

# Reflections on the Screen: Thoughts on Representation and Design

Brian Johnson, January 2, 2006

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Arch 484 always brings a series of speakers. This quarter, as an experiment, we expect most of the talks to be coupled to the general topic of *representation and design*. The starting point for this exploration is three-part: the simple observation that digital representations are rapidly overwhelming and often displacing traditional representations in the practice of architecture, causing concerns amongst faculty due to the deep connection that designers have with their drawings, set against a deep belief that we can benefit from considering what is gained, lost and unchanged in this process. In studio, where instructors often specify the media you work with, the question is whether it is desirable or appropriate to require the use of traditional or digital media. As a researcher trying to enhance digital design tools, I believe we need to understand what goes on in your mind as you sketch and how that might be hindered/helped/changed by those tools. As a faculty members, we all see a limited number of courses into which we pack tremendous amounts of cognitive and skill development and wonder what the right strategy is. Important questions abound: Do you need to learn to draw by hand before you lean to use a CAD or modeling program? Should be guide/limit your media choices? Would a more limited suite of software be better? What's the best way to **do** and **present** design with digital tools? etc.

So, what do you see on your computer screen? traces of the "virtual world" of the computer? reflections of the windows in the room? a vision of the future? perhaps a glimpse of yourself, reflected in the display? The computer screen is both a means of access to the powers of the computer and a barrier between us and that world. It is both a challenge to the traditions of production and a new means of production that may outstrip the

old. It may seem to be, and even be marketed as, a one-to-one replacement for drafting, but it is no more a simple replacement than is concrete a simple replacement for stone. Sure, it might be used as a replacement, but it can do more, and the means of its production have additional implications. And it doesn't look the same. It changes things.

Change can be good. Change can be bad. Before we simply embrace change or resist change, we should try to understand what is changing, what we can do about it, if anything, and what we think about it. That takes knowledge, insight, and reflection. After all, that's the only way we see ourselves.

Drawing is a fundamental human activity. Some of the earliest known sites of human habitation, such as the Lascaux caves, are known primarily through their visual remains. They reveal a rich tradition and subtlety of visual communication. Like speech and gesture, drawing appears to be an innate form of human expression.

Drawing is fundamental, but not simple. In fact, drawing analysis often borrows linguistic terminology, making the distinction between "syntax" (the rules for structuring expression) and "semantics" (the meaning of the expression). Certainly, it seems to have distinct languages, dialects, and other cultural traditions. Architecture students, despite nearly two decades of experience with drawing in the broader cultural context, are explicitly trained in the syntactic and semantic particulars of their subculture's drawing language. Further, there are differences between "sketches" and "presentation drawings" - in fact there's a whole set of drawing types, from concept sketches to schematic drawings to analytiques.

Drawing is sometimes portrayed as a form of thinking. How does this externalization of information help design? Is it really

necessary? Frank Lloyd Wright is reputed to have drawn up the designs for some projects in a matter of hours, after “working” on the projects (in his head?) for months. What was going on in his mind? What role did drawing play in this scenario? Persuasion of the client? Recording a ‘finished’ design?

On the other hand, if we are presented with a set of interrelated geometrical conditions and asked to resolve a geometrical question (Can the cabinet fit up the stairs? Is there enough room to turn around in the bathroom? Can you see the trash area from the living room?), drawings often provide the quickest and surest means to reach an answer.

Now, consider this comment I once encountered in a paper about CAD systems (paraphrasing from memory), “With the CAD system the lines are all perfectly drawn, I cannot tell if they were created by an inexperienced draftsman or an architect with many years of practice.” This comment brings up the so-called “latent” or “implicit” content of drawings, the information that we read into the physical artifact through what we know about the production history and process. It also speaks to the value we place on that information—the writer of this particular paper was willing to trust the details of a skilled draftsman more than the details of a neophyte! It’s as if your skill with line weight and lettering somehow reveals your CV! My objection to this comment at the time was that skillful CAD use *also* shows in the finished drawing. Experienced users express their experience through more control of dimensions, text placement, etc. I’m not sure either measure of experience is a good one for trusting the semantic content of the drawing (the actual building detail), and they are certainly different from each other, which disrupts our “reading” ability, but in both cases we are assigning meaning to the drawing beyond the configuration of materials which it portrays.

