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ACKNOWLEDGEMENTS

CALL FOR PAPERS: DIALECTIC 002

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It is a pleasure to welcome you to the inaugural issue of *Dialectic*, the Journal of the School of Architecture at the University of Utah (SoA). It has been too long, some twenty-five years since the last publication of the school, *Utah Architect*. I hope this portends a new era for the school by capturing the invigorating atmosphere of the place and unique life experience endemic to the study of architecture.

The architect and educator, Paul Rudolph, in celebrating Mies van der Rohe's Seagram Building, commented about an approach that was "...axiomatic that certain problems must be ignored if a great work of art is to be created."¹ The SoA for over thirty years has been in the vanguard in pioneering digital technology. Given its Calvinist pedigree, SoA's work is noteworthy for the development of problem solving tools with practical implications. Indeed Professor Emeritus, Ted Smith was a founder of *Masterspec*. With the analytic potential of digital technology, I would argue that a "great work of art" need not sidestep problems in pursuit of the sublime. With the environmental challenges that mankind has induced, we must insist on nothing less.

Why *Dialectic*? The corrosive effects of polarized and obdurate public discourse have left us impatient to address the monumental problems of the day. We as architects are trained to intercede; yet we have been marginalized by the fear of both expertise and the judgment of an educated eye. As a result and very much a reflection of the school, the editorial staff felt it's time to invoke the Hegelian notion of reconciliation. We pose a call for persuasive dialogue, engaging conflicting issues not as a means of negating the "other" but as a means of releasing opportunity imbedded in apparent conflict and seeming insurmountable complexity.

In this issue, we have contributions from lecturers, faculty, students, community leaders and side conversations that represent the school. Assistant Professor, Ole Fischer in his "Notes on the Dialectics of the Post-Contemporary Condition" frames the content of the journal by suggesting the need to reduce the distance between "pour-soi" or represented reality and that of "en-soi" or reality itself as described in Eric Gans' article. Fischer advocates a midfield of practical theory and theoretical

practices. A mediated position informs the research from our Integrated Technology in Architecture Center (ITAC) conducted by Associate Professor, Ryan Smith and Assistant Professor, Jörg Rügemer with examples of research in super efficient buildings and hybrid wood construction using beetle kill lumber as well as the conversation between Assistant Professor, Erin Carraher, and Jack Self that explores ways of applying parametricism to utilitarian and material ends.

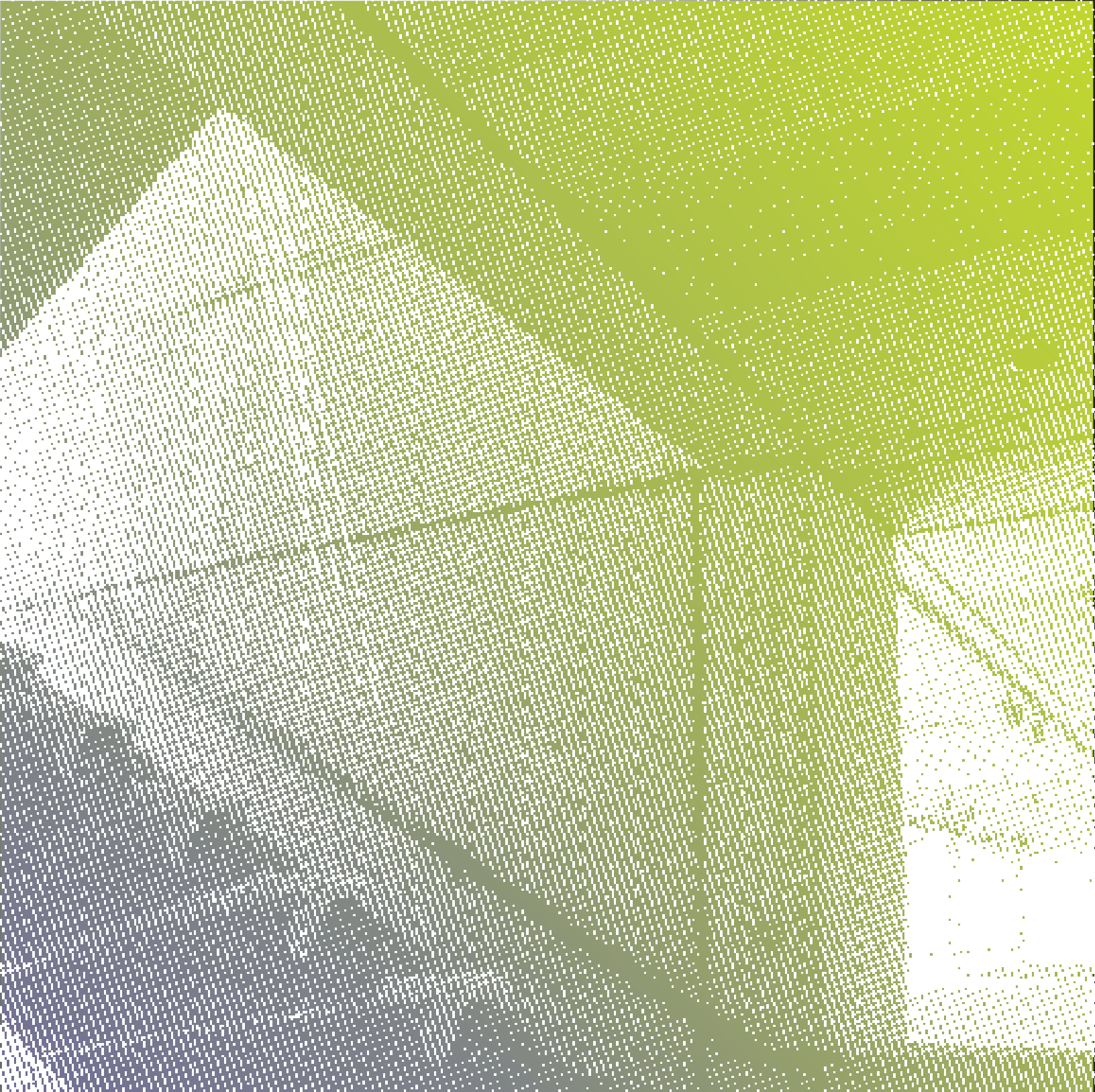
Professor Emeritus, Tom Carter contrasts the particularity of Utah as a subset to the often conflicting cultural mythology of the American West. Following his lead, I and several students have written about a recent design competition in Park City, Utah that suggests new understandings of the place as only architecture can evoke. Eric Gans from UCLA has contributed an article on the latent violence that is contained in authorship and other social constructs. We have included a transcript of a lecture given by Laura Marks, entitled "Individuation in Generative Artworks and Caucasian Carpets". Her research in oriental designs provides a model for authorship within tightly scripted limits of production. Central to the intellectual life of the school is the student work especially that of our Design Build Bluff program as examined in student interviews with their Navajo clients.

I want to thank our faculty advisors, Erin Carraher, Elpitha Tsoutsounakis and Verl Adams and especially our students editors, Ali Beach, M. Arch 2013; Jane Collette, M. Arch. 2013 and PJ Nakamura, HBS Arch 2012. Without their commitment to this journal, improvising as they went with the spirit of the school as touchstone, this first edition would not have been possible.

I hope this issue provokes more questions than answers and thus invites a future. Enjoy.

Prescott Muir, Director

1. Rudolph, Paul. *Writings on Architecture*, edited by RAM Stern (New Haven, Yale University Press, 2009) pg.93.



ARCHITECTURE, CULTURE, ECONOMY

OLE W. FISCHER, PH.D., ASSISTANT PROFESSOR

CRITICAL/PRACTICAL

A school of architecture exists as a fulcrum: it is the intersection of theory and practice, the hinge between past and future, the pivot point between not knowing and knowing. Though we constantly evaluate our situation amongst differing forces, the resulting position is rarely ever black or white. Similarly, we must resist the ease of thinking about the term dialectic as a simple dichotomy: thesis/anti-thesis, theory/practice, art/science. Dialectics rely upon a synthesis of seemingly opposite views with emphasis on finding resolution from an initial disagreement rather than by promoting further division or dilution of any one position. Just look at architecture; it is both an art and a science rather than either one or the other. It is necessary that we maintain divergent points of view to be able to have a critical perspective, but it is counterproductive to refuse to acknowledge other positions. A dialectic requires a conversation that elevates our understanding of a subject toward finding multiple truths.

This is something we do in architecture with each iteration. When approaching a design problem, our process allows us to explore multiple, different (perhaps opposing) possibilities. The resulting solution is inherently the result of, as well as the embodiment of, each version that precedes it. The fact that there is no one solution is exactly what allows one to discover many intersections of heightened congruity.

In the subsequent essay, Assistant Professor Ole W. Fischer, PhD takes on the task of situating architecture within the cultural, social and political context of a post-contemporary condition by examining the dialectics of critical theory and practice.

ARCHITECTURE, CULTURE, ECONOMY

NOTES ON THE DIALECTICS OF THE POST-CONTEMPORARY CONDITION

DR. OLE W. FISCHER, ASSISTANT PROFESSOR

MODERN, POST-MODERN, POST-POST-...?

In the early 20th century, architects dreamt of the emergence of the new human. They thought that architecture's sentimental look back on the historic styles and grandeur of the *ancien régime* should be turned around and—modeled after natural sciences and technology—directed ahead, into a bright new future. The abundant innovations of the 19th century should no longer be hidden underneath the cloak of history, but presented at the surface of buildings to define their character, along with the so-called new materials of concrete, steel and glass. At its core the modern project was about a new relationship between humans and the built environment; the rationality of the plan should correspond to a rational, egalitarian mass-society, or vice versa. The inhabitants were to find the contemporary premise of utilitarian thought, administered organization and efficient division of labor (symbolized in Henry Ford's conveyor belt) represented in built matter. Via the separation of functions, which determined the city from its general layout down to each unit, modern architects searched for the optimal—that is, minimal and standardized—requirement of space in order to satisfy, with limited resources, a maximum number of users. In response to the accelerated growth of cities and the misery of the masses, architects and planners claimed they were reorganizing the imbalances within space and society of capitalist production, distribution and consumption. The modern project seemed to be an enlightened, democratic and egalitarian one. But it was also a paternalistic one because modern architects and urban planners regarded themselves as technocratic elite, on par with engineers, scientists and politicians, or even as an avant-garde, a martial metaphor adopted by the communist cadre parties to emphasize their ideology of a “scientific” understanding of history and its dialectic evolutionary forces. Yet it was paternalistic in another sense as well: despite some exceptions, the architects of the modern era contributed to the stabilization of the dominant societal relations through their operational attitude towards social problems (housing, infrastructure, industrialization, etc.). The bluntest confession comes from Le Corbusier, who stated in *Vers une Architecture*: “Architecture or Revolution. Revolution can be avoided.”¹

Postmodernism is said to be the discontent with the utopian (and educational) ideologies of this modern project, the abandonment of the “grand narrations” (enlightenment, nationalism, liberalism, communism),² and hence a critique of universalizing concepts such as pure reason or uniform necessities and values. What manifests itself in philosophy as a critique of systems appears in culture as enhancement of the open, relative and pluralistic. The place of mass society, the industrial conveyor belt and standardization was taken up by individualism, the service sector and customization. In general, the cultural accent shifted from originality, invention and production to citation, estrangement (irony) and mediation. It was no accident that semiotics became the key concept of the time and that the analysis of texts and discourses dominated the humanities. Yet while modernity defined itself as differentiation from the 19th century past, the various currents of postmodern thinking agreed on little but the idea that modernity ended and had been replaced by something else: post-modernity itself. Significantly, one of the key discussions of the modern/post-modern debate took place in architecture: postwar modernism, with its slogans of *tabula rasa*, *grande ensembles*, satellite cities, industrialization, mechanization, and mobility, gained a bad reputation and was attacked by various enemies as a classic example of technocracy and misguided development. In addition to a clear-cut delineation from modernity (or modernism?), postmodernism embraced heterogeneous alternatives such as pop-art, a critical or affirmative exposure to consumerism, a call for participation by the observer—either directly via advocacy planning or indirectly via semiotic layers of meaning—and an interest in context, structure and typology, or in image, analogy and memory, without even mentioning neo-historicism.

This all seems a well-known story, yet in response to the two great currents of the 20th century thought, we might question the status quo of today: is it adequate to describe contemporary Western societies in terms such as post-structural, post-fordist, or post-modern, depending on whether we address their current philosophical, economic or cultural conditions? This might raise some doubts, although the search for a term mapping

the contemporary situation has not provided any convincing alternative. Compared to the 1960s and 1970s, societies have gone through massive changes. It is not so obvious, however, if and how the social, economic, political and technical transformations affect cultural practices. In architecture, for example, “postmodern” became a stylistic etiquette for the semiotic experiments of the 1970s and 1980s, which were soon replaced by “deconstruction” and “minimalism,” although these are arguably in continuity with a linguistic-pluralistic postmodern culture, in which “modern” becomes only one of many available (historic) styles.

CAPITALISM, NEO-CAPITALISM, POST-CAPITALISM?

Capitalism is dead. Long live capitalism! This is the dialectic story of economic development from the 19th century until today. Boom follows economic crisis, whose analysis and resolution fuel the next evolutionary cycle. Take the 1929 stock market crash and the ensuing Depression as an example: restrictive monetary policy, wage reduction and the spiral of national protective actions exacerbated the financial crisis, as John Maynard Keynes showed in retrospect. He argued instead for international agreements, a strong state, demand-driven, countercyclical economic policy and new instruments of control over banks, companies, and wages. The American New Deal and post-war economic redevelopment seem to prove his point. Yet they also show how macroeconomic lessons (or the logic of wartime economy) were internalized by entrepreneurial action. In other words, the new means of planning, control and participation imposed by the state in an attempt to overcome the crisis initiated a new phase of (trans-)national companies and mass consumption. These, in addition to improvements in production, financing, marketing, and distribution, led to a new societal model: neo-capitalism.

This new paradigm is derived from the administrative integration of research, planning and the decision-making process into business practice to deal with the growing complexity and internationality. The socialist agenda of reducing working hours while increasing wages, worker participation and education further undermined the old antagonism between capital and labor and paved the way for the economic recovery of Western Europe in the 1950s and 1960s. However, the integration of traditional labor organizations such as parties and unions into institutionalized democratic politics and a liberal economy rendered alternatives to the hegemonic social model impossible. In addition, there was a final disenchantment of

the left with real existing socialism after Khrushchev’s confession of Stalinist terror and the suppressed uprisings in East Germany in 1953 and Hungary in 1956.

An examination of the relationship between architecture and capital(ism) shows a similar pattern. While most architects of “heroic” modernism of the 1920s and 1930s rejected the dominant economic system, they still considered it necessary either to integrate into the administrative order or follow the artistic role model and search for patrons for their experimental designs, as often with Gropius, Mies van der Rohe and Le Corbusier. However, in spite of formal innovation, abstraction and reformist ideas, both strategies turned out to be operative and stabilizing, against the intentions of their authors. In the 1960s, criticism against modernism had advanced far enough to uncover its utopian hopes as failed and to understand the effect of the market on critical projects more dialectically: alternative takes included the search for the autonomy of architecture beyond functional determination (and hence capitalist exploitation) as well as the counterstrategy of accelerated development. Exemplary for the latter are the projects of the Florentine group Archizoom Associati, who recognized Fiat and Olivetti to be typical of the neo-capitalist corporations in Italy of the 1960s, and who understood the neo-Marxist dialectic of detecting liberating potentials within the new organization of labor, technologic progress and mass-consumption. After all, Marx had already characterized capitalism as the most advanced stage of historic evolution, which brought positive effects even to the workers, such as their organization into a productive force and their political awakening as antagonists to capitalists, which is why he believed capitalism had to precede revolution.

Archizoom use the instruments of neo-capitalist practice in a consistent way: they practiced as a corporate group under a brand name instead of as a traditional individual author, they put project and process at the center of architectonic work, and they affirmatively integrated graphic design as well as technologic progress into their projects. However, in contrast to US corporate architecture of the time, such as SOM or Saarinen, and to the pop and technophile English group Archigram—to whom Archizoom ironically relate—their projects have to be read as critical commentary based on the Italian actionist, neo-Marxian operaista movement. Archizoom’s project “No-Stop City” (1968–70) displays the processual, systemic and totalistic nature of neo-capitalism, unlike the smooth surfaces and technologic perfection of corporate

late modernism. They take up the widespread operaist concept of society as a factory and apply it to architecture. The singular architectural object exists no longer; it vanishes in isotropic mega-structures, in endless, repetitive interiors where the only feature left is building technology—artificial light and climate as well as a grid of columns and infrastructural cores. Architecture is replaced by planning, and presented as scientific, integrated control that pretends to organize economic and social development in space. Yet this is just an exaggeration of the architectural and urbanistic trends of the 1960s, a radicalization—not for its own end, but to provoke the transgression of the system into revolutionary events and finally lead to the emergence of “new wild realities” of nomadic inhabitation, free self-expression and spontaneous socialization as the collages of Archizoom show.

Today the experimental, utopian and radical architecture of the 1960s enjoys popularity amongst architects but against a changed socio-economic background; the neo-capitalist interdependence of state, unions, banks and corporations has disintegrated. The disappearance of the working class in favor of classless consumers and jobholders in Western societies matches the shift from “use value” to “exchange value” of contemporary products. In buying sneakers, lemonade or mobile phones we do not purchase an object, but a lifestyle. And we consume culture and art as easily as critique, resistance and underground movements. On the other hand, state interventions referring (often wrongly) to Keynes have proven their own risk sensitivity and went out of fashion with neo-liberal administrations taking office in the 1980s (Reagan and Thatcher) before deregulation, privatization and the dismantling of the welfare state became the standard repertoire of Western politics in the 1990s. All the while, the countries of the second and third worlds had to deal with much more dramatic shifts of their political, economic and social orders. Seen retrospectively, neo-capitalism appears to be a byproduct of the Cold War, which means that the fall of the wall also took place in the West without a term adequate to “post-communism.” Since then capitalism, the assumptive victor, has demonstrated—under the banner of globalization—its crisis-laden evolution as well as its capability to integrate excluded territories and populations into its system of exploitation. If the recent financial crisis adds another chapter to capitalist evolution between boom and crash, or if it changes the system structurally (like neo-capitalism discussed above), or even if it will mark the transition to another society—something like post-capitalism maybe—it needs to be further observed, but leaves room for speculation.

STRUCTURALISM, POST-STRUCTURALISM, POST-CONTEMPORARY?

An alternative architectural strategy of dealing with the neo-capitalist phenomena already mentioned above is based less upon analysis, integration and exacerbation of the inherent dialectic forces of the system, and more on the exposure and critique of its cultural effects in the footsteps of Adorno’s “culture industry” or Debord’s “spectacle.”³ So-called criticality, or critical architecture, originated in the early 1970s from a twofold rejection of semiotic post-modernism as well as techno-functional late modernism. On the contrary, following the model of minimal or conceptual art, architecture ought to be autonomous and abstract to gain room to maneuver within the prevailing social order of mass consumer culture. Therefore a group of architects regarded “heroic” modern architecture of the 1920s and 1930s as not fully exhausted, and formed a neo-avant-garde in order to continue (with the help of linguistic theories) the formal language of modernism, yet without its social program.

Soon the protagonists established critical characteristics such as post-functional formalism, abstract manipulation of geometric elements, display of architectonic conventions or disrespect against context, material, construction, detail, etc. The projects, often restricted to drawing or model, were accompanied by elaborate theoretic texts that made references to (post-)structural authors and claimed a disjunction, decomposition, deconstruction or transgression of architecture or explained verbosely its problematization, resistance and silence. In 1988, when the New York MoMA put on the Deconstructivist Architecture show,⁴ the triumph of critical architecture seemed perfect, at least in academia, only to leave the architectural discourse a few years later almost unrecognized. Yet it boosted its protagonists—Koolhaas, Gehry, Eisenman, Hadid, Libeskind, Coop Himmelb(l)au, Tschumi—into the upper echelon of the global star system where their signature buildings gave evidence of how a post-structural reading strategy turned into theory, and finally into an architectural style.

This translational process of philosophic, linguistic, psychoanalytic and social criticism into the discipline of architecture, however, took away much of its critical content. Instead of unmasking the established power relations (which architecture and urbanism tend to glorify), instead of uncovering the construction of the discipline (of architecture and planning), instead of questioning

the essential categories of thinking, speaking and writing (about architecture), the fruit of (post-)structuralism seems to be reduced to form finding. Even radical challenges of traditional practice, such as the retreat from authorship into aleatoric, diagrammatic, parametric or other process-oriented design strategies, turned into trademarks of a few protagonists and, by the penetration of the everyday with digital techniques, into a new style. Parallel, there has been a return to more classic disciplinary positions, rendering the architect either as pragmatic service provider or as ingenious artist. Or as both: this is the position exemplified by Frank Gehry against all formal similarity to deconstructivism. Ironically, there is a coincidence of decomposition with extravagance, critique of representation with media-architecture, and the death of the author with the birth of the icon.

Architecture now is “contemporary”: many of its themes and topics such as convex-concave shapes, fluid surfaces, amorphous seamlessness, processuality, dynamism, variability and the whole attempt to integrate temporality into design cannot be ascribed to digital technology alone. For sure, CAD, Photoshop and animation enhance a trend to dematerialization and virtualization, yet the aim for liquid, transformative and morphed space resonates dialectically with the dissolution of social, political and economic borders. Hence the frequent reference to Deleuze, because his thoughts on deterritorialization, hybridization and affect (in the schizophrenia of capitalism) elude critical distance, resistance and negation of other (post-)structuralist approaches, especially the ones of (neo-)Marxist origin. In addition, Deleuze’s concepts of non-linearity, nomadism, and rhizome have advanced to cultural clichés with the proliferation of the Internet, handheld computers and social media. The relevance of these theories lies in a critique of the territorial, essential and rational nature of Western thought, challenging the traditional philosophic foundations of architecture as structure, order and material artifact. On the other hand, diagram, process and liquidation of architecture may have an alternative genealogy beyond IT and French philosophy rarely reflected by its protagonists and interpreters. These phenomena echo the capitalist ideologies of planning and control, theories of human-machine-systems (cybernetics) and its update by system theories, and therefore they seem far less liberating (as possibilities of transgression and affect) than a cultural expression of total integration into the global systems of exploitation.

If contemporaneity is something like the last modernist legacy,

then recent talk of the post-contemporary promises to surpass architecture’s obsession to express the moment, or *Zeitgeist*. At a closer look, however, this idea of the post-contemporary turns out to be just another crutch borrowed from elsewhere: since the post-war phase in music and the arts is often referred to as contemporary, so too some critics figured, there must be something next—that is, a post-contemporary epoch. In other words: we have never been more modern.

CRITICAL, POST-CRITICAL, NEO-PRAGMATIC

Even within academia, critical architecture has met with some discontent. In the name of “post-criticality” a group of younger theoreticians tries to emancipate themselves from their intellectual godfathers.⁵ Alternatively, they propagate “projective” architecture that relates to the predominance of architectural design (projects)—and practice in general—for theoretic thinking. “Projective” should also resonate to the architect’s future-oriented perspective, referring to the literal meaning of foreseeing, and reject the critical instruments of negation and resistance, since they always carry a regressive trait. Another meaning derives from psychology where projection refers to the transfer of inner, subjective feelings onto outer objects and connects the post-critical position to perception, mood and the immersive atmosphere of architectural interventions and environments.

Even if this critique of established academic critical architecture and their caricature of the linguistic post-structural discourse mechanism seem refreshing, the trouble lies in its fixation on the academic debate. By overestimating the importance of some critical authors (and the school of Criticality in general), the post-criticals claim the futility of any critical practice in architecture. In fact they answer the question of the transformative social power of architectural design vaguely, with the provision of alternative lifestyles. Other critical approaches, such as participatory design, critical regionalism or critical realism, with its focus on the everyday are not taken into consideration. Rather we witness again the curse of reductive dialectics, where thesis is answered by anti-thesis, and one theory by the model of the “post-” that postulates nothing else but a binary negation, instead of proposing a real alternative. If we take a look at the post-critical debate in architecture, it might be worth noting that it entered the scene after 2001 and the parallel political revisionism and war against terrorism might be more than temporal coincidence. Already at

the beginning of the 1990s, some voices tried to challenge critical theory by asking for a positive relationship to the market and American popular culture, respectively denouncing abstraction, resistance and intellectual criticism as elitist Euro-centrism. Here the implicit suspicion of anti-Americanism avails on the (American) neo-pragmatist school of thought: with the fall of the iron curtain, the (neo-)Marxist heritage of critical theories seemed to be historically falsified. In a way, the post-critical authors of today, with their primacy of practice and their interpretation of mass consumer society as liberal, democratic and egalitarian, tie in with older postmodern theories such as the affirmative reading of Las Vegas by Venturi and Scott Brown⁶ or the appraisal of Disneyland as model for urban public space by Charles Moore.⁷ In this sense the contemporary projective approach looks less post-critical than pre-critical.

LA RECHERCHE DU THÉORIE PERDU, OR: THE PRACTICE OF THEORY AND THEORY OF PRACTICE

Architecture sustains a difficult dialectical relationship to society, which resurfaces as the old question of content and form. Almost every architectural design problem comments on the surrounding societal relations because each project suggests a piece of future to be realized, provokes a deviance from the existing, and opens a window of possibilities. This foreseeing (or projective) aspect of architectural design is initially independent from formal expression or style chosen. But the question of meaning comes back immediately with its theoretic, political and historical or just ideological inscriptions. Contrary to classical notions of semiotics, architecture does not speak, but its forms are neither free nor innocent since they face constant interpretations by their observers and users against the background of their knowledge and memory. The future-oriented vector of design contains a fundamental critical potential by challenging the existing and initiating change. Yet the success of capitalism relies on its faculty to integrate critique, resistance and even negation and to turn them into products. Or rather: capitalism lives on the promise for novelty and innovation, on the appearance of the permanent change of its products. Fashion answers this demand for constant renewal perfectly without touching the existing societal relations. Therefore architecture faces a two-fold problem: as a complex, expensive and permanent cultural product, it is built by order of the elites, which makes it difficult to be more than the embodiment of dominant values, yet under capitalism the innovative,

transformative and revolutionary quality is cashed in as trademark and fashion.

So where is space for a critical practice within contemporary culture? The retreat into the interiority of architecture, into linguistic structure, into autonomous typology or into geometrical manipulation of its elements ends in pure, formalist games. The most recent of these goes by the name of parametric design in digital disguise. But architecture cannot escape the societal relations: dialectically they force their way back into design unrecognized just as the excursus to contemporary architecture of networks, flows and processes and its connection to global, deregulated, IT-driven capitalism demonstrated. From this perspective it seems worth noting that there is a change underway to articulate borders, thresholds, envelopes and (solidified) surfaces, which might supply a new demand for security and stability or might as well refer to the discourse on sustainability, which addresses certificates, thresholds, performance, etc.

This should not be misunderstood as a plea for sociologic architecture or instrumental politics. The totalitarian force enclosed in utopian urban projects—already from the beginning, as Plato's *Politeia* as much as Thomas More's *Utopia* demonstrate—has not been averted. The divergence between the respectively failed developments of humanitarian intentions and inhuman results pervades the architectural history of the 20th century. Yet the fault resides seldom in architecture or planning alone, but on the larger part in politics, as for example the social segregation, dilapidation and hopelessness in French *grande ensembles*, which lead to recurring uprisings in the last years. Today, in the face of urgent social spatial questions, the omniscient heroic pose of the modern master is as inappropriate as the cult around the postmodern star architect and his trademark designs. On the contrary, we need alternative approaches, office structures and practices, where the internal criticality (of architecture) should not be mistaken for social or cultural critique. The choice of a project or client might be more relevant than style. Yet even sociologically informed design strategies applying participatory models and operating with flexible, negotiable spaces can easily turn into optimization strategies of lean management, which have already entered the planning codes of corporate architecture (desk sharing, work lounges, informal meeting spaces). The intention to democratize the working environment, to smooth the workflow and increase social interaction initiates a new stage of reification,

as demonstrated by the example of the Bürolandschaft (office landscape) by the Schnelle brothers in the 1960s, which started as a democratic, emancipatory reform model with cybernetic inspirations.

