Stirring the Pot: Theory and Beginning Design

"Theory is not dead. Neither is architecture. Both lie dormant in a world of bad buildings that use too much energy to make uncomfortable environments. The profession has done little to make that situation better. Maybe it should ask itself some hard questions."[1]

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INTRODUCTION

In light of pressing environmental and technological issues, architecture as a discipline faces a massive re-evaluation of how buildings are conceived, designed and constructed. These issues and their implications are generally understood by architects, but for the sake of discussion consider that buildings and their proliferation in the landscape have contributed to a permanent degradation of the environment, and that digitization, computation and mass customization are testing the limits of former modes of thinking and making. All this to say that technology and the environment now captivate the architectural imagination.

This raises the question: how can these potentially oppositional issues be introduced, understood and balanced in the minds of beginning design students? Although the role of theory is generally diminished in architectural education, if carefully chosen it may provide a platform with which to synthesize technology and the environment. More importantly, theory can help ground social concerns and humanist values in design thinking, two considerations that can become lost as designers grapple with the juggernauts of technology and the environment.

This paper[2] argues that theory deserves a place in the foundation of foundational design. Now more than ever the world of ideas can inspire students to look both within and beyond the specific circumstances of their projects and help them navigate and perhaps reconcile the ascendant issues of environmental responsiveness and technological contemporaneity. As an example I'll also discuss the introduction of theory into a second-year design studio and an introductory project used to solidify the understanding and role of theory in the design process.

THEORY WAS INTERESTING...BUT NOW WE HAVE WORK[3]

For many of you old enough to remember, theory in architecture took a big step backward roughly fifteen years ago when architects turned their gaze inwards and began to focus on practice and performance at the expense of theory and meaning. The post-critical reaction wasn't entirely surprising given the course that architectural theory took in the 1990s when it developed its own set of specialists, its own language, and its own style of writing. Once this happened it became a discipline unto itself and lost relevance as it drifted away from the profession and much of academia.

Figure 1: An overturned boat on the beach served as the he prompt for the introductory design project.

As Hélene Frichot notes, theory during this era, with its burdensome emphasis on textual analysis and dialectics became so consuming that it distracted architects from the realities of practice and in doing so alienated much of the profession. And even though academia provided a haven (as it still does) theory was so dense and impenetrable that in architecture schools theory was segregated into seminars and generally faded from design studios since it was impractical for faculty to bridge theory and design within the the context of a project-based learning environment. All of this to say that theory and practice had parted ways.[4]

From this void the "post-vanguard" emerged, and the emphasis shifted from theory to practice, from critical objectivity to inspired creation, from meaning towards use. In "Intelligence after Theory," Michael Speaks wrote, "While vanguard practices are reliant on ideas, theories and concepts given in advance, intelligence-based practices are instead entrepreneurial in seeking opportunities for innovation that cannot be predicted by any idea, theory or concept." Design became privileged over all other activities, particularly design with the affordances of digital design and fabrication, as well as the intelligence that accrues from research and an iterative engagement with "the Real". "Indeed, it is their unique design intelligence that enables them to innovate by learning from and adapting to instability. The most innovative of these new practices are thus more concerned with 'plausible truths' generated through prototyping than with received 'truths' of theory or philosophy."[5]

Stan Allen also influenced the post-critical discussion by re-evaluating the theory-vs-practice debate as competing categories of practice. He saw discursive practices as those which focus on representation and interpretation; these place a critical emphasis on the past ("things made"). Material practices, on the other hand, focus on matter, forces and material changes that transform reality by producing new objects or organizations. In *Practice: Architecture, Technique + Representation*, Allen wrote: "Architecture, I want to say right from the beginning, is a material, and not a discursive practice...material practices do not comment on the world, they operate in and on the world. They produce ideas and effects through the volatile medium of artifacts, short-circuiting the established pathways of theory and discourse". To Allen, material practices emphasize "things in the making", with a full awareness of the history of the discipline but also a willingness to innovate beyond defining boundaries, especially where performance is concerned. "Today, the most interesting practitioners no longer ask what architecture is, or what it means, but rather what it can do."[6]

