HCIN 620 Information and Interaction Design

Milestone 5

Spring 2015

Your second prototype

Milestone 5 for this course is to construct a second prototype (in Milestone 4 you constructed a first prototype). For this prototype, please do *not* polish your Milestone 4 prototype. As a learning experience, consider completely throwing away your previous prototype. Do not expect to receive a lot of credit for polishing the previous prototype, no matter how good it was. As a learning experience, it is more important for you to do the things that lead to the prototype than refining the prototype itself.

Design as an input to a prototype. Design can be thought of as a two part process. The first part is a divergent process, wherein you generate alternatives. The second part is a convergent process, wherein you make choices that reflect external constraints. A prototype can be construed as the implementation of those choices. Keep in mind that the implementation of a choice is not the same thing as the choice itself. The implementation is even more constrained by technology than is the choice in many cases.

So you can think of a prototype as one possible concrete expression of your design, a design that has been filtered through three stages, alternative generation, choices reflecting constraints, and implementation.

Alternative generation. To begin your design, you can make sketches, whether concrete sketches on paper or sketches in your mind's eye. At this stage, you should be comfortable with sketching and should be able to sketch design ideas in your sketchbooks. Those sketches will be evaluated when I collect your sketchbooks on the last class day. You should blend pictures and words this time, being careful not to rely on words because you are weak at sketching but not avoiding words when they illuminate details that may be hard to sketch, such as timing.

The National Science Foundation recently observed that there are insufficient computer-based tools available for the alternative generation phase and established an initiative to research creativity. I mention this because the literature that resulted from this initiative, as well as my discussions with some of the participants, awoke me to the problem that quite a bit of design software enforces its own look and feel. For this reason, I suggest that you begin your divergent process using paper or other non-software-based means. You may have noticed in class when we looked at prototypes that some of the prototypes had a very distinctive look, often an appealing look. Some of this may be connected to the tools used. I would like you to introduce prototyping tools as late in the process as you can because they are convergent rather than divergent. Their bread and butter is to get you from idea to product, not to broaden the scope of your ideas.

If software won't help with alternative generation, what will? The most reliable tool we have is to meet as a group and to share ideas without censorship. When we critique ideas, the first thing that may come to mind may be objections. When we generate ideas, we need to self-censor objections. The only things we might say that look like objections are occasional requests for clarification. Imagine, though, that you only have a few such requests in your clarification bank. If you ask for clarification too often, you will slow alternative generation down to a crawl.

I personally love to use image googling during alternative generation. This practice has been criticized by some with whom I have shared it, so it may not be for you. For me, it jogs my memory and reminds me of what I have seen before. It is rare that I pursue a completely unfamiliar image that appears in this process. It is more likely that, comparing images, I notice what it is that connects them in my mind. I believe I showed an example of image googling the word *clustering* in class. I concluded that the image most closely associated with clustering would be an unattractive picture of a scatterplot of red, green, and blue dots. This was not a new image to me but image googling helped me discover it as an

alternative in introducing the clustering concept.

One issue in alternative generation is that it is difficult to quickly clarify a particular alternative to your colleagues. Rapid sketching helps but there is surely an art form to knowing how far to go with presenting one alternative before moving on to another. While you generate alternatives, you have to be sensitive to your coworkers, not to their judgment of your ideas, but to their understanding of your ideas.

A second issue is timing. Most design students, given a three-step project, will spend more than half their time on step one, then panic and underdo steps two and three. It is important to budget time for alternative generation. If you establish a clock in advance, it may free you to keep generating alternatives until the signal to stop, rather than constantly monitoring for a *good enough alternative* to run with further. You need to keep diverging until the end of the time for diverging, not latch on to one idea.

