

## (Mis)Behaviors of Drawing

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### DRAWING IS LIBERATED FROM SINGLE SURFACES & SIDES

Digital drawing prompts a recalibration of literal and figurative depth. While the literal three-dimensional drawing is not a new invention, digital drawing has expanded the range of literal depth down to the millimeter, the “thinness” of a laser cut beam that has the ability to etch as opposed to cut a surface. Moving in the opposite scalar direction, etched markings provide a tight or loose base for the genesis of 3-dimensional physical material to emerge from the drawing plane. What we once understood to have infinite flatness now has the potential to create volumetric fields with extreme ranges of literal depth.

Figuratively, digital drawing may disregard adherence to one side of the canvas versus another. Digital drawing occupies two sides or more (within a three-dimensional construct) through the use of thick material and layered assemblies without losing legibility and precision. Analog drawing relies on the opacity of the paper, is relegated to the thinness of the sheet, and requires immediate adjacency to the next sheet layer in order to maintain legibility. Freed from these constraints, digital drawing offers up new techniques for synthesizing machined line work with physical markings and artifacts. In Figure 1, synthesis occurs through a student-coined technique where ink is hand laid into the etched markings on a series of layered and assembled acrylic canvases.

### DRAWING NEVER LOSES ITS COOL

Digital drawing initiates the resurrection of historical precedents that may not otherwise prompt a sec-

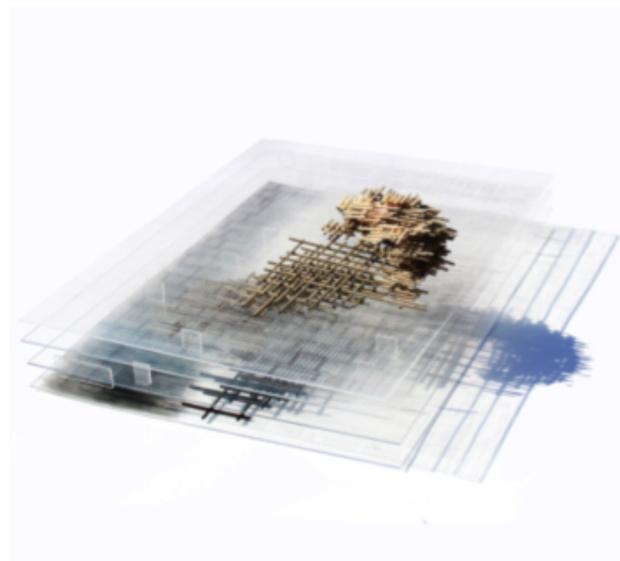


Figure 1. 3d-Drawing / Model Hybrid

ond look. As evidenced from prior research done in the first year graduate studio at the University of Illinois at Chicago taught by Paul Preissner, the act of mimicry as a learning methodology is currently underway. Earlier studio agendas of Preissner’s reproduced Peter Eisenman’s House VI, Fourteen Transformations drawings as source material for the design and transformation a new house proposal. The act of reproduction reinforces the process of critically *looking* at a drawing, fostering an awareness of the details, intentional marks, and of course uncovering mistakes by the original author. The drawings must be accurately reconstructed in order to fully understand them. According to Rossi himself, the copy is certainly intrinsic to the work itself.<sup>1</sup>

While both the Rossi drawings and the Eisenman drawings are problematic because they attempt to digitize work that was originally produced by analog methods, Rossi's drawings present a different problem from the Eisenman drawings in the act of reproduction. The Rossi drawings require a restructuring of the angle of view and the relationship to the drawing plane from drawing to drawing and often between objects within the same drawing. This act of restructuring immediately alters the reproduction to that of a forgery, a close copy of the original that was obviously constructed by a foreign hand. In the Eisenman drawings, the angle of view is a consistent axonometric birds eye between drawings and objects within the scene. This view angle also happens to be the default viewport in digital environments making it a convenient auto-correct tool in the act of the reproduction. Object snaps can be activated and orthographic construction controls enabled in order to secure a consistently precise view. While the Rossi drawings appear simple, almost childlike at first glance, decisions on the part of the forger must be made at each step of the reproduction, moving the resultant drawing further from the original. Differentiating slight variations between an exaggeratedly shallow perspective and an orthographic axonometric drawing requires the production of an additional set of construction lines (vanishing lines, horizon lines, etc.) which act as both an analytical device for the original drawing as well as a tracking device for the forgery itself.