INTELLECTUALS AND POWER

The post-critical argument by Speaks, et al for "the relevance of the design act and how it carries its own embedded knowledge" continues to be a strong one. As architects we can probably agree that design can and must add environmental, societal and economic value and that creativity and innovation are vital components of this equation. And of course, our socio-economic times require that buildings should perform better and be delivered more efficiently. But important questions remain: Is it enough to address the "how" of architecture without questioning the "why"? Does instrumentality and performance confer meaning in architecture? What is architecture's role in society and how can it be an agent of social transformation? Is architecture a product of culture or a producer of culture?

Some might object that these questions are distractions from just getting the job done and buildings built. Others, including this author, think that architecture must confront these tough questions and others as it negotiates not only it's economic and environmental contexts, but its social and cultural contexts as well. Theory has a role in this engagement and can help define the relationship between the built environment and the changing nature of the world at large. The question is how.

In 1972 two leading minds of the post-structuralist era, Gilles Deleuze and Michel Foucault, had a rambling conversation that came to be known as the "Intellectuals and Power" dialogue.


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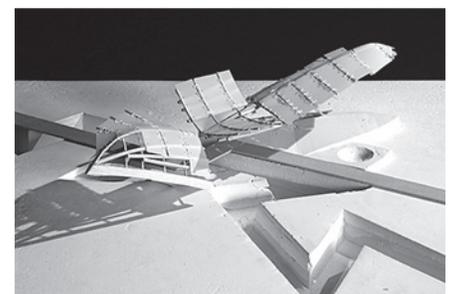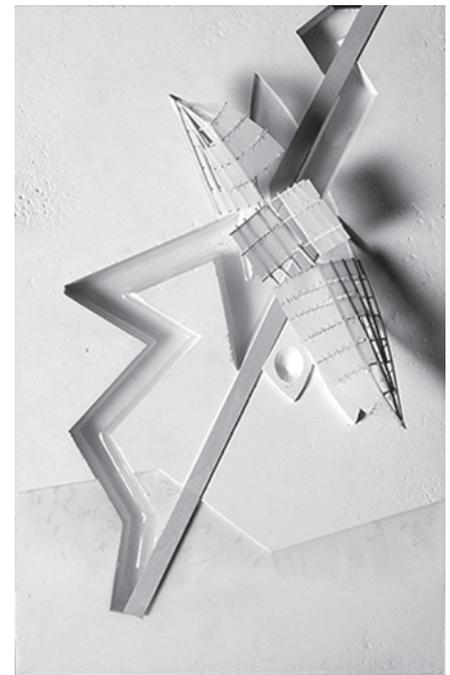
Figure 2: Seaside pavilion project by Moti Tavissoli

Their discussion touched on the role of the intelligentsia in the plight of prisoners, immigrants, and the LGBT community in France. They agreed that a shift had taken place, and that the role of intellectuals, although diminished, was both to expose the dehumanizing forces in society and provide resources to the public, not answers or visions, to navigate dense webs of institutional power. They also dispelled the notion of theory for theory's sake and made clear-eyed observations about its relationship to practice. Foucault asserted, "theory does not express, translate, or serve to apply practice: it is practice. It is local and regional and not totalizing". Deleuze replied, "Precisely. A theory is exactly like a box of tools. It has nothing to do with the signifier. It must be useful. It must function. And not for itself. If no one uses it, beginning with the theoretician himself, then the theory is worthless or the moment is inappropriate." Deleuze then expands on the notion of theory as practice, "Practice is a set of relays from one theoretical point to another, and theory is a relay from one practice to another. No theory can develop without eventually encountering a wall, and practice is necessary for piercing this wall."[7]

