Designing for Interactivity

CST 201: Media Tools

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Overview

This lecture provides an introduction to each of the following aspects of design for interactivity:

- Interaction design

- Users

- Design Imperatives

It concludes with a practice activity that will help you finalize your preparations for class.

Introduction

Designing for interactivity is simultaneously quite simple and quite complex. It's quite simple because it's really all about behavior – which we'll get to in a minute. However, it's more complex than graphic design and sound design for the very same reason: behavior. Before we dive into this notion of what separates interactive media from print media and audiovisual media, let's explore a few different examples.

When you think of interactive media, what comes to mind?

What *is* interactive media?

What *isn't* interactive media?

I can think of quite a few things that qualify as interactive media. Computer games – both 2D and 3D – are certainly examples of interactive media. Kiosks are a common form of interactive media as well. The kiosk[1] pictured at right is an interactive application that allows airline passengers to explore 28 different cities around the world, as well as to find out more information about the partnered airlines. ATMs are another type of kiosk-based interactive media. More and more interactive elements are showing up on modern televisions that are equipped with internet connections.

And, of course, mobile apps are now in the millions.

Interactive infographics and interactive maps are becoming more prevalent in this new age of visual communication. Other forms of interactive media in this vein are information dashboards (such as a web-based financial management application) or geospatial tools such as Google Maps and Google Earth.

This is just the tip of the iceberg.
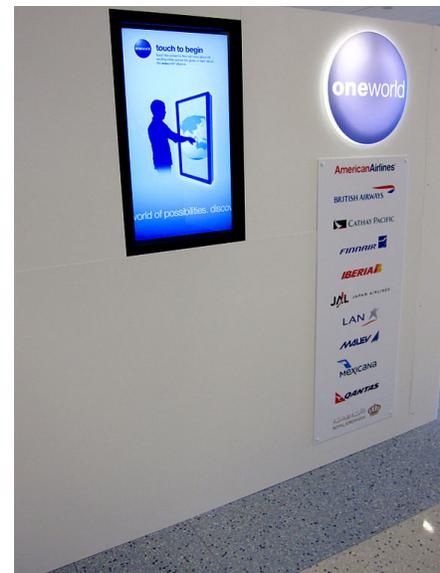
Test Yourself

1. Create your own map using "My Places" in Google Maps. Then, save your map as a KML file and open that file in Google Earth. Look at the similarities and differences between the two geospatial experiences (2D vs. 3D).

2. Do some exploring on the internet and see what sorts of cool interactive infographics you can find. What about interactive maps (other than Google Maps or similar tools)? Make a list of URLs of the cool interactive applications you find and share them with the rest of the class.

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1   Photo credit: FRED (http://commons.wikimedia.org/wiki/File:Oneworld.Travel.Station3.DFW.2009.JPG)

Interaction Design

Even though your understanding of what is and what isn't interactive media is just beginning to form, let's move on to understanding what separates interactive design from graphic design and sound design. As I've already hinted, there is one thing in particular that sets interactive design apart from these other types of design: Behavior.

Look to the diagram shown at right. In interactive design, behavior is directly related to form and meaning (based on the elements used in the design process). Before we move on to officially define interactive design, can you think of how these three factors – form, meaning, and behavior – are related in the context of interactivity?
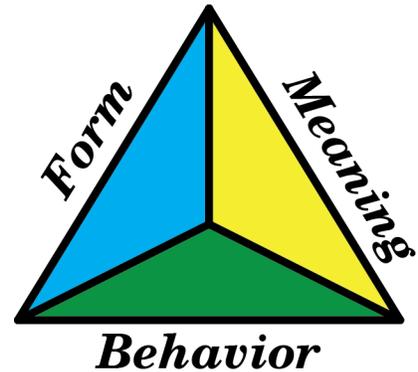
Also, before we move on, I must mention that a majority of the conceptual content of this lecture is derived from a single text: *About Face 3: The Essentials of Interaction Design* by Cooper, Reiman, and Cronin. It's a hefty tome that is considered to be one of the "bibles" of the field. I personally think it's one of the better conceptual approaches to interactive design.

