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INFO 608: HCI

Week 2 DOET Digest: Knowledge in Design

A study conducted by Gail Matthews showed that writing your goals significantly improved your chances of achieving those goals (Matthews, 2007). As we are in the season of New Year's resolutions and goal setting, it is something that has been in the forefront of my mind. Recently, I looked back on a vision board that I created about 5 years ago. When revisiting, I noticed that I had achieved almost all the goals, or I was working towards them in some way. Only a few of those goals had shifted or changed. Since then, it has been my mission to set goals and write them down. You might be wondering what this has to do with design. Well, in Norman's book, *The Design of Everyday Things*, he discusses knowledge in design. More specifically, knowledge in the head versus knowledge in the mind (2013, Chapter 3). I believe that when we write things down, it then becomes knowledge in the world and thus, we have less of a burden on remembering. Additionally, when written down we are more likely to be reminded of those goals than if they were solely in our head. Similarly, knowledge in design is a form of knowledge in the world that can help simplify what is to be memorized and provide benefits to people's lives (Norman, 2013, Chapter 3).

In Chapter 3 of his book, Norman proposes a question, "how can the design put knowledge into the device itself?" I found this question important to discuss because knowledge provides meaning and usefulness to a design (2013, Precise Behavior from Imprecise Knowledge, para. 3). If a design did not contain knowledge, then people may find that the novelty of such design would wear off. Additionally, Norman talks about how knowledge in the world is limited since people will only find it valuable if it is available in the right place, right time (2013, Chapter 3). Therefore, that knowledge must be targeted to the purpose of that design. For example, I am able to store people's birthdays in my phone's calendar. This knowledge is useful to me, as my phone can remind me when someone's birthday arrives so that I can wish them a Happy Birthday. However, if the calendar function was not available and I decided to store the birthdays in their contact information on my phone, the phone would not remind me, and I am more likely to forget. Despite the current contact storage application not being able to provide a birthday reminder, if calendars did not exist, designers could still implement a reminder function into the phone to make that knowledge useful in the design. While determining if a design is meaningful and useful to a user can help them provide knowledge in design, it doesn't exactly help them identify what that knowledge should be or determine where knowledge should go in a design.

Before a designer can identify where knowledge should go in a design, they would first need to determine what knowledge they want to incorporate. To do this, they need to first identify the key

behaviors they want their users to exhibit when interacting with the design. As identified in the book, behavior is a combination of knowledge in the head plus knowledge in the world (Norman, 2013, Chapter 3). Through observation, designers can discover how people interact with everyday things. Furthermore, they can identify the needs of the users to best understand where current, similar, devices may not be meeting those needs. Once they can identify the key behaviors and needs, they can start to recognize what natural mappings, conceptual models, perceived affordances, signifiers, and constraints would come to mind for people. With those in mind, the designer can then begin to include those in the design.

In Chapter 4, Norman discusses how constraints are a way to incorporate knowledge in design. He mentions four different types of constraints: physical, cultural, semantic, and logical (Norman, 2013, Chapter 4). Each is important in aiding people's interactions with the device. For example, online forms contain many constraints. Companies require people to fill out forms online for a variety of reasons and thus, may come in a variety of formats. Let's take an instance of a new patient form for a health-care provider. When filling out the form, a provider may seek information such as my name, date of birth, address, phone number, insurance information, and past health history. Online, I would be physically constrained by the input boxes next to prompts for that information. This is important because data often needs to be in a certain format and length. For example, we wouldn't want people to enter text into a phone number slot. So, to avoid bad input the form controls would constrain the allowable input in certain fields. Semantically, those input boxes may be sized in accordance with how long they expect the input to be. For health-history, they may allow free-form text so that you can describe any relevant details. Given the name of the field and size of the text box, a person is likely to provide details based on what information is needed and the size of the input box. Input boxes not only provide semantic and physical constraints but also act as an affordance, anti-affordance, and an interlock forcing function, which are other forms of knowledge in design.

Online forms are also an example of a skeuomorphic design[1] as they are very similar to forms that would be filled out on paper. This helps people learn to use new technology and prevents human error. Online forms may eventually look completely different in the future as technology continues to evolve. We are already seeing the simple sign-up form being transformed. For example, on many websites and phone apps you do not need to fill out a form to create a user account but can opt to use your email or social media account as your authentication mechanism. In this case, you authorize the site you are using to communicate via an API to gather the information from the 3rd party service rather than directly from you. This is beneficial as it reduces data redundancy and reduces memory load.

As you can see, incorporating knowledge in design is essential for society. It offers advancements that simplify our

[1] Skeuomorphic Design – term used to describe designs that incorporate old design features and familiar concepts into a new design (Norman, 2013, Chapter 4, When Silence Kills, para. 6)

lives by reducing the load on our memory – both long-term and short-term memory. At times, new knowledge in the world can seem overwhelming, though humans are adaptative and designs are often aided by standardization as they iterate. Change is necessary and inevitable. The new technology that we see today will evolve and change and eventually we will forget the designs of old; or repurpose them.

References

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