

On Virtuality & Reality

I try to find and enunciate an interesting framework for thinking about the quarter's presentations. Since the presentations themselves are independent and distinct, this framework is not so much an outline for understanding them as a whole as it is a suggested way of thinking about design computing in general. It may prove useful for the particular collection of presentations this quarter, or not. We will discuss.

The term "virtual" is used in computing to describe not something which is "nearly" another (as in "He's virtually dead, Jim") but something that "acts like" another (as in "Your USB thumb-drive is a virtual disk" or "Your computer uses space on the hard disk as virtual memory"). That is, it presents a behavior that is like something else. So, "virtuality" describes the fact that computers "act like" something else. In fact, *virtuality* is an essential aspect of modern computing, as your laptop morphs from "drawing board" to "typewriter" to "spreadsheet" to "radio" to "phone" to "stereo", etc.

Reality, of course, is familiar to us, though philosophical debates have raged for centuries about the *nature* of reality (Platonic "forms"?), its objective *existence* (Descartes' "I think, therefore I am"), how we *know*, how we *learn*, how we *communicate*, etc. Without jumping into that can of worms, we might ask what reality has to do with design.

Combining these two suggests that "virtual reality" is something that "acts like reality." The idea is powerful and alluring, but the juxtaposition raises a number of interesting questions too. "Acts like" is different from "is." We might "act like" Romeo or Juliet during a play, but we don't become them—we don't lose our own discrete identity and we don't actually commit suicide. To what extent must we "act like" something to achieve virtuality? What features of the reality must we replicate? To what extent are the answers to these questions cultural (set by upbringing) as opposed to cognitive (fundamental to our mind/body)? Several years ago, when WIMP GUIs such as the Macintosh's were new, I had a student who was genuinely disturbed because no matter how many files they dropped in a "folder" it didn't bulge like a paper file would when full of stuff. Since I thought of a folder as a "virtual directory" on the disk, merely a means of organizing files in an hierarchical structure, I'd never had this thought and it caught me by surprise. But the more I thought about it, the more valuable it seems. The fact that we get used to "bulgeless folders" is a reflection of culture. It's also an opportunity. How many times have you looked at a set of folders on your desktop and wondered which ones had lots of files, or not very many? Or picked up a thumb-drive and wondered how full it was?

Being virtual is being familiar. Virtual disk. Virtual memory. Virtual folder. Virtual stereo. These virtualities allow us to adopt, accept, and manipulate new technology without having to master issues like bit rates of MP3 codecs, paging models for virtual memory, etc. We get to pretend that the virtual thing is "just like" the familiar thing that it emulates. No (or little) learning curve. No problems.

Of course, whenever something is "like" something else, issues of identity and reality creep in. If you are "just like" someone else, you are being categorized. The practice of "profiling" in law-enforcement and national-security is a form of possibly pathological virtuality. The gap between "virtual" and "real" may obscure other pathologies too: Virtual memory systems experience "thrashing" at times, a condition in which they spend all their time moving data in and out of real memory rather than getting work done; I can play MP3 files through

my “remote speakers” but not AIFF files, which only makes sense if the “Airport Express” gizmo connected to the remote speakers is actually a small computer with a built-in MP3 decoder and a network interface.

What is the difference between virtuality and reality? For computing used in a “general purpose” computer like a laptop or a desktop, it is the fact that your machine can switch between different behaviors (from browser to word-processor to CAD system) without physical changes. But if I embed a small computer in a device, like a DSL modem or a toaster, and give it a limited set of input and output devices (LEDs, reset buttons, network interfaces, or a “lighter-darker” knob) is it a “real” toaster (makes real toast!) or a virtual one (just acting like)? At some point, when computation becomes part of the root behavior of something rather than an adopted behavior, perhaps it “becomes real”? In the VR research community there is a quality called “presence” which is used to describe the degree to which participants feel that they are “in” the synthetic environment rather than the one their bodies inhabit. By that test, users of video games and even individuals so engrossed in watching TV that they’ve “shut off the outside world” are in a virtual reality? What are the useful distinctions to make?

If “virtual” means “behaves like,” it implies that we have a representation of the thing in question, a model of what it should do, against which to test current behavior. These models are cultural creations. They can evolve. They change as we experience and learn things. They may be different for people with different cultural backgrounds. For example, hand-held computers that act like phones or MP3 players might be much easier for the general public to accept than hand-held computers that act like computers. Maybe this explains why the Apple “Newton,” introduced a decade ago, flopped, while smart phones and iPods have not. When cast iron was first introduced, it was often used to fabricate imitation logs, a familiar form made from an unfamiliar material.

It seems that “a design” (the noun) is a description (a model) of something that “acts like” (within certain limits) the proposed real thing (building, etc.). That is, architects and other designers have been dealing with virtual reality for a long time, subjecting models (designs) to various types of evaluation (checking to see how they “act” thermally, structurally, visually, etc).

Is this is a fruitful way of thinking about design? The “virtual building” is, of course, a real thing as well, in the same sense that 2D physical drawings are real, though they express a design that we might think of as the virtual building. The bits and bytes on the hard drive are quite real. It is their interpretation that involves virtuality. There are exhibits of “un-built work,” competitions to “propose” solutions to design problems, as well as designs “in progress”, etc. The propositions and un-built designs are an end in themselves, as well as a means to an end. Does this change the way we value or evaluate them? Are architects so attached to their media that they cannot adopt a new means of expressing design intent—a new model? Is there a uniquely architectural relationship between design, virtuality and reality?

A colleague has used the term “cybrid” to describe a hybrid of digital (cyber, virtual) and real environments. His particular interests lies in hybrids of spaces—physical buildings with real-time web presences, possibly exhibiting additional floors or services not available in the physical. It is an interesting concept in a world increasingly computer-mediated. Such a concept sparks many questions about (noun) design. I wonder what the cybrid relationship is for (verb) design?