Even the retreat of critical architecture into the safe harbor of the arts does not promise salvation. First, the art market today has become an example par excellence of a highly volatile exchange market liberated from “use value.” That is why economists analyze the art market as a model for stock exchange. Second, architecture buys into art by eliminating use, habituation and haptics, and therefore the political space of the everyday. And architecture pursued as pure art often falls back on the sacral and cultic, or onto autonomist formalism, whose gesture of negation against commerce and kitsch has worn off. On the other hand, art projects in the institutional frame of museums, galleries and academia offer a space for critical architectural interventions that might not have a chance on the free market. For select cases, an architectural project under the umbrella of the arts might develop a stronger political and social effect than traditional design practice. For the discipline at large, however, the integration of architecture into the fine arts would deprive it of its singular dialectical relation to life, which has to do with connecting different disciplines, practices and discourses into one singular, material artifact at a precise place.

Even the retreat of a critical architectural practice into history and theory, as Manfredo Tafuri had hoped after 1968,⁸ has lost much of its glamour. Since criticality was legitimized with his writings, the critique of critique strikes back onto the historian from Venice. Even worse, his plea for a separation of theory and practice has led to their alienation at those academic institutions where it originated. And finally, distancing theory from practice and production did not provoke a more critical approach to architecture and its cultural, social and political context, but rather a more ignorant one. Or a more servile one. We should ask for more—a skillful criticism of a building names what makes the design solution exemplary, or a critical interrogation of the discipline on the background of the social and political conditions—because the freedom of architectural design has to be understood as contingent, as relative to and limited by clients, regulations, technique, builders,

etc., not to mention its capillary connections to power and capital. But there is more for theory than description and analysis: it has to regain an active role in practice by locating alternative fields for action, by hypothesizing new developments and by initiating critical design strategies. In the end, practice and theory prove to be dialectically interrelated because in Western societies there is no cultural practice without theory, no product without concepts, terms and discourses. If contemporary architecture is about redefining a plausible relationship between the social and the formal, it is in need of a critical practice as much as a practical theory.

ENDNOTES

1. Le Corbusier, *Toward an Architecture*, trans. John Goodman (Los Angeles: Getty Research Institute, 2007), 307.
2. Jean-François Lyotard, *La Condition Postmoderne: La Raport sur le Savoir* (Paris: Minuit, 1979), idem, *The Postmodern Condition: A Report on Knowledge*, trans. Geoff Bennington and Brian Massumi (Minneapolis: University of Minnesota Press, 1984).
3. Theodor W. Adorno and Max Horkheimer, *Dialektik der Aufklärung: Philosophische Fragmente* (New York: Social Studies Association; Amsterdam: Querido, 1947; new edition Frankfurt/Main: Fischer, 1970); idem, *Dialectic of Enlightenment* (New York: Herder and Herder, 1972). Guy Debord, *La Société du spectacle* (Paris: Buchet/Chastel, 1967); idem, *Society of the Spectacle* (Detroit: Black & Red, 1983).
4. Philip Johnson and Mark Wigley, eds., *Deconstructivist Architecture* (New York: Museum of Modern Art, 1988).
5. Cf. Robert Somol, Sarah Whiting, “Notes Around the Doppler Effect and Other Moods of Modernism,” *Perspecta* 33 (2002): 72–7; cf. Sylvia Lavin, “The Temporary Contemporary,” *Perspecta* 34 (2003): 128–35; cf. George Baird, “»Criticality« and Its Discontents,” *Harvard Design Magazine* 21 (2004): 16–21; cf. Jeffrey Kipnis, “Is Resistance Futile?,” *Log* 5 (2005): 105–9.
6. Robert Venturi, Denise Scott-Brown, and Steven Izenour, *Learning from Las Vegas – The Forgotten Symbolism of Architectural Form* (Cambridge, MA: MIT Press, 1972, 1977).
7. Charles Moore, “You Have to Pay for the Public Life,” *Perspecta* 9/10 (1965): 57–65; 68–106.
8. Manfredo Tafuri, *Progetto e Utopia* (Bari: Laterza, 1973), idem, *Architecture and Utopia: Design and Capitalist Development* (Cambridge, MA: MIT Press, 1976).



DESIGN IN ZION: PROBLEMS AND OPPORTUNITIES

THOMAS CARTER, PH.D., PROFESSOR EMERITUS

KIMBALL ART CENTER TRANSFORMATION PROJECT

GRANT HERRON, BS ARCH '13, DAVID POLK BS ARCH '13, JANE COLLETE M.ARCH '13

PLAYING FOR STRANGERS OR THE DIMISHED AUTHORITY

PRESCOTT MUIR, DIRECTOR SOA

THE PARTICULAR

Difference means something particular at the SoA. Anyone who has ever been to Utah knows the remarkable landscape that surrounds us. Our university is perched on the shoreline of an ancient lakebed within a valley created by two mountain ranges, a place where Indians once lived in perfect balance with nature. Difference in Utah is indelibly tied to this awesome surround. Place is also defined by cultural history. Our school is located in Salt Lake City, which was founded by Mormon settlers fleeing to the west. Though we are a secular school, we are surrounded by and often defined by the presence, actions and buildings of both the dominant religious culture as well as the resulting counter-culture. This creates no small amount of complexity and polarity in which to operate.

You often hear the question “What is Regionalism?” raised in discussion around the school. It is not clear if there is such a thing. The only thing that is clear is that no one aesthetic style can suffice. We believe that it is our role as practitioners, students and educators to promote the critical role of architecture in defining the built environment and fixing culture for a moment. We promote a place-based sustainable ethic that operates at the local to the global scale. We support the development of socially, culturally, and materially sensitive design that both responds to and challenges the particular qualities of the place in which it is situated. How that looks and feels is up to interpretation, and often the subject of debate.

To operate with sensitivity in this place, we must first have a firm grounding in the past. We need to know where we come from. To develop a critical practice, it is not enough to understand the context of a place; we must recognize in what ways we as architects can elevate, challenge, transcend and innovate within that context. Can our work transform our understanding?

The three articles in this section frame a discussion of “The Particular” from a variety of perspectives. Tom Carter, PhD and Professor Emeritus in the School of Architecture, presents the historical grounding of architecture in the American West and Utah’s particular connection (or lack of connection) to the western mythology. Students Grant Herron, David Polk and Jane Collette interpret the process of an international design competition conducted during the 2011-2012 academic year in Park City, Utah for the design of the Kimball Art Center expansion. Several of the best architects in the world were in residence over the course of the year, presenting and defending their designs for the center and the ways in which they responded to the particular “place” of Park City. Finally, SoA Director and Professor Prescott Muir, a juror for the Kimball competition, presents an argument for the role of the museum as cultural vessel and cultural generator. He demonstrates the difficulty of the architect’s role in facilitating discussion about the selection of a public building that reflects these ineffable programmatic qualities through a particular formal response.

DESIGN IN ZION: PROBLEMS AND OPPORTUNITIES

THOMAS CARTER, PH.D., PROFESSORS EMERITUS

This essay is a revised and much condensed version of the talk, “Design in Zion: The Search for Regional Identity in Utah Architecture,” given to Utah Chapter of the American Institute of Architects, Salt Lake City, September 2003. I want to thank Sarah Sabiston for helping develop and refine the arguments presented here.

A simple question often begets a hard answer. This is certainly the case with the one concerning the divide between Utah’s past and present architecture. Why, people have wondered, has the state’s nineteenth-century Mormon vernacular architecture had so little influence on contemporary design? The situation is indeed curious. Architects in other western states have used local building styles to create what landscape historian Chris Wilson, in his seminal study *The Myth of Santa Fe* (1989), calls “modern regional traditions.” Here in Utah this has not happened, despite the richness of the state’s vernacular inheritance.

So this essay offers some thoughts on the possible reasons why early Mormon architecture has failed to impact contemporary Utah design in the way, say, Native American, Spanish Colonial, and industrial (mining) traditions have in other states. An assumption here is that outside of the area around Temple Square, Salt Lake City—and Utah generally—has little regional distinction and is, for better or worse, just another western city of the Los Angeles variety. From the vantage point of three decades of experience studying western vernacular architecture, it seems to me there are three root causes for this state of affairs: first is the problem of Utah’s place in the larger western region; second is the peculiar nature of Mormon/Gentile relations; and third are the particular qualities of the early Mormon building style itself.

UTAH AND THE AMERICAN WEST

Despite occupying the vast center of the region, Utah has never fit well into the popular image of the West. For most people, the West possesses discernible qualities that contrast with those associated with Mormons. On one side is the Wild West, while on the other is well-behaved, orderly Utah. The West celebrates the rugged individual, Utah the community; the West is male (or at least manliness is deemed a western virtue) while in Utah the family reigns supreme; the West has cowboys and we have

farmers. The list goes on. But the point is Utahns just aren’t very good westerners. We find it hard to cash in on the cowboy mystique; however hard we try it doesn’t seem to quite work—big belt buckles may be simply incongruous with the squeaky-clean suit, white shirt, and tie associated with missionaries.

The fact that the story of Utah’s settlement is similar to other parts of the West seems to make no difference. Like those headed to Oregon’s Willamette Valley, California’s Sacramento River Valley, the rangelands of Nevada, or Colorado’s goldfields, the Saints came west seeking opportunity. Their efforts may have been religiously motivated, but they still shared with other westerners the hardships and rewards of settling a new land. Nevertheless, they are still separated out and often ignored in general histories of the region. Historians study the West or they study the Mormons, but rarely both. Such oversight has led many historians to refer to the Mormon Great Basin as the “doughnut hole” of the West—the area in the middle of the western map that no one really knows what to do with.

Such an indeterminate cultural positioning has implications for architects, for it becomes hard to attach oneself to the well-worn but readily recognizable themes that typify “western” buildings; the Pueblo “indigenous,” the frontier “boom-town,” or the National Park “rustic” styles come to mind. Except for Deer Valley, perhaps, with its huge log and stone vacation homes, or Park City’s Main Street shopping mall, Utah is just not the West, though you can see it from here.

MORMONS AND GENTILES

The identity crisis gets even more complicated when we start looking inward, to the cultural composition of the state. A second reason for the lack of a strong modern regional style in Utah architecture centers on the abiding conflict between Mormons

and Gentiles. Whether it is acknowledged or not, the Mormon/Non-Mormon dichotomy is real and has impacted both the historic and contemporary Utah landscapes. In Salt Lake City, the split surfaced almost immediately, with the Latter-day Saints centered around Temple Square and South Temple, and the Gentiles locating nearby on 300 and 400 South. This bifurcation has endured to this day.

Add in the increasingly diverse nature of the Gentile population after about 1890, and the question of identity becomes even more complex. If Utah is not western, neither is it monolithically Mormon. The most accurate description is that we are a multi-cultural state, which is a good thing but still problematic for it usually comes at the expense of the Mormons, whose significant contribution to the state's history is downplayed. The story of the opening ceremony at the 2002 Winter Olympics is instructive. Utah Gentiles were wary of being represented by handcart-pushing pioneers, so in the name of ecumenical peace we got cowboys. In other parts of the West, pioneers are perfectly acceptable, but not here (even though this would not be "the place" without them).

It is a silly but nevertheless real disagreement that seeps into the design profession. If architects were going to create a modern regional tradition, what would they fashion it upon? Whose story would be highlighted? Certainly, the dominant building tradition in the state is Mormon, but if it is singled out then the role of other people is diminished, and these "other people" are highly sensitive about being left out. Both non-LDS and LDS architects feel this, I'm sure, and both shy away from drawing upon the Mormon past, except around Temple Square. There were similar problems in New Mexico when the Santa Fe style was invented. Architects there chose to foreground only one aspect of their state's past—the early Pueblo and Spanish mission period—while conveniently ignoring later Anglo and Mexican/Mestizo contributions. Luckily, the same thing has not been allowed to happen in Utah, where despite all our insecurities we seem willing to affirm multiculturalism.

All the same, we need to accept the fact that these old antipathies present a formidable obstacle to achieving a regional style in contemporary Utah architecture—on both sides. Gentiles think the Mormons are conservative and reactionary, and Mormons think the Gentiles are permissive and liberal. This myth persists, despite the fact that in the two biggest building projects of the last

decade the tables are turned, with the Mormons showing some courage and imagination in their new Conference Center, and the Gentiles, in the Salt Lake Library, faltering, letting old western insecurities about being unsophisticated and provincial influence their choice of architects—they wanted a Moshe Safdie building even if it wasn't a very good or original one! The LDS Conference Center, no matter what you think of it, is at least genuinely Utah. It is OF this place, and rather bravely so at that.

GENTILITY

A third factor working against the creation of a modern regional style in Utah architecture has to do with the progressive nature of early Mormon vernacular architecture. Modern regional traditions, as Chris Wilson points out, have one thing in common and this is that they begin with a nostalgic look backward. For Americans, the feeling of loss centers on a sense of community. Modernization brought prosperity and abundance, but also urbanization, pollution, crime, congestion, and the demise of the old type of pre-industrial community where people actually knew each other, where life was slower-paced, and problems seemed manageable. Such a world is gone, of course, but we long for it nonetheless and find comfort in surrounding ourselves with references to it, especially in our architecture.

Creating a modern regional tradition in architecture is fairly easy—it is fashioned around older pre-industrial/pre-modern forms and meanings. Building style thus helps people feel they have moved out of their crazy time and slipped back into a more sensible era, a "time before" everyone went mad. Some examples (and the Disneyland names are no accident) would be what I like to call Frontierland, a main street like Park City's which is lined with old western false-front stores; Adventureland, the Swiss village at Solitude or the rustic style buildings at Zion or the North Rim; or maybe Indianland, the ersatz adobe of Moab and St. George. These architectures are not actual extensions of earlier vernacular practices, but rather, idealized appropriations—inventions really—of historic traditions that give the impression of historicity.

So why no Mormonland? For one thing, it may already exist in and around Temple Square. Another reason, however, and the most important one I think, is the lack of a strong romantic quality in early Mormon vernacular buildings. It is hard to wax nostalgic

about buildings that were from the outset remarkably progressive, fashionable, and for the time, modern. In moving away from the States, the Mormons were seeking refuge from persecution, but they were not looking to disassociate themselves from America, either politically or culturally. Like many westerners today, the early Saints took great pains to avoid being thought backward (Brigham Young preached incessantly against building log cabins), uncultured (they immediately built a social hall and followed it with a grand theater), and unrefined (they assiduously followed eastern fashions). Legitimacy comes in many forms, and architecture was one device the Saints used and continue to use in establishing themselves as an acceptable element within American society.

CONCLUSION

Utah's lack of a strong modern regionalism is grounded in a set of older influences—obstacles to a strong sense of place. For one thing, we do not fit western stereotypes; for another, the state's Mormon heritage is contested by other segments of the population; and finally, it is hard to become romantically attached to the progressive ethos embraced by the Mormon pioneers. So where to turn? I think we ought to be glad we fail the western test; who wants more gigantic log ski lodges, mining town shopping centers, and adobe health spas? Also, there seems to be no need for homogeneity; the state is home to a diversity of national and cultural groups and we should celebrate this while at the same time not being embarrassed of the dominant LDS contribution. For instance, I see great value in Salt Lake City's dual identity. The competition between Church (our own little Vatican) and Gentile zones should inspire rather than impede architects on both ends of Main Street. As for the romantic reuse of the vernacular, personally I say leave this alone. It is time to move on and create a regional architecture for the future, not the past, one that confronts the problems of our own time such as climate change and sustainability rather than one that escapes into past mythologies. In this, I am sure the old timers would agree.

“AND AS FOR THE ROMANTIC REUSE OF THE VERNACULAR, PERSONALLY I SAY LEAVE THIS ALONE. IT IS TIME TO MOVE ON AND CREATE A REGIONAL ARCHITECTURE FOR THE FUTURE, NOT THE PAST-...”

KIMBALL ART CENTER TRANSFORMATION PROJECT

GRANT HERRON, DAVID POLK, B.S. ARCH '13; AND JANE COLLETTE, M.ARCH '13

The following article provides multiple perspectives on the Kimball Art Center Transformation Project from students, competitors, jurors and townspeople.

In 2011, the Kimball Art Center in Park City, Utah announced plans for an international invited competition. They asked architects to address the renovation and expansion of their existing building to support its mission of inspiring and teaching young artists and exhibiting the work of established professionals.

The Kimball Art Center (KAC) is a non-profit visual arts museum that, in 2011, served over 80,000 visitors, featured five nationally acclaimed and ten local exhibits, offered more than 270 classes to the public, hosted the 42nd annual Park City Kimball Arts Festival, and was the center for the Sundance Film Festival for the 30th year in a row.

The site of the Kimball Art Center, which stretches along Heber Avenue between Park Avenue and Main Street, was originally home to a livery stable. In 1929, the Kimball brothers purchased the lot and built an auto service garage that remained in operation until 1972. In 1976, local resident Bill Kimball turned the building into a non-profit art center. The KAC has been renovated many times over the years, including a major remodel for its role as a hub for the 2002 Winter Olympics.

On November 2, 2011 the five short-listed firms—Bjarke Ingels Group (BIG) of New York and Copenhagen, Sparano + Mooney Architecture of Salt Lake City, Tod Williams and Billie Tsien Architects of New York City, Will Bruder + Partners LDT of Phoenix, and Brooks + Scarpa Architects of Los Angeles—met in Park City to tour the existing facilities and the town. Competition Director, Don Stastny, and KAC Executive Director, Robin Marrouche, further briefed the designers on the details of the program. During a public “Meet the Designers” event later that same evening, Park City residents and design aficionados from the greater Salt Lake area heard from each of the design firms about their initial impressions of the project.

The designers were given until December 21st to complete their proposals. The competition boards and models were delivered

to the KAC and exhibited to the public. The proposals clearly demonstrated the center's aspirations for an innovative and high-quality design approach, each uniquely capturing a different aspect of Park City and the KAC.

On February 2, 2012, the KAC hosted the final project presentations, which were open to the public and comprised a 30-minute presentation from each designer, followed by a 30-minute question and answer session with the jury. This format allowed each of the architects to explain their design process and for the jury members to address specific concerns.

A week later, BIG's design was announced as the winner. Their proposal focused on three key elements: relevance to historic Park City, creation of a new landmark for the city and sustainability both in the way the building functions and in the materials used in its construction.

Ingels and his team drew upon the history of silver mining in the area, which has had a lasting effect on the local architecture. The Silver King Coalition Mine Building, known more simply as the Coalition Building, was visual evidence of that influence and stood as a landmark in Park City until it burned to the ground in 1982. In the decades since the Coalition Building's untimely demise, Park City has stood without a prominent architectural feature. One issue with recreating those proportions, however, is the fact that the resulting building envelope defies Park City's current zoning ordinances—a parameter stressed during the competition.

Along with the legacy of mining came a building method known as stacked timber construction, which was historically the primary building method in both mining and residential construction in Park City. This style continues to prevail as the primary aesthetic of the town. Ingels recognized an opportunity to interpret this style and proposed doing so using wood members extracted from the remains of an old railroad line that crossed the Great Salt Lake. These timbers, which have been marinating for decades, will serve

as the exterior envelope comprising the building's twisting facade.

BIG's proposal will provide much needed exhibit space, give Park City national and worldwide recognition in the design community, and turn the KAC into a vanguard of the visual arts. The Kimball Art Center may not just transform how we see and experience art, but also how we see and experience architecture.

INTERVIEWS

Gary Kimball is a fourth generation Park City resident, and the son of the man who built the KAC building in 1929.

Jane Collette, graduate student: What was the first structure on the KAC site?

Gary Kimball: George Gillian Snyder constructed the Dexter Livery Stables on this site in 1874. Dexter was a famous trotter racehorse from upstate New York. He was the rage of the horse-fancier public.

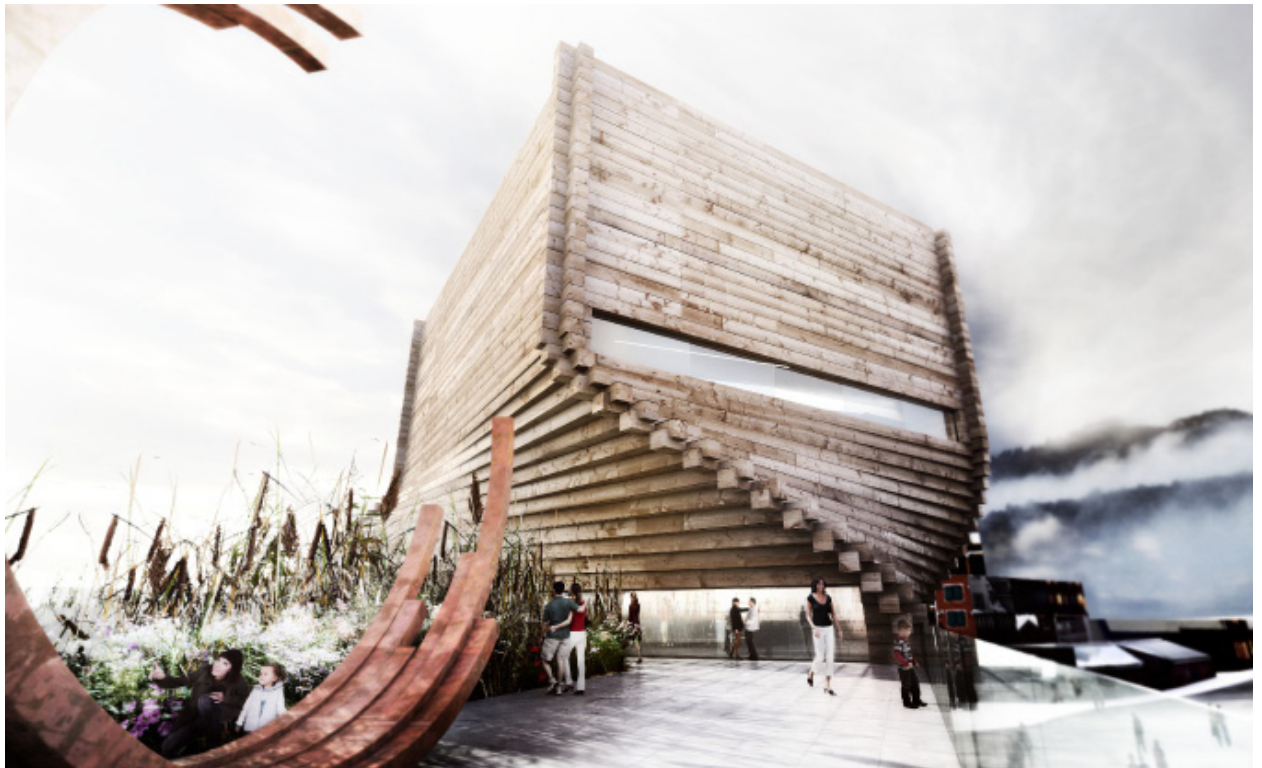
In 1886, my grandfather Robert Taylor Kimball and several of his brothers purchased the Dexter Livery Stables, and turned them into the Kimball Brothers Pioneer Stage.

JC: Does any part of the original livery building survive?

GK: No, the livery building is gone. It was located on what is now that outdoor area on the corner of Heber and Main. My father used that corner for oil storage. The Kimball Art Center is the service station that my father had built in 1929, of brick, concrete and steel girders. At that time the building was considered state-of-the-art, and was proclaimed fire-proof, a novel idea for Park City. Not a good year, though, he built it just before the stock market crash. He held on to it for about 10 years and was able to get out of it without debt. It could have been worse.

JC: Are you related to KAC founder Bill Kimball?

GK: I'm only distantly related. He was an official with Utah International and made a good marriage into the Eccles family,



BIG's proposal dug deeply into the urban development of Park City's heritage as a silver mining town. They proposed using repurposing trestle wood from an abandoned rail line to create a monolithic, twisted envelope constructed of stacked timber. Photo courtesy of Bjarke Ingels Group.

who controlled 1st Security Bank. When General Electric bought out Utah International, Bill ended up with lots of money. He looked for a place to build an art center as a tax shelter. He found the old Kimball garage and discovered the name and history connection. Before my father died, he got to meet Bill, and they found out that they were distant cousins. My father considered it an honor.
Robin Marrouche is the Kimball Art Center Executive Director.

Jane Collette: Describe how the idea for the design competition came about.

Robin Marrouche: The idea [came] from Hank Louis [University of Utah adjunct professor and Kimball Board Member]. We wanted a Main Street entrance to the museum, and we needed to expand to fulfill our mission. It was Hank's idea to do a design competition. He did a studio project with students designing a Kimball expansion—that was the first step.

JC: BIG's design has no Main Street entrance. How willing are they to make changes to their design?

RM: Yes, that was one of the big issues with their project, but they are very willing to work with us. They haven't started making changes; we're waiting for approval from the city.

JC: What kind of opposition did you face early on in the process?

RM: Nobody disagrees that we need more space, everyone's excited. The only comments I had were, "Oh my gosh, that's going to be great for the community."

JC: The budget of \$6 million seems small for this project. Why is it so low?

RM: We gave a modest preliminary budget to vet out the competitors. If you can't stick to a modest budget, you are not right for this job.

JC: What is BIG's current estimate for the project cost?

RM: BIG and [their local partner] Architectural Nexus value engineered it at \$9 million in their presentation, but that's without final plans. We expect it to cost between \$9 and \$10 million.

JC: Much has been made of the community involvement in this design competition. Can you describe how this has worked?

RM: Community involvement started at the Arts Festival last summer [2011]. We had chalkboards out for the public to sketch on and write comments. People wanted things like educational class space and sculpture gardens. We photographed the chalkboards, compiled all of the data, and then we supplied the data to all of the architects. The public was also invited to send in comment cards. Copies of all of those cards were given to each juror as part of the deliberation, and they have since been given to BIG.

JC: Is it true that one of the donors refused to commit funds unless BIG was chosen? Was this donor also a juror?

RM: No. None of the jurors were donors.

JC: The two architects on the jury, Maurice Cox and Prescott Muir, preferred Scarpa. Why did the jury choose BIG?

RM: The jury decision was unanimous.

JC: You were quoted in the paper the day the decision was announced as saying that this choice would put Park City on the map of great architecture. Did you have BIG in mind from the beginning?

RM: No, but we definitely wanted a landmark building.

JC: BIG would need to make some major changes to meet Park City's zoning codes. Are you worried that you won't get city approval?

RM: Height is a big issue in terms of code. Light pollution is not a big problem. [The height limit is 35' at the street front], BIG's proposal is 80', which is the same height as the Coalition Building. Some of the people who are objecting to the height didn't live here until after the Coalition Building burned down. And there are other nearby buildings that are higher [than the 35' limit].

JC: How do you respond to those who feel that Main Street's historic character will be spoiled by this addition?

RM: We aren't going with a Victorian building. Bjarke Ingels stuck with the timber and steel materiality of the mining town.

JC: Is the project on schedule for completion in 2013?

RM: It's too soon to tell. We need to go through the city process.

Anne Mooney of Sparano + Mooney Architecture, and University of Utah architecture professor.

Grant Herron and David Polk, undergraduate students: You were out of the country during the entire design process?

Anne Mooney: John [Sparano] and I were in Italy. We worked with a small Italian crew, and the office in Salt Lake. Five people working intensely, and a couple others who came and went during the process. We returned a few days before we had finished. Time difference was a little difficult. It could have been an advantage, allowing us to work round-the-clock. Unfortunately, it didn't quite work out that way.