Definition of Interactive Design

As with all the other definitions that we've approached in all of the lectures for this course, the definition of interactive design that follows is not the only definition out there (by far!), but I think it's a pretty good one:

> Interactive design is the definition and design of the behavior of artifacts, environments, and systems – as well as the formal elements that are requisite in the communication of such behavior.

If we pick apart the definition, we can see that behavior always comes first in the interactive design process, with the formal elements (and the meaning inherent in the use of those formal elements) used to achieve the desired behaviors.

Remember, behavior always comes first.

Additionally, there are two main types of behaviors that must be designed (or, more accurately, *accommodated for*). These two categories of behavior are:

- The User's Behaviors
- The Application's Behaviors

In the following section, we'll cover some basic concepts about users and their behaviors, and then in the section after that (on Design Imperatives) we'll approach a few aspects of application behaviors.

Users

Understanding and accommodating the behaviors of the users in your targeted audience is the most important aspect of interactive design. If you can't support existing behaviors, then it's highly unlikely that you'll be able to convince users to behave the way you'd like for them to (via design) without coercion.

And coercion is bad, kids, m'kay?[2]

Seriously, though, with interaction design, the user(s) should always come first in the design decision-making process. To put it another way, humans are more important than technology. Always. Any technology that exists was designed and brought into existence by us. Therefore, it should go without saying that any technology we build – including virtual technologies such as interactive media – should serve us. We should not serve the technology. We'll get more into this argument in the last section of this lecture.

To reiterate: Humans are *always and forever* more important than technology.

Don't *ever* forget this fact.

There is an enormous body of literature in print and online that explores the vast subject of understanding the needs of users in terms of interactive technologies. However, I think a good place to start (and stop, for the purposes of this lecture) is a brief foray into the three basic categories of users.

Three Categories of Users: Beginners, Intermediates, and Experts

As you might have guessed from the sub-heading, the three categories of users for any interactive application: beginners, intermediates, and experts. The table below describes some basic differences between the three categories.

Beginners	Intermediates	Experts
These users essentially have no idea how to use whatever interactive application it is that you've designed – or they've just never used it before.	These users do a pretty good job interacting with the application/media, but they forget how to do things all the time.	These users are considered pros or "power users" and they are typically so proficient with the interactive application that they are always looking for shortcuts to optimize and/or increase their workflow.

For example, think about Google Earth. A beginner user has either never used Google Earth before and opens it for the first time to play around and see what it's all about – or has used it a few times

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2   Sorry, I couldn't resist a South Park joke.

and struggles to figure out all the different tools and options available. An intermediate user has a grasp of all the available tools – such as recording "tours" and using KML files and exploring Earth with the flight simulator. However, the intermediate user is constantly forgetting exactly how to record a tour and has to frequent the integrated help files, forums, and the like to get refreshers on a regular basis. An expert user of Google Earth probably has some aspect of his or her job that requires frequent use of the software application, or they just have a lot of free time to spend exploring Earth and familiarizing themselves with the tools. A good sign of an expert user is someone that can help beginners (and many intermediates) learn how to better use the application without consulting any references.

Keep in mind that most users of almost any interactive application are *perpetual intermediates*. This means that they'll get past the beginner phase and stick with the application to learn several of the tools well enough that all they need is a refresher, but they'll likely never make the transition to expert user.

So, it's a good idea to approach interactive design from the perspective that your perpetually intermediate users need to be happy with their experience concerning the tools and interactivity. And they need to be able to become perpetual intermediates quickly – beginners don't stay beginners for long...they either become intermediates or stop using the application.

However, you need to keep the experts happy, too – assuming that the experience/application you're designing will actually have expert users (or intermediates, for that matter). Can you think of any interactive media applications that don't have experts? The airport kiosk comes to mind. How about casual games? What about an interactive weather tracking dashboard? What about Facebook? What about an ATM – or online/mobile banking services?

Test Yourself

- Pick three applications: 1) a mobile app, 2) a rich internet application (RIA), and 3) a desktop application.

