

The Beauty in HCI

A look at the impact of aesthetics on human-computer interaction.

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Introduction

For years there has been an internal fight in the design community, with usability experts in one corner and artistic designers in the other. From before the publishing of the article “Usability Experts are from Mars, Graphic Designers are from Venus” on A List Apart’s website 10 years ago until today, both sides have argued their points and have struggled to meet each other halfway. This paper takes a look at the progress of that struggle and what remains to be done to bring the two sides together.

Thanks to usability pioneers like Jakob Nielsen and Donald Norman, the importance of usability is widely recognized. Computing interfaces are compared against heuristic lists and action-step models and artistry is frequently eschewed in favor of measurable functionality. But with computing interfaces moving beyond the desktop computer and winding up in everything from the refrigerator to the bathroom mirror – in other words, becoming more pervasive in one’s everyday environment – the human-computer interaction (HCI) community is taking more interest in the notion of aesthetics. (Huh, Ackerman & Douglas, 2007)

Defining Aesthetics

In terms of origin, aesthetics is a Greek word meaning “sense-perception” (Pold, 2005). Aesthetics is about art, beauty, judgment and reflection. It is a philosophy that is difficult to define but yet has a history that embraces a number of concepts including taste, emotional expression, and form. Philosophers who specialize in aesthetics understand this history and continually critique and revise those concepts and how they relate to art (Bardzell, 2009).

Beauty

First, let's consider aesthetics in terms of beauty. Beauty manifests itself in various ways and is, of course, quite subjective—what is considered beautiful varies from person to person and culture to culture. One commonplace assumption is that people primarily make choices based on attractiveness. However, studies by Sarah Diefenbach and Marc Hassenzahl show the existence of a “beauty dilemma”, where people who value beauty are actually reluctant to pay for it and will disregard it when making choices. Unlike functionality, people find beauty more ambiguous, difficult to justify, and associate it with luxury and waste. This is even more pronounced when an interactive device is being evaluated since devices are primarily seen as tools where functionality should receive the highest consideration. If people do make a choice based on beauty, they will try to justify it by exaggerating the usability advantages (Diefenbach & Hassenzahl, 2009). This may be closely tied to the concept of perceived usability, where people assume the better-looking product actually works better.

Beauty has social significance as well, serving to create emotional attachments between the product and its user (Diefenbach & Hassenzahl, 2009) and possibly between the product and non-users in the immediate environment as well. For example, in the health care environment, aesthetics has been shown to have significant effect on the care patients are given and the medical treatment they receive (Rullo, 2008).

Reflection

Aesthetics as it applies to computing is not just about visual beauty. It is also about reflection and providing insight into the visual representation itself, the process of interaction and the relationship between the work being done, the materials used and the cultural environment. Aesthetics can transform visual representation from something to be made invisible – as is the guiding principle in pervasive computing – into something

worth exploring and understanding better. This type of reflection can spark creativity and bring about deeper cultural understanding (Pold, 2005).

One example of reflection through aesthetic interaction is the interactive software *Popautomate*. *Popautomate* takes text entered by the user, searches for the occurrence of those words in various popular songs and then stitches all the occurrences together to create a new song. This may seem like just another fun piece of frivolous software but when implemented with an aesthetic approach, it can suggest a number of issues to reflect on: the ongoing conflict between the copyright-protective music industry and the contemporary music audience; the cultural change from music as autonomous works to music as material for constant manipulation by others; and, how the materials used to distribute music (digital files vs. vinyl records) have contributed to the cultural change (Pold, 2005).

Another example is the *Eye Vision Bot*, an interactive piece that displays 25 art images to the user in the form of a grid and then uses eye tracking to determine which image the user is looking at. The system then highlights that image by making it larger and then uses the metadata attached to that image to search its database for similar images to display. This type of cybernetic feedback loop causes the user to reflect upon the direction of their gaze, how the system is interpreting (or misinterpreting) their needs, and whether they can, in turn, interpret how the system works. This leads to additional reflection on the media industry and whether it functions in the same way by serving up images that we seem to be helplessly attracted to like violence and sex, which in turn leads to reflection on the ethics of this kind of interaction based on subconscious wish fulfillment (Pold, 2005).

Significance for HCI

HCI has grown in recent years, expanding from straightforward, rational ways of assessing usability (how long a task takes, how many errors) to consideration of context

and culture. Aesthetics supports this expanded view by enabling HCI to go beyond the analysis of goal-oriented tasks to include emotional and cultural factors brought to light through critical reflection. When considering the overall quality of experience, it is now permissible for interaction designers to give significance to beauty, not just functionality (Huh, 2007) since the reality seems to be that choice and use of interactive products is not simply a matter of efficient task accomplishment. Aesthetic factors, such as beauty, play an important role and affect the user's judgment about usability (Diefenbach & Hassenzahl, 2009). It is important for HCI professionals to understand how these factors can affect the outcome of their usability tests and how they can use these factors to further understand human behavior.

Conclusion

It seems clear that progress is being made in the struggle to align beauty and function and that the catalyst was the shift to ubiquitous computing. Once the trend began to embed computing in everyday objects, the HCI community had no choice but to embrace aesthetics. However, more work needs to be done. Current HCI literature is not clear on how exactly to transform the aesthetic attributes of interaction into design requirements (Rullo, 2008). In addition, HCI research has a hard time coming up with a methodological approach to the subjective concept of aesthetics, having typically concerned itself with more scientific methods (Jung, Altieri, & Bardzell, 2010). But the path for additional progress has been laid. Even though the idea of reflective, aesthetic interfaces might seem to contradict some of the transparency tenets of HCI, increasingly HCI research suggests that we need to look at more than just the functional aspects of interaction and consider the emotional variables that come into play based on the aesthetics of our solutions (Rullo, 2008).

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