Although not intended for architects, aspects of this fascinating conversation should resonate with designers and help. First, it echoes Allen's argument that theory isn't outside of practice, it is practice, discursive or otherwise. Second, theory is useful when it situated within specific circumstances and it avoids globalizing or authorizing tendencies. Third, theory "must function" in the material world, implying that it is instrumental and operative. For architects, this potentially equates theory with other "tools" employed in the design process. Lastly, theory, like practice, is a mode of inquiry and action, and these two modes provoke one another through a relay that moves back and forth as blockages occur in either realm. This aligns with the design process, architecture's most productive force. It also aligns with Speaks' notions of design fluidity and "thinking by doing". Perhaps critical thinking and post-critical thinking are not incompatible and mutually exclusive after all. Chrysler, Cairns and Heynen write that theory "draws us both outwards from the building to the wider network, ecology or milieu within which it sits, and inwards to the material fabric of the building itself. It also ensures that these outward and inward trajectories are not mutually exclusive, but have the capacity to be short-circuited, and related intimately. This expanded field suggests that architectural theory is porous and open to the circumstances of the world".[8] Architecture may in fact be more transformative if it operates as both material practice and a social practice.

THE PRACTICE OF THEORY

Having argued for a role for theory in architecture, the topic turns to its place in academia. For over a decade it has largely been relegated to seminars or folded into history courses, approached as what Allen calls "discursive practice". This has sidelined it from the other two areas of the architectural curriculum: design and technology. Deleuze's notion of theory as a "box of tools" however suggests it should operate in and on the world, more as an active forward-focused "material practice" than a passive historically-focused discursive practice. In other words, theory can play a productive, not obstructive, role in design thinking. For all students, but especially those at a foundation level, theory is a potential platform for interweaving history, technology and design through project-based investigations in the design studio.

As an example I'll discuss here the introduction of theory into a second-year design studio and a short project written to solidify an understanding of its role in the design process. Second year, with its emphasis on situating design in the environment and integrating technology, both in terms of tools and construction materials/methods, challenges students to work across scales and balance these and other architectural issues. Students in this studio were introduced to two strains of theory intended to frame two project scales, the environmental and the architectural. The three-week project encouraged students to expand design


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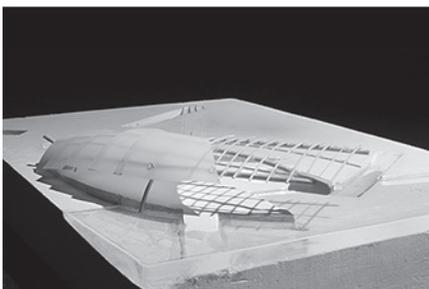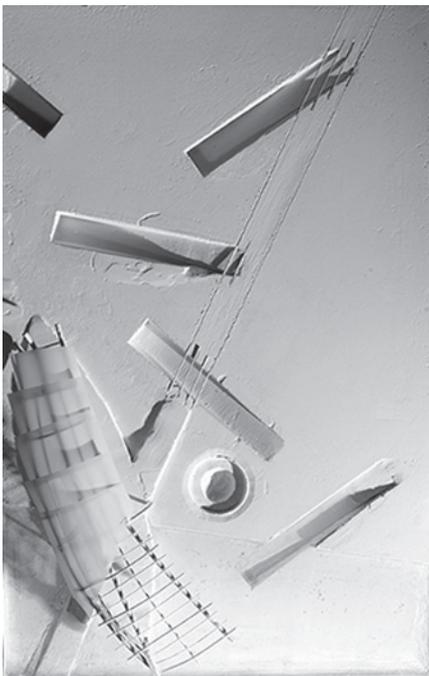
Figure 3: Seaside pavilion project by Vicky Arias

Stirring the Pot

thinking by 1) considering the environment through the lens of the early land art practices of Michael Heizer, and 2) positioning the material and tectonic development of their projects relative to Gottfried Semper's Four Elements. While this tightly orchestrated project provided narrow parameters for the bridging of theory and design, the larger intention was to provide students with another "tool" for independently confronting complex issues on future projects.

To begin the project, students were given a single provocative image: a simple wooden boat pulled onto the shore and overturned (see Fig 1). In terms of architecture this image suggests a clear space captured by a subtly expressive structure sitting lightly on a sandy landscape. Students were asked to explore the dualities portrayed in the image: heavy/light, earth/sky, natural/manmade, and stereotomic/tectonic in their designs for a seaside pavilion.

