

The Post-Medium Condition

Informational asset transfer towards digital- material ingenuity

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Abstract. *Theorists in art, architecture and visual media have described the digital world as a world of mediumlessness and proclaimed that the medium of a work, once the ontological determinant for the classification of the arts, is rendered meaningless by recent technological and cultural developments (Krauss, 2000; Negroponte, 1995; Manovich, 2001). Although indebted to specific media-based techniques and their attendant ideologies, software removes the material reality of techniques to an immaterial condition where the effects of material operations are reproduced abstractly. This paper asserts that a productive approach for digital design can be found in the acknowledgement that the importance of the digital format is not that it de-materializes media, but that it allows for the maximum intermingling of media. A re-conceptualization of media follows from this, defined now as, a set of conventions derived from the material conditions of a given technical support, conventions out of which to develop a form of expressiveness that can be both projective and mnemonic (Krauss, 2000). The paper will focus on the identification of these conventions towards the development of new forms of expressiveness in architecture. Further demonstration of the intermingling of materially-based conventions is carried out in the paper through a comparative analysis of contemporary works of art and architecture, taking installation art as a particular example. A new design approach based on the maximum intermingling of media takes account of integrative strategies towards the digital and the material and sees them as inextricably linked. In the digital “medium” different sets of conventions derived from different material conditions transfer their informational assets producing fully formed, material-digital ingenuity.*

Keywords. *expanded architecture, art practice, material, information, parametric techniques, evolutionary logics.*

Introduction

The Post-Medium Condition describes a space of creative work where material distinctions no longer prevent the transfer of informational assets and techniques from one medium to another. This shift has been acknowledged by theorists in art, architecture and visual media (Krauss, 2000; Negroponte, 1995; Manovich, 2001), who trace it back to the post-war period, when photography was absorbed into critical contemporary art practices. Using photographic strategies, artists transgressed traditional, medium-specific boundaries such as painting, sculpture and fine-art photography. The ubiquitous image, informed by a wide range of aesthetic and technological conventions from Dadaist photomontage to film, went on to dominate both radical art of the late 60s and 70s and mainstream television, film and advertising (Spector, 2000). Digital image space is the apotheosis of this post-media trajectory. Although indebted to specific media-based techniques and their attendant ideologies, software removes the material reality of techniques to an immaterial condition where the effects of material operations are reproduced abstractly. Digital models are created by “lofting,” or “lathing,” manipulated by “slicing,” “bending” or “twisting” and “shrink-wrapped” or “unrolled.” Situated language, for instance, “dodge” and “burn” techniques from the darkroom and “splicing” from the editing room allude to the original (material) source of the technique. A new approach for digital design can be found in the acknowledgement that the importance of the digital format is not that it de-materializes media, but that it allows for the maximum intermingling of media-specific operations, like “twisting” an image or “splicing” together animated models.

A re-conceptualization of media follows from this, defined now as a set of conventions derived from (but not identical to) the material conditions of a given technical support, conventions out of which to develop a form of expressiveness that

can be both projective and mnemonic (Krauss, 1999). A productive design approach based on the maximum intermingling of media takes account of both integrative strategies towards the digital and the material and stochastic phenomena resulting from their interplay. The symbiosis of different sets of conventions derived from different material conditions transfer their informational assets and innovations in the digital medium, producing fully formed, inextricably linked, material-digital ingenuity.

Installation Art

Installation art is exemplary of the post-medium condition. The intermingling of materially-based conventions is well-illustrated in installation art. Its multiple histories and diverse influences, including architecture, performance art, sculpture, cinema, land art and painting develop strategies for the integration of multiple material techniques. Installation art places new emphasis on the first-hand experience of the viewer, a viewer who is not reduced to a disembodied eye, but is quite literally present. In its site-specificity and “supra-sensorial” preoccupations, installation art rehearses many architectural techniques such as those that organize and structure perception. By linking the material with the phenomenal, installation artists transform spatial perceptions through their evocative interventions on floors, walls and other surfaces.