H + P: Do you feel that there was a conflict of interests, having Prescott Muir on the jury?

AM: No, I don't think so. He didn't put my name forward; it was already in the pool. Architecture is a small world—you know everybody. He knows Will Bruder and Bjarke, and others.

H + P: Did it help to be a local firm?

AM: No, I think it was a total disadvantage. I think they were looking for a big name outside the state.

H + P: Were you surprised by the jury decision?

AM: All competitions have their politics. I don't think it was unusual, in some ways. I thought they brought [Bjarke] in just to produce some interesting ideas. I was surprised when he won, but he did get connected with the community quickly. In architecture, there's so much that goes on between the scenes. It's just part of the whole thing.

H + P: Do you think that your involvement in the KAC competition will help you in getting other commissions?

AM: It's one more piece of experience in our body of work. It's more helpful if it's built, but we got to explore some things that might find their way through in some other commissions. We're currently competing for a very big job. The KAC was helpful in providing us

with more practice competing against very respectable firms.

The jury consisted of Prescott Muir, Director of the University of Utah's School of Architecture; Maurice Cox, architecture professor at the University of Virginia; Tina Lewis, Park City historic preservationist; and local residents Jim Gaddis and Joanne Shiebler. There were two additional jurors with no vote: Robin Marrouche, Executive Director of the Kimball Art Center, and Phyllis Robinson of the Park City Municipal Corporation.

H + P: Which project initially appealed to you the most?

Tina Lewis: Both the BIG and the Brooks + Scarpa projects stood out to me initially because they both separated the historic building from the new building in a distinctive way.

Jim Gaddis: Probably one of the more conservative ones, like the glass and aspen trees [of Sparano + Mooney Architecture]. This seemed to fit better, and the cost to construct seemed more in line. [Coming from a] local architect gave it points.

H + P: How did the community input affect your decision?

TL: The jury spent an enormous amount of time reading every single comment that was made by the public—some of them pages long, some of them quite amusing, some of them amazingly insightful.

JG: I had no community input for my decision.

H + P: What do you think good architecture can do for Park City?

TL: The Kimball could very well become a tourist attraction by itself. It will certainly become the new Park City "postcard." Great architecture can only do good things, no matter how small the town, no matter what type of building.

The KAC project is waiting for a building permit before it can proceed. Many local residents are unhappy with the design, which they feel disturbs the historic quality of Park City's Main Street district. BIG's proposal also does not meet Park City's codes and zoning ordinances. The tower's violation of the 35' height limit has become particularly contentious.

Tom Clyde is a columnist with the *Park Record* and Jim Tedford and Gary Kimball are long-time Park City residents.

H + P: Tom called the proposal “Fort Bridger” in a *Park Record* editorial, and Gary described it as “a salute to the Titanic”. What are your objections to the design?

Tom Clyde: It’s just sort of jaw-dropping. There’s a 45’ height limit in that zone, and with this we start out at 80’. And everything else on the street is rectangular; it aligns with everything else. This thing is screwed in at an angle, and seems to hover over the street. It might be really nice somewhere else, but it’s so wrong for this site; this is a historic district. It will be fascinating to watch the politics. Several major donors in town have said that they won’t contribute, and I think they still have to raise a ton of money to build this thing. I have talked to a couple of planning commissioners, and at least those two [that I spoke with] are pretty hostile to it.

Jim Tedford: The thing goes totally against all of the codes. Main Street is a treasure, and they want to build this big twisted thing out of logs. I looked at the models; they were all beyond belief. [Sparano + Mooney’s] was the least objectionable of the five. It looks to me like they didn’t give a hoot about Main Street, Park City. I have no idea if they listened to anyone. But they are going to have to start listening pretty quickly—they don’t even have a permit yet. Main Street from the Kimball on down is all brand new, but most of those builders did a good job of making it look like Old Main Street. Many of the long-time residents, people who have been here 40 and 50 years, they don’t like this thing at all.

Gary Kimball: The tower is too tall, I like to actually be able to see the mountains. The Coalition Building was magnificent, it had form and function. [BIG’s proposal] has form, but it sure in the hell doesn’t have function. I do like the idea of salvaging the trestles, and I’m all for re-using old wood, but don’t do it here. I just want them to leave Old Town alone. I’m afraid that if I say it will be defeated, it will go through lickety-split. But I hope it will be defeated. If they have the money, they have the power and will do what the hell they want to do.

Students’ Perspective –

Grant Herron and David Polk, B.S. Arch, 2013:

As the *Dialectic* staff members assigned to cover the unfolding

of the Kimball Art Center Transformation Project over the fall and winter of 2011-2012, we have followed the entire process, attending all public events and interviewing many of the architects, jurors, and others involved. The public nature of the KAC competition allowed students from the University of Utah’s School of Architecture to observe the design process first-hand. This unique opportunity sparked a multitude of discussions and debates regarding the submissions, process, and jury selection. It was a once-in-a-lifetime experience to see so many great architectural minds at work, and in a sense, to learn at their feet.

BIG’s winning proposal will turn the Kimball Art Center into an icon. But how true to their design can BIG stay as they move from renderings to construction documents? For example, it will be a challenge to engineer the proposed façade to deal with the seasonal expansion and contraction of Park City’s extreme climate. Also, the overall proportions of the building may radically change if the architects are not approved for a variance to exceed the zoning height restrictions.

While most of the public seems pleased with the outcome of the competition, others adamantly detest its defiance of Main Street’s context. The original desire for transformation in the competition brief inherently requires change; however, this is often forgotten when change presents itself too drastically or suddenly.

Regardless of the negative feedback, BIG’s proposal will become a landmark that transforms the landscape of Park City. If anyone knows how to create an iconic building, it is Ingels. ‘Starchitecture,’ though often criticized, has many positive effects. A project like BIG’s KAC expansion could be the catalyst for a new wave of growth in architecture throughout Park City and all of Utah. However, starchitecture also comes with a price. Ingels’ reluctance during the jury review to include an entry off of Main Street (an element the KAC had specifically requested in the brief) raises the question of how much he will be willing to entertain changes that would affect the integrity of the proposal. However, Ingels was quick to remind the jury that due to the nature of the competition, his team had been working in a vacuum and that they looked forward to collaborating with the KAC if selected. With time, both BIG and the KAC will have to collaborate—and potentially compromise—in order to maintain the functionality of the building within the integrity of an iconic form.

Ingels' personality sold his proposal just as much as the design itself. He works from a mantra that "Yes is more"—a belief that there can be a happy marriage of both realistic and radical architectural approaches. His presentations are at once bold, provocative, and hilarious. His irreverent attitude perfectly complements his unruly approach to design. Although his style is fresh and exciting, one must wonder how a building with his personality will fit in with Utah's built landscape.

Though inhabited by various Native American tribes throughout history, Salt Lake City—like Park City—is still young (it was founded in 1847 by a group of Mormon settlers led by Brigham Young). Salt Lake City architecture mixes the old with the new, and Mormon with Gentile, but nearly everywhere else, modest architecture generally prevails. With the construction of the Salt Lake City Public Library by Moshe Safdie in 2003, and the new Natural History Museum by Ennead Architects completed in 2011, the architectural landscape in the region has slowly begun to redefine itself. These new, modern projects have already begun to attract more attention and draw larger crowds. While it is certainly exciting to have architects of such high caliber in Utah, BIG's selection for the Kimball project means one less commission for a local architect. If more national and international architects begin to snatch up the prime commissions and contracts in Utah, it begs the question of what that means for local architects.

The Salt Lake City-based firm of Sparano + Mooney (who also have an office in Los Angeles) came into the competition with a diverse portfolio of high quality, highly detailed work that demonstrates careful attention to material, community, and urban context. They deliver thoughtful and innovative design solutions that balance contemporary design with timelessness. Their inclusion in the process raised the question: why hold an international competition only to choose a local architect? Though they are leaders of rethinking architecture in Salt Lake City, Sparano + Mooney still face the struggle of obtaining local commissions.

Architectural Nexus, the Salt Lake City-based firm selected to collaborate with BIG on the Kimball project moving forward, will take on a critical role during the design and construction process. The collaborative nature of the BIG/Nexus team caught the jury's attention, and the companies will need to continue their teamwork to bring in the proposed design on schedule and on budget. Nexus will contribute their ability to see beyond the unique building codes and

restrictions of Park City, but also to find the potential for innovation therein. While the Kimball was not awarded to a design architect from Utah, its success will still depend on BIG's collaboration with a local firm that better understands local conditions.

This dilemma of architectural practice within Utah echoes our perception of the seeming disconnect between what is taught at the School of Architecture and what is ultimately built in the region. The ultramodern, push-the-limits processes that some studios promote are often relegated to paper architecture or just "that cool project I did in school" when students graduate into local practice. BIG's proposal provides inspiration as a model for students who want to push the limits of the built environment here in Utah through projects that don't necessarily fit the typical mold.

Editor's Perspective –

Jane Collette, M.Arch 2013:

The Kimball staff said repeatedly during the public presentations that they were humbled to be in the presence of so many great architects. But if the KAC wants no fine art, why do they want fine architecture? Not only does the Kimball lack a permanent collection, but according to Executive Director Robin Marrouche, they have no desire to acquire one. The KAC is essentially an empty museum, and the expansion will make it emptier. The art classes offered by the KAC for summer 2012 included "Tots Totally Tie Dye," "Knitting for Tweens and Teens," and "Stained Glass Garden Stakes." This is hardly bringing culture to Park City. Will Bruder said during his presentation that he was proud to be designing an art center and not a museum, and the distinction is evidently an important one. But perhaps Marrouche and Bruder are right. The "All About Me" museum may well be the perfect expression of our times.

The common grievance of the Kimball proposal's detractors is that the new building, because it is unlike the nearby old buildings, will damage the historic character of old Main Street, Park City. *Park Record* columnist Jim Tedford says, "Main Street from the Kimball on down is all brand new, but most of those builders did a good job of making it look like old Main Street." The people who built the older parts of Main Street, however, were not trying to blend in with some earlier style. Their buildings are an authentic expression of their own time and place, and that is the reason Park City loves them so much in the first place. New buildings made to match the old ones do not honor the historic, but rather degrade it. They

corrupt the integrity of the historic buildings they are imitating, and create a theme park of fakes. As Ada Louise Huxtable said, “To equate a replica with the genuine artifact is the height of sophistry; it cheapens and renders meaningless its true age and provenance. To imply equal value is ... to cancel out the generative forces of its cultural context.”¹

Reproductions also fossilize the historic district and make it into a museum, instead of a public space meant for people. Public space is messy. It is full of ideas that some may not like. Although the BIG proposal is less successful than some of the others, it is at least, for the most part, an authentic expression of its own time and place—just like the historic buildings of Main Street. It may not look like Main Street, but it is Main Street. Highly visible, the new building will shake some of the cobwebs from Park City’s downtown. As Huxtable said, “the variety of ordinary styles and patterns in a few city blocks offers more information and pleasure than the sterile clichés of any artificial substitute.”

Although many long-time residents now hate the proposed new building, over time it seems that buildings born of controversy grow to be better loved than those that were met with initial consensus. Frank Lloyd Wright’s Guggenheim Museum in New York was mocked as a “temple to Wright,” and Louis Kahn’s Kimbell

Museum in Fort Worth was compared to cow barns. Both are now considered iconic works of genius. Richard Meier’s Getty Center in Los Angeles, by contrast, stirred little controversy apart from the dust raised by the bulldozers. A turgid and tedious complex, the best thing about it is its magnificent view of Los Angeles. It now seems headed down the path to architectural irrelevance.

Over time, some of the BIG project’s detractors may come to love the new tower. As Alain de Botton writes, the Japanese have long had a conception of beauty, wabi, that is very unlike our Western one. Wabi identifies beauty with “unpretentious, simple, unfinished, transient things.” Perhaps the new Kimball will “puncture the simplistic notion, heavily promoted by purveyors of plastic mansions, that what a person currently finds beautiful should be taken as the limit of all that he or she can ever love.”² Not only can we learn to love new things, but doing so enriches our lives.

ENDNOTES

1. Ada Louise Huxtable, *The Unreal America: Architecture and Illusion* (New York: The New Press, 1997).
2. Alain De Botton, *The Architecture of Happiness* (New York: Pantheon, 2006).



Sparano + Mooney Architecture drew inspiration from the local Wasatch aspen forest in which individual trees are connected through a common root system – a local forest is thought to be the largest and oldest living organism on the planet. Image courtesy of Sparano + Mooney Architecture



Will Bruder + Partners predicated their design on the walls of the famous sculptural canyons of Utah, which bear colorful pictographs and petroglyphs, and paired this with elements from the eclectic and colorful Victorian architecture that lines Park City's Main Street. Their proposal promoted the exhibition not just of art, but also of nature, architecture, and sustainable technology. Photo courtesy of Will Bruder + Partners



Brooks + Scarpa drew inspiration from the blue skies of Park City, coining their project "The Kimball Cloud". Their proposal presented a dynamic program wrapped within a perforated and faceted façade and diffused the distinction of interior and exterior space both on the ground level and above. Photo courtesy of Brooks + Scarpa Architects



Tod Williams and Billie Tsien Architects honed in on the quality and character of craft dominant in the region, proposing a richly elegant box of "sky and shadow" clad in hand-glazed brick and hammered, perforated copper panels. Image courtesy

PLAYING FOR STRANGERS OR THE DIMINISHED AUTHORITY

PRESCOTT MUIR, DIRECTOR SoA

To celebrate this inaugural issue of *Dialectic*, I think it appropriate that as director of the School of Architecture, I speak to the complex problem of teaching architecture students how to interpret culture, which is central to the discipline. A real-world experience shared with students on multiple levels is quite often the best and most enduring lesson. I participated as a juror, with a group of our students as spectators, in the recent design competition for a new building at the Kimball Art Center in Park City. In this issue of *Dialectic*, several students give their interpretation of events, based upon observing presentations and subsequent interviews with contestants. This provides a counterbalance to my own impressions, which are drawn from more direct participation, and conditioned by 35 years of practice.

When and where does culture begin? Can it be traced to a point of origin? Just as words are grounded in some material beginning as a means of representing the corporeal world, one would expect culture to have similar sources. Yet culture may in fact begin in language in search of material confirmation. Much like evolution predicated on the natural selection that sets a species on a developmental course, one would expect culture to develop by a similar process of selection, born of the consequences of an engagement between a certain people and place. Yet unlike natural selection, culture is premised upon group psychology. This leads to some form of consensus that is much more fungible than the cause and effect of a simple physiological response. That is, if I eat something poisonous, there is a high probability that I will get sick and thus learn to avoid that food. Ah, that culture could so easily be summoned. Though words may begin in the material, our reaction to the material is subject to the fallibility of the senses, and therein lies the instability of language. Through words, we more often deceive ourselves about the physical world. We use phrases such as the sun rises, when we know the dawn to be a function of earth's rotation. Yet this usage endures because of some cultural purchase found in language. For Hegel, the one predictable source of culture (according to his discussion of the origin of ideas) is the very fluid nature of origins: where to mark the beginning is indeterminate; a beginning is to be made, but it is only a relative one. We go beyond it but not to infinity, only to another

beginning which is, inevitably, also only a conditioned one; in short, it is only the nature of the relative which is expressed, since we are in the realm of the finite.¹

Given the limitations of our understanding of reality, which relies on the compromised capacity of human perception, it is hard to establish the truth of events in which we are active participants. The courts deal with this dilemma on a daily basis, in reconciling conflicting impressions of shared experiences. How then do we fix a situation in order to ultimately understand that which we cannot fully know through senses alone? In a photograph, does its material accuracy really capture the essence of a situation? Conversely, does a hand drawing done *in situ* both reveal some truths while obscuring others? In reaction to a mathematical reality, Jean Paul Sartre said, "He who begins with facts will never arrive at essence."² Yet as architects, we are in the business of fixing cultural situations in programmatic narrative so that we can ultimately interpret them in material form. It is as if we were working back through language to fix the original feeling or impression that gave rise to language in the first place. We use imperfect tools to freeze an imperfect reality.

The dictionary defines culture as "the arts and other instances of human intellectual achievement regarded as a whole."³ Thus to apprehend culture, one would expect to look to museums as a source. Art museums empower a chief curator, under the supervision of a knowledgeable collections committee, to decide which art gets exhibited and included within the collection. The museum is a systematic filter for cultural generation, determining what survives to be preserved for posterity versus what gets lost in the detritus of history. In contrast to the museum, the typical art center provides direct participation by amateurs in the making of art, juxtaposed with curated exhibits. This is a much more ambiguous relationship, yet one that is more influenced by the local.

The competition for the Kimball Art Center's new building was conducted by the facilitator and architect Donald Stastny, and included an initial invitation extended to 40 architectural firms.

The list was trimmed by the jury to five firms that participated in public presentations of their qualifications and, ultimately, of their final designs. The process included an open dialogue between contestants, the jury, and selected patrons. The jury comprised five voting members, of whom two were architects, including myself. The other jurors represented various local constituencies. There were also two ex-official members: the art center's director, and a representative from the mayor's office. To my surprise, the competition was won by BIG Architects of Copenhagen. A design competition is a unique opportunity to watch culture unfold with the intent of selecting a building that reflects, in this case, an art center in the business of cultural generation, a circular argument to be sure. How this jury selected a winner is far different from how a museum, and indeed an architect, makes decisions about an appropriate cultural reflection of a community.

Paul Rudolph said, "Architecture is a social art, and that will never change. We are privileged to be servants of society."⁴ Yet an architect is both servant and master. We possess the power of the pencil in determining how a community portrays itself, from initial idea to eventual material form. Thus if architecture is merely a reflection of society or culture, how does culture reveal itself? For Daniel Libeskind, architecture is not a deductive process. He said, "Architecture connects through layers of discontinuity."⁵ Is it a matter of happenstance, as the Greeks characterized the nature of cities? The etymology of the Greek word "polis" comes from a game of chance. Does culture emanate from a convergence of seemingly random events that the opportunist architect deciphers?

A person experienced in educating architecture students in the conventions of good design judges a design competition using similar metrics. Yet even among a short list of experienced and talented architects, a common design solution is seldom found. Expectations are quite often undone by solutions that defy convention. How this comes about is a bit of both Libeskind and Rudolph, in the embrace of an indeterminate social art.

As the celebrated country western singer Waylon Jennings perfected his music, his relationship to his audience changed. He observed this transformation over the span of his career:

Because you start out playing for people who are just like you... You play for people who come from where you come from. They seek you out in little clubs because they

understand what you're doing, so you feel like you're doing it for them... Then one day, you're not playing for people like you anymore... you're playing for *people who want to be like you*, and you can't trust these people... they don't know what they're looking at... Because they already hate me a little, just because I'm me and they're them. That's why they always go on about how *talented* you are... Because if *they* had this talent, they would be you... you got it, and, supposedly, they don't. So eventually you're bound to disappoint them.⁶

The earlier audience was a direct *participant* with the performer, without recognition of his authority, because the performer was one with them. In the participant relationship, the performer gains direct and immediate feedback. Yet because of the audience's lack of respect for his authority, the performer's expertise needs to be subtly measured for fear of losing the oneness with the audience. This participatory relationship explains the social dynamics of a design jury.

The later audience for Jennings was one of the *spectator*. This kind of audience is disassociated from the performer by a social construct for which the stage is merely symbolic. The spectators transfer favorable opinion to the star performer by association. However, should the star disappoint, the fall is precipitous because of the spectators' need for self-preservation.

Both of the above scenarios reflect the relationships at play between the architect as participant-juror in the first instance, and the student as spectator in the audience in the second. Neither of these roles reflects the methodical act of selecting culture familiar to an art museum, in which authority is rewarded. I have noticed this dynamic in other cohort groups, such as participating on planning commissions, in which an architect's standing and expertise are discounted as a means of preserving the familial nature of the cohort. The architect's influence as expert is thus subordinated to a social construct. By contrast, the authority represented by the performer-architect in the spectator scenario is celebrated by audience members as an extension of their identity. Both cases diminish objectivity in favor of the psychosocial phenomena.

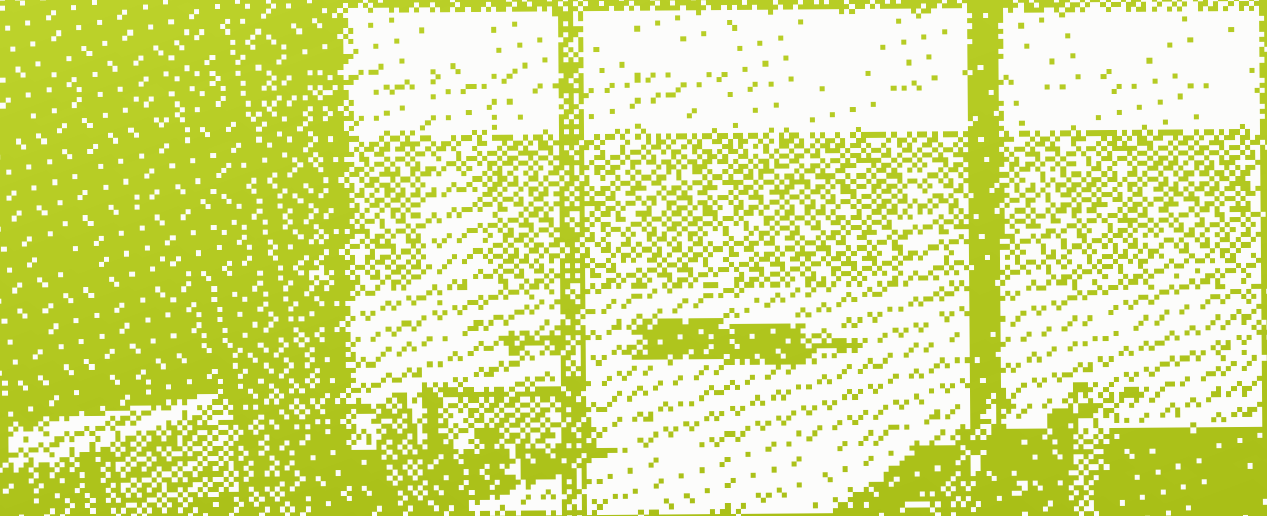
Each year, the AIA Utah conducts a design competition in which respected outside architects are invited to judge the work of Utah architects. Concurrent with this, the AIA conducts a people's choice award through the local newspapers, in which the general public can vote on the same submittals. Never has the people's

choice coincided with that of the experts. This may be a matter of populist taste versus the connoisseurship of an educated jury, devoid of the social dynamics discussed above, but which is a closer approximation of culture?

Identifying culture as it emerges in real time is problematic. This is especially true when relying on the social constraints of a lay jury and a spectators-performer relationship. Over the long term, the museum curator and the expert design jury seem to be better indicators of cultural hegemony. Yet any authoritative power may miss the exceptional talent that T.S. Eliot speaks of, with the ability to rewrite history through a singular act of genius.⁷ Did such a moment occur in the Kimball Art Center competition, in consequence of the circumvention of the authoritative voice? I guess time will tell.

ENDNOTES

1. Hassenaly Ladha, "Hegel's *Werkmeister*: Architecture, Architectonics and the Theory of History," October 139 (2012), 17.
2. Carol Becher, *Thinking in Place: Art, Action and Cultural Production* (Boulder, CO: Paradigm Publishers, 2009), 59.
3. Catherine Soanes and Sara Hawher, eds., *Compact Oxford English Dictionary of Current English, Third Edition* (New York: Oxford University Press, 2005).
4. Paul Rudolph, *Writings on Architecture*, series edited by Robert A. M. Stern (New Haven, CT: Yale University Press, 2009).
5. Daniel Libeskind, public presentation given May 18, 2012 at the Goethe Institute, Washington D.C.
6. David Hickey, *Air Guitar: Essays on Art and Democracy* (Los Angeles, Art Issue Press, 1997), 146.
7. T. S. Eliot, *Selected Prose of T. S. Eliot: Tradition and the Individual Talent* (Orlando, FL: Harcourt Inc., 1932), 37.



A BRIEF ANALYSIS OF DECONSTRUCTION

ERIC GANS, PROFESSOR OF FRENCH AND FRANCOPHONE STUDIES, UCLA

INDIVIDUATION IN GENERATIVE ARTWORKS AND CAUCASIAN CARPETS

LAURA U. MARKS, DENA WOSK PROFESSOR IN ART AND CULTURE STUDIES, SIMON FRASER UNIVERSITY

PRACTICAL THEORY

Because architecture is both an art and a science, because its realization is contingent on economics and materiality, and because it requires the synthesis of multiple people, trades, and technologies, it is a practice that requires dialog and communication. We make drawings to explain how building elements come together. We make presentations about the way spaces are shaped by form to achieve a particular effect. We make models to help people project themselves into an as-yet unrealized place. The reasons we choose to make one decision rather than another are constantly under scrutiny, and it is necessary that we are conscious and self-reflective when it comes to making these decisions.

In addition to the material limitations, technological complexities and programmatic requirements that inform the decision-making (i.e. design) process, we as architects look to theory to help us ground our choices. Every architect has a particular collection of experience and knowledge that shapes his or her process. We also have collective knowledge that we garner by looking to authors, philosophers, and academics who help us frame the questions of our practice.

These sources are often outside the practice of architecture and require interpretation to adapt them to suit our purposes—or a totally separate, irreconcilable investigation. The essays in this section examine the role of critical theory as foil for design. In particular, they look at deconstructivism and parametrics and their relevance to contemporary practice. French scholar Eric Gans provides a brief analysis of Derrida's theory of deconstruction through a slightly unusual lens; rather than de-construction (or demolition), he speaks of differentiation, of how you go about making decisions through the internalization of elements of a paradigm. He does this through the perspective of what he calls Generative Anthropology. Laura Marks, scholar and artist, examines the in-between spaces of visual, cultural, and anthropological fields of study. In an essay reflecting the content of a lecture given at the SoA in the spring of 2012, Marks examines the role of cultural and personal experience and the ways this shared knowledge is embedded in both historical Islamic carpet-making and contemporary digital media.

A BRIEF ANALYSIS OF DECONSTRUCTION

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Deconstruction is an idea inaugurated by Jacques Derrida. The standard ideas about deconstruction may be found on Wikipedia and many other places. My intention is to provide a brief analysis of deconstruction from a different perspective, one that I call Generative Anthropology (GA). This too is described on the Internet, and in particular on the website of Anthropoetics (www.anthropoetics.ucla.edu), a journal I founded in 1995, which includes an introduction to GA. But the reader of this article should not need to consult any outside sources to understand my discussion of deconstruction.

As its name implies, deconstruction is a critique of constructions or structures, particularly of hierarchical or “authoritarian” structures—and one of deconstruction’s achievements is to show that all structures, even those that lack an obvious center, are indeed “authoritarian” in that they depend on a central *decision*. Deconstruction is a weapon in the delegitimation of authorities, authors, origins, masters (as opposed to slaves), men (as opposed to women), Westerners (as opposed to “Orientals”). In this it reflects the postmodern order that, following WWII and in particular the Holocaust, denounces the legitimacy of any form of hierarchy. Although my personal political views are not of interest here, I will point out that I do not share the hostility to authority that pervades the academy today and that is given legitimacy by deconstruction as the most coherent and powerful postmodern metaphysics. I say this because I would like to defend what I consider to be Derrida’s real contribution to thought, which is to my mind, and despite his own indifference to this domain, in the area of fundamental anthropology.

