

REPRESENTATION IN A TIME OF RE-PRESENTATION

Design media processes in architectural education

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Abstract. This paper examines what is appropriate and valuable to include in architectural education in light of changing representational conventions and techniques. Architecture finds itself at a unique moment in time where the means of production for the profession, and indeed the entire discipline, are transforming and fundamentally undermine the existing models of education, production and understanding. The threat to architecture education is that architecture becomes learned techniques rather than a way of operating within a body of knowledge that grows and responds to its context. These digital media processes offer contemporary education new and challenging ways to communicate ideas, sometimes subverting the imperative for “drawing” as the representation does not refer to information in the abstract, but IS the information quite literally.

Keywords. Design education; design theory; digital design representation.

1. Introduction

Abstraction and its role in architectural representation have traditionally been about fragmentation and isolation of the parts from the whole. Contemporary educational models presume this relationship of the parts to the whole.

Digital design media re-presents design information as a context driven, anti-fragmentation design process that is dependent on contextual relationships in increasingly simulation based modelling environments and fundamentally reconceives the relationship of the whole through the parts. Speculation about this shift provokes a critical debate about the possibilities and pitfalls of a new trajectory suggested by digital education and practice.

Traditional representational conventions of communication like plan, section and elevation are fundamental to the way architects are educated. When avant-guard practitioners such as Thom Mayne proclaim “I haven’t drawn a plan in five years” (Mayne, 2006), they expose a significant issue of digital practice’s effect on education. Digital modeling fundamentally subverts plan thinking by prioritising a three-dimensional view of the world. While seasoned practitioners may not need to work in plan, does an education in that form of abstract thinking still serve them well? To find way forward academics might be well served to expose debate or hybridised transition in the design studio projects themselves. Figure 1 is an example of this hybridised transition where the rules of elevation (a projected orthographic isolated instance) are still at play, but spatial and contextual information are also revealed. This simultaneity is achieved through a conflated “side-view” of the 3-d model and selected use of transparency.

Does architectural education still require representational abstraction in this age of digital design techniques, methods and processes that privilege simulation as the model of architectural production? What are the issues and knowledge that academia should now address to enable the novel transformation of methods of communication emergent in the digital design proc-

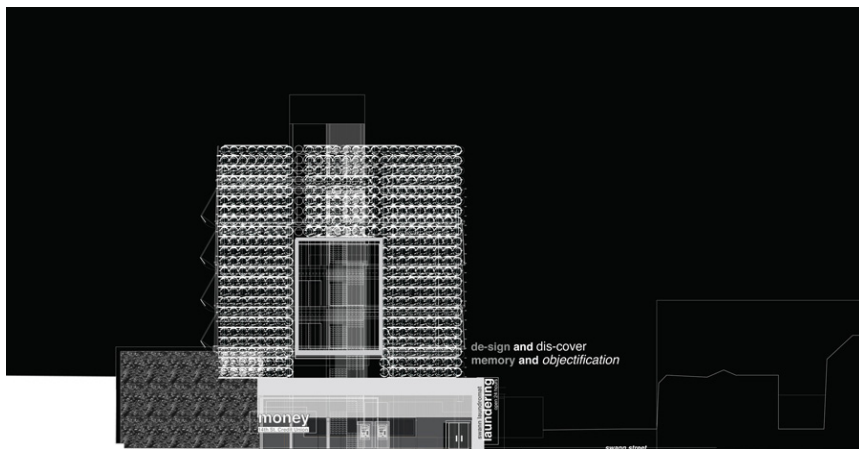


Figure 1. Hybridised transition of spatialised elevation – Lisa LaCharité-Lostritto, 2009.

esses of contemporary practice and education? Many academics and scholars favor a reductionist approach (Guidera, 2006) that mediates the complexities and simultaneities that digital media brings to bear. Perhaps academia might hybridise existing educational models with the goals of integrated practice and reprioritise the value of technologies and processes and the presumptive connection of architectural design and representation.