Figure 2. Aldo Rossi forgery drawings

### DRAWING STOPS WATCHING ITS WEIGHT

When a drawing is relieved of its duty as a binding contract between architect and contractor it becomes an object of interpretation as opposed to a tool for communication. For both analog and digital drawings, this means the rules of the drawing game relax. The rigors of conventions (line weights, layers, composition, and organization) as communicative tools are no longer intended as a code of commonly understood and shared instructions to be followed. Instead the drawing becomes an interpretive narrative between author and observer. Below, architect and educator Jimenez Lai draws inspiration from Archigram, John Hedjuk and others in an effort to construct a narrative through formalized architectural conventions and illustration techniques more akin to a manga comic book than to the conventional architectural drawing set. Lai's work subverts the linearity of narrative by avoiding consistency of views (the plan and the section are allowed to occupy the same picture frame simultaneously) and opens up new territory for the way we *read* a drawing and ultimately a projects conceptual agenda.

### DRAWING "PROCESS" IS NOT PROCESSING

Processing and scripting in architecture is ubiquitous. It appears in the form of patterns, varied repetition, and in its most common physical form, panelization. It allows for analysis through the simulation of environmental conditions on a building such as solar angles, heat absorption rates, and wind variations. While the use of these tools to produce controlled customization and viable analysis are commonplace, the use of computational processing as a tool for codifying the *process* (method of production) of a drawing project is equally valid and seemingly less investigated.

The work of Casey Reas, a pioneer in computation-based drawing, has most exhaustively unleashed the potential for drawing through processing by scripting rules into the computational instructions that are aligned more closely with analog methods than digital. Reas' drawings as an end product are produced solely through machined means. However the process of conceiving of these drawings as well as their development is not nearly as far from the methods one might use in analog production. Reas's process allows for intuition. Sketching, erasing, and composing, are acts not forbidden in

his process and in fact these built-in errors become parameters for the code itself.

### DRAWING IS MATERIAL

Drawing is relieved of two prior obligations when it becomes material. First, the drawing as a set of instructions or construction drawings no longer needs to be divorced (physically separated) from the object(s) it is intended to produce. The output of alphanumeric information in the service of assembly instructions for anyone other than the original author of the drawing is now possible through digital fabrication methods. These methods take on form in physical space as they are engraved, adhered, and stamped into the building material itself. This allows for the continuous tracking of the assembly of parts and a direct 1:1 relationship between instructions and assemblage. In the Dragonfly installation at SCI-Arc by Tom Wiscomb/Emmergent the drawing information was physically transcribed onto the intersections of each part, easing discrepancies between architect, fabricators and the assembly team. There is a side effect to this process, in that that the literal drawings, those produced on paper, become an artifact of the design process and a reinforcement of the projects conceptual agenda as opposed to a necessary technical document or binding contract between architect and fabricator.

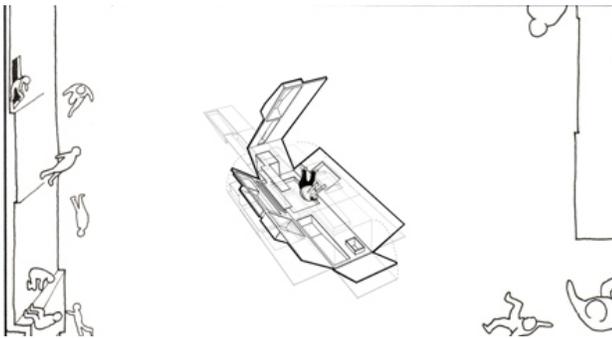


Figure 3. The Abstraction of Living drawing by Jimenez Lai

### DRAWING EXPANDS ITS TERRITORY WHEN MATERIALIZED

Drawing moves beyond the graphic and into the tactile and scalable when two-dimensional data is processed and output onto three-dimensional material. Prior to the mating of digital design and digital fabrication -- and well illustrated in Sol Lewitt's

"Wall Drawings" from the late 1960's -- the idea of producing a set of instructions or *rules* intended for other artists or artists assistants to play out provoked a level of uncertainty in the final work. Richard Lacayo's critique of Lewitt's retrospective at The Massachusetts Museum of Contemporary Art which included 105 of the Wall Drawings was that a great LeWitt wall drawing may start like an algebra lesson, but ends like a Renaissance fresco.<sup>2</sup>

Often for Lewitt the end product was of no importance. In fact he may not have seen many of his drawings in their completion, as he never materialized them personally. For Lewitt, the end game was the set of rules as scripted not their sum.

