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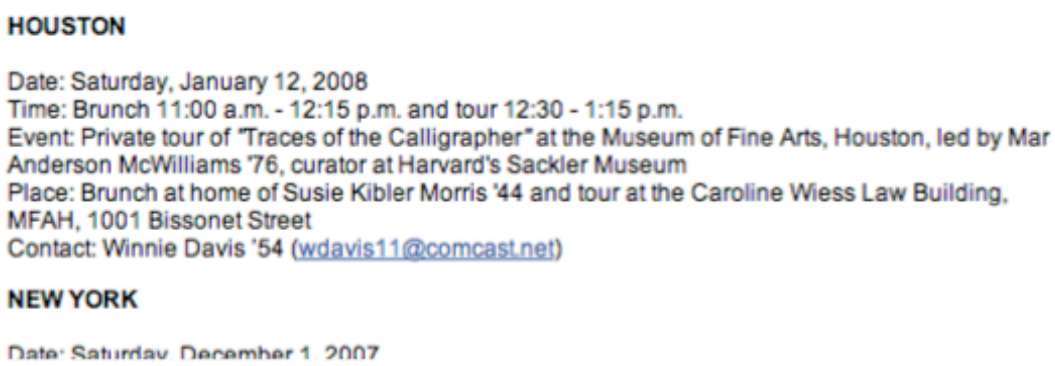
Understanding Perception Through Design

> "The most important aspect of any design is how it is understood in the minds of the audience" (Shedroff, 2001).

Understanding users from a psychological perspective is critical in user-centered design, but only if the designer understands how that knowledge can be applied to design. This was the central tenet of the course 'Understanding Perception in Design.' In this course, we studied various psychological theories, such as visual perception, schemas, attention, learning preferences, etc. In each section, we discussed how these principles applied to design, and then proceeded to do a project related to the theory. Since my background is in cognitive science and psychology, some of these psychological theories were not new to me; however, applying these concepts requires a different, deeper understanding than studying them in a psychology course.

We began with the basics of visual perception, particularly Gestalt theory (Sternberg, 2008). Gestalt theory views perception in a holistic way. The whole does differ from the sum of its parts. The human brain interprets what it sees in such a way as to make sense of the whole. The gestalt principles are very important in design, as they give us an understanding of how our viewers may perceive our design.

For example, the gestalt principle of proximity helps us understand that information/objects grouped more closely together will be seen as being related. This is why it is important that titles and what they relate to are close together. In the example below, although Houston is the location for the main paragraph, the next title 'New York' is actually located as close (or closer?) to the main paragraph, which is rather confusing.



HOUSTON

Date: Saturday, January 12, 2008
Time: Brunch 11:00 a.m. - 12:15 p.m. and tour 12:30 - 1:15 p.m.
Event: Private tour of "Traces of the Calligrapher" at the Museum of Fine Arts, Houston, led by Mar Anderson McWilliams '76, curator at Harvard's Sackler Museum
Place: Brunch at home of Susie Kibler Morris '44 and tour at the Caroline Wiess Law Building, MFAH, 1001 Bissonet Street
Contact: Winnie Davis '54 (wdavis11@comcast.net)

NEW YORK

Date: Saturday, December 1, 2007

Going beyond visual perception, schemas help us process incoming information about our environment (Walker & Augoustinos, 2006). They are formed by previous experience and socialization. Schemas function by giving us a meaningful framework within which to place information. They help us figure out what is important and what we should remember in our environment. Information is easier to process and remember when it relates to meaningful patterns.

If the viewer is unlikely to spend much time looking at a design or information present within a design, it is particularly important to ensure that the information is something that is easily recognized and remembered by the viewer. Choosing things that fit well into a particular schema might help with this. Cigarette ads do something like this when they associate their brand and smoking with a sexy woman in a nice location, possibly being hit on by an attractive male. It's easy for viewers to categorize both the situation and the people.

Since schemas are based partly on past experience, schemas vary between individuals, and even more so between cultures (Walker & Augoustinos, 2006). The appropriate script for a given situation may differ depending on one's audience. This is related to the idea of long-term memory focusing a person's attention (Adams, 2001). What a person focuses on is related to what is already in that person's memory.