2. Representation and re-presentation

Architecture is a way of seeing and thinking that privileges visual communication that oscillates between abstract and literal systems. Here abstract systems are understood as representational conditions whereby the very media of design exploration translates ideas. Conversely, literal media are understood as systems that re-present information without representational translation. By using media as more than just a representational system or communicative necessity, media is capable of directing process. Cyclical observation of media processes informs one's design and it is in this reprioritisation of outcomes and expectations that one can be informed by media to direct design process. This leverages media as a way to evaluate and inform the architectural design process.

This division of abstract and literal methods of communication provides the opportunity to construct a design process working non-linearly in explicit systemic, conditional and metaphorical operations. Speculative design methods develop across a series of disparate media processes that are structured, rather than dictated, by the particular architectural issues of visual communication. Accommodating and embracing a diverse and complex range of issues of input and testing the variable levels of output lead to novel outcomes in the form of new discrete ideas and compositions.

Contemporary architecture continues to value the Modern position that multiplicitous phenomenon are symptomatic of valuable and interesting complexities (Venturi, 1966). The analog design processes of mid-century Modernism persist in the instruction of architectural design. The challenge to effectively introduce contemporary digital media towards new and speculative types of architectural communication remains to be explored.

3. Design media processes

The conventional practice of architecture today assumes a traditional set of orthographic projections (plan, section, elevation, etc.) at varied scales and levels of detail, that when taken in concert signifies a whole, complete idea of a building. Contemporary architectural practice assumes a simple one-to-one

correspondence between design intent and interpretation, between the representation of ideas and the interpretation of the design of buildings. Contemporary models in architecture education reveal this assumption, these abstract, fragmented representations of the building and its components rely on reductive syntactic connections (Lonna, 1997) where each abstraction is part of a dissected whole. Taken as a summation these fragments exceed their individual abstraction and constitute a representational description of the complete building. Digital and computational media conversely begin with the virtual construction (simulation) of the whole, which is then viewed as a series of isolated assemblies of constituent components. Is there an inherent value in the translation of ideas into abstract representation or is there a greater value in transcription of ideas in to a simulated construction?

Students in a graduate design studio were asked to model the shapes, forms and gestures from assigned paintings and in so doing, create spatial interpretations/analyses of the painting. Students were asked to consider a temporal interpretation of the painting to interpret the motion implied by the painting and the elements of motion contained within the compositions. The speculative digital model generated should reveal a specific formal/spatial aesthetic analysis of the original painting. The fundamental components of the paintings- line, tone, shape, color, texture and depth were the parts of the compositional whole, and were often related to the artist's interest in point, line, surface and depth. The visual language of each painting should be expressed in the digital models, the new artefacts of discovery.

In the case of *Taureau III* by Le Corbusier, there are layers that divide the painting into three parts vertically. The color masses give the painting depth,

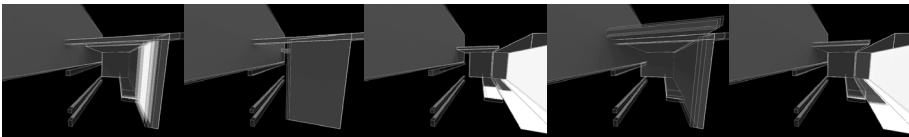


Figure 2. Frames from animate translation of original painting – Lisa LaCharité-Lostritto, 2008.

as some colors read at the forefront while others recede to the back. Within this compositional reading lie many sub-readings, including ideas about time through the morphology of the composition's color regions while presenting all morphological versions simultaneously. The animations illustrated in figure 2 translate the set of morphological regions from the painting into a set of digital volumes, lines, planes, and spaces. In the animation shown in figure 2, faces and points animate based on a repeat behavior temporarily extending, shortening, or inverting the masses. In between each frame are four sub-

frames. These sub-frames trace the paths of the moving faces. Eight animations are made, each with a different composition. The animations are then arrayed into an image sequence. From this, a collection of frames is selected to create a composite animation, as seen in figure 3. The animation shown in figure 3 uses digital video tracking software to produce many new combinations of overlapping frames while incorporating compositional ideas from the original painting. The production controls the time between the frames and emphasises the transition from one frame to another.