NINE DEPRESSIONS

The project was organized into three phases. The jumping off point for the first phase of the was Land Art of the 1960s and 70s, specifically Michael Heizer's *Nine Depressions for the Nevada Desert* (1968). Part of a movement that rejected galleries as the physical and economic locus for art, Heizer and others were drawn to post-industrial wastelands or vast stretches of rural land. In most of the works from this era mapping, photography and/or text-based accounts are central to the explorations. In Heizer's case, so was earthmoving. Lots of earthmoving.[9]

Over the course of two months in 1968 Heizer created a series of lines, troughs and loops linking nine sites on dry lakes near the Nevada-California border. The first of the series, *Rift,* consisted of a zigzagging depression 51' long x 1.5' wide x 1' deep. To create it Heizer displaced 1.5 tons of hard pack from the surface of Jean Dry Lake. The eighth work, *Dissipate*, consisted of five wood-lined trenches with sloped bottoms measuring 12' long x 1' wide. The final work in the series, *Isolated Mass/Circumflex*, consisted of a 1' wide trench 120' long that looped upon itself. (Fig. 4)

Almost from the day they were each completed the *Nine Depressions* began to transform and erode with the passage of time as the lakebeds reclaimed the displaced soil. It was only through photographs and descriptions that the works persisted. In interviews Heizer spoke of this entropic condition: "I'm mainly concerned with physical properties, with density, volume, mass and space. My work is in opposition to the kind of sculpture which involves rigidly forming, welding, sealing, perfecting the surface of a piece of material. I also want my work to complete its lifespan during my lifetime. Say the work lasts for ten minutes or even six months, it still satisfies the basic requirement of fact."[10] Mark C. Taylor observes that Heizer's work from this period, "was not constructed to escape time but to embed usin it ever more deeply."[11]

Students were asked to consider several issues at the heart of Heizer's early work. First, that landscape is both form and material and that representation must be balanced with direct engagement. Second, that temporality is ever present in all built works. And lastly, that dialectics such as figure/ground, permanence/change, appearance/disappearance, form/formless, positive/negative, etc. are powerful constructs for thinking and knowing.

To better understand Heizer's work (and set the stage for the second phase of the project) students studied photographic records of the *Nine Depressions* and "excavated" one of the works by recomposing and re-contextualizing it. Re-composition entailed scaling the work to fit a 13" x 19" field with careful consideration of the relationship between the Heizer composition and the rectangular frame (the Heizer composition could be cropped but could not lose its legibility). Re-contextualization entailed envisioning the work on a sloping waterfront rather than a flat desert lakebed with the waters edge becoming a compositional element.

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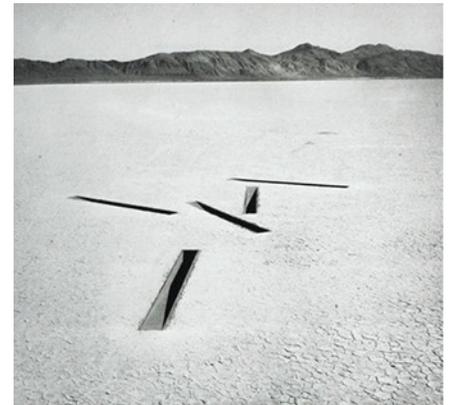
Figure 4: Michael Heizer, *Dissipate*, *Rift*, and *Isolated Mass/Circumflex*, 1968

Since water covering 25% of the downhill portion of the site was required this resulted in the Heizer depressions becoming partially flooded in many projects. Drawings were used to create formwork and a casting strategy for capturing the translated landscape in plaster and resin.