At the heart of Derrida’s thought is a paradoxical (non-)concept known in French as *la différance*. To defer in French is *différer*, so the term *différance* is a verbal noun or gerund of the verb *différer*, but it is also a creative misspelling of *différence*. The point of spelling this word—which, aside from the accent, is spelled the same way as in English—with an *a* is a clever way of emphasizing that in order to create an awareness of *difference*, in particular in language, one needs to *defer* one’s decision among the different elements in a paradigm. If choice between A and B is not deferred but immediate, it is effectively “instinctive,” and the decider never becomes aware of the difference, or indeed that he has made a choice. To be aware of a difference, one must weigh the different possibilities in the same context, that is, one must *defer* one’s choice.

The original focus of Derrida’s critique was presence: in particular, the *self-presence* of the speaker of language, which Derrida denounced in his first work, *La voix et le phénomène*, as the founding myth, the fundamental but implicit premise of *phenomenology*. Phenomenology, which, in a variant of Descartes’ *cogito*, “brackets” all but the content of consciousness as the sole reality directly available to us, is the dominant self-reflective mode of the Continental philosophy of Husserl, Heidegger, and Sartre, as distinguished from Anglo-Saxon analytic philosophy. As the term *deconstruction* suggests, Derrida’s critique did not lead him to construct a new philosophical model to supersede the phenomenological, but merely to withdraw to its “margin.”

Existentialism, beginning with Heidegger (who never used the term), saw in what was originally an epistemological technique a source of ontological intuition: our experience is one of “being there” (*Dasein*), of being-present to the world even if we know it only through our own experience. Where Derrida contested this mode of thought was in rejecting the *Da* of presence. He attacked presence as a phenomenon of linguistic production and provided a linguistic/semiotic rationale for the notion of *différance* in which he saw our real relationship to language. What is lacking in his analysis, as in all analyses that take their point of departure in the content of the individual mind, is an *anthropological* basis for this content. Derrida sees that phenomenology’s presupposition of immediate self-presence to one’s consciousness is in effect an artificial construction, a “myth,” but he fails to see that in exploding this myth one has also exploded the whole rationale and intellectual framework of phenomenology. His recourse to the semiotic paradigm as the model for deferral makes this clear; for whence does the paradigm emerge? If we are always hesitating among elements in a paradigm, what makes us finally capable of decision, and how does the event of decision supervene upon its deferral? If we accept that presence is a secondary, fictive

construction, how then did semiotic paradigms come to be primary? Most simply, if decision is the ultimate goal of recourse to a paradigm, how can the paradigm itself be prior to this decision rather than an instrument that emerged to facilitate and enrich it? None of these questions can be answered or even asked in the context of phenomenology, yet all of them are accessible to the model of generative anthropology.

These remarks apply as well to the perhaps even more familiar paradox that provided the title of Derrida's most famous and important book, *De la grammatologie*, published along with two other seminal early works in 1967. If Derrida is known for one idea other than the nebulous notion of "deconstruction" itself, it is that writing is a generally superior model for language than speech because the *différance* that generates meaning, hidden in speech, is patent in writing, which subsists outside the presence of its creator. At certain moments Derrida even seems to be affirming that writing existed before speech, an assertion that can only be squared with reality if we count as "writing" the domain of gesture and of the spatial in general.

Perhaps needless to say, given its traditional philosophical context, none of this provides us with any clue to the historical development of either speech or writing: how indeed *did* language emerge if it is "really" writing rather than speech? What is particularly revelatory is how Derrida deals with the embarrassing fact that the entire Western tradition is centrally reliant on *written* texts, a fact that extends to the para-Western domain of Islam. His answer is that in order to make The Book sacred, it must be attributed to divine inspiration, that is, to the sacred guarantee of presence and immediacy that we find in the various declarations of praise for speech and denigration of writing by those Western writers Derrida uses as his prime examples: Plato, Rousseau, Saussure, Lévi-Strauss. But precisely, divine immediacy is a category more important for the understanding of language than either speech or writing; *language cannot be understood independently of the sacred*. To understand how to relate language, deferral/*différance*, the sacred, and the different forms taken by signifiers in history, such as speech and writing "in the narrow sense," one requires a model of the originary function of language, such as GA possesses but the Western metaphysical tradition within which Derrida's work falls does not.

Derrida's continued loyalty to this tradition is in the post-revolutionary nature of postmodern thinking, which is dominated

not by the desire to overthrow authority as in the prewar revolutionary era, but by the drive to denounce it as a mode of oppression. The postmodern demystification of central authority is an end in itself, an expression of resentment whose proponents no longer feel either able or required to present an alternative to the current system. The Holocaust, with its vision of an utterly inhumane authoritarian social order, has given rise to a mode of critique wholly devoted to moral outrage.

In Derrida's analysis, the Western "myth of presence" was originally described as "logocentrism," but feminists with no objection from the master soon rewrote it as "phallogocentrism." Deconstruction lends itself to the critique of political authority by undermining the legitimacy of centrality and, ultimately, of the human in general—a position openly defended by not a few environmentalists who contest humanity's right to dominate and despoil the planet. What makes Derrida a major thinker is not his own all too typical postmodern politics, but the fundamental nature of his critique, which touches on the foundations of human language and of the human itself. The seemingly narrow and arbitrary association of deferral/*différance* with the linguistic paradigm masks a profound intuition that is very close to grasping the originary purpose of language to defer conflict. That the "deconstruction" of this purpose is that of the human itself reveals both the radical perversity of postmodern victimary thought and its asymptotic nearness to the constructive positions of generative anthropology.

What is deferred in human language even before the first paradigm was constructed is *violence*. The deferral that creates the possibility of difference in the human sense of consciously contrasted alternatives is the necessary deferral of our "horizontal" appetites which, at the moment when the human emerges, are no longer controllable by the animal mechanisms of deferral.

In GA's model, the originary function of language is to defer the potential conflict engendered by appetites converging on a central object and reinforced by mimesis, identification and imitation of the other's desire. The originary hypothesis provides a plausible model of how this might have occurred. We imagine a group of protohumans surrounding a desirable object, say the carcass of a large prey animal. How is it to be divided up? Primates generally avert conflict over questions of distribution through a pecking-order hierarchy: the alpha animal gets the first crack at any opportunity for food or sex, then the beta animal, and so on. If any

member of the group is unhappy with his place in the sequence, he can challenge a higher ranking animal and if he wins the fight, he will take his place. Thus the members relate to each other only serially; the alpha animal is the first on the list but not the leader of the group, which never acts as a unified collective.

It suffices then to assume that, given an increasing protohuman level of mimetic intelligence, the intensity of the desires of the individual members of the group increasingly feed off each other to the point where the alpha's right to go first meets *the opposition of the group as a whole*. Once the group begins to question the old hierarchy, the distribution of appetitive objects will remain a source of potential conflict until a new conflict-deferring mechanism can be found. This mechanism is representation, and the beings who practice it are the first that deserve the name of *human*. The first instance of this mechanism, from which all others are descended, can be called the *originary event*, and we need only assume it occurred once in the evolution of our species.

Let us imagine that when even the alpha animal has come to fear the potential wrath of the others, all the members of the group symmetrically reach for the object but all abort their gesture for fear of appearing to appropriate it and thereby incur this wrath. At this point, some members of the group realize that their aborted gesture of appropriation can be understood as a *sign* that one has renounced the act of appropriation, while at the same time designating the object to the others. This is the origin of the phenomenon of *shared attention*, showing someone something, which does not exist among animals. But it is not merely new neuronal activity. It is mediated by the *sign*, the aborted gesture of appropriation, which in designating the central object while signaling renouncement of its possession in fact *sacralizes* the object, making it "by law" as well as in fact interdicted to all the members of the group. Thus we may call the first sign the *name-of-God*.

The sign *makes-sacred* by pointing to what is significant. At the moment of the emission of the sign, the rest of the world is unimportant; the central object at the center of the scene is alone salient, worthy of attention. The semiotic paradigm in this case is limited to a single value, that of significance or sacrality, the opposition of sacred and profane dear to Durkheim: so to speak, the binary opposition of 1 and 0. The deferral of violence that arrests the appropriative action of the members of the group

is translated within the system of signification into a hesitation among the elements of this originary, minimal paradigm, or more precisely into a *space of contemplation* where alone this choice can be made, even if the choice has only one possibility. And indeed, when one sees a color, one doesn't go through the entire paradigm of colors to decide that it's red, one sees it "almost instantly"—but not *instinctively*—as red. We are able not simply to see it but to *call it red* because language provides us with a space of contemplation in which we can see the world in its possible correspondence to the sign. Sartre calls this space that separates the human mind from the world *le n[on]ant*, but he does so in phenomenological terms, independently of any consideration of language. For Sartre, the *n[on]ant* of freedom separates us as *pour-soi* (for-itself, that is, capable of defining the world) from the world of *en-soi* (in-itself, that which merely *is*).

What Derrida understands as *diff[er]ance* is precisely this space of freedom that depends on language as a means of deferral. In anthropological terms, the sacred center cannot be understood as preexisting the scenic event in which it is named. Hence no central authority can be grounded on an immediately universal intuition of truth. Religions are means of commemorating and reinforcing the historical moments in which specific scenes are constituted around specific objects, including the infinitely unspecific "object" of monotheism. It is surely a legitimate activity to "deconstruct" this center in the sense of demonstrating the paradoxical anthropological basis of what religious and quasi-religious discourses claim to be absolute. Yet as in all postmodern victimary thought, deconstruction offers no alternative to the construction it puts into question. It has no explanation for the emergence of the human social order, and it often is used to imply very pointedly that the structures of this order are based on an arbitrary usurpation of central power that is itself unexplained and indeed inexplicable. Such is the postmodern reaction to the Holocaust and the horrors of absolute worldly authority it reflected.

To take Derrida's notion of deferral/*diff[er]ance* to its logical conclusion in *anthropological* terms is to reveal that what must be deferred to permit the appreciation of difference—that between the unique sacred being and everything else—is the potential violence of rivalrous conflict feared unanimously by all members of the group. Derrida's method of deconstruction, meant to undo the sacred authority of the cultural center that underlies all "structures," can be used in contrary fashion to demonstrate the

necessity of this center, and in so doing to grasp the specificity of language and of the human species it uniquely distinguishes.

As we discover by analyzing the construction of language from an anthropological perspective, the violence that deconstruction denounces in the structures of authority finds its originary source in the violence that the structures of language exist to contain. It was once a truism that the violence of authority, even at its worst, is never as great as the violence of anarchy, of unfettered human desire feeding mimetically on itself. The great hole rent in the fabric of the human condition by the Holocaust has thrown this assertion into doubt, yet humanity cannot survive if we do not accept it as *almost always* true. The human may be defined most simply as the creature for whom the greatest danger comes not from the outside world but from its own species. The existence of language is the proof of this assertion, for no other animal has need of a whole supplementary realm of signs to check its potential for violence. That this realm and the space of reflection that makes it possible has allowed us to dominate our environment in a way unthinkable for animals is a beneficial consequence of language, but not its original function. The great defect of deconstruction is in failing to recognize that the violence it always attributes to presence, signification, and the sacred is only the shadow of the violence against which these structures protect all of us, including the anarchists of Occupy Wall Street and the late marginal conceptualizer of deconstruction himself.

INDIVIDUATION IN GENERATIVE ARTWORKS AND CAUCASIAN CARPETS

LAURA U. MARKS

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In my book *Enfoldment and Infinity* I compared the media art of our time to the religious art of Islam.¹ I was inspired by Islamic art and Islamic thought because, in avoiding a direct representation of God, they create powerful abstractions that indicate the divine presence/absence, are pulled toward it, and demonstrate and perform it but do not show it. This power of non-representation created the conditions of a kind of nonorganic life in Islamic art.

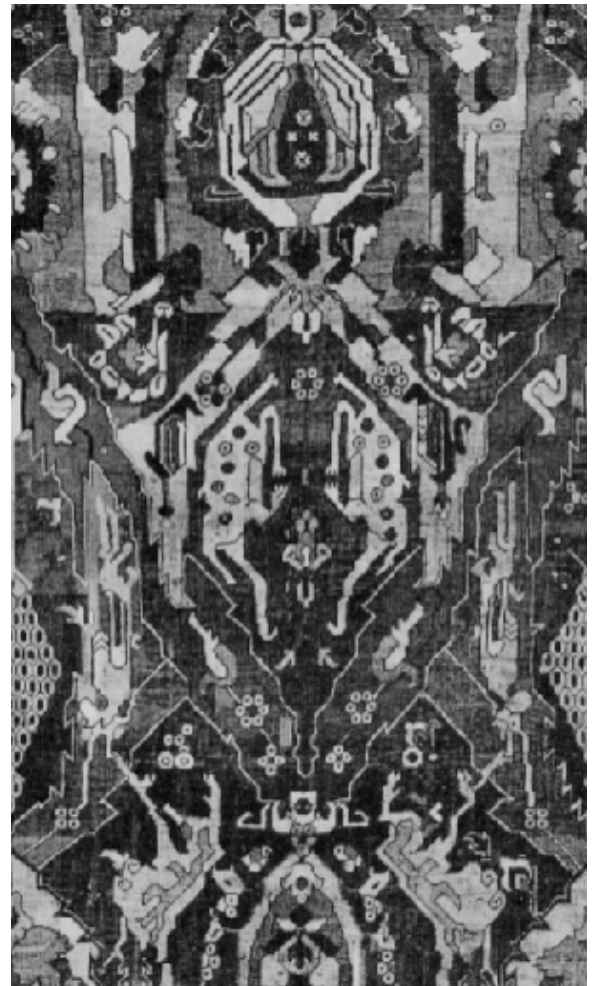
Enfoldment and Infinity ended by going beyond religion. In the last chapter I looked at some carpets that seem to have an internal life force that does not obey the injunctions of a benevolent (or any other kind of) God; carpets that suggest we do not need God because we have Life. This essay builds on that perception and pursues the comparison in the last chapter of *Enfoldment and Infinity* between two bodies of algorithmic art—contemporary genetic artworks and 17th century carpets from the Caucasus. This comparison may seem *recherche*, but I think it is pertinent because these carpets are perhaps the strongest examples of analog algorithmic artworks whose patterns arise not from top-down instructions, but from internal differentiation and individuation: they act like life.

The worry, of course, is that artworks produced from algorithms cannot be unpredictable. How can algorithms produce something that looks like life, acts like life, is, for all practical purposes, life? How can algorithmic media give rise to something new; how can information-based objects be truly individual? Pondering this in turn raises the question: How does a force that propels individuation arise?

Genetic artworks are algorithmic artworks whose algorithms respond to new information such as inputs from the environment or from users. This allows them to come up with results that could not be prefigured in the algorithm's initial state. Caucasian carpets hail from the Caucasus, the ethnically and religiously mixed area that historically intersects northern Iran, Russia, Armenia, Azerbaijan and Georgia. I'm looking at those carpets from the 17th and 18th centuries from this region. They too are algorithmic and genetic artworks. Thinking about carpets, with help from some

Deleuzian ideas, should give us a set of criteria for how meaningful individuation occurs in algorithmic art. These criteria will look for individuation at the pre-individual level, which is the level of atoms or particles, in the matter-idea complex called the 'machinic phylum' and in the evolution of novel beauty.

CARPETS AS ALGORITHMIC ARTWORKS



Detail of carpet, Caucasus, 17th C. From Kurt Erdmann, *Oriental Carpets: An Essay on Their History*.

First, let us look at some pre-digital algorithmic artworks. Carpets, of course, are algorithmic media. All carpets have some degree of automatization—the imposed structure of loom, thread count, knot style and design. Given their basis in calculation, carpets are a fundamentally algorithmic medium, where an algorithm is an instruction to be executed.

In the comparison between handmade and mechanically produced objects, it might seem that mechanical production cannot match the artist's hand and eye in its ability to spontaneously create the new. This anti-technical criterion has been around since Ruskin, Morris and others reacted to the Industrial Revolution's seemingly devastating effects on handcraft. Certainly nomadic and village carpets allow for a lot of spontaneity on the part of the weaver. The carpets I'm discussing, however, were made for high-level courtly and religious clients. At the beginning of the 17th century, Shah 'Abbas of Iran supported economic development throughout his realm, and this stimulus may have established commercial rug weaving in the Caucasus. The size of these carpets shows they were woven on large looms, suggesting commercial production.²

These carpets were woven from detailed cartoons that specified form so weavers did not have much room to maneuver. However, the cartoons did not specify knots per form, giving weavers a bit of leeway. This ratio between pre-given form and slight improvisation may account for the genetic development of the forms on Caucasian carpets. Pre-given, top-down forms individuate in unforeseen ways, producing genetic mutations that shock and delight. (Fig. 1)

Looking at the detail of a Caucasian carpet, we see how its motifs are figurative, but don't represent any figures we've seen before: they are a little like flowers, a little like animals, a little like crystals. Commentators on Caucasian carpets often refer to their forms as hybrid, "foetus-like,"³ anthropomorphic flowers and floral animals and populations of "archaic, headless, two-headed beasts."⁴

It's important to note that carpet designs are not necessarily determined by the materiality of their medium. Many carpets borrow their designs from other media such as painting, even though the curving lines required do not translate easily to the 90-degree angles of the carpet's warp and weft. As a result, the algorithms that carpets carry out are somewhat independent of the medium. Carpets don't only express the material; they express a relationship between material and idea—an algorithm.

We can say carpets index their algorithms, for by examining a carpet we can figure out the algorithms followed by the weaver.⁵ For example, the pattern of the Lotto carpet (so-called because it occurs in the paintings of Lorenzo Lotto) applies algorithms of recursion and mirroring to basic motifs in order to fill a field with them. Often these algorithmic processes begin at a point and unfold. And, thinking in an unfolding way, we can say those algorithms in turn index their weavers, designers and programmers. Looking at them we see the expression of the instructions for their making—a communication between the designer and the weaver.

As Braxton Soderman argues, algorithms are expressive, meaningful and also ideological. Algorithms are created by humans. So, far from being a cold impersonal medium, algorithmic works like carpets indicate all kinds of decision-making, reflection—even emotion—and of course error. For example, a carpet in the collection that Joseph McMullen amassed in the early decades of the 20th century and donated to the Metropolitan Museum of Art in New York, allows us both to image the algorithm that the weaver followed and to intuit the decisions she made that deviate from the model in executing it. It is a funny-looking carpet with asymmetrical touches of color. The collector described it this way:

This is a very close but hilarious descendant of no. 97 [another carpet in the collection]... The design is basically faithful... But there is no comparison between the sloppy drawing in this rug and the sophistication of its model, while the use, or misuse, of colour, particularly blue in the central medallion, is strange indeed, without system or sense. Again green is used in the corner pieces at one end only. It is all a refreshing reminder that the human spirit can, and does, produce wonderful effects impossible to the trained and sophisticated mind.⁶

Algorithmic media, when executed by hand, permit all kinds of decisions, felicities and mistakes to occur. But what about algorithmic media executed by machines such as computers?

GENETIC ARTWORKS

Installation artists Laurent Mignonneau and Christa Sommerer have been working with genetic algorithms since 1992, producing works that grow and change according to users' interactions with them. The works make their connection to biological evolution evident in that they are plant-like or insect-like: the plant forms

grow and branch, and the insect-like forms grow and reproduce according to visitors' input. Sometimes this input is as simple as the amount of time a visitor spends in front of a screen.⁷ *Life Writer* (2006) uses a manual typewriter input. (Figs. 3a and 3b) The characters that users type are translated into forms by assigning a standard ASCII value to each character; the resulting forms "eat" the input text, growing and reproducing. As a result, users can't know what kind of forms their typing will reproduce; however, if they interact with the work for long enough they learn that the more they type, the more growth and individuation occur. This visually pleasing work answers the question of what causes evolution by suggesting that evolution results from sustained engagement. Still, it leaves open the question of what motivates evolution. I am not arguing that interfaces should be more transparent so that users can know intellectually what results their actions produce. Maybe the slight mimetic relationship between users' gestures and the creatures' changes is enough to make the work satisfying. But in this, as in many other genetic artworks, the motivation seems slim.⁷

INDIVIDUATION

The rise of computer-aided design and computer-generated objects seems to mark the triumph of ideas over matter. Objects produced by algorithms seem to exemplify the hardy old Aristotelian notion

that form consists of the impression of ideas on matter. Matter is potentiality, form is actuality;⁸ matter is seen as passive, and form acts on matter.

A helpful rejoinder to the Aristotelian paradigm asserts that forms arise not through the imposition on passive matter but according to a process of individuation, which relates an entity's potential to the changing system of which the entity is part. Gilbert Simondon writes that individuation occurs in a system that is *metastable*, or out of step with itself.⁹ Simondon wrote, "We must begin with individuation, with the being grasped at its center and in relation to its spatiality and its becoming, and not by a realized [*substantialis*] individual faced with a world that is external to it."¹⁰ The individual form is not a final result so much as something like the peak of a wave—just a phase in process of individuation.¹¹ There are more potentials in pre-individual state than this individual.

Becoming, then, is a mode of resolving an initial incompatibility that was rife with potentials: lots of other potential resolutions might have arisen.¹² The results of individuation can never be predicted. In this awareness of the multiplicity of potentials, only one of which is actualized, we hear the resonance with theories of evolution, specifically that posed in Henri Bergson's *Creative Evolution*. No two things individuate in the same way because, as Bergson wrote,



Detail, medallion and star carpet, Eastern Anatolia, 16th-17th C, from the Ulu Camii, Divrigi-Sivas. Vakıflar Carpet Museum, Istanbul



Christa Sommerer and Laurent Mignonneau, *Life Writing* (2006)

the universe is always changing. Individuation is the realization of a life force from within—the actualization of the virtual—a becoming.

So let us define life as the capacity for individuation. This is why I started with the Caucasian carpets that seemed to have their own internal life force. The definition still doesn't help us with computer-generated objects, though.

GENETIC EVOLUTION STARTS AT THE MOLECULAR LEVEL

To the degree that it resists top-down organization, every form is a living micro-interval that responds to its environment in unpredictable ways. Bergson wrote in *Matter and Memory* that the smallest elements of “flowing-matter” are perceiving, acting: alive. Similarly, Deleuze describes the earliest life forms in the “primeval soup” as tiny machines that perceive and react.¹³

Here's an example of primeval soup: not a Caucasian, but an Eastern Anatolian carpet (16th-17th centuries) from the Ulu Mosque of Divrigi-Sivas, now in the Vakıflar Carpet Museum in Istanbul. (Fig. 2) This carpet follows a kind of cosmological organization whereby the central medallion suggests the beauty and divine order of heaven. The further we move from the center, the more unruly the forms get: they seem to possess an internal life force. An energy arises between these odd small forms that makes them seem like micro-intervals, perceiving at one end, acting at the other.

I love this carpet because of the way the wacky flowers and cloud bands compete with the “transcendental” medallion as though they've heard of heaven and they want none of it!

This begins to raise the question, is there something in material that resists idealism, that has its own ideas of how to develop? And if so, what pushes it to develop?

Simondon pointed out that individuation begins at a level prior to the individual. I think it also begins at a level far smaller than the individual. If we start not with a body but with a point, we might unleash creative energy that's not available when we start at a larger scale. This means looking not at the molar level, but at the molecular, a paired term from Deleuze and Guattari that reflects the scientific proportion 1 mole = 10²³ units. While the molar scale deals with large-scale happenings and general states, the

molecular scale deals with tiny events, bursts of energy that we don't experience when we are acting at the molecular level.

So in privileging a non-human perspective we move not to a larger, God-like perspective, but to a tiny perspective the POV of a molecule or an atom. Bergson wrote that a point perceives infinitely more than we do: that while it lacks discernment, it has access to every other point in the universe.

In *The Movement-Image*, Deleuze writes that we do not need to see things, for things themselves already see. “The eye is in things,” he writes, referring to Bergson, who imagined that every point has a point of view that can be, as it were, photographed: “taken in the interior of things and for all the points of space.”¹⁴ Deleuze also identified a “gaseous perception” in the films of Dziga Vertov, American experimental cinema and video works that do not connect movements together but privilege the energy of each freely moving particle as in the analog video synthesis of Eric Siegel. They attain “a pure perception, as it is in things or in matter, to the point to which molecular interactions extend.”

Gaseous perception, then, achieves the radical openness to the universe implicit in Bergson's philosophy of perception: the interval between perception and action becomes so minute that the particle's entire existence consists of perceiving and acting in a single instant.

Deleuze thus attributes life to the tiniest particles of matter. This theme occurs also in *The Fold*, where Deleuze extends Leibniz's already generous definition of the soul, or the monad, from organic entities to anything that “perceives,” i.e., discriminates among and reacts to its environment. Thus cells, proteins, molecules, photons and atoms can all be considered to perceive. The universe swarms with infinitesimal souls!¹⁵

Elena del Rio argues that a film (or, we can extrapolate, any artwork) often takes place on the dueling levels of molar/molecular, large scale/small scale, representing hundreds of small events. The molar level (meaning, values and narrative) may say one thing; the molecular level (affects, attractions) may say another. Del Rio, analyzing the melodramas of Douglas Sirk, points out that while the narrative takes place on a molar level, trying to convince the audience of ideological beliefs such as the productive Oedipal family on the molecular level are completely different

kind of energy acts. Del Rio describes the “bad girl” character Marylee in Sirk’s *Written on the Wind*: she’s sexually voracious and frustrated—a “tramp”—wears hot colors, bubbles with swishy, provocative gestures, loves music, and loves to dance. Marylee is a mass of molecular energy who cannot be contained by the molar morality of the film’s plot. Del Rio argues that representation is molar, performance is molecular. Representation re-presents: it’s stuck with the precedent. Performance creates something new—becoming. Marylee then is like a carpet, alive with an energy that bursts the bounds of representation.

CONNECTED ATOMS

So we have a conception of the universe as a swirl of lifelike particles, a dance of points. From an atomist perspective, the points are disconnected. But if we consider the universe to be a plenum, a space entirely filled with matter, points are the seemingly disconnected surface of an internally connected substance. As Mario Perniola writes, the world is not empty, it’s full—so full that everything has to be folded up to fit.¹⁶ Deleuze in *The Fold* argues the latter: all matter and spirit are inseparable, one fabric, deeply folded. What look like points are really the inflection points of folds.¹⁷ The fabric of the universe is matter; the powers that fold it from the inside are spirit.

The Baroque paintings of El Greco interested Deleuze for the way they depict the universe as a field of folds. El Greco’s harsh white highlights and slashing dark crevices emphasize the folded texture of matter. The tips of these folds look to us like points, but if you take one and drag it out you unfold a section of the universe. Certain parts of the image bulge out toward us, others remain hidden. In El Greco’s *Annunciation* (Fig. 4) at the Hermitage in St. Petersburg, some of the universe remains enfolded, like the vague area behind the dove or holy spirit that flies down between clouds, the squashed-together mass of angel musicians and the deep folds of Mary’s robe. This is because heaven and earth are on the same plane with a deep fold between them.

The accordion-like space in El Greco also suggests we could unfold it in the opposite direction, the peaks becoming valleys and the valleys peaks. It gives a sense that not everything is available to vision, but rather it is a struggle to make things perceptible, to unfold the world to perception. The composition tips and tilts; it does not offer the scene to one privileged viewing position, as in

Renaissance perspective, but inflects at certain points (as Deleuze writes, calling upon Leibniz’s calculus-based conception of the universe), emphasizing that the universe appears differently to every point of view. This point of view is, of course, the perspective of the monad, Leibniz’s soul, that perceives the entire universe from its limited perspective. The monad is a kind of dependent universe.¹⁸

The Fold, in short, suggests that a point has an intensive perception freed from anthropomorphic perspective. Furthermore, it attributes a capacity to be alive to non-organic things, like rocks and carpets, as well as to organic entities.



El Greco, *Annunciation* (1596-1600), Museo del Prado

So we get a sense that the universe appears as a series of disconnected points that are, in fact, all connected by folds. If we can relinquish a human point of view for a while, we can enter into the perception of these points and perceive the universe the way a point, a molecule, an atom might perceive it: an infinity of dispersed, tiny points of view that connect us to the universe.