The frames chosen from the constructed montage are put together in an action script movie allowing the viewer to choose the composition (figure 4).

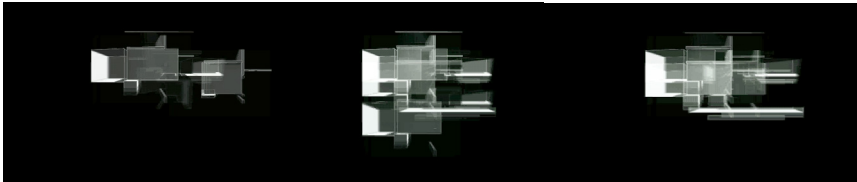


Figure 3. Frames from animate montage of frames from animate translation through analytic processes of rhythm and transition – Lisa LaCharité-Lostritto, 2008.

There are three sets of the same set of compositions. Each set can be changed, scaled, and moved within the virtual frame. This movie provides a way to generate a vast collection of virtual montages. The interaction results in a hybrid experience that is perceived as more physical because it provides a parallel connection between body and other sensory experiences, via the action script interface, similar to interaction with physical space.

The value of these processes of animate dimensional translations lies in their ability to accommodate analyses of non-spatial information. The potential lies in the opportunity to provide a digital path to an authored, developed, and editable system of representation that could produce new representational artefacts to describe spatial speculations rooted in cross-disciplinary ideals. Collage is typically defined as a drawing that is made of an assemblage of different forms in a composition. In architecture, an idea is communicated through the method of assemblage. This can be translated to the idea of animation as a temporal collage. There are co-present layers of line and surface as in a collage, but the connections that the lines make and the characteristics of a surface can change over time in a temporal collage. The method becomes a polymorphism, a combination of ideas and/or operands that create at least two or more related results that may or may not be immediately recognised as related. Many static compositions can hint at the idea of change in time, but cannot create a series of seemingly autonomous compositions linked by time. Montage is typically defined as a drawing that is made of an assemblage of

different forms in a composition. An architectural idea is typically communicated through a method of assemblage, as seen in a typical set of plan, section, and elevation drawings.

There are non-animate applications of collage and assemblage processes that include graphic conditions that conflate modeling, drawing, and typog-

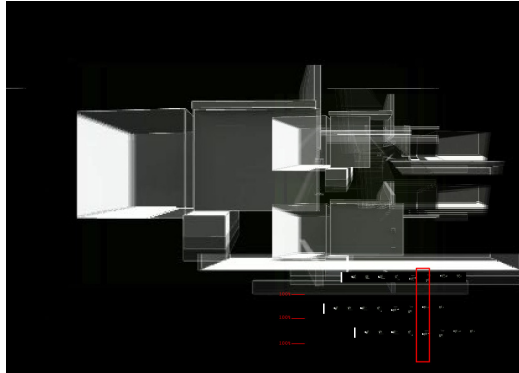


Figure 4. Interactive animate representation of scale, position, and transparency – Lisa LaCharité-Lostritto, 2008.

raphy. These digital media processes have allowed architectural design and graphic design to merge (figure 5) removing the separation between type setting and architectural graphics. The incorporation of text into conceptual architectural drawing was influenced heavily by cultural changes in the twentieth century. Russian constructivist, Kazimir Malevich, a painter and art theoretician, incorporated text by typography and language that indirectly relate to the content of the media, simultaneously sending a message and using the text as structure for the composition and the implication of new spatial interpretations within the image.

