Web Aesthetics and Usability: An Empirical Study of the Effects of White Space

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ABSTRACT

Usability has been an essential component of the Web User Experience (UX) and a focal research topic. In recent years, the penetration of interactive technologies in all aspects of everyday life challenges the way UX is understood and designed. The past decade, Human-Computer Interaction (HCI) scholars have been continuously attempting to introduce and explore new and non-traditional factors in the UX arena, such as aesthetics, emotions, affect, and trust. This study contributes to the field by exploring the relationship between aesthetics and UX, specifically the impact of the classical design element of white space on the perceived attractiveness and perceived usability of an e-commerce website. A between-subject research design involves the manipulation a website’s white space. Three different versions were constructed using 25, 50 and 75% of the white space, respectively. Findings offer support for the relationship between aesthetics and the perceived usability of a website. The study results suggest that the usability of a website is impacted negatively when white space increases over 50%. Practitioners should consider that in the context of eCommerce Web design, reduction of content and shrinking of visual elements, in favor of white space, is likely to negatively impact the usability of a website.

Keywords: Classical Aesthetics, Perceived Attractiveness, Web Aesthetics, White Space, Usability

INTRODUCTION

Traditionally, utilitarian factors such as usefulness, ease of use, and usability have been the fundamental qualities of the Web UX (Hartmann, 2006), since their impact on the performance of an interactive experience has been significant and the HCI community has been focused on them for almost two decades. In recent years, the penetration of interactive technologies has aggravated the complexity of UX and has generated a continuous growth of the HCI literature towards the investigation of new, non-traditional, factors (‘Coursaris & Kim, 2011; Petersen et al., 2008). Specifically, a few earlier studies from different domains have suggested the existence of a potential impact of aesthetics in users’ daily interactions with artifacts (Norman, 1998; Tractinsky, 1997; Lavie & Tractinsky, 2004; Hartmann, 2006). More recently, a few new studies continue to offer support and unfold the relationship between aesthetics and utilitarian factors such as effectiveness and efficiency (Coursaris et al.,...
In addition, claims for a relationship between affect, emotions and usability had been made evident (Schenkman & Jonsson, 2000; Norman, 1998, 2002; Wright & McCarthy, 2008; Hassenzahl et al., 2010). Thus it becomes apparent, although still in early stages and approached from multiple disciplines, that judgments of beauty and attractiveness may influence the performance of an interactive experience.

In the next section, a literature review explores several relevant publications, which enlighten the path of how aesthetics may impact user perceptions of a website’s (or other interactive experience’s) attractiveness and usability.

**LITERATURE REVIEW**

**Aesthetics in Human-Computer Interaction**

Aesthetics originate from the Greek adjective *aesthetikos*, which derives from the verb *aesthesthai* that means, “perceive” (Oxford American Dictionary, 2008). Aesthetics are a set of principles concerned with the nature and appreciation of beauty. They are interlinked with the philosophy of art and are considered to be a particular theory of the conception of beauty; a particular approach to what is pleasing to the senses (Hoffman & Krauss, 2004). People throughout the centuries have been highly interested in aesthetics. The appreciation of beauty is a classical quality and applied to many aspects of life, such as senses, imagination, and understanding (Lavie & Tractinsky, 2004). Aesthetics have been a topic of study and research over the ages by many schools of thought, and consequently have been approached from many different angles and points of view. The first endeavors towards a deeper understanding of visual aesthetics in the context of HCI, belong to Noam Tractinsky. His contributions to the field have been significant (Tractinsky, 1997, 2000, 2005; Lavie & Tractinsky, 2004), and used by most scholars who have explored the relationship between aesthetics and usability. Lavie and Tractinsky (2004) separate visual aesthetics into two subsets: classical aesthetics and expressive aesthetics. Subsequently, they connect those definitions with Nasar’s (1999) concept of visual richness and visual clarity. Visual richness addresses the originality, sophistication, and creativity in terms of graphics, layout, and typography. On the other hand, visual clarity consists of attributes such as clarity, cleanliness, symmetry, contrast, and others.

**Aesthetics, Emotions, and HCI**

The importance of aesthetics and their potential impact on usability have been under investigation. Huh et al. (2007) highlight the growing need of moving beyond usability and integrate aesthetics into the HCI research agenda. Recent HCI research calls for a balance between usability and aesthetic considerations (Coursaris & Kim, 2011; Lavie & Tractinsky, 2004; Huh et al., 2007; Coursaris et al., 2008; Coursaris & Kim, 2007; Coursaris & Kim, 2006). Thus far, a set of findings offers initial support for a relationship between aesthetics and usability (Coursaris et al. 2008; Tractinsky, 1997; Lavie & Tractinsky, 2004; Huh et al., 2007; Quinn & Tran, 2010; Moshagen & Thielsch, 2010; Li & Yeh, 2010). The first empirical results in this field came from Kurosu and Kashimura (1995), who were the first to study the relationship between interface aesthetics and usability (Tractinsky, 1997). They found an unexpectedly robust relationship between Automatic Teller Machine (ATM) user interface aesthetics and perceived usability. Tractinsky et al. (1997) expanded on Kurosu and Kashimura’s findings by proving empirically that the relationship between aesthetics and perceived usability was still present beyond initial impressions even in a different cultural context. Nevertheless, context still appears to be an influencing factor. In a study conducted in Taiwan, Li and Yeh (2010) found strong correlations between aesthetics and perceived usefulness, and between aesthetics and perceived ease of use. They notice a significant difference in their findings compared with the findings of Cyr et al. (2006) who in a similar study, conducted in
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