This long excursus into the point of view of a point has helped us think of the potential life teeming within larger entities: to consider that all of matter is extremely alive. Now I'd like to suggest a couple more ways that algorithmic objects, in particular, can arise as fresh, unpredictable individuations.

MACHINIC PHYLUM

Even the most strictly ordered, hierarchical carpets produce singularities where idea meets matter. No two motifs can be exactly the same when they are executed on a loom with a certain thread count, with wool or silk of a certain diameter, by hands of weavers with varying skills and interests. Let's look again at the medallion and star carpet, Eastern Anatolia. Each floral motif, boxy arabesque and (Chinese-derived) cloud band is different from the others. As I mentioned, these motifs do not seem to emanate from the center, which is a stiff little blue medallion. This carpet insists that there is something in material that resists idealism, that has its own ideas of how to develop. It reminds us that matter to be formed has an entire energetic materiality in movement, carrying singularities or haecceities that are already like implicit forms that are topological rather than geometrical, and that combine with the forces of deformation: for example, the variable undulations and torsions of the fibers guiding the operation of splitting wood, together with variable intensive effects, such as porosity and resistance.¹⁹ A carpet, arising from the meeting of ideas (designs, algorithms) and matter in the hands of the weaver, is a machinic phylum: "materiality, natural or artificial, and both simultaneously; it is matter in movement, in flux, in variation, matter as a conveyor of singularities."²⁰ The weavers have to follow the material and let its singularities guide their hands, yet they are also introducing (not imposing) ideas to material and rolling matter and idea together in forms that will be slightly different each time.

I struggled a lot to find a source of individuation in algorithmic artworks, which would seem to be entirely pre-determined by their algorithms, until one day I saw it staring me in the face.

Algorithmic artworks are not just numerically generated; they arise from nexuses of idea and material that are completely singular. Given particular material, historical circumstances and drawing on existing programs that other people wrote in particular circumstances, the genetic artwork executes in a time and place that is, of course, different every time. So we can easily say that any algorithmic artwork arises from a machinic assemblage in Deleuze and Guattari's sense of a singular nexus of ideas and materials. For example, each iteration of Sommerer and Mignoneau's "Life Writing" assembles the analog typewriter interface; a text-to-form editor; the artists' time, thought, practice and conversation; funding; and the actions and interest of users.

Carpet making is also a machinic phylum specific to a culture, subject to its organizing principles. Caucasian carpets too arise from machinic assemblages that required industrial-level design and production. Individuation occurred at the level of design, where it fascinates to try to reconstruct what was going on in the mind of a designer. Individuation also occurs at the level of production, in the decisions about knots per form that I think produced their genetically mutating forms. And individuation continues to occur in use.

SEDUCTIVE NOVELTY

We can certainly see a playful, experimental practice of pleasure in the way carpet patterns evolve. What about contemporary genetic artworks? The pursuit of beauty and pleasure seems a retrograde motivation for contemporary art. It appears rather that genetic artworks, to the extent that the artists aim to meet criteria for contemporary art, follow models of participatory and relational art. The artwork is supposed to change in response to some wish or need of the participant. I've interacted with any number of algorithmic artworks, genetic and otherwise, that practically begged me to invest them with meaning. But as with relational artwork, throwing the creative agency back onto the beholder or participant, demanding that we the visitors give the work its meaning, often results in random or lackluster outcomes. Such genetic works seem to follow a survival model of evolution: changes come about if enough participants select for them.

I think we need a stronger argument for what motivates individuation. What about this one: individuation arises from experimentation for the sake of beauty and pleasure! Moreover, the genetic impulse

of art arises from sexual difference! This is the shocking thesis of Elizabeth Grosz in *Chaos, Territory, Art*.²¹ In a brilliant feminist intervention, the Deleuzian philosopher adds sexual difference to individuation. Grosz picks up Bergson's point in *Creative Evolution* that we humans inherit all the creative solutions of other creatures from whom we differentiated at some point in evolution.²² She rereads Darwin to argue that "survival" be construed in the broadest sense possible. The wish to seduce gives rise to all kinds of genetic inventiveness and experimentation, producing useless beauty.²³ Darwin writes that the mature male stickleback becomes "beautiful beyond description," colorful, translucent and iridescent, during mating season.²⁴ To attract pollinators, flowers color their petals yellow and pink and emit lovely scents. The bowerbird gathers colorful objects to decorate a stage for its courtship dance.

If we take the idea that evolution arises not from natural selection but from sexual selection, a universe of meaningful evolutionary beauty, seduction and pleasure unfolds for us. The carpets I've referenced are beautiful and provocative, showing off their evolved embellishments much as the male stickleback shows off his colorful, iridescent skin. These ideas about seductive evolution offer new criteria to artworks produced with generative software. In fact there are many digital and specifically genetic artworks that evolve in ways designed to keep our attention, to attract and delight us. Critics often dismiss these works as decorative, not serious. But it is their ever-evolving beauty that makes them succeed. Beauty is an agent of evolution!

To conclude, I suggest that genetic and other artworks that rely on input from the user might try refining the random openness that so often motivates interaction. Further, they might try jettisoning the dreary, survivalist motives that incite "relational" interactions. Instead, retrograde though it may sound at first, cultivating beauty and experimenting with pleasure may be the most generative of motives for individuation.

ENDNOTES

1. Laura U. Marks, *Enfoldment and Infinity: An Islamic Genealogy of New Media Art* (Cambridge, MA: MIT Press, 2010).

2. Carol Bier, "Pattern Power: Textiles and the Transmission of Mathematical Knowledge," in *Appropriation, Acculturation, Transformation: Textile Society of America 9th Annual Symposium 2004*, ed. Inez Brooks-Myers,

Susan Tselos, and Carol Bier (Middletown, DE: Textile Society of America, 2004; CD-ROM), 108.

3. Parry Owen, "Caucasian Masterclass [Textile and Antiques Fair 2002]," *Hali* 124 (2002): 124; writing of an early Caucasian blossom carpet.

4. Lawrence Kearney, "A Kind of Meta-Art: Caucasian Rugs from The Rudnick Collection," *Hali* 152 (2007): 69, on Marasali prayer rug.

5. Braxton Soderman, "The Index and the Algorithm," *Differences* 18:1 (2007).

6. Joseph McMullan, *Catalogue*, plate XXXVIII, Islamic Carpets from the Joseph V. McMullan Collection (London: Arts Council of Great Britain, 1972), 52.

7. as in *Wissengewächse* (2007), an interactive façade for the City of Science in Braunschweig, Germany.

8. Gilbert Simondon, "The Genesis of the Individual," in *Incorporations*, ed. Jonathan Crary and Sanford Kwinter (New York: Zone Books, 1992), 298.

9. Gilbert Simondon, "The Genesis of the Individual," in *Incorporations*, ed. Jonathan Crary and Sanford Kwinter (New York: Zone Books, 1992), 302.

10. *Ibid.*, 310.

11. *Ibid.*, 300.

12. *Ibid.*, 303.

13. *Ibid.*, 63.

14. Gilles Deleuze, *Cinema 1: The Movement-image*, trans. Hugh Tomlinson and Barbara Habberjam (Minneapolis: Minnesota UP, 1986), 60.

15. This attribution of life to all entities calls to mind Charles Peirce's statement, "Viewing a thing from the outside, considering its relations of action and reaction with other things, it appears as matter. Viewing it from the inside, looking at its immediate character as feeling, it appears as consciousness." Charles Sanders Peirce, "Man's Glassy Essence," *Collected Papers* 6.268.

16. Mario Perniola, *Enigmas: The Egyptian Moment in Society and Art*, trans. Christopher Woddall (London: Verso, 1995), 3-21.

17. Gilles Deleuze, *The Fold: Leibniz and the Baroque*, trans. Tom Conley (Minneapolis: Minnesota UP, 1993), 16.

18. *Ibid.*, 53.

19. Gilles Deleuze and Félix Guattari, *A Thousand Plateaus*, trans. Brian Massumi (Minneapolis: Minnesota UP, 1987), info 408-409.

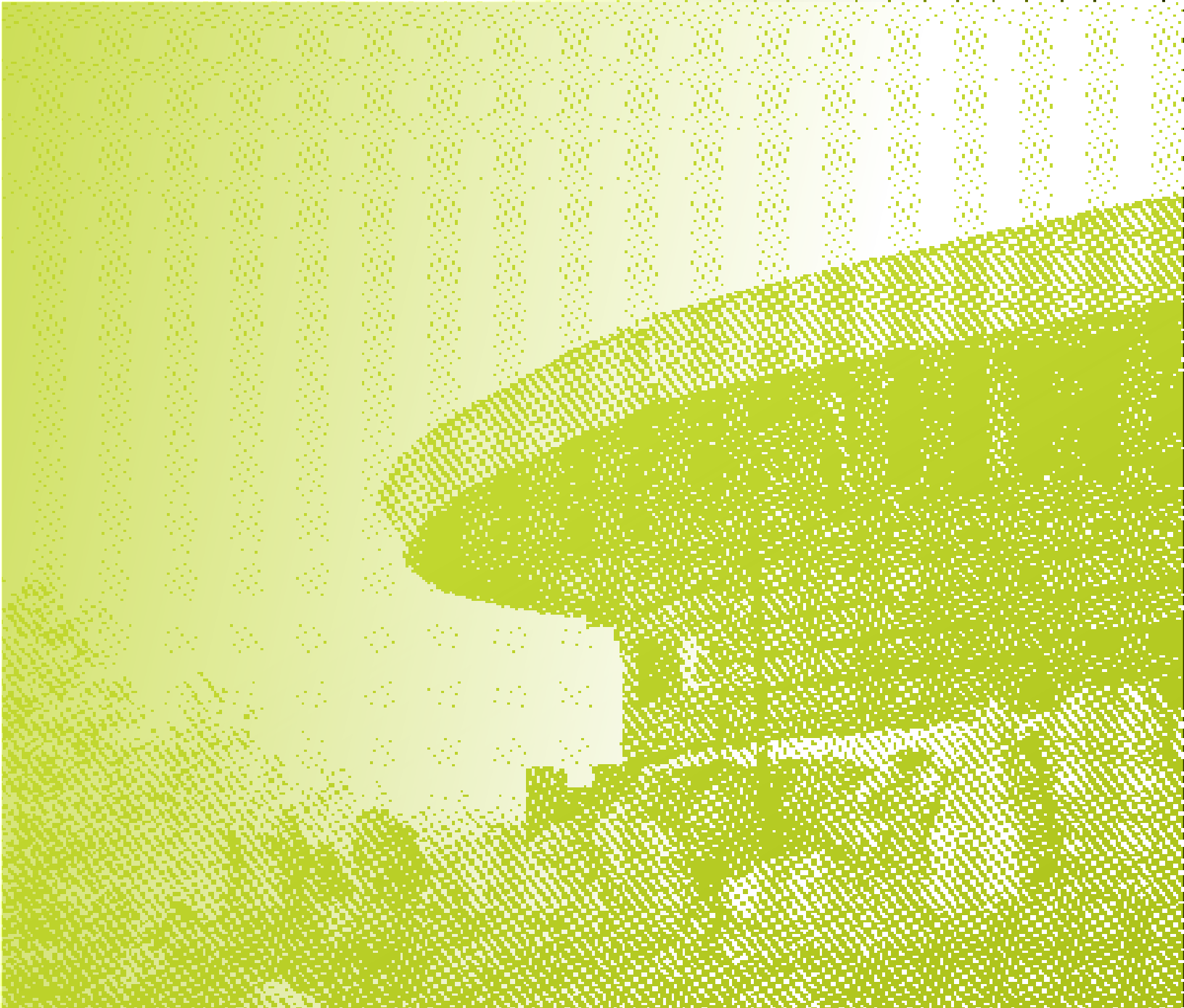
20. *Ibid.*, 409. In *The Fold* Deleuze characterizes Leibniz's third order of infinity as an intensive series of qualities that are possible but not necessary, which constitute "the real in matter: texture of a substance, timbre of a sound, malleability of gold, etc. (47). If the world is included in the soul, the monad, it is creased in matter (102).

21. Elizabeth Grosz, *Chaos, Territory, Art: Deleuze and the Framing of the Earth* (New York: Columbia University Press, 2008).

22. Henri Bergson, *Creative Evolution*, trans. Arthur Mitchell (Mineola, NY: Dover, 1998 [1911]), xii.

23. Grosz, 66.

24. Charles Darwin, *The Descent of Man*, and Selection in Relation to Sex, quoted in Grosz, 67.



DESIGN STRATEGIES TOWARDS HIGH-PERFORMANCE MARKET RATE HOUSING: THE 125 HAUS

JÖRG RÜGEMER, ASSISTANT PROFESSOR

MAKING THE MOST OF THE BEETLES

RYAN E. SMITH, ASSOCIATE PROFESSOR

DESIGN BUILD BLUFF

RACHEL CUSIMANO, M.ARCH '13, MELISSA SCHNULLE, M.ARCH '13, LIZ YONASHIRO M.ARCH '12

CRITICAL PRACTICE

Not only do we create designs on paper at the SoA, we sometimes get the opportunity to build them. As with every architectural practice, the questions of how we critically operate in a particular time and place are relevant to all of the projects taking place within the school. What does it mean to build in and of a place? How do you define the context for a building: to what geographic scale, to what scope of historical perspective, to what aspect of projecting toward the future, to what level of sensitivity to the environment, to what extent of challenging the accepted? These are questions all architects ask themselves when defining what place “place” has within their design process.

Educator-practitioners as well as students at the SoA are examining new ways of critically building in the Mountain West, from the utilization of damaged natural resources as sustainable construction materials, to the employment of energy-efficient building techniques in high altitude buildings, to the development of designs within the particular economic and cultural environment of a Navajo reservation. In each case, faculty and students are engaging in hands-on experimentation that embeds critical questions as applied to architectural practice.

Assistant Professor Jörg Rügemer discusses the design and construction of what he believes to be Utah’s most energy-efficient and cost-effective house, a title contingent on the outcome of a two-year post-occupancy monitoring process. Rügemer relays the struggles of working with a stock builder to employ Passive Haus principles in market-rate construction. Ryan E. Smith, Associate Professor and Director of the Integrated Technology in Architecture Center, discusses an ongoing research project in the center that utilizes beetle kill pine, which is wood infested and killed by the mountain pine beetle, to create a sustainable, solid wood building material called interlocking cross-laminated timber. Finally, students taking part in the school’s design-build program that creates affordable off-the-grid homes for residents of the Navajo reservation in Bluff, Utah provide a critical history of recently completed projects as well as their personal experience in the program. They discuss the challenges and opportunities of operating within a strict budget in the landscape of the high desert and how this affects the resulting designs.

DESIGN STRATEGIES TOWARDS HIGH-PERFORMANCE MARKET RATE HOUSING: THE 125 HAUS

JÖRG RÜGEMER, ASSISTANT PROFESSOR

This article is an extract of the ongoing research on the 125 Haus, which was accomplished by professor Jörg Rügemer, team leader, designer, developer, principal investigator and occupant of the 125 Haus project. The complete report was published in 2011 in the International Journal of Design Principles and Practices, Volume 5, Issue 5, Common Ground Publishing, Champaign, Illinois. It includes comprehensive energy simulations, performance data and cost information and comparisons to a comparable standard built-to-code building. For more detailed information please refer to the reports at listed at the end of this article.

INTRODUCTION

Located at an elevation of 7,000', the 125 Haus is a moderate-sized, 2,400 sq.ft. three-bedroom plus studio, contemporary residence in Park City, Utah. The 125 Haus is an interdisciplinary research and design project for a highly energy-efficient residential case study priced at market rate for the Utah and Intermountain West Cold Climate Zone. Employing an integral planning approach that includes the general contractor (GC), the structural (SE) and mechanical engineer (ME), the Integrated Technology in Architecture Center (I-TAC) at the University of Utah, and the building department of the jurisdiction (BD), the 125 Haus is designed to the German Passive House Standard, which was developed by the Passive House Institute founded by Dr.



Assistant Professor Rügemer's 125 Haus in Summit, Park City, Utah.

Wolfgang Feist in 1996 in Germany.^{1,2} 125 Haus' design process, construction, energy-saving potential, cost efficiency and return on investment (ROI) are documented, evaluated and analyzed throughout a two-year post-occupancy monitoring period that started after completion of the building in fall 2011. The project is understood as a lab-house,³ in which different strategies in the design and development process are tested and evaluated.

METHODS

Project Goals

To be successful in the accomplishment of the 125 Haus as a major case study and research project for the region and climate zone, the following goals were established at the beginning of the design process:

- Compact, moderate size house for a family of four, including a studio;
- Smallest possible impact on site;
- Superior architectural design, rooted in the regional context;
- High quality and highly functional/multifunctional spaces;
- Energy-efficiency close to the Passive House Standard (~80% or higher than code requirement);
- Integrated energy modeling to optimize design and passive strategy;
- Project documentation, post-occupancy monitoring and evaluation to prove efficiency;
- Standard construction methods and building components;
- High market-transferability;
- Minimal technology; and
- Costs to be at or below market rate.

Interdisciplinary, Collaborative Team Approach

In the residential sector, correct pricing is essential to considerably influence the market; end users are not willing or are simply unable to pay a larger premium for high performance buildings. To reach the above-mentioned goals and achieve energy-efficiency (80%+) and cost effectiveness (\$117.75/SF direct construction cost) at the same time, the composition of the interdisciplinary team turned out to be critical. Identifying the right team members at a local market level represented a big challenge, since many firms were not willing to explore the potential and strategies towards high performance residential buildings, even in economically challenging times with little to no work in the residential building sector. Those challenges were overcome by investing an appropriate amount of time in the team-finding process before the project was developed in greater detail.

Design Philosophy

Albert Einstein once said, “Everything should be made as simple as possible, but not simpler.” In today’s world, we have lost this kind of approach in many regards, including the ability to concentrate on the essence of things. This applies to architecture too and, with few exceptions, is well-documented in the built environment with which we surround ourselves. Especially in the field of residential design and construction in the U.S., architectural design is repeatedly confused with the functional organization of

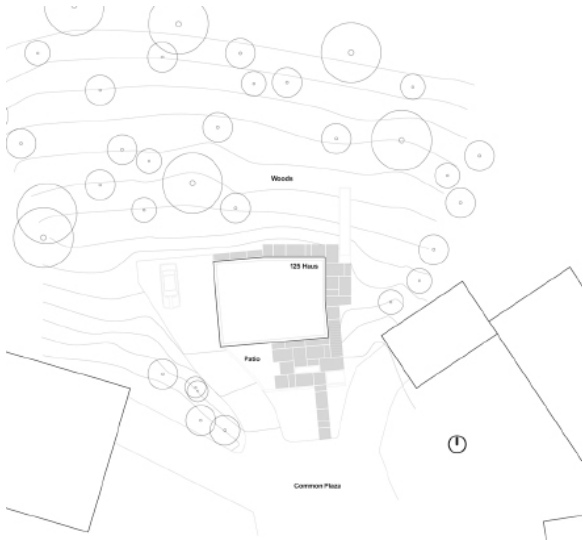


Fig. 1 Site plan and immediate context.

large quantities of spaces, which, at their best, conform to code, but lack spatial and architectural quality. Often, the results are pricey, poorly performing buildings with a low spatial quality and an expected lifetime of fewer than 30 years. To find a way back to the essence of architectural design, I have based my design philosophy on four pillars: (1) simplicity is the key to successful design, sustainability, and high performance in architecture and urban design; (2) a holistic, interdisciplinary approach leads to superior architectural design; (3) the quality of the detail and its execution determines the level of quality of the overall work; and (4) successful architecture and urban design includes aspects of both regional and global contexts.

DESIGN PROCESS

Site

My involvement in the site-finding process for the 125 Haus guaranteed the fulfillment of specific passive design site requirements that were important for a Passive House design. The chosen site is subject to simple covenants, conditions and restrictions (CC&Rs) and voluntary Home Owner Association (HOA) design rules, which in some cases can become extremely restrictive or even prohibitive for energy-efficient buildings. There were only a few developed sites available that would fulfill most of the requirements in close proximity to the metropolitan area of Salt Lake City. A good compromise was found in a half-acre buildable infill lot that belongs to a 1950s subdivision development sited in Summit Park, a 6,000-person community located between Salt Lake City (16 mi) and Park City (15 mi). Except for its altitude at 7,000', the site represents an average lot for a single-family detached residence in the region. Located at the north end of a cul-de-sac, it has southern and eastern sun exposure, with dense trees to its north and west (Figure 1). The property slopes downwards with a 12% gradient to the north. Nestled between two existing buildings, the 125 Haus fills the remaining gap. The lot is located in the Utah cold climate zone that is defined through long, cold, relatively dry winters and moderate warm and dry summer months with an estimated 8,190 heating degree and 162 cooling degree days. Annual snowfall is about 400".

The purchased land fulfilled the desired requirements for natural daylight with direct sunlight throughout the year, which is important for solar heating during the winter months. The general orientation allowed for a good passive solar placement of the

building, with restrictions through some coniferous trees on the southwest-facing corner of the lot (Figure 1, 2). Although this condition is not ideal for an entirely passively heated home, I was able to adjust to it through consistent and strict design to passive energy standards. The moderate slope allows for three stories under existing building regulations, with the placement of the garage on the lower level. This allows for full southern exposure and maximum solar heat gain on the upper floors in the winter. It also permits a direct view onto the panoramic mountain range to the south.

Building Placement

To optimize the building's placement on the lot, massing models were developed and taken to the location to understand lighting conditions, topography, views, landscape and proximity to the neighboring buildings (Figure 3). A land survey confirmed property lines and required setbacks according to local regulations. Building height restrictions of 32' allowed for three stories, keeping the building very compact with a small footprint, undercutting the footprints of most neighboring garages. The solar pathfinder diagrams, in tandem with local setback rules, established the building's location on the southernmost corner of the property. Exposure to winter sunlight is maximized and driveway length

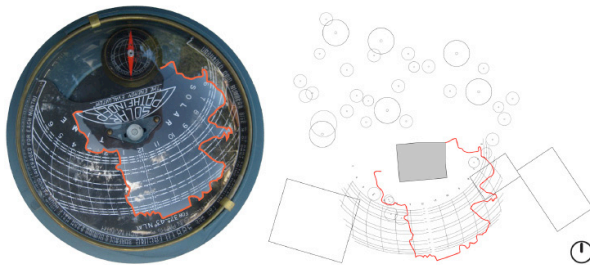


Fig.2 Solar Survey with the Solar Pathfinder (left); Superimposition onto site (right)

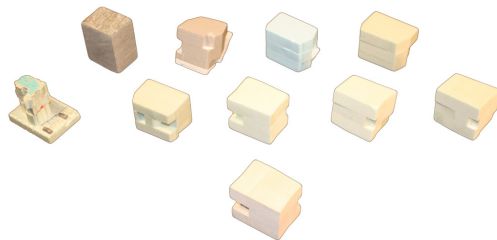


Fig.3

is minimized, reducing paved-over areas. The location helped to minimize cutting of trees and provided for an urban scheme, in which the buildings define the cul-de-sac as a village plaza. This space is used for common activities and kids' play.

DESIGN STRATEGY

The 125 Haus is designed to function as a repository for my family's European origin; it is also a daily retreat from our busy, everyday life. The exploration of Utah's inspiring, impressive rock formations, the specific site characteristics, and the need for a minimal surface-to-volume ratio for best energy-efficiency led to the initial concept model (Figure 4).

Solar orientation and major views helped to programmatically organize the three stories, placing the garage/workshop and studio on the lower floor, the common family areas on the main floor, and the private bedrooms on the upper floor (Figure 5). Our needs defined minimum space requirements for work, communal living, functional spaces and bedrooms. Emphasis was placed on a reduction of space by taking advantage of multifunctional organization: kitchen-living-dining-playing rooms; garage-workshop; the integration of circulation space as usable space, play corridors, reading and observation niches and integrated washer and dryer closet. The orientation and position of the central, open staircase supports the minimalistic space approach; it organizes the house into east and west halves. It is an important feature to allow for natural nighttime air-flushing during the hot summer months to avoid the need for air conditioning; it also allows for a direct visual connection between the main entrance and the natural landscape to the north when entering the building.



Fig.4

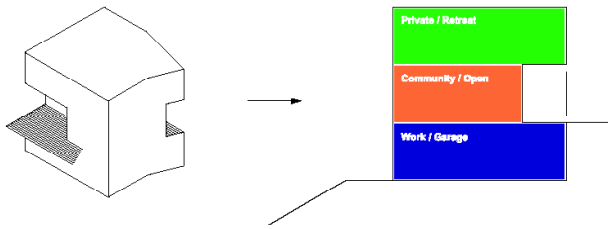


Fig. 5 Initial concept model and repository; building organization

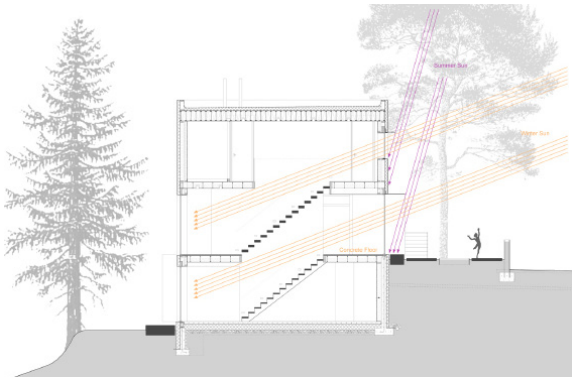


Fig. 6 Building cross section with summer and winter sun exposure.

Each space is designed to specific daylight conditions and views. Solar orientation requirements for passive buildings, room function, expected user behavior and views determined the size and location of each window in the building (Figure 6). North- and west-facing windows in the communal area allow for horizontal views onto natural surroundings; their sill elevation is determined through the viewing height from the sofa and that of a standing person looking down the natural slope into the woods. A large window in the kitchen opens to the east, providing a windowsill for kitchen herbs; it lines up with the stove to allow for a visual connection to the outside during cooking. A horizontal window is placed 6' above the dining table to bring in direct sunlight in the morning, blocking out direct views to and from the neighbor's garage. All south-facing upper floor windows connect directly to the mountain range, blocking the direct view to the street for someone lying or sitting in bed. The studio windows catch the morning sun and have a direct view onto the trees, to allow for brief relaxation during periods of intensive work.

Figure 6. Building cross section with summer and winter sun exposure

The south-facing main entrance leads directly to the communal

areas: kitchen, dining and living room. The open staircase leads down to the studio and garage, with the opportunity to exit into the garden through a glass door, which provides direct visual connection from the main entrance. To access the private spaces, one has to pass through the kitchen or living room and turn 180° towards the mountains at the upper end of the open staircase.

Interior materials are kept minimalistic: white painted smooth walls and ceilings and hardwood floors for the living areas; white walls, ceilings and anthracite tiles in the bathrooms; and concrete floors in the kitchen, studio, and entrance area. Baseboards, trimmings and decorations are avoided to support the idea of a pure and modernist space. Kitchen and bathrooms are equipped with simple, high-quality materials and fixtures, to ensure low-flow and quiet faucets, dual flush toilets and durable materials for showers and bathtub.

To consider site-specific requirements and accommodate an interpretation of the typical local patio, the initial building mass was slightly folded to follow the topography and comply with the 32' height restriction. Two deck areas were carved out of the solid mass. Although this produces slightly more facade surface area, it enhances the spatial indoor and outdoor quality of the building considerably (Figures 7-8).

The outdoor areas were designed to minimize impact on the land. Open-joint concrete pavers surround the building, providing a patio to the south and a stair with a small coffee-patio to the east. The pavers serve as a snow buffer in the wintertime, allowing for easy snow removal along the facades. The building mass protects the southern patio from the predominantly northwestern winds. The driveway connects the higher street level with garage level to the west. Cars parked in front of the garage are hardly visible from the patio and street. Rain and storm water is entirely contained onsite.