In a review of the 1970 exhibition *Arte Povera*, Land Art, Conceptual Art, at the Galleria Covoca d'Arte Moderna in Turin, Italy, art critic Tommaso Trini warns that anyone not having put into practice Marcel Duchamp's old adage, “Ce sont les regardeurs qui font la peinture” [It is the viewers who make the painting] will have trouble “coming to grips” with the works on display: Revolutions in modern art have reached right to the heart of what it means to be a viewer, to the very extent of endowing this role with the status of an actor, not to say an active combatant. To describe the radical

collection, and to distinguish the work in the show from the so-called “traditional art forms,” sculpture and painting, Trini uses the phrase assemblages and installations. The new emphasis placed on the viewer and her interaction with the art – the possibility to enter the art, to engage the entire site of the gallery challenged the paradigm of the autonomous artistic work. Influenced by the Umberto Eco’s (1962) *Opera aperta*, [Open Work] which discussed the openness and flexibility of work like that of James Joyce and John Cage, the experience of the interaction would constantly evolve, contingent on environmental factors. *Arte povera* [Poor Art] and land art put an emphasis on natural materials, which would index these changes in an obvious manner. *Arte Povera* was a term used by critic Germano Celant (1967) in the text for his show “*Arte Povera e IM Spazio*” in Genoa, Italy. Celant selected six Italian artists who, ...at that moment, in the autumn of 1967, all shared a crystalline understanding of the marriage of concept and materials. (Flood and Morris, 2001). Rather than continuing the oppositional framework at the base of technological drive to dominate nature and matter, the work of these artists demonstrates a foundational post-structuralist theme, that the products of nature and culture present identical structures, which are not distinguishable (Trini, 1969). *Arte Povera* artists, particularly Giovanni Anselmo, Pier Paolo Calzolari, Jannis Kounellis, Mario Merz and others, made installations with materials that engaged atmospheric conditions, qualitative transformations and changes of state due to environmental conditions using their physical and/or chemical properties.

The term, installation, would not be listed in The Art Index until 1978. Even then, it was cross-referenced with artist Allan Kaprow’s 1958 term, environment and the genre included artistic practices that were more properly categorized within other movements like Earthworks, Fluxus, Minimalism, Conceptual art or Process art. Art critic and theorist, Rosalind Krauss famously charted the location

of these new forms in a conceptual structure taken from mathematics, the Klein Group. Krauss’ diagram appears in her seminal article, *Sculpture in the Expanded Field* (1979) in which she attempted to sort out “the rather surprising things that have come to be called sculpture” in the ten years between 1969 and the article’s appearance. By problematizing the set of oppositions between which modernist sculpture was suspended, Krauss dismantled the privileged terms and set up a field in which other possibilities and categories could exist. The post-medium condition offers an analogous opportunity for design practice.

Intricacy

The recent exhibition, *Intricacy* curated by Greg Lynn, is exemplary of the post-medium condition and can serve to highlight some conventions of new forms of expressiveness in architecture and art. The show included works by architects Office dA, Peter Eisenman, FOA, Reiser + Umemoto, painters David Reed and Fabio Marcaccio, sculptors Roxy Paine, Bonnie Collura, and Tom Friedman, film and video artist Chris Cunningham and photographer Adam Fuss among others. Rather than maintaining these media distinctions (architect, painter, sculptor, film maker, photographer) Lynn’s text categorizes the work using technique or strategy-based qualitative terms such as, *Aggregates* and *Assemblages*, *Voluptuous Surfaces* and *Undulating Lattices*, *Vital Mechanisms* and *Fused Forms*. Lynn himself contributed a luminous ceiling installation [FIGURE 1].

Composed of several undulating circular and translucent pieces, alternatively referred to as “chandeliers” or “flowers,” the work produced an inversion effect of floor and ceiling reminiscent of Marcel Duchamp’s installation for the International Exhibition of Surrealism at the Galerie Beaux Arts in 1938. There, Duchamp illuminated empty coal sacks that he hung from the ceiling, rendering the entire exhibition space as a single work. Though

he did not select the works of the other surrealist artists, his strategy created a work that the visitors walked into and experienced, a forerunner of what is now called installation art. For *Intricity*, Lynn did select all the work and carefully orchestrated adjacencies and placement. Like Duchamp, he selected to suspend his work from the ceiling. At the Institute of Contemporary Art (ICA) in Philadelphia, it hovered above the architectural models.

In keeping with the qualitative and technique-based characterizations, mentioned above, several works occupy multiple categories or can be described by more than one term. For example, Office dA's Tongxian Art Center [FIGURE 2] and Roxy Paine's Scumak S2-P2-R5 [FIGURE 3] are categorized as Aggregates and Assemblages, and also exhibit Voluptuous Surface qualities.