People remember things within the same context in which they learned the information (Walker & Augoustinos, 2006; Adams, 2001). Therefore, if we want to help people remember something, we should give it to them in a meaningful context, preferably one that fits in with a known schema. Including the context for something in

design is important for this reason. An invitation card with a party hat and balloon on it helps the viewer recognize what sort of information is likely to be on that card, what they should do with that information, and what is most important about that information. When presenting a project to a group, telling a story about a user experience that the audience can relate to may help them understand and remember the project.

Another important topic in psychology is the idea of top-down and bottom-up processing. Top-down processing starts with high level cognitive knowledge, including things such as previous experience, which influences how someone perceives something (Sternberg, 2008; Watkins & Rees, 2006). A person will more quickly recognize something that they are expecting to see than something unexpected. Expectations are very important in top-down processing. This is important in design when the designer can use things such as previous experience to help the user process things faster and better. For example, in most Western cultures, green generally means 'go' and red means 'stop', so a designer could create a green 'go' button and a red 'stop' button, and a (non color blind) user could look at the colors and know the meaning without having to read the words.

Bottom-up processing starts at the bottom, with the initial stimulus, and then works up to higher cognitive knowledge (Sternberg, 2008; Watkins & Rees, 2006). Something like a flash of light, for example, or a moving object would trigger bottom-up processing. The user's attention would be drawn to that spot, possibly before they are consciously aware they have moved their eyes. After they look at the spot, they will process the information. Bottom-up processing is the reason we notice those annoying, flashing, animated banner ads.

Also below the cognitive processing level is what Norman refers to as the 'visceral' level of processing (Norman, 2005). We have evolved to automatically respond to certain cues in our environment. Visceral design also includes our quick enjoyment of things that are pretty, fun, or cute.

Norman also discusses two other levels of responses to design – reflective and behavioral. Behavioral is about the actual use of the item, not the appearance. It's about function, ease of use, learnability, and physical feel. This is what usability professionals

typically focus on, particularly functionality.

Reflective design relates to all of the more complex matters related to a product, such as social meaning, self-image, personal connection, culture.

Many people are initially drawn to Macintosh products because of their attractive appearance (visceral). They then try to use the computer, and find it very intuitive to use (behavioral). After that, they may consider the social aspects of owning a Mac, as Macs are generally seen as being cooler than PCs (reflective). In the end, the user may decide the higher price is worth it. Because Apple designs on all three levels, many people decide to buy Macs, despite the high price. They look nice, they are fun to use, and are seen as being chic, something which is reinforced by much of Apple's marketing.

Understanding these concepts is valuable both for designing or evaluating an interface or product. While the behavioral is what most usability professionals concentrate on, the visceral and reflective levels shouldn't be forgotten. In evaluating something, we might ignore our first response, even though that response is very important.

While these concepts are useful, it can be helpful to have a more formal framework for evaluating a design. Salen and Zimmerman (2003) developed a framework for analyzing actions and outcomes. While they were talking about games (and players, instead of users), their framework is equally applicable to any designed interaction that is not a game. There are five questions to answer:

1. What happened before the user was given the choice?
2. How is the possibility of choice conveyed to the user?
3. How did the user make the choice?
4. What is the result of the choice, and how will it affect future choices?
5. How is the result of the choice conveyed to the user?

By answering each of these questions, flaws in a design can be found and analyzed. For example, it's possible that in answering the second question, one may find that the possibility of choice is not really explicit in any way, and thus novice users may not even know that a certain action exists.

Salen and Zimmerman (2003) also generated a concept that ties together much of the previous information: the space of possibility. The space of possibility is all of the possible future actions implied by the design of the interface. It includes all of the potential meanings in the designed system as well. As a designer, thinking about this concept brings together all the various pieces - meaning, design, interaction, system, and user experience. Designers often craft each of the above pieces separately, and thinking about this concept should lead to thinking about how all of the parts of an interface fit together. Does the design and interaction lead to the appropriate meaning? What does using this interface mean to someone from an emotional and social perspective? etc

Overall, this course taught me new ways to think about, create, and evaluate design. Understanding design from a user's point of view is critical to being a good interaction designer. Using theories of visual perception, attention, schemas, levels of processing, and frameworks for evaluation, the designer can try to understand how the user understands their design.

Word count: 1464

References:

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