However, for architects such as Freeland Buck, the relinquishing of control of the rule set lies not in another set of physical hands but in the mechanical modes of production they employ. Machines take on the equivalent role of Lewitt's assistants, playing out the rule sets, albeit not without interpretation. Given the level of precision possible with digital fabrication, one would assume a 1:1 result -- what we see in on the screen is what we should see on the wall. However, a high degree of indeterminacy still exists. The tooling selections, the material properties, the reaction of material to the tool (burning, cracking, peeling, etc.) are all a result of the drawing as a manufactured physical artifact, not as a two-dimensional line drawing viewed on-screen. The sum of these effects is always more than their two-dimensional pre-visualization as they produce varied shades, gradients, and depth not present in the 2-dimensional drawing.



Figure 4. Freeland Buck's CNC-milled wall surface at Earl's Gourmet

## DRAWING ISN'T SHY ABOUT BEING CUTE

Drawings as diagram, illustration, and instruction offer an ease of accessibility to volumes of research. In Farshid Moussavi's *The Function of Ornament* and *The Function of Form*, typological research is cataloged in an encyclopedic collection of drawings. These drawings maintain a consistent aesthetic; views are established that allow the viewer to register major as well as minor differences between types, and most importantly, complexity is rendered using the least amount of lines possible. There is nothing more provided to us than what we need to relate the text of the concept to its graphic counterpart. This type of drawing does not rely on the more is more model where density trumps content or legibility.

Easy access to content or ideology within a drawing has other merits that lie in the dexterity of communication between multiple audiences. At Atelier Bow-Wow the representational quality of the work typically synthesizes stylish occupants (outline figures) going about the intended activities for which the space has been designed with technical information that would be best understood by a contractor. This approach produces a drawing that is at once multilingual as well as specific to a desired client or end user, so the result appeals to a wide audience. The drawings exude a sense of informality that contrasts and also complements the structural detailing and complex assemblies of material shown in the building section. They are dimensional and noted to the millimeter to convey legitimate building information to the contractor, yet they suggest an ambiguous scale in the way real materials such as wood paneling, plants, and interior accoutrement are rendered too big, too small or simply too cartoonish for the proposal to invoke any second guessing on the part of the client. These drawings charm us into believing that architecture will always come in on time and on budget, and remain as innocuous a process as we have always claimed.

## DRAWING MAKES PROMISES IT CAN'T IMMEDIATELY KEEP

In Jeffrey Kipnis' introduction to *Perfect Acts of Architecture*, he suggests that "the architectural drawing as end work can function in any of three ways: as an innovative design tool, as the articulation of a new idea, or as a creation of consum-

mate artistic merit."<sup>3</sup> Each perfect act as selected by Kipnis is carefully cropped to show the project in drawing form only, as if it was never materialized in built form. Some of the drawing concepts materialized later in the architects' careers. Some remained closer to the exploratory agenda in *Perfect Acts* such as Eisenman's House VI, and others mutated over time as in the case of Daniel Libeskind's "Micromegas" whose dense intersections of line work later manifest in the Jewish Museum in Berlin. Here, the drawing becomes a catapult for invention, leaving behind the expectations of convention, buildability, or financial burdens. The drawing is liberated from critique in this case, as it is always a proto-document of something that is not quite finished – an act still underway in the eye of the author.

## FIGURE REFERENCES

Figure 1: Photo by Anna Asatryan

Figure 2: Photo by Kelly Bair

Figure 3: Image by Jimenez Lai

Figure 4: Photo by Lawrence Anderson Photography, Inc.

## ENDNOTES

1 Rossi, Aldo, *A Scientific Autobiography* (Cambridge, MA : MIT Press,1981), p.83.

2 Lacayo, Richard. Sol LeWitt's Dazzling Line Drawings. *Time* magazine, November 17, 2008.

3 Kipni, Jeffrey, *Perfect Acts of Architecture* (The Museum of Modern Art, New York, 2001), p.14.