Discussions at the accompanying symposium identified qualitative similarities in the selected works of art and architecture that were marked by a tendency to reintegrate material information into the digital design realm (<http://www.design.upenn.edu/intricity/index.html>: March 2003). *Intricity* addresses the material phenomena of the work at a micro-level, for example at the scale of the brick, or even at the scale of the molecule and its environmental response. The masonry units of the Tongxian Art Center form curved, voluptuous surfaces. Not a simple repetition of the discreet brick unit but an aggregation through an ongoing spatial negotiation of each individual connection. Paine's scumaks aggregate at the molecular level. As in his previous full-scale-art-making machines, Paint Dipper and PMU (Painting Manufacturing Unit), SCUMAK No.2 (Sculpture Making Machine) [FIGURE 4] uses computerized variables to control the parameters of production in a way similar to the way genetic coding instructs cells to form or to carry out certain activities.

The meticulously numbered scumaks are the product of Vital Mechanisms that use predetermined technological parameters and automatically programmed processes. Made of low-density



Figure 1. "Intricity" Exhibition Design Ceiling Installation, Institute of Contemporary Art, University of Pennsylvania, Greg Lynn 2003.

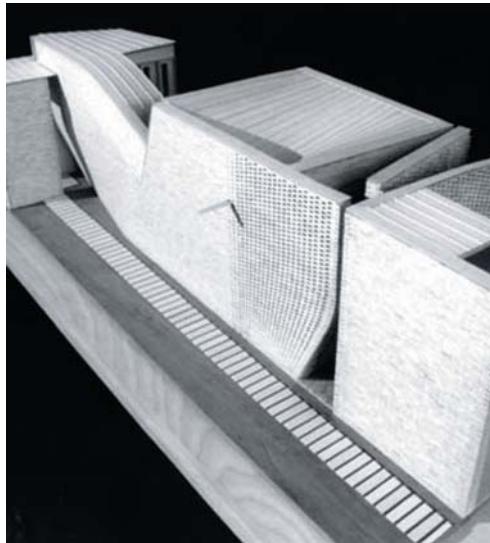


Figure 2. Tongxian Model, China. Office dA, 2001.

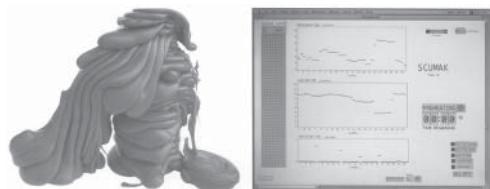


Figure 3. Scumak S2-P2-R5 and computer screenshot of its program. Roxy Paine, 2001. Courtesy the artist and James Cohan Gallery, New York.



Figure 4. SCUMAK (Sculpture Making Machine) No.2, Roxy Paine, 2001.

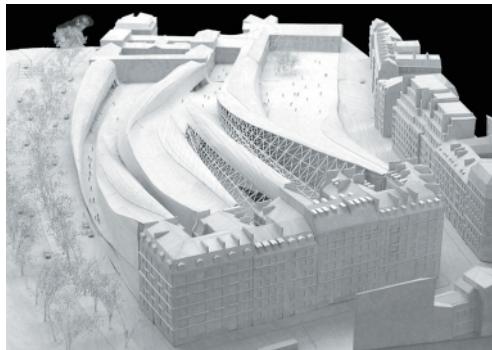


Figure 5. Quai Branly Model, Musee du Quai Branly competition, Paris, Eisenman Architects with Famuele Architecte, 1999.

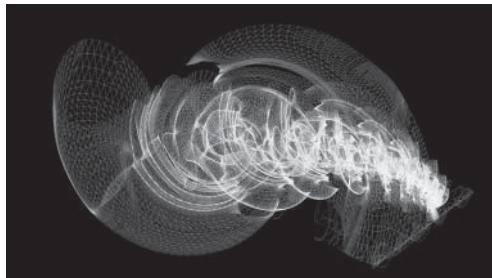


Figure 6. X_Phylum, METAXY/ Karl Chu, 1998. Courtesy the artist, Los Angeles.

polyethylene, the sculptures are sensitive to temperature and humidity, and continue to evolve in response to environmental conditions even after they leave Paine's conveyor belt. While abstract, Paine's ultra-artificial artworks evoke natural forms and processes, like igneous rocks, mountainous topographies, and sedimentation. The physical forces that determine the shape and character of the work, heating and cooling, concentration and dispersal, are primal landscape-shaping forces. Paine's apparatus is a microcosm of vast, real-world processes. The work makes one reflect on the possibility that macroscopic conceptual organizations may emerge from microscopic processes.

