personal goals, which can include perceptual and emotional aspects (2010: p 7).

Design of interactive products must address the whole user experience. In the last years, this sentence has become a sort of mantra, as UX has become an established field of research in Design (Hassenzahl & Tractinsky, 2006). Different models and frameworks have been proposed in order to represent the kaleidoscopic nuances that compose the UX. However, so far these models have raised different criticisms: among the others, according to Xenakis and Arnellos (2013, p 2) *such approaches hardly lead to recommendations that can be safely generalised in design methodologies, like all those practical design methods, which are based on affordance theory*. The present study deals with this issue and tries to lay down the foundations for a prescriptive formulation of the design for the UX.

Furthermore, despite the evidence that the design of an interactive artefact is actually the design of behaviours and experiences, the aim of designing experiences carries some risks. First of all, experiences with products are to be ascribed just in part to the products, as the remaining part is due to the context in which the interaction occurs and to the user itself. As Redström (2006: p 124) pointed out, the aim of designing experiences necessarily leads to the attempt of designing the user, which means trying to design something that is not there for us to design. However, as confirmed by the findings discussed at the beginning of this introduction, the issue of users' pleasure is always there to be fulfilled. Hence, the whole UX has to be considered, including users' personal goals, expectations and emotional aspects, without neglecting the agency of people interacting with technology (McCarthy & Wright, 2004: p 10).

Borrowing the words of Enrico Gismondi, as reported by Verganti (2009: p 2), User Experience Design should be about making proposals to people: the experience provided by the artefact should be the result of a proposal made to the users, not an imposition. However, UX Design deals with the intertwin-