FOUR ELEMENTS

The second phase of the project introduced students to Gottfried Semper's writings as a strategy for approaching the architectural scale of their seaside pavilions. In two major works[12], Semper developed his position that architecture is based on four irreducible elements: the earthwork or mound, the hearth, the framework/roof, and the enclosing membrane. Based in part on his reading of a Caribbean hut in the Great Exhibition of 1851, this rationale challenged the long-held paradigm of the classical primitive hut as posited by Abbé Laugier in 1753. Whereas Laugier used the lens of mythology to premise his primitive hut, Semper used the lens of anthropology to consider his primordial dwelling which he saw as springing from man's need to cover and shelter by ordering and binding the four elements.

Semper defined the four elements in both material and phenomenological terms. The heavy earthwork and hearth, built from stacking compressive units of stone, brick or pisé were considered stereotomic elements (derived from Greek *stereos* for solid and *tomia* for cutting). Stereotomic elements formed a mass that both embedded itself in the ground and extended upward from the earth. The framework and enclosing membrane, on the other hand, built from light tensile wood or reed members were considered tectonic elements (derived from the Greek *tekton* for carpenter or builder). Tectonic elements formed a spatial frame so as to frame a portion of the sky above. In the Semperian paradigm, architecture occurs at the charged intersection of the stereotomic and tectonic realms and dwelling exists in the dialectical space between mass and frame, between heavy and light, and between earth and sky.

Rather than use primary sources, the introduction to Kenneth Frampton's *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture* was used to build an understanding of the Semperian paradigm and locate it within a larger sphere of architectural theory. More than a mere introduction, Frampton's essay is an outline of architectural thinking that draws a line from the Greeks to the French, German and English theorists of the nineteenth century to the present. In twenty-seven dense pages Frampton references the words or works of sixty-two theorists or architects at a head-spinning pace. It's a lot for young students to digest, but they are encouraged to focus on the context he creates for the discussion, the sum of the parts as it were.

Frampton devotes four pages to Semper and they remain one of the most succinct discussions of his influences and theories. Frampton's reading of Semper is richly layered and he is careful not to limit it to structural, spatial or material terms. Architecture, he points out, occurs in the joining of the stereotomic and tectonic elements and meaning is constructed through the act and art of building. He reminds students that if architecture is to acquire cultural value it must be approached as a multivalent endeavor: "In the last analysis, everything turns as much on exactly how something is realized as on an overt manifestation of its form. This is not to deny spatial ingenuity but rather to heighten its character through its precise realization. Thus the presencing of a work in inseparable from the manner of its foundation in the ground and the ascendancy of its structure through the interplay of support, span, seam and joint." Frampton is careful to address not just what a building is, but also what it does. "Situated at the interface of culture and nature, building is as much about ground as it is about built form…At the same time, it is as much about place-making and the passage of time as it is about space and form. Light, water, wind and weathering, these are the agents by which it is consummated. Inasmuch as its continuity transcends mortality, building provides the basis for life and culture."[13]

Figure 5: Examples of traditional and contemporary skin-on-frame kayaks

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As a means to develop a deeper understanding of Semper, particularly the tectonic elements, students were asked to research kayaking and skin-on-frame kayaks (see Fig 5). Most kayaks today are constructed of molded polyethylene or thermoformed ABS plastic sheets that shaped so as to conflate structure and skin into a single surface. Traditionally however, native peoples crafted wood frames lashed together with sealskin cord or caribou sinew, then stretched sealskins over the frame to create a light, nimble boat. This tradition lives on today with cults of boat builders who lash together steam-bent wood ribs and stringers using nylon cord, then cover the frame with a urethane-impregnated canvas skin. Analysis during this phase of the project was intended to also serve the major project of the quarter, a coastal kayak club.

Each student selected a documented approach to a skin-on-frame kayak. With a focus on the frame rather than the skin, relationships between structural elements (gunwales, stringers and ribs) were studied using scaled drawings and study models. For the final model steam-bent basswood proportionally scaled to the kayak components was used to create a one-foot long interpretation of their chosen boat design.