PASSIVE ENERGY DESIGN STRATEGY

Easy access to HVAC equipment, coupled with inexpensive energy, causes designers in the U.S. not to consider site and building use parameters for passively performing structures, leading to standard buildings that are divorced from their surroundings. Typical applied strategies for high performance buildings include standard construction in tandem with add-on

technology to mask a multitude of traditional design sins, and to offset the extensive amounts of fossil energy consumed by those buildings. This strategy is not reasonable as it comes at high costs and low thermal comfort.

A more promising strategy is a design and research-based passive energy approach, in which the building is actually married to its environment, meaning designed to its specific site, climate, altitude, occupants, budget, etc. This strategy is applied as the first principle of design for the 125 Haus. Using an integrated, interdisciplinary design and development process that includes energy modeling as a major tool, the overall strategy, construction methods, components and details are optimized towards the most energy-efficient and cost-effective building solution, using off-the-shelf technology to ensure market transferability.

Major emphasis is placed on the building envelope, which is designed to the Passive House Standard and provides a comfortable, healthy indoor environment. With R-values of 60 (walls) and 80 (roof), an air infiltration rate of 0.8 ACH50, and high performance windows with U-values between 0.14-0.20 Btu/hr-ft²-°F, heat loss through the envelope and air infiltration is reduced to a minimum. Due to the many components assembled

in the predominantly wooden stick framing construction method in the Intermountain West, airtightness comes with challenges. These were overcome by care being given to envelope sealing before the insulation and drywall went into the walls. For the 125 Haus, simple and feasible envelope sealing methods were considered and discussed throughout the entire design process. By combining two wall/insulation systems—double stick framing and EIFS (Exterior Insulation Finishing System)—the exterior shear-load bearing OSB sheathing served as a controllable layer that was sealed before the EIFS insulation and stucco system were applied. To avoid humidity and air quality problems inside the building, an HRV (Heat Recovery Ventilator) was installed as the major technical component.

CONCLUSION

To achieve high performance and energy-efficient buildings at competitive market rates, every design move must include the questioning of and critical reflection upon conventional models and needs in architecture to successfully combine energy and cost-efficiency in the process. Such a process requires a comprehensive knowledge of passive strategies in architectural design, and an understanding of environmental building systems



Fig. 8 Model view from the northeast with kitchen pop-out window and northern deck (right)



Fig. 8 Model view from the northeast with kitchen pop-out window and northern deck (right)

and the way they work and influence a building's energetic and thermal behavior.

In today's construction business, the disconnect between architects, engineers and contractors/builders equals the conceptual split that occurs when applying a solely creative or purely scholarly approach to any design and construction process in the architectural design arena. By avoiding such a conceptual split and working together in a strong collaborative effort, the team of the 125 Haus was able to fully apply the collaborative team efforts, synergies and research findings towards a well-designed, high performance and cost-effective building. With its emphasis on cost-effectiveness and market-transferability through application of regional construction methods and materials and components, this case study research project is expected to help move the residential market in the Intermountain West of the U.S. and beyond towards high performance and energy-efficient buildings.

ENDNOTES

1. "The German Passiv Haus Institut," PHI, accessed January 3, 2011, <http://passiv.de/>.
2. "The Passive House Institute," US PHIUS, accessed January 11, 2011, <http://www.passivehouse.us/>.
3. A lab house is a building in which different strategies, technologies, materials, components, and other aspects are tested, analyzed, evaluated and documented.
4. For detailed information on the wall, roof, and other assembly systems being used in the design of the 125 Haus, please refer to: Jörg Rügemer, "Energy-Efficient and Cost-Effective Residential Passive House Design in the Utah Cold Climate Zone," Proceedings of the 2011 BESS Symposium, Pomona, CA (2011). For detailed information on the performance of the building, please refer to: Jörg Rügemer, "Challenges of cost-effective high-performance residential construction on the US market: lessons learned from building Utah's most energy-efficient and cost-effective house," Proceedings of the 2012 4th International Eco-Architecture conference, Kos, Greece (2012).



The completed 125 Haus' kitchen. Photo courtesy of Scott Zimmerman.

FURTHER RESEARCH ARTICLES ON THE 125 HAUS

Rügemer, Jörg. "Developing Super Efficient Passive Residential Buildings – First Experiences from Building Utah's Most Energy-Efficient and Cost Effective House." *The International Journal of Design Principles and Practices* (2012, forthcoming).

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Interior living room space. Photo courtesy of Scott Zimmerman.

MAKING THE MOST OF THE BEETLES

AN ALTERNATIVE USE OF STANDING DEAD FOREST WOOD

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Beetle kill pine is abundant in the forests of the western United States and Canada. Colorado State University reports that by 2008, two million acres of national forest in Colorado alone were infested by pine bark beetles, or double the acreage in 2006. This represents 44% of Colorado's national forests.¹ (Figures 1 and 2)

Beetle kill standing dead pine can certainly be used as biomass energy. It can provide fuel directly, either as chips or ground material, or it can be converted into pellets for stoves and boilers, thereby also releasing CO₂ into the atmosphere. Energy production, however, is the lowest value application of beetle kill pine, and it won't cover the cost of removal and transportation. The best use for portions of the trees is in construction products for residential and commercial buildings. The unusable remainders of the trees can then be harvested for energy production. This scenario makes the most of beetle kill pine.

Despite the current stagnation in real estate, Arthur C. Nelson, also of the College of Architecture and Planning, projects that the

rate of building in the Intermountain West will double by 2030.² Unprocessed, standing dead beetle kill pinewood from western forests will be unable to meet this growth in demand. This wood is low-grade and small in diameter, making it inadequate for the 2x4 and 2x6 stick frame buildings that constitute the majority of local construction. Researchers at the University of Utah's Integrated Technology in Architecture Center, in collaboration with Euclid Timber Frames, LLC, of Heber City, and Brigham Young University Civil and Acute Engineering of Provo, are studying beetle kill pine's potential for use in construction products.

The team has researched, developed, and is now commercializing a beetle pine product called Interlocking Cross-Laminated Timbers (ICLTs), a prefabricated, cross-laminated, solid wood wall and roof panel. Like the Cross-Laminated Timbers (CLTs) developed in Europe, ICLTs are fabricated from 2-7 layers of alternating-direction 3" x 6" and 3" x 8" pine stock. Unlike other solid wood panel systems, however, ICLTs use no fasteners and no adhesives, thereby avoiding volatile organic compound (toxic)

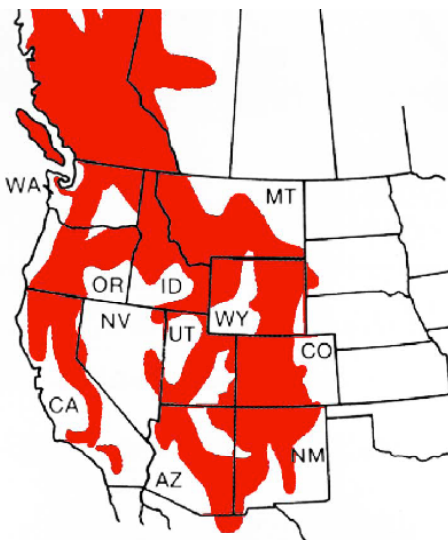


Fig. 1 Mountain Pine Beetle Infestation Across the Mountain West.



Fig. 2 Mountain Pine Beetle.

glues. This allows the panels to be disassembled at end-of-life and repurposed in the building material supply chain. It also reduces overall capital costs. ICLT fabrication requires neither presses nor fastener installation, and avoids the set up associated with glue lamination. Standard mills and timber fabricators looking to diversify their product offerings can produce ICLTs using their existing infrastructure and equipment. The exposed wood on the interior also provides thermal mass and humidity regulation. (Figure 3)

Layering gives the panels strength, allowing low-grade wood to be used in a high-value structural condition. ICLTs are estimated to last upwards of 100 years. Compared to standard light-frame construction, which has a 30- to 50-year life span, ICLTs provide a stronger outer structure and a more durable enclosure. They meet the needs of a more sustainable building industry, both economically and environmentally. ICLT panels range in thickness from 6" – 21", and can be made up to 10' in width and 25' in length. ICLT structures can in some cases be built up to nine stories. They are efficient in speed of construction, and, given the availability of material, are potentially affordable for both production-home building and large commercial structures. (Figures 4 and 5)

Forestlands in the Intermountain West average 50 trees per acre. On average, the trees are 80' high and have a 3' trunk diameter

at the end of their useful CO2 sequestration life. A mature tree produces 1,695 board feet of lumber. One million acres of standing dead beetle kill pinewood yield 85 billion board feet of material. Given that ICLT construction uses 40,000 B.F. per average-sized Utah house (2,700 S.F.), this acreage could produce more than 2 million housing units. With an estimated 750,000 new housing units needed by 2030 in Utah alone, the Colorado standing dead forestland could provide enough material to cover most of the U.S. Intermountain housing demand.

ICLTs are capable of providing a single-family housing solution, but their greatest economic and environmental potential lies in their ability to compete with concrete and steel construction, most notably in the mid-rise multi-family and low-rise non-residential sectors. Concrete and steel both have considerably higher embodied energies than ICLTs.

Coordinated support by the research community at the University of Utah will continue to be critical to early beetle kill pine product development, particularly for code approval, seismic testing, fire evaluations, and connection requirements. Even more important to the success of beetle kill pine in construction is the resolution of various political and financial obstacles. In an effort to expedite beetle kill pine usage for construction, University of Utah researchers hosted a campus Western Region Wood Building



ICLT 5 – Layer Cross-section.



ICLT Wall Assembled and Installed On-site.

Workshop in March 2012. The workshop focused on applied research. It was sponsored by the U.S. Forest Service, the Forest Products Laboratory, and FP Innovations. It brought together current research and industry practice to find solutions to the full lifecycle potential of beetle kill pine, including design, sourcing, milling, fabrication, and assembly. The goal is to create new, low energy-use products for the building market.

For more information on ICLTs, the Western Region Wood Building Workshop, and ICLT research, visit the Integrated Technology in Architecture Center (ITAC) website at <http://itac.utah.edu>.

ENDNOTES

1. D. A. Leatherman, I. Aguayo, and T.M. Mehall, "Mountain Pine Beetle," *Colorado State University Extension, Report No. 5.528*, accessed January 27, 2011, <http://www.ext.colostate.edu/pubs/insect/05528.html>.

2. A. C. Nelson, "The Boom to Come, America Circa 2030," *Architect* 95 (2010): 93-97.



ICLT Building Near Moab, Utah.

DESIGN BUILD BLUFF

RACHEL CUSIMANO, M.ARCH '13; MELISSA SCHNULLE, M.ARCH '13; AND LIZ YONASHIRO, M.ARCH '12



BEGINNINGS

Design Build Bluff is a design-build program dreamt up by University of Utah adjunct professor Hank Louis. According to Louis, "...about the mid-90s I started reading about the Rural Studio... I called up Sam Mockabee [of Rural Studio] and asked him to give a talk at the U.... and then all of a sudden, it just clicked with me: there's a reservation in Bluff, Utah where we can do the same experimentation as in the Rural Studio...I bought the Scorup house [adjacent to Bluff] and started the process."

As the program logistics evolved, students of the early design-build studios worked in Park City on various small-scale community projects. In 2003, one group of students was entrusted with building a Salt Lake City home for an immigrant family. Once the students had proven their abilities, the university allowed groups to start working in Bluff. Design Build Bluff provides students with real-world experience, both in design and construction. Few architectural programs in the country offer their students this kind of training.

It's 7:30 in the morning. All across Design Build Bluff's Scorup property in southern Utah, alarms are ringing and being sentenced to another 10-minute snooze. Outside, the sun is still an hour away

from rising over the mesa, and patches of lingering frost hint at the chilly temperature. Soon all 12 students have dragged themselves out of bed and are chaotically assembling lunches, tool belts, or whatever else needs to be prepared for the workday. Staff members begin to make their way over from their separate living quarters and congregate in the dining room. At 8:30, ready or not, the morning meeting begins.

After safety reminders and agenda updates, the group piles into a well-worn passenger van and makes its way over unpaved roads to the adjacent Navajo reservation. Just past 9am, the van pulls up to the jobsite and everyone begins setting up for the day. Small teams of students form, each tackling its own assignments and setting goals to achieve by sundown. Some begin forming the straw bale wall, others calculate and assemble structural beams, while another team backfills trenches, one wheelbarrow load at a time.

Students are warned in their first meeting—nothing in Bluff is perfect. And it's true, nothing is. But they don't tell students that this imperfection envelops everything, unifies it, and brings out the best in the participants. Out here, they abandon all sense of formality.

Three years ago, Louis approached Rick Sommerfeld, director of the design-build programs at the University of Colorado, Denver (UCD), about collaborating to build houses year-round. Since then, UCD and the University of Utah have partnered on three homes in Bluff: the Windcatcher House, the Nakai Residence, and the Skow House.

Utah and Colorado students now take an elective studio in which they each design a new Bluff house the semester before they start building. This offers students a chance to thoroughly study the site and building program.

Students must then bridge the gap between design and building. Another major challenge is the remote location of sites on the reservation and the lack of resources that one would normally have access to, like utilities, building supplies and other amenities. This works as both an advantage and a disadvantage. The opportunities to build whatever you want and change deadlines happen daily in Bluff. Sommerfeld sums up the Bluff experience: "It's difficult to work in conditions where you can't just pull up a

concrete truck and pour concrete, and you can't just go to a store and buy anything off the shelf."

INTERVIEWS: RESIDENTS OF FOUR DBB HOUSES

LITTLE WATER

Residents: Ben and Sarah Jones

Completed: May 2012

Design: 12 students from the University of Utah

Location: Navajo Nation Indian Reservation, Southern Utah

Little Water is the most recent Design Build Bluff project, and stayed under its budget of \$25,000. The design took its roots from the traditional Hogan homes of the Navajo Indians. The plan is radial, with an east-facing entry and a clockwise circulation pattern. The semi-circular structure radiates from a central oculus at the building's core and highest point. The orientation was carefully planned in relation to solar radiation, wind directions, and the topography of the site.



Little Water exterior landscaping.

Operable vents in the oculus provide night flush cooling. The oculus was also designed to bring in light, as the clients requested minimal windows. A berm encases approximately 75 percent of the home's vertical mass within the naturally sloping terrain, taking advantage of the earth for temperature regulation in the harsh desert climate where hot days are followed by cold nights. The remaining 25 percent of the home's exterior walls consist of non-load bearing straw bale, coated with layers of local clay. These walls have an R-value of 28. The upper roof is designed to shade the underling roof and allows for ventilation to pass between the two layers through a four-inch air gap. A rocket mass heater heats efficiently by both convection and conduction, re-burning the fuel in an insulated, internal chimney, which is then exhausted through pipes running through a stone and cob bench—a thermal battery—where the heat is released slowly, long after the fire has gone out.

Standing in the old, crowded trailer that the federal government dropped off on their land years before, Ben and Sarah Jones were eager to move into their first real home. They didn't talk much, making only a few comments. "We've never had a house before," said Sarah. I got the feeling they didn't really care what they got. They would make do with whatever we decided to build. In a final attempt to draw information from them, I begged them for their input and opinion of the design. Sarah spoke with the only English words she knew: "It's beautiful." The couple is the most elderly of any previous Design Build Bluff clients, and therefore, the most traditional. I listened to Sarah converse back and forth with her husband and her son, Gary, who acted as our interpreter for the interview, in their native Navajo. Their voices were soft, their words flowed together like a chanted hymn, patient and drawn-out, in a language that is unfortunately slowly dying.

Sarah frequently walked through the unfinished house, imagining it complete and realizing how large it is. Due to worsening medical conditions, Ben often watched instead, sitting on the decaying wood stoop of his trailer.

Ben and Sarah asked for an outdoor space where they could cook (a "bread house") and an indoor basket-weaving space. They wanted the new home to be accessible to their existing home. Wheelchair access was critical, as Ben and Sarah both expect to be wheelchair-bound soon.



Little Water Interior shot of kitchen and oculus.

Design Build Bluff (DBB): How has the design implemented Navajo building tradition? How important is this implementation to you?

Ben and Sarah (B+S): It's close to cultural standards but more modern. The way the berm is, in old times they used to build houses in the ground.

DBB: What do you like about the home? What do you dislike about the home?

B+S: It's beautiful. We love everything. We really have no words for it. The only thing is the opening along the wall. Is it going to remain open? There is concern for sand collection when the wind blows. Other than that, we feel that we will get everything we wanted.

DBB: How do you feel about your involvement in the design process, are the students meeting with you often enough?

B+S: The process from the beginning renderings up to this point in the construction look close [to what was proposed], and we feel it is going to meet our initial expectations. We are fine meeting with the students. We prefer having our son, Gary, around to translate, so that we understand what's going on.

DBB: How were you nominated to receive a home?

Gary (son): When I started working on the other projects for Bluff, they asked if my parents had a home. I said no, they applied for some housing a long time ago but it takes forever. I talked to Hank about it, he's the one that wanted to do it.

Main Challenges: Excavation and earthwork turned out to be more expensive and labor-intensive than expected, as this was the first semi-earthen home built by Design Build Bluff. The large number of environmental systems implemented in the project made it a rush to finish on time.

WEST WATER

Residents: Tyron and Angie Hutchins

Completed: April 2012

Design: 19 students from the University of Utah

Location: West Water community, outside of Blanding, Utah (off the Navajo reservation)

This house uses prefabricated modules. The design concept started with two rectangular floating volumes, one for public and the other for private use. The students felt that the four Hutchins daughters needed a "nested" space of their own. The volumes were positioned for southern exposure, with one volume shifted forward and lifted five feet higher than the others, thereby creating an outdoor deck adjacent to the lower unit, and a carport under the higher one. Unlike any other house in the West Water area, this house is elevated and juts out from the sloping landscape. A three-foot thick "spinal wall" is the heart of the home. It ties the two volumes together and acts as a thermal mass, radiating to the outdoor space below. Initially thought to fit the dimensions of a 16-wheeler truck bed, the students discovered that the roof heights made the modules an oversize load. This increased transportation costs, and limited the design options.

This large family of six was sharing a two-bedroom apartment in Blanding with Angie's sister and her family. The Hutchins desperately needed more space, which is the reason the students chose these clients over the several hundred others on the Navajo Nation's waiting list for housing.

DBB: How has the design implemented Navajo building tradition? How important is this implementation to you?

Tyrene and Angie (T+A): I know some of the culture, not all of it. It is unique and different. Usually the front door faces east. We have a front door facing south and also one facing east. They believe that when the sun comes up, they wake up with the sun. But it's not important to me.

DBB: Do you feel this design suits your family's needs?

T+A: Yes, [but we would] add another bedroom.

DBB: What do you like about the home?

T+A: The deck and the hardwood floors. An extra bathroom was a surprise.

DBB: Is there anything in the home that does not work properly, are there any post-construction problems that were never resolved?

T+A: The septic and the solar. The solar is supposed to be donated and was planned from the beginning. The septic is on hold because the person that is supposed to install it has not come out. We have it, [but] the guy does it when he feels like it.

DBB: Were you involved in the design process, how often did you meet with students?

T+A: They asked us what we wanted and I basically told them that we just wanted a normal house. They talked to us constantly about what was going on. We did tell them that we wanted carpet, but when they came up with some carpet, they did not like it ... because it was not brand-new carpet and [the students] thought it was gross.

DBB: What were your expectations, were they met?

T+A: Yes. I was so excited about getting a house. I didn't care.

DBB: How were you nominated to receive a home?

T+A: They nominated us in the monthly meeting that the West Water community holds. It's a different process than what they do on the reservation, [but] all homes, [whether] on or off the reservation, are [chosen] ... by the community, through the Navajo Nation. There were setbacks. It took a year and a half to



West Water House Construction

construct... they told us we were getting it in May [2011] and it turned into April [2012]. There were only 4 students working on it after May [2011].

DBB: What utilities do you have?

T+A: We haul our own water and will still need to haul it to the property from town after we move in. We usually go every other week. We have a propane tank for gas. We have no power or septic.

DBB: How do you feel about the house overall?

T+A: I appreciate everything that they did for us. We are very happy with the house.

Main Challenges: The clients are not currently residing in the house because the project funding ran out before completion. Neither the septic nor solar energy systems are operating, and the Hutchins are still waiting to have them donated. Without septic and solar, the Hutchins cannot get a certificate of occupancy, and are therefore unable to move in. The city of Blanding is

attempting to annex the West Water community in which the house is located. If this happens, Blanding will provide utilities for all of the West Water houses, but the annexation may take several years. The transportation costs and extra time expended waiting for the delivery of the prefabricated modules were also very problematic for the project. After failing to find anyone to donate the transportation costs, the students were finally offered a heavily discounted rate for the transportation and craning of the home. This came as an eleventh-hour option during the last week before the end-of-semester deadline. Other prefabricated Design Build Bluff homes have fared even worse, some taking over a year to transport due to a lack of funds.

The project faced other problems as well. The clients are the only mixed Caucasian and Navajo family in West Water, and the community has been divided over whether to support either the home or the couple's relationship. There has also been controversy among the town's political leaders regarding the innovative design of the home. At one point, the students attended a community meeting to ascertain whether the Hutchins still owned the land, given that their homestead lease had expired. After much deliberation, the tribal leaders finally renewed the Hutchins' lease.

NAKAI HOUSE

Resident: Lorraine Nakai

Completed: December 2011

Design: 18 students from UCD

Location: Navajo Nation Indian Reservation, Southern Utah

An entomologist and self-described jack-of-all-trades, Lorraine Nakai is well-educated and enjoys talking about her work and her many philosophies. She is free-spirited and full of energy and charisma when she talks about her home and her life experiences. There is a strong bond between the crew of students and Lorraine. The house, with its simplicity, is architecturally rich. The new house is positioned to form a courtyard with the two existing houses of the compound. Its glass siding reflects the older houses. The client has a lot of books, and they became part of the programmatic idea by forming an entire wall that separates programs from the main living spaces.

DBB: How has the design implemented Navajo building tradition? How important is this implementation to you?

Lorraine Nakai (LN): Navajo culture is ever-changing and every person is different. The cultural roots you are asking about, my only answer would be that the Navajos do not have specific needs. We will always make do with what we've been given. The Navajo culture is about sharing. If you are given knowledge or money, you share that bounty.

DBB: What do you like about the home?

LN: I love everything about the home. I have books that I've never been able to take out of boxes until now.

DBB: Is there anything in the home that does not work properly, are there any post-construction problems that were never resolved?

LN: One of the students created a ladder to slide along the bookshelf, but was unsuccessful in its completion. Before he could get rid of it, I asked him to leave it. I converted it into an indoor planter.

DBB: Is there anything you would change about the design?

LN: I would not change anything.

DBB: How were you nominated to receive a home?

LN: My family built the two homes on the property. My mother lived in one and my grandmother lived in the other. Now, I have a house I can call my own. I never thought I would be nominated by the Navajo Nations to receive a house. For that, I'm thankful. I give, give and give for the community, never thinking about getting anything in return.

DBB: Were you involved in the design process?

LN: I was at the house every day and was able to mitigate and work closely with the DBB students. Every day I was surprised and tickled. The students and I, we are all neighbors and of the same community. There really are no boundaries between those on the reservation and those off of it. You can choose to leave or stay without hassle. The only real boundary is what the federal government has created, poverty. People need to work and make money, but there are no jobs on the reservation. They must commute to jobs. This is why there are many elderly living alone.

DBB: What were your expectations, were they met?

LN: The students initially asked me to create a list of the things I wanted in the design. I am extremely delighted to [have gotten] everything I wrote down.

Main Challenges: The main water line has not been connected because the house sits on a giant bedrock slab that needs to be drilled. Another major challenge was transporting the spandrel glass sheets from Park City. The bookshelf was also a problem. It took longer than planned, but became a major part of the overall design.

WINDCATCHER HOUSE

Residents: Maxine and Maurice Begay

Completed: December 2010

Design: 22 students from UCD

Location: Navajo Nation Indian Reservation, Southern Utah

This residence was designed for a single mother and her son. The students used local soil and clay in the construction of rammed earth walls and compressed bricks that provide thermal mass.



Windcatcher House

The focal point of the residence is a windcatcher. It is designed to passively cool in the summer by directing breezes through wet material in the tower. A wood stove at its base heats the house in winter. The public space provides an open connection to family, while the entrance and private spaces are oriented to the east, sacred in the Navajo tradition.

Maxine and Maurice were selected from three families interviewed by the students. It was a difficult decision. Maxine was ultimately chosen because there was alcohol abuse in her extended family, and she needed to separate herself and her son from violent behavior. It also helped that she liked the designs of previous Design Build Bluff homes.

DBB: How has the design implemented Navajo building tradition? How important is this implementation to you?

Maxine Begay (MB): I told my students that in the Navajo way, the home is your mother. I said that I want my door facing east, because east is an open place, where people are welcome to come within the mother earth. So, they made me a big wide door on the east side, and I think that's cool. I want my house to be traditional, painted in Navajo designs with white, black and red. The white represents the daytime and the black represents the night. The red is the dawn. I'll probably do that myself somehow. They made this for us. Each of the four directions is an open place to put a door. It is a welcoming gesture to your family, your friends. They didn't put in my north door, but I said, that's okay. We wanted

our chimney and everything [to be made] from the sand around here.

DBB: Is there anything you would change about the design?

MB: No, we like the way our students built our home. We wanted our place by ourselves and we love it, we enjoy it, we have cookouts here with family and they want to have Easter here with us. Even though we have no power, they bring their generators.

DBB: What do you like about the home?

MB: I told them everything is my surprise, everything I love. The students would say, "Hey Maxine, we have a surprise for you. Can you come over?" My jaw would drop.

DBB: Does the design respond well to the constantly fluctuating desert climate?

MB: Other than the windcatcher not working, it's good. Once you open these windows with the screens, it's very cool. During the summer my grandma comes over and says it's cooler than her home. For the winter, there are heaters on the wall. They are electric though, and it is cold [the house does not yet have power]. That is why we dragged our mattresses out here in the living room.

DBB: Is there anything in the home that does not work properly, are there any post-construction problems that were never resolved?

MB: The windcatcher, they are not done with that yet. One summer, last year, it was so hot for my son and me. I chased my son up there because I'm scared of heights. He said, "Mom, these things are so heavy." I had to make myself to go up there [to the top of the windcatcher] and [I] opened up the panels on one side. It was coming in really cool. So we opened two sides and a nice cool breeze was coming in. But we needed some screens so bugs cannot come in. They were coming in like crazy, so we closed it.

DBB: Were you involved in the design process?

MB: I had an open house on the last day and I had a prayer done for the students, we even blessed them with cedar. We had a cookout with them. My family opened our arms to them. They were like family to us, especially [to] my grandma. My grandma got used to them being here all the time working on the house. She would come over to watch them work. She would say, "When are they coming again? Are they going to be coming again?"

At that time, I was working at the San Juan River Kitchen. Mitch, the contractor, came one day and asked if I would come out. He said, "I need to ask you something." I went outside with my apron. When I walked out, there was a bunch of people standing and smiling. I said what in the world. That's when they told me they picked my son and me. I was so surprised. That was my happy day when they told me that. They asked us how we want our house. My son wanted a bunk bed, so the students made him a loft. We wanted a home because for me, I do not have a mom. My mom is deceased. I don't have a dad. Now, I'm thinking this house is my mom. This is what I told them. I want my house near my grandma's house. This is where they made it for us. We were here all the time with them. We really got along with our students. I would feed them fried bread and mutton for lunch.

DBB: Were your expectations met?

MB: Nothing that I can complain about.

DBB: What utilities do you have?