- For each of these three applications, describe specific differences between beginners, intermediates, and experts and how they might use the applications. If there are no experts (or intermediates) for your chosen application, explain why.

Imperatives for Interactive Design

Remember: Humans are *always and forever* more important than technology. This is the third time I've mentioned this sentiment in the lecture. (Yes, it's *that* important.) Based on this ethos, there are four major imperatives for the design of interactive media:

- Ethical

- Purposeful

- Pragmatic

- Elegant

One way to think about these four imperatives is to consider any interactive media application to be a person. If you do this, then the behaviors of the interactive media application can be personified, which makes these behaviors easier for us to judge. We know how humans *should* behave. If we think of these "machines" as humans, we can judge their behavior accordingly.

Design should be Ethical

What does it mean for any interactive application to be *ethical*? Well, in this case, we're talking about *normative* ethics, which basically are concerned with morality of action (or behavior).

To be ethical, the application in question should be considerate, helpful, and do no harm. What makes an application considerate? Can you think of interactive media applications that are helpful? Obviously, if an application is harmful, that's a bad thing. Can you think of applications that are harmful to people?

Additionally, it should improve human situations. In other words, if the application actually creates a burden for humans, then it shouldn't exist – or it should be redesigned in a way that removes the burden. This seems like common sense, right?

Design should be Purposeful

What makes an interactive application have purpose? Well, for starters, it should be useful to humans. If it's not, then then application really doesn't have any valid purpose. And, even if it's a useful application, if humans *can't* use it, then all that usefulness is for naught – so usability is a huge factor of what it means to be a purposefully designed interactive application. If you're curious about usability, Jakob Nielsen's website[3] is a great place to start.

From a practical human perspective, though, what does it mean for an interactive application to be purposeful? If an interactive application helps its users achieve their goals and aspirations, then it can be considered purposeful. Additionally, the application should readily accommodate a variety of user contexts and capacities, which essentially means it should be flexible enough to be usable by anyone that needs to use it (within reason). This directly touches on the issue of accessibility and Section 508[4], which is a topic that could fill an entire course.

Design should be Pragmatic

This imperative is pretty simple and straightforward.

Any design that stays in the design phase and never gets developed and implemented – no matter how ethical, purposeful, and elegant it may be – is useless. If it doesn't actually exist in tangible, usable form, then what's the point? If you've got a good design, it needs to come to life, and it needs to satisfy the needs of all stakeholders involved in the process.

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3   http://www.useit.com/
4   http://www.section508.gov/

Design should be Elegant

At first glance, the elegance of any interactive application could be based on its efficiency and effectiveness in achieving its goals, and the level of artfulness in which this goal achievement happens. In other words, elegant interactive applications are beautiful – in a functional[5] sense.

Sure, it's beautiful. But what does that really mean?

The interactive application should provide the simplest complete solution to the problem it's intending to help humans solve. It should have internal coherence, which means it is self-revealing and understandable – which means that users should be able to simply learn the application intuitively as they use it, without breaking the flow to go and look at any sort of supplementary help system.

Finally, to be elegant, the application should appropriately accommodate and stimulate the user's cognition and emotion. This means that the user should be encouraged to think when engaging with the application, and it should also be emotionally rewarding. If the application feels bad or boring, it is far from elegant.

Test Yourself

1. Obviously, these four design imperatives are ideals, and perfection across all four categories is rarely achieved. Can you think of any examples that have even come close? If so, describe why said application is elegant, based on the four imperatives. If you can't think of any, then pick any interactive application and describe why it doesn't meet the imperatives. Be specific.

2. Think about your upcoming Interactive Map project. Describe how it can meet these four design imperatives.

Prepare for Class

Sketch a few interactive flowcharts for the Interactive Map you're going to make. Think about your interactive map as a person, and how it would behave when interacting with a real person (the user).

Draw out several scenarios of use. This is not a sketch of what the map would look like, but several flowcharts that document the interactive "conversation" between the user and the map (and all the inherent tools and content).

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5 http://www.visualcomplexity.com/vc/blog/?p=984