The nomenclature, Vital Mechanisms is equally appropriate to describe the robots in Chris Cunningham's video for Bjork, all is full of love. The human-like qualities of the robots are achieved by the affectation of responsiveness, rather than any softening of the robotic nature of their movement or facial expressions. Cunningham uses photographic techniques to augment the moments of contact between the robots with splashes of milk-like fluids. Electrical sparks create the effect of a transfer of information between the robots when they "touch". Both the sags and slumps of the SCUMAKS and the flows and secretion-like seepages of the Bjork robots use haptic stimuli to effect a sensorial response to the technological that crosses into the material and the organic. The digital technologies of manufacture used by the architects to build the micro scale models are also Vital Mechanisms, and some, like Eisenman Architects' Musee de Quai Branly [FIGURE 5] have Voluptuous Surfaces and Undulating Lattices.

Overall, the exhibit functions in a didactic dimension that epitomizes the formal, structural and material connection between objects placed in conversation about the measure of intricacy (Lynn, 2003). Indeed, Lynn reveals his partiality to designs that employed only the highest degree of rigorous mastery of digital design technique, since

the exhibition, he says, relies on contemporary machine processes that allow for both a monolithic materiality and form while maintaining an incredible fineness of detail and connection. If there is a visual sensibility that emerges, it is due to technique rather than figuration or content.

Affective Structures

The term affective structures revisits machine aesthetics through the resuscitation of the latent meaning of aesthetics, from the Greek, *aesthesis*, meaning to perceive or feel. Extending the notion of the “New Biology of Machines” (Kelly, 1994) to sensation, affective structures suggests the possibility of structures capable of variable response, improvisation, attitude or illusion. Intricacy and its literal relation to entangling or trickery creates linkages across terms that are typically seen as opposed, such as, human/inhuman, material/computational, nature/machine. The work in the show characteristically could be seen as producing a synthesis that does not repress the qualities of the either term. An organization of intricate connections both within and across the works produces a new discourse of diversity, one in which structures which appear very different may be shown to have identical structures and respond to stimuli in very similar ways. For example, the work of Karl Chu [FIGURE 6] and Roxy Paine appear to occupy opposite ends on the material-digital spectrum.

Seeing both as affective structures, renders this categorization obsolete and reveals alliances and continuities between the works. Rather than binary opposition between the organic and the



Figure 7. *The Weather Project*, Turbine Hall, Tate Modern, Olafur Eliasson, 2003-2004.

technological, both approaches are characterized by the convergence of these terms. Roxy Paine’s SCUMAK intertwines material and information, and demonstrates the relation between stimuli and response and the nature of feedback. As the parameters of the machine respond to the environment, or are altered by the code that determines the temperature, viscosity and/or speed of production, the sculpture produced both registers the effect and introduces feedback into the system. The process becomes non-linear, stochastic, organic. Karl Chu identifies the revelation of this process as Stephen Wolfram’s logical extension of the Church/Turing thesis and cites Wolfram’s contention that all processes, whether they are produced by human effort or occur spontaneously in nature, can be viewed as computations (Wolfram, 2002). Chu explores the convergence of computation and genetics in his work, calling it a genetic landscape of architecture.

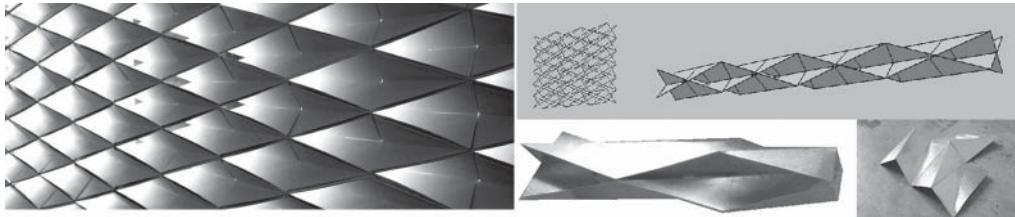
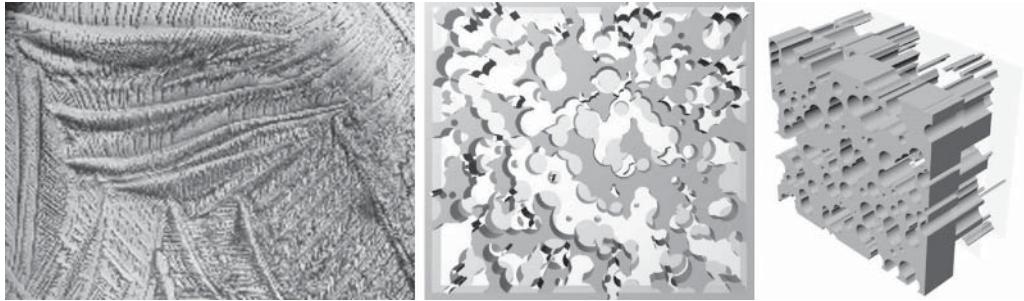


Figure 8. Student Work: Justin Diles, *Window Wall Installation* (photo, right.) *Digital Model and Folded aluminum model composite*(left), University of Pennsylvania, School of Design seminar: *Experimental Surfaces, Phenomenal Effects*, 2005.