Choices reflecting constraints. Charles Eames once said that design all about constraints. The way he said it avoided saying that it was about balancing constraints, or compromising over constraints, or choosing which constraints to honor. By saying that it is about constraints, I think he acknowledges that great design may transcend constraints. Even so, it is the transcendence of the constraints that matters. The constraints that were transcended may not be apparent to an individual observer. For example, I criticized the Disaster Response prototype as being too desktoppy. The response was that the client requested it. That is a constraint. I still feel my critique was valid and that it is too desktoppy. While acknowledging that I may be wrong about that, I hope that the team will figure out a way to meet my constraint that it not look too desktoppy, while meeting the client's constraint that that they focus on the desktop. Notice that they could ignore my constraint, compromise to show they acknowledged it, or do some third creative thing that makes me feel one way about the solution and makes the client feel a different way about the solution. It is a hallmark of much successful design that it admits differing, even

conflicting interpretations, but that these varying interpretations all include a wish to adopt the design.

Choice expresses your talent. You could say that your talent is revealed by your choices. There are analytical choices that may be arrived at by accounting practices or statistical practices or diplomacy. Those can be learned procedurally. What you must work on yourself is your insight. You must hone something within you that transcends that which is easily learned as procedure.

This is not to devalue accounting, statistics, or diplomacy. The big picture is made up of countless small parts and each learnable skill has a role to play in piecing together the big picture. For instance, Napoleon was often credited with a diabolical ability to foresee the future, but explained this as an outgrowth of his accounting ability. He could, for instance, tell off the top of his head how many horseshoe nails his army would require between Vienna and Austerlitz. With his encyclopedic knowledge of the details of the army, he could easily predict the details of the armies of his enemies, and know what choices faced them.

Napoleon is an easy example of how someone can assemble details into a clearer picture than anyone else, but you might be surprised to know that this characteristic is ascribed to many famous military leaders. Grant, Jackson, Patton, and Rommel are all examples of generals purported to have some kind of sixth sense which, upon inspection, appears to have been fed by encyclopedic knowledge of details.

Although the above examples are military, the lesson is not by any means confined to the military. Because I grew up in a military family I was exposed to many accounts of military success. Since then, though, I have observed the same phenomenon in art, science, and business. Talent can be cultivated through learnable skills but in some people, a point of transcendence is reached that is at least somewhat mysterious. You may find it worthwhile to strive for this level of transcendence for its own sake. All I can do is to urge you to try and to assure you that someone is likely to

recognize when you have achieved it.

Implementation. Implementation is what we will see when you complete the final milestone. There will doubtless be some confusion as to what you have done because we will be seeing evidence of divergence and convergence, not those processes themselves. The main thing that implementation adds is craftsmanship.

Craftsmanship. Craftsmanship in constructing your prototype should clarify the choices you have made. Unfortunately, clarification of your choices is not the goal of Balsamiq, or Axure, or IndiegoStudio. The goal of these tools is get you from idea to completion as effortlessly as possible and perhaps to add some sparkle to your idea.

To decrease effort, the easiest thing for a toolmaker to do is to make some of your choices for you. This may lead to confusion about your ideas since we may not know which choices you have made and which choices the toolmaker has made for you. It may also distract us from thinking about the choices and redirect our attention to the sparkle.

Sparkle is certainly nice but it does not translate into successful design. If you review Dieter Rams's list of the elements of successful design, you will find evidence that dazzling presentation of design is not important to design.

Think of your your prototype as a vehicle for your ideas and think about evaluating it on that basis.

Social presence. Several of your prototypes may benefit from social presence indicators. You may especially want to emphasize social presence indicators that work when very small numbers of people are using your prototype.

You must also consider the problem of manipulation of social presence indicators. Astroturfing is a common online problem. In an age when gold farming is profitable and Amazon's Mechanical Turk has been studied from many angles, there is plenty of reason for a casual observer to question social presence indicators.

Form factor. Several of your prototypes may benefit from being useful on different devices. You may benefit from thinking

about how you can make platform hopping transparent.

Project focus. In one case, I came away questioning whether your focus was language learning or game development. These are both gargantuan topics in their own right, so it may help to rank your goals to decide what is most important about your project in case resources such as time become an important constraint.