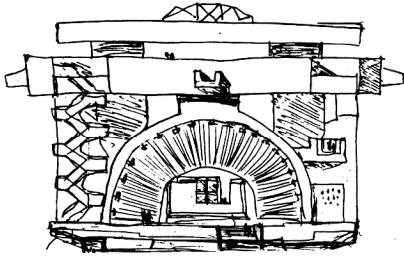
Drawing is also Power. Drawings are often the primary vehicle of persuasion of clients, design review boards, critics. A good sketch can be quite persuasive (think of Victor Steinbrueck's sketches of the Pike Place



Market). Architects are one of our culture's sanctioned "makers of drawings". It's quite a romantic notion, repeated in such popular literature as Ayan Rand's Atlas Shrugged, and architects are certainly aware of it. There was a JAE article a few years ago in which the author disputed LeCorbusier's own recounting of the drawings in his sketch books regarding the initial ideas for Ronchamp. Corbu's telling was far more romantic and inspired than the author's reconstruction from an analysis of the drawings themselves. Designers who "came up" in the era of hand drawing must have very ambivalent attitudes about a technology that threatens that status.

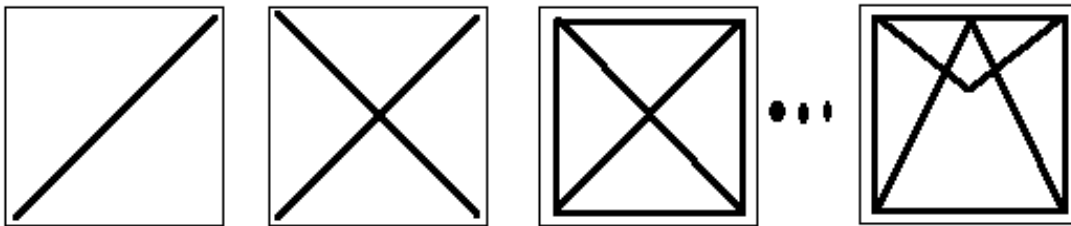
Drawing can more directly impose power too. Most of you will be aware of a tradition practiced at some architecture schools, largely dying out, which is the tradition of drawing on a student's work during a design review. The purpose of such actions was to teach the student not to over-value the drawings themselves (probably a good thing) but it also represents an act of violent power and (presumed) superiority. Even without the ego-crushing impact of having a critic scrawl over your work, design education uses the power and status relationships of drawing. In desk-crits the studio critic is often explaining something or challenging a student through drawings. The individual with the "hot hand" who can skillfully render complex three-dimensional scenes quickly is *presumed* to have great design

skill as well. Skill with drawing establishes power relationships in architecture school and in architectural practice.



As mentioned, while humans use spoken and written language extensively, we are very visual creatures too—perhaps more visual than verbal. This Paolo Soleri sketch probably says “Arcosanti” as well as the word. In fact, humans are so good at visually reading faces

for mood, familiarity, etc. that complex data is sometimes depicted in the form of cartoon faces for quick communication. Perhaps drawing helps us feed-back, or recycle, imagery, helping to uncover and bring out “emergent form”—that cognitive ability to see new patterns in old data, to re-interpret and “discover” new ideas. Can computers even do that?



Architects design buildings, right? Of course, drawings are also a product of the practice of architecture. Sometimes they are the only product. Competition entries, speculative projects, abandoned projects—all involve drawings that are never realized as buildings. The question of tacit content of drawings has already been raised, as has the issue of “love of drawings” being a distraction. We ought not to underestimate the strength of the relationship between architects and their drawings. In the mid 1980’s there was a CAD system named RUCAPS that could automatically draw plans, elevations and sections from a building database (BIM before BIM). However, the drawings had a fairly dry, sterile look. They lacked the rich texture of hand-drawn

graphics, the kind you might frame and hang on the wall. Hmm... (it might still be an open question as to whether that extra drawing data gets a better, or more expensive, building built).

Of course, traditional drawings come in different scales, too, and the choice of scale carries its own semantic baggage. We know it is pointless to measure stair treads for code compliance on a 1/16" scale drawing. We know that wall thicknesses on an 1/8" drawing, or even a 1/4" drawing, are only approximate. We know that a hand-drawn line that wavers is probably representing an approximate location for a straight wall. In other words, we know that the valid semantic content is tied to the limits of production. That's because our pens and pencils aren't that sharp, our hands aren't that steady, and our eyes aren't that clear. CAD drawings are different. Coordinates are precise and unchanging at any scale (though it might be hard/impossible to read the resulting mish-mash of lines). Lines are straight and uniform (to the limits of the raster display/plotter).

If buildings are frozen music, drawings are frozen gesture. And, for a mime, gesture is all. The evocation of place, mood, motion, and material that can be found through drawing is undeniable. But a quick sketch of a 13<sup>th</sup> century square is a far different thing from a measured drawing of the same square. Perhaps they are no more comparable than a poem and an academic paper?

There is a tremendous little known geography reflected in the screen. So many modes of thinking about and representing space, our place in space; our understandings of space, place, and architecture: words, photographs, sounds, drawings, CAD files, memories, tactile textures. The talks this quarter will touch on some of these, putting dots on the map of this geography. Your job, now and in the years to come, will be to connect some dots in a workable way, and perhaps add some new one of your own.