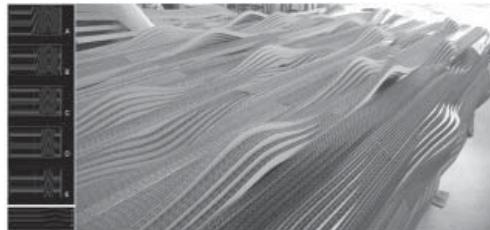
Figure 9. Student Work: Eric Spencer, *Crystallization Panel, Sodium Carbonate*(left), still from digital animation and digital model (right), University of Pennsylvania, School of Design seminar: *Experimental Surfaces, Phenomenal Effects*, 2005.



Examples from contemporary installation art, like Olafur Eliasson's recent *The Weather Project*, in the Turbine Hall of the Tate Modern [FIGURE 7] also challenge distinctions between humanly-produced processes and naturally-occurring ones.

Eliasson creates a vastly-scaled dynamic, immersive environment, an affected nature, synthetically sublime. Another contemporary artist, Eduardo Kac, makes transgenic artwork using genetic engineering to transfer natural or synthetic genes to an organism. He created *Alba*, the "GFP Bunny." GFP stands for green fluorescent protein, a synthetic mutation of the original wild-type green fluorescent gene found in the jellyfish, *Aequorea Victoria*. Transferred genetically to an albino rabbit, the synthetic gene makes the white rabbit glow green under certain conditions. (Kac, 2004). All these works couple synthetic processes with a poetic resonance that recalls American Transcendentalist Ralph Waldo Emerson, "...we want the exact and the vast; we want our dreams, and our mathematics."

Figure 10. Student Work: Hannah Jackson and Angela DeRiggi, *Variiegated profiles: Digital templates* (left), *Installation- corrugated cardboard* (photo, right), University of Pennsylvania, School of Design seminar: *Experimental Surfaces, Phenomenal Effects*, 2005.



Conclusion

Anthony Vidler's *Architecture's Expanded Field*, (2004) a recent correlative to Krauss, (1979) reports that architects are finding inspiration in jellyfish and geopolitics, and are working today within radically new frames of reference. He cites Lynn's *Coffee & Tea Towers* for Alessi, (2003) describing them as interlock[ing] like the carapaces of insects and turtles. In addition to their organic formal associations, the sets also exercise a transfer of material information between the organic and the technological. Made of a titanium alloy coated with a molecular film of variable thickness, the refracted color of each piece is determined in the injection-molding process as a reaction at the molecular level to the heat of the process. Designed and produced digitally, they nonetheless index environmental and material information. The parameters of this registration can be controlled precisely, but the qualitative result (the refracted color) is unpredictable.

The identification of qualitative design categories, like intricacy or the informal of engineer, Cecil Balmond is a change from the current design paradigm, which prefers instrumental categorizations such as mass customization and digital fabrication. These qualitative approaches are prolegomena to a radically-material design paradigm which takes advantage of physically-based animation and dynamic simulation. While these tools are in mainstream use for animations, especially de-

struction simulation, for instance, fracture, which can simulate the explosive break-up of a brick wall due to impact, the possibilities for the integrative use of these tools in design have not been widely examined. Designing with digital materials “made physical” with molecular properties which react symbiotically with other materials or environmental simulation parameters represents the kind of convergence of conventions which promises new forms of expressiveness. Work completed in my 2005 seminar, *Experimental Surfaces, Phenomenal Effects* at the University of Pennsylvania, begins to elaborate these possibilities. [FIGURE 8] [FIGURE 9] [FIGURE 10]

A new design approach based on the maximum intermingling of media takes account of integrative strategies towards the digital and the material and sees them as inextricably linked. This is based partially on installation art strategies gleaned from the works described. However, the conceptual model owes more to Post-Darwinian evolutionary concepts, such as the symbiotic nature of nucleated cells of Lynn Margulis and the hopeful monsters of Berkeley geneticist Richard Goldschmidt. (Kelly, 1994). Thus, the evolution of architectural paradigms, here taken as broadly analogous, is an intermingling of material and information and, as Goldschmidt holds, genetic logic cannot be divorced from the laws of material form in which it dwells. Furthermore, akin to Margulis’ research, the symbiosis of different sets of conventions as derived from different material conditions transfer their informational assets and innovations into the digital medium, producing fully formed, material-digital ingenuity.

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