Often digital media and computational design shifts focus away from representational development (drawings) and towards formal and spatial development (ideas) through the development of the three-dimensional model. It is this gap between design theory and digital practice that exposes a possible path for engaging digital design media in education that explores how fundamentally new digital conventions of communication might reshape the design process, digital practice and educational priorities. These novel digital conventions of architectural communication will conceptually shift production of architectural ideas and objects like nothing has since orthographic and perspective projection in the 15th and 16th centuries.

4. Process is the product

In the move beyond drawing-centric practice into a dynamic process oriented

digital practice, a new conceptual foundation for architectural thought and production is emerging. A foundation based not on drawn conventions of a representational nature but instead re-representation of design information based on computation and simulation of architectural assemblages. These digital processes are of a non-representational nature, and focus on fluid relationships between design, documentation, conceptual representation and descriptive representation in which digital information (computation), not graphic information (drawing), are the primary medium.

This movement of digital computation and simulation has continued to affect the culture of architecture in many ways. The means of production,

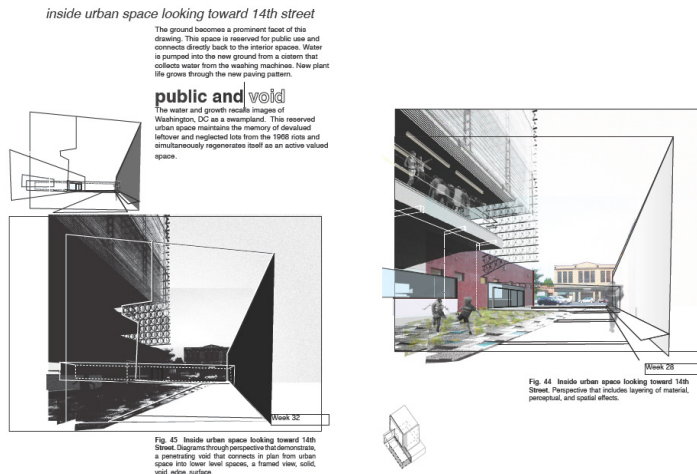


Figure 5. Hybrid representation – re-representation – Lisa LaCharité-Lostritto, 2009
<http://0095b6.com/lacharite/index.php?project/thesis/>.

fabrication, simulation, and 4D project simulations are again expanding the conventional thinking about modes of construction and visual conventions of communication as well. There is simultaneity in exploration of scales, tectonics, and aesthetics. This has changed the meaning of curricula in architectural education. The curriculum has become more of a framework to set up an experience where bodies of knowledge overlap and indirect connections can be made rather than a way to control a body of knowledge.

New conventions of architectural communication that evolve out of digital fabrication information (SHoP, 2004) re-present the computational processes used in the design process. This visual communication or re-representation (figure 4) of design intent demonstrates the fluidity between design process and design product in contemporary digital processes. The novel conventions of digital fabrication are not trying to represent the intention, it IS the

intention. Re-presenting information in its unadulterated truth speaks more accurately to the design process and architectural product liberated from any representational obligation or agenda.

Formal, tectonic, and experiential performative requirements are often the driving force in digital projects and are communicated in each drawing or form of architectural communication simultaneously. The initial stages of their projects are based on the coalescence of the computational study of parameters and restrictions derived from the site, program and requirements of the space that is being designed (SHoP, 2003). This digital modeling analysis generates architecture that informs the spatial, formal, and temporal properties throughout the entire design process. (Rahim, 2002) From this digital model, physical dimensions are extrapolated and recorded on a spreadsheet and software is used to separate the pieces of the digital model and organise them on cut sheets in a way that minimises the amount of materials used. The cut sheets are sent directly to a machine to be cut or produced (SHoP, 2004). There is no need for symbolism or traditional convention to communicate what the piece does or how it looks. The drawing becomes the actual information for the thing itself. These construction drawings can be tied to design as they are rooted in generative geometric processes (McCullough, 2004). The drawings represent the process of designing, the process of making and the process of fabricating.