The prompt for the third phase of the project was relatively simple: merge the kayak-inspired frame of the second phase with the Heizer-inspired site from the first phase of the project (mound) to create a seaside pavilion. Add a fire pit (hearth) and a roof (enclosing membrane) to complete Semper's Four Elements. Additional guidelines included: assume a scale of 3/32" to yield a site measuring roughly 140' x 200' and a pavilion 130' long; use the kayak frame as the source of all structure with no additional members (the frame could be radically changed or deconstructed as long as it didn't lose its "kayakness"); assume a south-facing slope for the site; provide a simple footpath that connects the pavilion with parking to the north and waters edge to the south; use lashing to secure a light, protective translucent membrane to the frame; carefully consider both views and solar orientation in the design. (see Fig. 1–2)

CONCLUSION

This short introductory project challenged second-year students to expand their design thinking by considering the environment through the lens of land art and technology through the lens of boatbuilding. It foregrounded site and structure and encouraged students to see these design factors as related both compositionally and conceptually. It prepared students for the primary design project which followed, a kayak club for a coastal site. More importantly, it introduced students to theory by showing how it can interweave complex factors, and it encouraged students to see their work a part of a larger world of ideas.

Upon reflection this project provided a very full plate for students. This approach stands in contrast to foundation studios that deliberately limit the complexity of project briefs in order to filter the issues addressed by beginning design students. In evaluating the projects however, the quality and depth of the results would suggest that students thrived in this manifold environment, producing work that was on balance clear in its conception, artful in its composition, deft in its craft, and competent in its representation. The author would argue that the project's success is due in part to a carefully selected two-pronged theoretical framework that helped students make multilayered connections in their work so that multiple considerations could cohere and prevent the project from spinning out of control. In this particular instance, Heizer and Semper were chosen because their approaches aligned well with issues central to the second-year fall quarter curriculum at Cal Poly. These were presented not as universally-applied truths but rather as contingent design tools that students would select for themselves on future projects. Students left the studio willing to confront complex issues, be they environmental, technological or otherwise, by looking both within and beyond the specific circumstances of their projects.

ENDNOTES

1. Betsky, Aaron. "Architectural Theory and American Pragmatism," from the Beyond Buildings blog in *Architect Magazine.* Posted November 15, 2013.

2. Ideas for this paper were first presented at the National Conference of the Beginning Design Student held at the University of Houston, February 26-28, 2015.

3. This is borrowed from the title of Michael Speaks' essay of the same name in *Architectural Research Quarterly*, vol. 6. issue 3. Sept 2002. p. 209-12.

4. Frichot, Hélene. "On the Death of Architectural Theory and Other Spectres." *Design Principles and Practices: An International Journal.* Vol. 3 No. 2. (Melbourne: Common Ground, 2009).

5. Speaks, Michael. "Intelligence After Theory". *Perspecta 38*. April 2006. p. 104.

6. Allen, Stan. Introduction to *Practice: Architecture, Technique + Representation.* (New York: Routledge, 2009). p. xiii-xiv.

7. Frichot, Hélene. "On the Death of Architectural Theory and Other Spectres." *Design Principles and Practices: An International Journal.* Vol. 3 No. 2. (Melbourne: Common Ground, 2009).

8. Speaks, Michael. "Intelligence After Theory". Perspecta 38. 09_Endnote Text: Text box should be flush all the way to the edge of the page, left or right depending on

9. Several essays used by the class to unearth the work of Heizr and his contemporaries were taken *Ends of the Earth: Land Art to 1974*, a publication in support of an exhibit of the same name (organized by Phillipp Kaiser and Miwon Kwon).

10. Michael Heizer from a 1970 interview with Avalanche magazine as told in *Land and Environmental Art. p. 205*.

11. Taylor, Mark C. "Rend(er)ing". *Michael Heizer: Double Negative.* (New York: Rizzoli, 1991). p. 13.

12. *Die vier Elemente der Baukunst* from 1851 and *Der Stil in den technishen und tektonishen Künsten oder Praktische Ästhetik* from 1861–1863.

13. Frampton, Kenneth. *Studies in Tectonic Culture: The Poetics of Construction in Nineteenth and Twentieth Century Architecture.* (Cambridge:The MIT Press, 1995). p. 26-27.