MB: I haven't gotten the home-site lease yet. That's the reason why we don't have power. I have to go to the chapter house where I vote, in Red Mesas. I haven't gone over there because I'm on foot. The land is ours, but you have to get a home-site lease to

get power and other utilities. We have drinking water in barrels. My grandmother has electric and running water, so we go over there to shower. Sometimes we cook on the stove. It's pretty hot. We have one of those iron skillet. We have all of our meat at our grandma's. That's where we keep all of our stuff.

DBB: How do you feel about the house overall?

MB: Now we have our own space, my son and I. We enjoy it. To me, I enjoy it. I love my home. I always pray for my house. I love how they built my house. I am out of a job, so it's hard for me. I'm thankful that my students did all this for me.

Main Challenges: The home is finished but without power, therefore the climatic features of the home cannot work to their maximum potential. The wind catcher needs electricity to run the pump that wets the material. It is not easy for clients to obtain a home-site lease from the tribe. Maxine's limited income and mobility make this even more difficult. This is a common problem for families on the reservation and cannot be solved by the students.

ENDINGS

As we hung the last of the doors and touched up the paint on our last day of work, our minds were at ease knowing that we had finished the house on schedule. We arranged a farewell feast on the just-completed kitchen counter for friends, family, and the new homeowners. Ben and Sarah were quiet during our final gathering. Our clients barely speak English, and were reclusive during the months of construction. But after we had finished eating, Sarah began to sob, her hand over her mouth, trembling. She said, "I cannot put how thankful I am into words." She couldn't believe how hard we had worked, even when it was pouring rain, even during the harsh desert sandstorms. Then Ben spoke, as his son Gary interpreted for us. As he blessed us and our families, many of the students also began to tear up. After four months of exhausting manual labor, it was the closure we all longed for.

We handed over the key to the front door and left, knowing that we had become part of something larger than we had imagined. Now an elderly Navajo couple, in need of dignified shelter, will rise with the eastern sun, as the sun's rays slowly radiate over the floors and walls made of their native soil. We have come a long way. We have made a difference in the built world.



**SKEUOMORPHS AND OTHER ANACHRONISMS:
PRINT MEDIA AND BUILDING IN THE AGE OF DIGITAL TECHNOLOGY**

AN INTERVIEW WITH JACK SELF, EDITOR OF FULCRUM, THE AA'S WEEKLY FREE SHEET

DIGITAL FABRICATION AT THE SCHOOL OF ARCHITECTURE

ERIN CARRAHER, ASSISTANT PROFESSOR

CONVERSATIONS ON DIGITAL TECHNOLOGY

CHI-YOW LEE, M.ARCH '12; PHILLIP NAKAMURA, HBS ARCH '12

APPLIED TECHNOLOGY

SKEUOMORPHS AND OTHER ANACHRONISMS

PRINT MEDIA AND BUILDING IN THE AGE OF DIGITAL TECHNOLOGY

INTERVIEW WITH JACK SELF, EDITOR OF FULCRUM, THE ARCHITECTURAL ASSOCIATION'S WEEKLY FREE SHEET
ERIN CARRAHER, ASSISTANT PROFESSOR

On July 9, 2012, I conducted an interview with Jack Self, editor of Fulcrum, the Architectural Association's weekly publication, regarding the current state of media and technology and their effect on architectural education and practice. The particular exchange between Mark Foster Gage and Patrik Schumacher in recent issues of Fulcrum,¹ as well as conversations in print between Schumacher and Self in the Architecture Review² are referenced during the discussion as examples illustrating the broader discussion currently ongoing in the architecture community. The following are excerpts from our conversation.

Erin Carraher: A way to describe *Fulcrum* for those who are unfamiliar might be that it is a print publication in digital times,³ which in itself is an interesting conundrum. In it, you have criticized contemporary design's tendency towards digital publication on blogs like Dezeen and ArchDaily, and you've said that they embrace the "teenage fantasy that architects design only for themselves and for others just like them"⁴ as opposed to print publications that have shifted more toward critique and commentary.⁵ How do you think this affects current students' views of architectural practice? Are we making the built work of architecture irrelevant by commodifying the representation rather than the built form of it?

Jack Self: I think the most important thing to say about publications, before we talk about the design process itself—which is radically changing and has changed dramatically in say the last 15 or 20 years and is continuing to do so at an alarming (well perhaps encouraging) rate—[but] in terms of publications, I think the internet and digital media in general are both a blessing and a curse; ... on the one hand it's made it incredibly easy to disseminate and ... share information with your peers and with people you have no contact with at all, in ways it was impossible to do 20 years ago. But on the other hand, the internet has become increasingly closed; it has sort of splintered itself. I think something like Facebook is really a game changer, and I don't think it is a coincidence that in Britain Facebook really [became] popular ... towards the middle of [the] last decade, and shortly afterwards you see things like Dezeen turn up. It's because of the kind of closed social networks that Facebook propagates or cultivates that something like Dezeen can be successful. The issue with it is [that] this kind of flat exchange within monocultural situations leads to a kind of foreshortening of architectural perspective. I think this becomes very problematic for students when you're dealing with something like the concept of precedent. Instead of having

[a] rich understanding of historical context and really perhaps understanding five or six buildings at an incredibly high level of detail, instead what you have is this shallow pool of thousands of images, each one of which is a kind of copy of another—in which every building is a kind of pastiche, and a kind of distorted mirror representation of a million buildings that preceded it. Again, when you couple that with quite a closed network of communication, what you tend to see is students essentially recycling the same ideas without really necessarily making any—what I would consider to be—critical progress.

EC: It's a formal copying in some sense rather than following through on or developing any of the other forms of the precedent.

JS: There are two fields that interest me a great deal. I just finished writing a dissertation [for a Masters of Philosophy degree]...about the morality of neo-liberal economic theory. To cut a long story short: it's not very moral.

EC: [laughs]

JS: [One of] the two branches of philosophy that really interest[s] me at the moment, or has interested me for a while, is . . . speculative realism and object-oriented ontology, which says that if you think about cosmic time, humans and their existence [are] just the most brief of whispers in the existence of the universe. Therefore, when we consider the way in which objects and beings interact with each other and how all objects are talking to each other, we need to perhaps remove some of the subjectivity and stop ourselves from thinking that the only meaning of the world is the meaning that we create for ourselves through its perception, through its ultimately subjective perception. Before I discovered that particular branch of philosophy, I was very much influenced by [Jean] Baudrillard and the disappearance of reality and its

replacement by a kind of ceaseless chain of copies and images without origin, and I think in a strange way that at least defines—for me—architectural education and a lot of architectural publications today. On the one hand you have an increasing obsession with objects or perhaps things, or maybe even systems is a better way of describing it, in which the object of study sits outside human perception and in fact functions as a series of parameters that relate between themselves. In a sense it has its own ontology. [A]nd on the other hand, you have this collapse and disappearance of reality, an ignorance of reality and an inability to perceive what's real about the world by this complete vortex of subjectivity. That, I think, relates back to the idea that we think we write for ourselves and those that are just like us because in a sense we are no longer able to consider a reality that is beyond our own subjectivity.

EC: And I think there are interesting parallels between the radical transformation in communication through the introduction of social media and the radical transformation in architecture through the introduction of digital media. In some way, both happened extremely fast and created a clear divide in their wake between those who were operating before the shift and those who came up or those who are coming up in a post-shift climate. We see it in the way that our current students interface with technology as opposed to the ways, for instance, a more established faculty might. I think you can see this too in some of the broader discussions in the profession, for instance at the recent Yale symposium “Is Drawing Dead?” where some—though not all—of the more established theoreticians and critics refute the value of technology through their resistance to it.

JS: [The dialog between] Mark Foster Gage and [Patrik] Schumacher was really the first time that *Fulcrum* . . . put the changing technological and sociocultural—the interdependency of these two aspects—to the forefront of our editorial agenda. What [came] after that have been several issues that try to deal with the same topics subsequently. The [one] that I'm thinking about in particular is Greg Lynn's interview. One of our editors, Sarah Hearne, who is doing her PhD with Sylvia Lavin at UCLA, interviewed Greg, and Greg said that at that symposium the only person he thought who really had a fine grasp of the meaning of our times, or who had a good understanding of how digital drawings are produced, is Mario Carpo [the Vincent Scully Visiting Professor of Architectural History at Yale University's School of Architecture]. So obviously our next port of call [was] to go and ask Mario Carpo about it. And he produced Issue 47 [“Digital

Darwinism”] all about the algorithm, which is precisely what we're talking about: the idea that one of the things I often like to think is that the most interesting thing about architecture today has nothing to do with buildings; it has to do with a far more complex notion of the way in which algorithms, the design of systems, the design of units, the design of interrelational parametric entities are not in themselves technological ends, which I think sometimes can be the temptation for students to think, [that] the technology is in itself a kind of *raison d'être* for a project.

But in fact, the role of architecture throughout history has been a very social one, and therefore even if we're dealing with new modes of representation, new ideas about technological production, we must always consider it from primarily a social and cultural standpoint. This again is, I think, the essence of this dichotomy that I'm very interested in: on the one hand, architecture is unique and rather brilliant in a sense that it is simultaneously the idea of itself and the thing itself. A building is both a drawing that the architect produces and an object in the world. The blurring, the inability to tell the difference between the illusion of the idea and the reality of the building, I think, is an increasingly interesting field of endeavor. Something else I would say about those who came before the shift and those who came after it, I mean I began my education quite some time ago actually—this has been quite a lengthy degree—and I also began in a university where there were no computers. There were no laser cutters.

EC: Me too.

JS: Everything was calculated, all your structural drawings were done by hand, and then I ended up in a school like the AA, which is sort of the complete opposite, the polar extreme, of that technological spectrum. So, from that vantage point, my thought would be that in order to fully respond or to fully critique a system, I think you need to have a good idea of what came before it, in the [same] way that in order for the Modernists to really at least nominally reject all of the historical precedents before them. If you go and look at a Corbusian façade, it often uses classical proportions. He had an extremely historical understanding of the context in which he operated. I think the risk we run today is that either people are failing to see how architecture is shifting—the kind of people who came before the shift, as it were—or the people who come after it are rejecting the enormous body of historical knowledge that their professors might have, and they're circulating in this kind of microscopic eternal present, which is

completely a-contextual and a-historical, and that I think is really a kind of dangerous position to be in.

EC: It goes back to the idea of the copy, I think, in some ways.

JS: Absolutely.

EC: Maybe if we go back a little bit to the dialog between Gage and Schumacher, I think amongst other things the two debated the nature of the discipline and whether we should in some respect agree to disagree—which is maybe Gage's idea of dissensus—or if we should collectively move toward consensus, which Schumacher proposes we do through Parametricism, which he defines as the next great style after Modernism. Can you maybe tell us a little bit about how this discussion came about and your take on the debate?

JS: I think I should say first of all that I have an extremely deep respect for Patrik, not only from the point of view that he's extremely hard working and extremely dedicated to advancing the field of architecture as he sees it, but he's also a really nice guy, which I think often gets overlooked. You know people are very quick to portray him as the straw man of utopian idealism about some sort of universal architecture for the 21st century, and I think in many ways he is revolutionary in the types of arguments that he is making, but he's also quite reactionary. I think he . . . feels that for architecture to be presented coherently outside of the profession there needs to be some sort of consensus. Because otherwise we run the risk of appearing perhaps insincere, or worse, incompetent to other fields, specifically the professions and clients who will ultimately commission our architecture. Whereas I think Mark Foster Gage is probably something more of an architect's architect. He is aware of the enormous divergence of interests and fields of research in contemporary architecture. That's the sort of play that I see between the two of them. My own position would tend to be that I think firstly all universal styles, even Modernism, are historical constructs. I don't think they're real. And as soon as you begin to investigate the strains of Modernism that existed in the twentieth century, the whole idea of a coherent movement comes undone whether you begin to look at, say for example, Oscar Neimeyer and compare it to 1930s Fascist Modernism in Italy. I mean, the distinction between the two is just so radical, you can barely draw them together and yet they are presented as a unified movement. I think that's what Patrik is trying to do in a sense; he's trying to create the illusion of a structural framework

of the contemporary historical theory where none exists, whereas Gage is far more interested in playing on the obvious discrepancy between modes of thinking, modes of operating and modes of production.

EC: I know you've also conversed in print with Schumacher on his views on education. You pointed out the kind of oxymoronic nature of his position in a recent *Architectural Review* essay⁶ that took some shots at British architectural education about the nature of avant-garde schools—I think he called them “experimental laboratories where architecture evolves to better meet society's needs,” or that they should be experimental laboratories, but that the nature of that type of practice is incompatible with the nature of professional practice. I wonder how we can both address contemporary reality in education while also allowing for the experimental nature of education—architectural education in particular.

JS: I think experimental design schools are a real luxury, and often the students who are in them don't fully appreciate the liberties that they are given. I think architects have quite grand ideas about the profession, and there's something still of the Howard Roark embedded in architectural culture—that we're lone artistic figures struggling against a world which has completely misunderstood our profession—and that only if we were given complete liberty we could construct a brighter tomorrow. In as much as the Randian model, which has played itself out in economic theory of the last three or four decades [and] has so fundamentally failed, for some reason that architectural characterization has survived.

As far as design schools go, there is a very real possibility in all design schools to be experimental and to push the limits of your thinking. But in a sense that always has to occur outside of the institutional framework. One of the things we've tried to do with *Fulcrum* is to offer students both a platform for their own writing but also the opportunity to engage with different subjects within architecture rapidly, and to get architecture students habituated to the idea that innovation in architecture comes through their own initiative: it can't be kind of top-down, centralized.

You know, I think the idea of a Bauhaus, in which there are a few key professors that influence an entire generation, I just don't think information is disseminated that way anymore. You can see it in every societal aspect, this shift to a kind of aggregate, crowd-sourcing, copy left, wiki-type of structure in which things

are produced collaboratively. That really is the essence of the way society's changing and the way that architecture should change as well, as soon as we are able to let go of the ego aspect of us being the dominant figure with the rolled up sleeves working into the night against a drawing board, which is a kind of farcical and anachronistic image.

EC: It's still a very romantic model or very romantic view of the architect in some way. I wonder if that refers back to the generational divide that we were discussing before. I think we see things here in the States, and I don't know—maybe it's the same, maybe it's different in Britain—but I think we're seeing the shift away from the historical model of master/apprentice towards more of the kind of fluid exchange. And you might go so far as to say this is affecting entire office cultures, where we see more collaborative, non-hierarchical practices and less of the vertically-segregated ones. I wonder is that something you're seeing at all? You talk about that as the direction we should be moving in; are you seeing glimmers of that appearing in practice and maybe education as well?

JS: I think you're absolutely right, and I think we are seeing that. One of the things that the director, Brett Steele, says a lot at the AA is that the most interesting thing that the AA produces is not architects but models of architectural offices. If you certainly go back in the AA's recent history, it produces some really unusual modes of working. That is perhaps the gap that Patrik Schumacher is trying to highlight; by giving people the ability to work collaboratively on projects rather than each student in their own separate pocket, the kind of collapsing of hierarchy between tutor and student, there's a sense that each individual unit group for the way that our years are divided. Within a single year group, you may equally find students who are doing studies into transportation networks along the European coastline as well as someone who is really interested in the modern application of Japanese woodworking techniques. That enormous divergence within single year groups I think is very representational of the types of fragmentation that are occurring in society at any case. This is perhaps in a way linked to the impossibility today of what might be called a common culture. When I was much younger, there were only a few television channels in Australia—there were five—everyone watched the same TV shows and the next day on the playground there [were] really only a few choices of shows that people had been watching. [T]hat allowed something like "The Simpsons" to become a massive cultural touchstone.

Whereas today, people who are the same age may have vastly different interests and be part of vastly different cultural groups to the extent where it becomes not just cultural division but even subcultural division; it's not just whether you're a goth, it's what type of goth are you and are you in the same type of gothic group as me? In architectural culture, when we can start to introduce that into the education, I think it fosters the types of practices which have the type of diversity which is required by a changing society. Architectural schools which produce homogeneous year groups with homogeneous interests or nominally homogeneous interests are limiting the students and forcing them to conform to the type of redundant Randian image that we've discussed.

EC: I think that's absolutely true. I think we see it in the very nature of the things that you're talking about, but also by the nature of the economic climate, the role of the architect is changing, either by choice or by necessity, into something that in some ways more broadly embraces these other aspects of practice, which I think is a really interesting place to be for the profession.

JS: I don't know what it's like in America, but there's certainly a sense in Britain—we're not recovering quite so well as America, economically. We chose a different economic path. Amongst my generation, I was very involved in the Occupy London movement. There is a real sense, even amongst those who are not in any way motivated or politically active, that my generation is being sold out. There's not a lot of hope for architects graduating today. And that's forcing people with an architectural education to apply their design thinking in new and quite unexpected ways. But I think that's [a] wonderful thing. As I said, I do believe that the least interesting thing about architecture today is buildings and the real value of an architectural education is a particular way of thinking about interrelations of various factors. The algorithm has a lot to do with the way in which we are able to perceive the relative interrelation of many aspects of society and technology and the scientific framework, and these various other aspects. So I do see this as the as-yet-undeveloped potential in architecture today, and I presume that will continue to—at least for the next decade or two—be in the core interests of both students and the profession, as they seek to adapt and evolve to the economic climate we find ourselves in.

EC: Yes, and I think the very nature of those interrelated networks of social and economic and material and technological forces are maybe what the idea of parametric design is striving for. I don't

know if we've quite gotten there yet. I think there's still a lot of digital ornamentation that's happening, both in school and in practice.

JS: Yeah, but I think that's inevitable in many ways. One of the terms I particularly appreciate is skeuomorph; they're redundant ornamental details which pertain to an obsolete technology. So, for example, the rivets on jeans are completely structurally redundant. They're an aesthetic addition from an age when jeans were made in a very different way. In fact, Apple is a fantastic example of a kind of societal swathe of skeuomorphs in the way they design icons. The notepad icon looks like a notepad; the microphone icon, if you tap it, the volume bar jumps. We're not yet ready to relinquish our hold on the types of physical objects that we became so attached to, and we're not yet ready to fully throw ourselves into a purely digital realm—not even at an aesthetic level, but at a paradigmatic level. We're not ready yet as a global, perhaps as a Western society, to make a shift to the types of thinking that actually characterize our age. In that respect, Schumacher is very ahead of his time, and I think also in that respect he doesn't disagree with Gage. They both have a good deal of overlap in the . . . ways they conceive the role of technology and particularly the modes of thinking and modes of production that go along with it.

EC: I wonder along those lines, if we're talking about the role of technology, what are your thoughts on the role of computational making or digital fabrication and how it's being incorporated? I know in the DRL (Design Research Lab), and I'm sure in much of the AA, there's a move toward the incorporation of these types of technologies into the education process. We see it here a lot starting to emerge in practice as well.

JS: The DRL is an interesting case in point because it tends to work on these short three-year cycles. Initially it was really concerned with being able to model, script and represent through drawings the types of ideas that they were discussing. By the end of the tenth year, they were really shifting towards How do we build these things? How do we think about them in the world? How do we make them real? If you look at the projects that are coming out of it today as opposed to five years ago, they're very much more concerned with the physicality of objects as opposed to the milky, whitewashed, wholly unrealistic [environments] populated by Archicad figures rendered in grey. They've moved away from that, which I think is the right move. It's a deeply unpopular

thing to say in America, but I do tend to adopt a kind of Marxist framework for the analysis of this. I'm not by any means interested in Communism—I think that was one of Marx's least successful ideas—but I do think that Marx gives an extremely good understanding or good critique of how capitalist societies operate. What he does say is that the ways in which we make things, the kind of material aspects of history, have an enormous influence on our societal structures. You know, all of the factors that we've spoken about today are interrelated; something like a 3D printer, the possibility that in say 20 or 30 years every home may have its own 3D printer, radically transforms the kind of hierarchical corporate model we've gotten used to in the 20th century. Something that Mario Carpo points out is that the kind of ideal of the 20th century was to produce homogeneous objects, because there was a belief that homogenization and standardization meant a reliable quality; that's why McDonald's and Coca-Cola do so well. Today, you see it in the work of someone like Greg Lynn, who argues that actually it's the possibility that an architect might design your shoe, or might design your car, and that individual, mass-produced, industrial bespoke is the future of technological production. Well, if it is going to be the case that an architect designs your shoe, or designs your cutlery, what sort of societal model might accompany that? I think that is very much what we are seeing in this shift toward open-source, the wiki, and all the other models we have discussed, and I think also is really the unspoken butt at the base of things like the Occupy movement. Really what they're arguing for is non-hierarchical societies. How that plays out in the 21st century will be very interesting. I'm sure it's bound to have an influence over our economic, social and political models, and at the level of the architectural school, I think it's . . . already become the case at somewhere like the AA, where you see so many graduates of the DRL going to work for somewhere like BMW. It's increasingly the case that something like architectural design and architectural thinking is not being applied at the scale of a building, but is being applied at the scale of everyday objects.

EC: I think it's that shift of the architect from historically being the designer of iconic buildings, to the monumental, to the mass-produced, to the mass-customized at this point.

JS: I'll just give you a fantastic example of how it's shifting. Last week, the tallest building in Europe was completed in London. It's the Shard by Renzo Piano [Building Workshop]. But it's a building taller than the Eiffel Tower but with only 60 years spec. The kind

of economic model we have demands that for expensive property in the center of the city, you need to be able to develop that plot of land multiple times every century. And so the profit, if you like, is in the constant construction, sale, demolition, and reconstruction. That's the role that someone like Mark C. Taylor wrote [about] in...issue 17 of Log [in] a fantastic article about specular and speculative architecture, in which architects basically become agents of the deeply speculative economic model where they barely have to construct a building, they can simply produce a render of it and that's enough to generate a profit. That's the type of culture you see represented by someone like Dezeen, in which the circulation of images itself becomes the discussion, as opposed to the buildings. I think this type of enormous phallic spire dominating the London skyline is likely to be seen as a kind of folly and the sort of culmination, the ridiculous culmination, of four decades of deeply immoral economic practice, which I think is both fiscally and morally bankrupt. And it's completely opposite to the types of cultural and technological developments that we are seeing in architectural schools today.

EC: I think it also belies the sustainable or environmental nature of our current climate, in that it's not very responsible in those respects either. I wonder maybe if we go back to the role of social media in design, whether that be in the Occupy movement or in the political uprisings that have been happening across the world, or even less politically in the environment of architectural publication and dissemination, do you think media's doing a better job these days of addressing social concerns than architecture is, or is it creating a more reactionary society through these open flows of communication?

JS: I certainly think, with something at the level of *Fulcrum*, there is a temptation to view modern instantaneous communication as somehow superior to print media. But I think we should be deeply skeptical about the notion of "real time." I mean, by its very nature, humans are always slightly offset from the actual existence of the world simply by the fact that it takes a certain period of time for our senses to register the information, the sensory data that we're receiving. So, the very notion of instantaneous communication I think is something of a red herring. And if you step back from the idea that the goal of communication is to convey thoughts instantly and you start saying that maybe there's a real value to the idea that it takes a certain period of time—I mean, I'm not aware of any blogs, or even any online publications which are produced for example quarterly or annually, with perhaps the exception of

something like the Feltron Report, which is a kind of infographic report. But that's not in architecture. I have as yet to see anything for example akin to Log Magazine, which is produced in a triannual manner precisely because the temptation of the internet is to produce everything instantly, and it means that you don't really fully consider the types of ideas that you're printing or that you're publishing. I think in issue 20 [of *Fulcrum*], I spoke about the problem of authority in print media. In order to print something, you need to be given the authority of whoever it is that's funding your print. Whereas, if you're writing a blog, there's no editor, there's no sub-editor, there's no editorial agenda, there's no one spellchecking you, there's no one censoring you or directing you and that can often lead to a kind of meaningless chatter. I mean, I don't think that speaking more necessarily means saying more.

EC: As evidenced by the 24-hour news cycle, I would say.

JS: Absolutely. Absolutely. And so the value of print media for me is, as I think you pointed out at the beginning of the interview, its capacity for commentary and analysis and understanding and critique in the way that digital media is increasingly taking up the role of immediacy in the kind of 24-hour news cycle, and the sort of Huffington Post kind of media. And Dezeen is the . . . architectural version of that. I also think that the physicality of the object is significant, not for nostalgic reasons. I'm not interested particularly—although we do pay a lot of attention to the aesthetic of something like *Fulcrum*—that's not its principle goal. It's not a question of format over content. The principle goal is that actually, if you really want to influence, or you really want to start a conversation with the people around you who are actually sitting next to you in class and congregating around the terrace in the bar, the only way that you are going to be able to achieve that is by creating something physical and putting it directly in front of their faces. People simply don't have the attention span for blogs, for a sustained relationship with blogs any more. I also think that the whole blogosphere in itself in architecture has shifted in a very unusual way. I can't think of any really independent, new blogs in the last two or three years that have really caught my attention. For the most part, all the good writers who previously would have been the Geoff Manaugh [BLDG BLOG], Dan Hill [cityofsound], or Rob Holmes [mammoth] types of characters, with each of their specific interests manifest in a coherent blog, are instead being sucked up into corporate blog structures. They become people like the Elias Redstone[s] of this world who write a kind of weekly blog for the *New York Times*. Ten years ago that would have been

an independent blog; today it's been absorbed into a corporate structure.

EC: In the Greg Lynn interview that you referenced earlier,⁷ he talks about the fact that we are in more of a critical and theoretical crisis in architecture than a design crisis. He says "when designers are left without critical theory other than just their own, we run the risk of becoming vocational teachers of technique only," and he sees this as the situation that we currently find ourselves in. Do you think that through all of these different kinds of media—whether they be electronic or print, or just the general discourse that's happening in architecture—do you think there's adequate discussion and documentation of the history, theory and criticism of digital technologies and the effect they are having on architecture, or are we just at the beginning of that discussion?

JS: Well, you have to be very careful with that discussion, that you firstly don't create any type of instant histories. You have to make sure you don't go down that kind of route where you start thinking too much about categorizing what you're doing rather than actually doing something. On the other hand, I don't think that there's significant enough attention paid by architectural theorists and historians teaching in classes to make sure that the generation of digital natives they are teaching are really on the same page as themselves. We speak literally the same language, and yet actually the words we use have vastly different meanings. This is very much highlighted by one of my history/theory professors from Australia who went to teach in China. He went to teach Modernist architecture in China, only to realize that the word Modernism in Chinese obviously has absolutely no historical context. It doesn't mean the Bauhaus in any sense. And actually, there's a tendency when we teach students in the west, that when we use a word like Modernism, there's an understanding that you need Gropius and Mies and Corbu, but actually those types of words have not made the generational jump. And I do think a lot of value of that generation in their knowledge is not being properly conveyed to the younger generation. I don't know what you could really do to fix that.

EC: I think it goes back to what you were talking about before. I think it's both the lack of understanding of or study of precedent on the part of the students, but also the lack of the faculty or the older generation to embrace those newer technologies and ways of thinking. So I think it's a little bit of a struggle on both sides.

JS: There's something wonderful about Mario Carpo—because for a man of his age to have stayed so contemporary is really remarkable. What I think is really indicative of his way of thinking is that he has a very open and inclusive agenda. He's far more toward the Mark Foster Gage [perspective] than he is toward the Schumacher[s] of this world. He has a clear agenda. He has a very clear position that he's trying to advance, but he's doing it in a way that is not absolutist. I think that kind of approach is really what is missing in architecture. Either people go for a kind of extreme absolutism in which theirs is the only truth and theirs is the only direction, or they take a completely hands-off position and say, well perhaps there's a wonderful productivity and value in our increasing divergence and difference—the Mark Foster Gage[s] of this world. At a basic level, I don't agree with Mark Foster Gage or Patrik Schumacher. I think that there's probably a third way of thinking about [it] that probably lies more in the sense that we should have very clear agendas in our own work and we should have very clear agendas in our educational institutions for the directions that we want to push architecture. We should do it in a way that's inclusive of these differing opinions, and that is an extremely hard thing to do. I am not aware of any design school that has successfully adapted to the 21st century condition in that sense.