As evident in the drawings of Dunescape, the temporary installation in the P.S.1 courtyard, the parameters are the dimensional requirements for

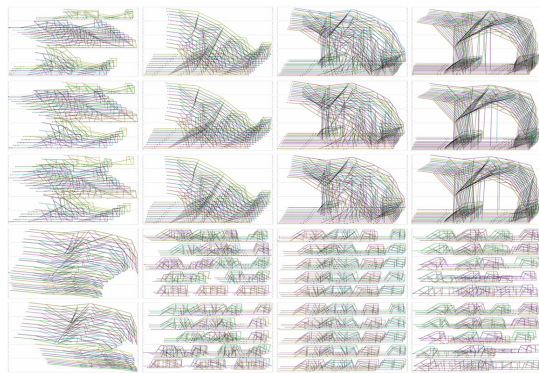


Figure 6. P.S.1. Dunescape 1:1 Conceptual Process/Construction Document information drawings – image courtesy of SHoP Architects, PC.

certain actions (figure 6) or contours drawn as sections, directly resulting in the architectural form. The process is the product; the image at 1:1 is the representation of every component and is literally the construction document for

architectural assembly. These drawings represent the process, fabrication, and form, directly exposing all instances simultaneously.

5. Why does this matter?

The threat to architecture education is that architecture becomes a collection of learned techniques rather than a way of operating within a body of knowledge that grows and responds to context. The application of digital technologies such as BIM, parametric design, and digital fabrication are fundamentally altering the how and what of architectural design.

The possibilities afforded by digital design media and robust computational technologies are increasingly affecting what we make and simultaneously how we make as architects. Increasingly intelligent (or semi-intelligent) digital modeling is replacing (or displacing) digital drawing or representational (un-intelligent) modeling. We see diminishing returns of the value of transforming three-dimensional spatial/formal ideas into two-dimensional conventional abstractions (drawings) of those complex ideas. The basic conventions of architectural visual communication are all based on the predisposition for abstract, two-dimensional communication that has long been a part of architectural education, understanding and practice.

Figure 7 began as a conceptual investigation of ideas and definitions from readings that influenced ideas about the design. Simultaneously, this concep-

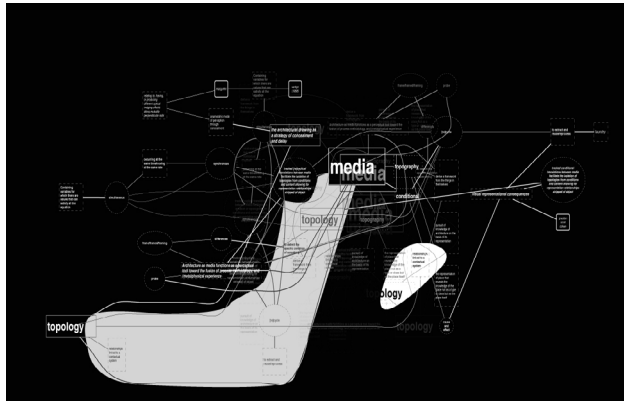


Figure 7. Novel convention of diagram|palimpsest – Lisa LaCharité-Lostritto, 2009
<http://0095b6.com/lacharite/index.php?/project/thesisdiagrams/>

tifies a connection between design processes and products or specific conventional conditions. The media here directs the process of analysis through the process of connection developed in the re-presentation of representational connections in the information presented.

The issues and knowledge that academia addresses to enable novel transformation of methods of communication emergent in the digital design processes of contemporary practice and education challenges existing definitions of representation and re-presentation. There is no longer a set body of knowledge or abstract conventional norms but instead it is a process driven fluctuating body of knowledge that prioritises ways of thinking through media processes that embody design process of any given project in the media used to design. Academia must revisit current curricular approaches and imagine a system that acknowledges the obsolescence of the how and what of that which is taught in today's schools of architecture.

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