EC: I think that is a great observation. I think it's also difficult from the perspective of a new educator. It's hard to understand within a context that's so rapidly changing—whether you hold on to the traditions of the past, or you are reactionary to what's happening currently, or you should be forward-looking. Being able to situate yourself within that constantly-changing flux is really difficult.

JS: It is. I've found, not as an educator, I have a great admiration and also I really don't envy the position of educators today because it's an extremely difficult time to be teaching in architecture. It's much harder to grasp the sense of what it is that we should be teaching. As I said before, I think that the only way you can really understand the direction you want to move in is by understanding where you came from. In that respect I think the greatest teachers that I've had have been very skeptical about history. They haven't presented it as a very linear evolution of design styles, they've tried to explain that history is a lot like the present. That there were divergent theories, there were conflicting opinions, and that things progressed with a kind of general tendency. Therefore we should be looking for the same types of things, the same sort of indicators of how times are changing today. [P]erhaps through historical

precedent in a broader sense, rather than a specific building—perhaps of an entire architectural culture and the way it evolves through time—[we can] come to understand how society today might be evolving, how architectural society is evolving today, and where we might push it. I do think that ultimately you have to teach with an agenda, and you have to teach with the intention that you're attempting to push because otherwise you retreat into the self-defeating criticality which I think crippled architecture through its Post-Modernist period in which, by abandoning even the attempt to pursue an absolute reality or an absolute truth, you end up really not going anywhere.

EC: I think Brett Steele, in one of the issues of *Fulcrum*,⁸ was talking about the way he approaches education as the director of the AA—that it's about each generation defining their own challenges and their own problems to address through architecture, which I thought was a really beautiful way of thinking about it. I think in a lot of ways, the challenge of our generation is really in even understanding what the challenges of our generation are.

JS: Absolutely. [Steele] also pointed out—I asked him why so many of the people [teaching] at the AA are young? Why there are so few old professors? Whether or not it had been a conscious decision?—and he kind of avoided the question. But certainly under him the mean age of teachers at the AA has dropped significantly. And in that sense, I think we rely on the people—in a way that in a pre-modern society we relied on the vast amounts of time embedded in our elders to direct our societies—today, really with the kind of speeding up of history, it's far more productive to think of our elders as being those who are really only one step ahead of us. And that already, to have a sense of where it is we're going, even only five or ten years into the future, is already an enormous challenge and a great aspiration. But, I think that's what we should aim for.

ENDNOTES

1. Mark Foster Gage, ed., *Fulcrum* 18 (2011); and Patrik Schumacher, ed., *Fulcrum* 19 (2011).

2. Patrik Schumacher, "Schumacher Slams British Architectural Education," *Architectural Review* (January 31, 2012); Jack Self's response, "Patrik Schumacher Can't Have it Both Ways," *Architectural Review* (February 29, 2012).

3. *Fulcrum* is printed at the Bedford Press at the Architectural Association. Physical copies are then digitized for the Internet. Accessed September 20, 2012, <http://fulcrum.aaschool.ac.uk/>.

4. Jack Self, "Happy Birthday Ma," *Fulcrum* 20 (15 June 2011).

5. Jack Self, "Pygmy Hominids & The Printed Word," *Fulcrum* 01 (31 January 2011).

6. Patrik Schumacher, "Schumacher Slams British Architectural Education," *Architectural Review* (January 31, 2012); Jack Self's response, "Patrik Schumacher Can't Have it Both Ways," *Architectural Review* (February 29, 2012).

7. Greg Lynn, "Bespoke Industrial," *Fulcrum* 38 (14 March 2012).

8. Brett Steele and *Fulcrum* editors, "Shooting the Breeze," *Fulcrum* 11 (4 May 2011).

DIGITAL FABRICATION AT THE SCHOOL OF ARCHITECTURE

ERIN CARRAHER, ASSISTANT PROFESSOR

DIGITAL FABRICATION IN EDUCATION

Advances in the digital technologies used to design buildings necessitate parallel innovations in the methods used to make buildings. Digital fabrication—the process of translating computational information into physical form using computer-controlled machinery such as 3D printers, CNC routers, and laser cutters—is the emerging construction practice that addresses the changing nature of architecture by incorporating these technologies.

The use and availability of computational tools in practice are constantly evolving. This makes it difficult for universities to keep pace with teaching relevant technologies and working methods, let alone to project what might develop beyond current practice methodologies. What we lack is the real-time, real-world input that comes from practice. The advantage we have over practice, though, is the benefit of time and freedom to think beyond project-specific applications to what the next developments in the technologies may be. Direct collaboration between academia and industry allows for both parties to benefit from each other's experience, capabilities and resources.

At the University of Utah's School of Architecture (SoA), we have established a structure that I believe accomplishes this goal through the development of our new digital fabrication pedagogy and research trajectory. Our approach engages the school within the larger profession by developing strategic collaborative partnerships that allow for the transfer of information across traditional academia/industry boundaries to advance the potential contribution of digital fabrication to both education and practice.

ESTABLISHING A DIGITAL FABRICATION FRAMEWORK

The University of Utah has a history of excellence in the field of digital technologies; everyone knows the Utah Teapot, the first three-dimensional computer model developed for graphics experimentation. As a new faculty member charged with addressing the continuation of this legacy through the development of a digital fabrication program, I found that the

SoA is situated amongst significant digital fabrication resources within Salt Lake City's design community. After evaluating several potential models for developing our program, I determined that it made the most sense to take advantage of these resources and form a partnership with an existing fabrication firm rather than start from scratch and duplicate their equipment in a new school facility.

In Spring 2012, the SoA formed an official partnership with Plastik Banana Design Werkshop, a digital fabrication design and prototyping shop, to serve as the official fabrication facility for the school. This seemed a natural partnership for several reasons, not the least of which is that the company was founded by a graduate of the SoA's Master of Architecture program who is invested in the education and development of the students. In addition to their work with architects, design firms and artists both locally and internationally, Plastik Banana also has a history of collaborating with students and faculty at the SoA.

Cementing this relationship gave students immediate access to Plastik Banana's state-of-the-art fabrication facilities as well as the benefit of the embodied knowledge of their practicing fabricators who explore new ways of applying digital tools in projects on a daily basis. The agreement takes advantage of machine downtime for student projects, and eliminates the need to purchase large pieces of expensive equipment that would be used only a small percentage of the time in the school's shop. Students also serve as liaisons between the SoA and Plastik Banana as digital shop technicians, gaining internship experience in the process.

The benefits to the university of this model include the elimination of the capital investment, maintenance and staffing costs associated with building a ground-up facility; having architecturally-minded fabricators rather than traditional machinists consulting with students; the decoupling of specific knowledge about the equipment from one faculty member in favor of developing a more lasting body of shared knowledge; and the opportunity to work with professional fabricators who are well-versed in the most up-to-date practices and machinery necessitated by their business.

APPLIED DIGITAL TECHNOLOGIES

I have identified several factors that I believe are critical to an effective digital fabrication education structure; primary is the belief that computational making skills need to be introduced alongside computational thinking ones early in the architecture curriculum. I believe that digital fabrication projects provide one of the most effective ways to make real for students the designs they develop on the computer. Hands-on experience working with machines and materials provides resistance to pure form-making. This grounds their designs in a material reality, and serves as a microcosm for the process of making a building.

Another conviction I have is that we are educating architects, not machinists or fabricators. While I believe the traditional definition of an architect is evolving, I do not think that most students educated in digital fabrication techniques are going to become fabricators themselves. They do, however, need knowledge of the capabilities and limitations of the machines, an understanding of which materials work well for different processes, the ability to make critical choices about tooling and tool paths, methods for optimizing material yield, and an understanding of other variables specific to each process that affect the outcome of the fabricated

piece. In essence, students need to learn the syntax and lexicon of digital fabrication. This will enable them to effectively integrate it as a tool into their future practice and to successfully communicate with fabricators when doing so.

There are many schools doing innovative work in integrating digital fabrication into the curriculum—some in more formal explorations, some in materials and processes, and others in addressing real world design projects. Universities should be places for experimentation as well as practical application, and I have been experimenting with methods of integrating digital technologies into the curriculum to find the most comprehensive and effective approach possible. Over the course of the 2011-12 academic year, I conducted a series of case studies using three project structures: a graduate architectural communications course, a beginning design studio project, and a graduate seminar wholly focused on digital fabrication. Each project had as its end goal a full-scale mockup, prototype or built piece that required students to engage with different fabrication technologies. Each structure tested various methods of introducing information, collective and individual project development and incorporation of outside design influences.



Graduate students in the fall 2011 communications course are introduced to the capabilities of the 4-axis CNC router

The first project focused on integrating digital fabrication into a graduate course on architectural communications. This course used a series of cumulative exercises to explore digital fabrication through hands-on experimentation. Students developed methods of combining analog and digital media, physical and virtual models, and visual and verbal presentations to clearly represent their designs at all stages of development. The course culminated in the digital fabrication of a series of group installations.

The second structure looked at integrating digital fabrication into a beginning design studio through the lens of parametric modeling. Using digital and analog parametric processes, the relationships between elements were defined and their characteristics were controlled using constraints. Students worked in groups of three to design sunscreen systems to rehabilitate the façade of an existing building for a proposed letterpress studio. The project explored the parallels between the art of letterpress and parametric modeling. The final product was a full-scale mock-up of a 4' x 8' section of the students' screens.

The final case study was a semester-long graduate seminar focused exclusively on digital fabrication. The project for this class required that students work with faculty and students from other

departments, meet real-world code requirements, coordinate with the university design review committee, work within a fixed budget, and material research and development. The project was to design and fabricate a series of movable photovoltaic shade-structure charging stations for portable electronic devices on the Marriott Library Plaza. Beginning with a crash course in digital technologies, students spent the semester developing a design, coordinating with engineers and material suppliers, prototyping, pricing, submitting the design for university review, and finally fabricating a prototype structure with the help of Plastik Banana.

Each of the projects was noticeably and positively affected by the incorporation of Plastik Banana into the process. In addition to their technical expertise, the staff members brought real-world sensibility and insight into their interactions with the students. Building on these case studies, I am approaching the next generation of these courses in a more holistic way, by integrating technology classes with design studios, and by partnering with digital fabricators to co-teach these courses.

ADVANCING DIGITAL TECHNOLOGIES

I am addressing the future developments of this educational and research trajectory in two ways: first, by proposing an advanced



Major I, first year undergraduate, students present the full-scale mock-up for their parametric sunscreen project.

digital fabrication lab at the university, and second by developing actual design projects that will allow students to engage with fabrication at the scale of buildings and within the context of real-world parameters.

My research is in the field of applied digital technologies related to full-scale building application. This includes prototyping new uses and assemblies for existing materials, exploring BIM/fabrication workflows, and developing new parametric building and construction systems at full-scale. One of the key components of success in this pursuit will be continuing to tie into the embodied resources of the region. Along with Brad Brinton of Plastik Banana, I have established relationships with regional material manufacturers, robotics engineers, and software developers who are all committed to pursuing academic/industry collaborations. To determine the state of digital fabrication research at leading academic institutions, in the spring of 2012 we conducted tours of schools across the country. What we found was both exciting and surprising. While schools such as Sci-Arc, Carnegie Mellon, University of Michigan, and the California College of the Arts are undoubtedly leading the field of robotic and digital fabrication in education, they have not taken full advantage of their own local resources to apply the developments they are making into actual buildings. Many projects are still realized only as formal installations within the school walls. What we are interested in pursuing at the SoA are more specific applications for these technologies within the design and construction industry.

Our relationship with Plastik Banana has developed beyond just a resource-sharing structure born of financial constraints into mutually beneficial collaborations on several projects currently in development. Following this success, we will continue to take advantage of the wealth of regional building system and architectural technology resources. This will foster strategic partnerships with the local community of architect-practitioners, material researchers and manufacturers, community organizations, government agencies and other university departments as we continue to develop projects and facilities to support this work.

One project currently in progress is a university-wide competition for the next generation of the Library Plaza shade structures. Based on the prototype built in the spring graduate seminar, students applied for and received significant funding from the

university's Sustainable Campus Initiative Fund (SCIF). This funding will be used to fabricate several structures developed by multi-disciplinary teams through the competition.

We have also formalized a partnership with the Girl Scouts of Utah to build a series of cabins on their Trefoil Ranch property in 2013. This project will integrate fabrication technologies into the construction process using the Interlocking Cross-Laminated Timber product that has been developed by Associate Professor Ryan Smith in collaboration with Euclid Timber amongst others. Fellow faculty researchers in the Integrated Technology in Architecture Center (ITAC) and I will coordinate a team of architecture students and Girl Scouts of all ages who will be involved throughout the design and construction process.

CONCLUSIONS AND NEXT STEPS

Though these collaborative relationships are still in the early stages, the projects that have already begun demonstrate that these partnerships have the potential to develop into long-lasting, mutually beneficial opportunities for all parties. Such a framework creates creative collaborations in which all stakeholders are contributing their unique knowledge to the equation and benefitting from the input of others.



SoA industry partner Brad Brinton, owner of Plastik Banana, and Assistant Professor Erin Carragher tour digital fabrication facilities at Carnegie-Mellon University and Sci-Arc.

Architecture is a collaborative act. Architectural research and education should be the same. The long-term benefit to students of exposure to such technologies is the hands-on experience of working on their own research projects alongside faculty members and industry partners. The knowledge gained will lead to the development of new ways of integrating parametric modeling, BIM, digital fabrication and all of the other emerging form-making technologies into the design and construction process.

The collaborative digital fabrication models that have been established are already showing positive results in student projects. I believe this demonstrates that fabrication leads to a more grounded understanding of the digital design and construction process at a scale that students can manage while in school. This further enhances the quality of the students' education and gives them the opportunity to advance the architect's role in the emerging field of computational making.



Caption?

CONVERSATIONS ON DIGITAL TECHNOLOGY

DIGITAL TECHNOLOGY PROSPECTS AND CHALLENGES FOR THE ARCHITECTURE STUDENT
CHI-YOW LEE, M.ARCH '12 AND PHILLIP NAKAMURA, HBS ARCH '12

Architecture has always been generated through a variety of means: paper, pencils, straightedges, and physical models. Before it was even called “architecture,” buildings have been translated from the human mind into images. Today, some firms and students still prefer analog methods, especially for developing initial concepts. The computer, however, is playing an increasingly prominent role in both designing and making architecture. The 2011-2012 academic year brought much-needed improvements to our school's technology curriculum and facilities with the hiring of Assistant Professor Erin Carraher and her collaboration with Plastik Banana Design Workshop to provide previously unavailable digital fabrication services. This has opened new opportunities for students. How can we best take advantage of them? To answer this question, we interviewed several pioneers in architectural digital technology, and many of those involved in our school's emerging curriculum: Rick Smith of Virtual Build Technologies, Antonio “Tony” Serrato-Combe of the SoA, Mark Green of CASE Design, Inc., Brad Brinton of Plastik Banana Design Workshop, and undergraduate design student Caitlin Thissen.

Developed in the 1970s, the earliest digital drafting programs merely imitated traditional methods. The University of Utah's SoA was one of the first in the country to experiment with computer applications in architecture, under the direction of Professor Edward “Ted” Smith who went on to found MasterSpec. These methods of computer drawing were innovative because at the time, there were neither mice nor monitors to relay and view commands. Users had to input instructions onto cards that were hand-processed by a computer center. Tony Serrato, who was part of this pioneering research, says:

The role of our school in the beginning was to deal with the user interface. That was quite complicated; it took me almost a month to write the instructions set to draw just one single line. We were very much interested in going beyond the user interface and creating applications, because there were no applications. The user had to create them. We spent many years doing this. I wrote one of the very first applications to generate perspectives automatically. Those were the good old days. Then companies

like IBM and Apple began getting into the computer field, and we gave up the quest to create software. We became more learned users of software, which is what we are today.

Fast-forward nearly four decades: The technology has evolved into three-dimensional modeling programs that can represent whole environments. Parametric modeling allows these models to become keyed to specific commands and processes—parameters—that change based on localized relationships and conditions. BIM (Building Information Modeling/Management) is a form of computational modeling that has greatly transformed the design process by allowing building characteristics to be represented in computer models. A BIM model can tell designers, clients, and contractors how a building will perform before it is actually built.

The SoA's Integrated Technology in Architecture Center (ITAC) researches the application of new technologies in ways that increase efficiency, sustainability and building performance. In February 2012, ITAC hosted a week-long series of events on parametric and BIM integration in architectural design. Mark Green of CASE Design (and U of U alumnus) gave a lecture, followed by a panel discussion with Rick Smith, Bryan Harris of 3Form Advanced Technology, David Scheer of the AIA's Technology in Architectural Practice Advisory Group, and Brad Brinton of Plastik Banana Design Workshop (also a U of U alumnus).

INTERVIEW / RICK SMITH

Rick Smith is the founder of software development company Virtual Build Technologies, and the man who introduced CATIA (software originally intended for modeling aircraft) to Frank Gehry's office as a means to model complex geometries. He has collaborated with Gehry on projects such as the Disney Concert Hall, and with other well-known architects such as Moshe Safdie and Randall Stout. He began his involvement with architects in the 1970s, and has witnessed the transition from analog to digital technologies. Smith is currently developing RhinoBIM, a software interface that will integrate BIM with Rhino 3D modeling software.

We asked him to share his views on the changes in the field, and what they mean for students.

PJ Nakamura and Chi-Yow Lee, Dialectic staff (D): How widely accepted are digital technologies?

Rick Smith (RS): Mark's presentation [at the ITAC Workshop in February] was interesting because all of those techniques that they're using are what we did 20 years ago, and back then it just wasn't being accepted. Now it looks like Mark and his firm are on the verge, he will probably be the one who will be recognized for getting this out in the industry. [N]ow the architectural industry is ready to accept this technology and find the right process. I think there's still a lot of confusion. Revit and Bentley systems, and others out there, have been vying for the development and establishment of a new process, but I think that process still isn't clearly defined. All the architects I talk to say, "We need to be taught, whatever is the right process." I still think it's evolving.

D: Do clients seem to prefer digital or analog renderings?

RS: I think both work. I think the artistic analog is probably still the better way to go for an initial client presentation. Obviously, later presentations that are digital are better because they're representing exactly what's going to be built, and information drawn from it is almost instantaneous. The client can know how many square feet, and the cost.

D: Any advice for students?

RS: Things are happening so fast in technology. You've got to get the skills and be ready to adapt to change. And I really think you're [at] the beginning of a new revolution, thinking universities should be establishing a pretty well-defined methodology and teaching it.

Interview / Mark Green

There are many software platforms to choose from and students may be wondering where to start. We asked Mark Green for his views on the ever-changing "industry standard" software and

prospects for current architecture students. CASE is a New York City BIM consultancy firm that helps other firms develop efficient digital workflows. Mark also teaches BIM and parametric design at Columbia University, and conducts workshops across the country on how to implement these into curricula. He will begin teaching at the SoA this fall.

D: Is there any software program that you think all students should learn?

Mark Green (MG): There is not one platform; you should give yourself design flexibility, so you may need to expose yourself to several different platforms. I think a lot of it is project-specific. It's pretty critical that you know how to use Rhino and [especially] Revit. Grasshopper is also beneficial. Revit is the industry standard, but when the geometry calls for something a little more complex, I introduce Rhino.

D: What do you think the future of architecture will be like?

MG: More and more contractors are hiring architects to work for them because they need BIM in their offices, so it's creating a more integrated system. We're actually speaking to each of the trades more often, and earlier in the design process. I think something needs to change in the education of architects to be able to prepare [for this new environment].

D: What are the advantages and disadvantages of these changes?

MG: The advantages are that we know more about our building, we can now have a more refined product. The advantages tend to lean towards the owner; they have fewer change orders, they can save money, they know what their building is going to be, they know how much it is going to cost. For some people it will have a negative impact, like MEP engineers, because they have to model things that they normally would have abstracted in a diagram. It's going to impact the way that architects learn to design, because they can't use the same process. Now you're going to have to be doing so much more early in the design process.

"...[THE PRESENTATION AT THE ITAC WORKSHOP] WAS INTERESTING BECAUSE ALL OF THOSE TECHNIQUES THAT THEY'RE USING ARE WHAT WE DID 20 YEARS AGO, AND BACK THEN IT JUST WASN'T BEING ACCEPTED." (RICK SMITH)

D: What other changes do you foresee in the industry, and how do you think they will affect students?

MG: I think we're pushing towards paperless delivery. Maybe in the future, we won't need to abstract everything from 3D to 2D to be able to deliver it for permits, etc. And because of that, I think smaller offices will be able to do bigger projects. That will give people right out of school more opportunities. I think we need to have students be leaders earlier. Students need to become more capable of using these tools right away.

D: Any other advice?

MG: It's not all about the tools, it's about using them as a new medium. It shouldn't change your design, and you shouldn't let tools drive your design. You should have them enable the design.

DIGITAL CURRICULUM

Software is constantly evolving, so how can digital technology be integrated into the curriculum and pedagogy? One way to keep current is through digital fabrication. Digital fabrication is a method for building the complex, custom forms generated by the computer. It includes technologies such as CNC milling and 3D printing.

Our school is fortunate to have a nearby digital fabrication shop, Plastik Banana, owned by recent graduate Brad Brinton. Brad is currently collaborating with University of Utah Assistant Professor Erin Carragher on developing our new digital curriculum. This partnership has resulted in both undergraduate and graduate pilot classes. A Major 1 studio pilot project involved the fabrication of a full-scale sunshade, and a graduate seminar fabricated a shade structure for the Marriott Library plaza. Major I is the first year of the two-year undergraduate architectural studies program. These projects introduced students to the 3D modeling programs Rhino and Grasshopper. Major 1 student Caitlin Thissen commented:

Learning the commands and utilizing the best tools for our design in Rhino was a challenge, but we were able to quickly determine

what was and wasn't digitally possible. Grasshopper allowed for the easy repetition of elements across a surface. Through hand drawing and physical model building, I am better able to connect with the artistic and conceptual development of the project, but Rhino and Grasshopper plug-in allow projects to move more quickly.

These tools allow students to test ideas and build them using sophisticated technology such as CNC, but they have a steep learning curve. We asked Brad Brinton about the disconnect between software and production:

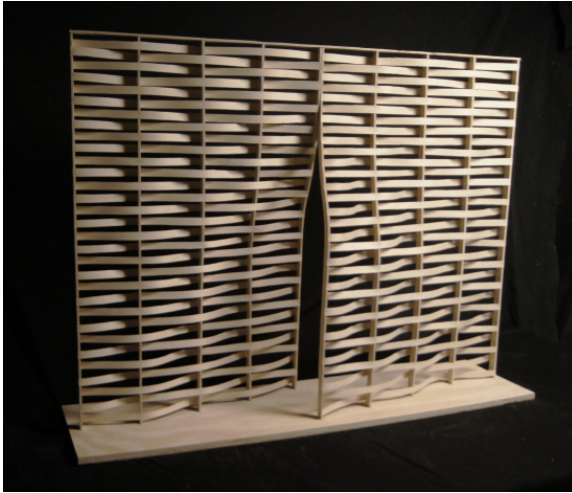
D: It seems we have to constantly move between programs to fully realize a project. Do you think it will all get integrated?

Brad Brinton (BB): This unprecedented digital explosion seems to have started about 10 years ago. Digital fabrication for a lot of people is still inaccessible, boutique-y, only for special projects or superstar architects. In terms of where software is, some companies produce their products each year, while other products are more adaptable. The company has to make money, and it isn't always driven by the end-user. That makes it difficult to create or supply a program that does everything. The skill set for a perfect program? I can't imagine it. Digital information is more integrated into the entire process to increase that efficiency.

D: How can exposure to digital fabrication remove preconceived boundaries in student projects?

BB: I think there is merit to hand-building, and the imperfection of the human body is an interesting component in design. But it's also important that a student not be hindered by the disparity between what they can design in their mind and what they can actually create physically. It was really exciting to see this new group of students' comprehensive experience at such an early level in their education [Major 1]. They had to think about connections, material qualities, and things that would traditionally have come later. Because of the dialogue [with the fabricators] throughout the process, they produced amazing things at such an early level. There's some resistance to this digital shift due to a lack of understanding of how to engage in it. It's really exciting to

“I THINK WE NEED TO HAVE STUDENTS BE LEADERS EARLIER. STUDENTS NEED TO BECOME MORE CAPABLE OF USING THESE TOOLS RIGHT AWAY.” (MARK GREEN)



Mock-up of the parametric screen made by Aaron Argyle, Casey Copier, Danielle Frohn and Caitlin Thissen.



This group's screen project draws its form from the process of feeding paper through a print press and is modeled using Grasshopper and Rhinoceros.

think about where we're going to be when these [Major I] students get out of their master's program. I wish there were a way that we could convey that opportunity to every student.

So how does the architecture student find balance between analog and digital? Do we lose a human connection with the architecture when we abandon analog methods? Many of the people we interviewed discussed this problem by using photorealistic digital

renderings in preliminary presentations as an example. They make the project easy to visualize, but they can also scare a client into thinking that most of the decisions have already been made. This can also lead to a less developed design concept, because quick decisions have to be made about materials, sizes, and even colors. SoA professors have noted that reliance on the computer and our on-site laser cutter leaves some students less capable of producing drawings and models by hand. This poses problems when technology fails or is unavailable.

INTERVIEW / TONY SERRATO

Tony Serrato is one of the few professors still teaching at the school to have witnessed the evolution from the analog-only days. He began his career teaching hand drawing, and then the possibilities of digital production caught his interest. Tony now teaches both. We talked to him about changes in techniques and student abilities:

D: How do you feel about the introduction of Rhino and Grasshopper so early in the curriculum?

Tony Serrato (TS): I think there needs to be a progression in the use of tools, because there are many levels of sophistication in tools. There also needs to be a progression in the complexity of the tools, so that the tool fits the task. To me there is no point in using extremely complex machinery to solve very simple tasks. What is tempting today is to begin with very complex programs like Rhinoceros, and plug-ins like Grasshopper, and many of the other applications that are more in the world of programming than architecture. So you spend more time doing things other than architecture. This is the College of Architecture, not the School of Applications. I've seen students spending a huge amount of time trying to understand Grasshopper, and I think time would be better spent dealing with how you design a good building. You can learn BIM, but if you don't know how to put a building together, BIM is useless. We need to design architectural spaces first. And then we can find a little hammer or a little screwdriver, whatever tool is needed to do what you need to do, but not reverse the order.

D: How important do you think learning analog skills is today?

TS: There was a very famous study done by several universities in England and one in Denmark. They had two groups of students: one worked with analog tools and one with digital tools on the

same project. That study demonstrated that digital has a number of advantages over analog. It's not that one is better than the other, but they do different kinds of things.

D: Do you think we need to move in the direction of going almost exclusively digital?

TS: Yes. There is opposition to that, but my take is that the computer has landed, and it's not going to go away. Now you can argue that you cannot design with a computer the way you can with pencils, but just go to any firm, they're all working with digital production. It's real. Young people have this kind of hunger to try new things. New generations are very good at adopting technology, much better than older generations. Mature people often just don't want to. It is actually stressful to them.



Morgan Thompson's parametric screen installed in the SoA Bailey Gallery. The parametric design makes use of interlocking groove joints to structure a module that creates the form.

CONCLUSION

If studio is a process of making mistakes, does digital technology give students an advantage in being able to iterate through many more solutions? There is a tension between mass production and the loss of hand-craft that started long before the introduction of digital technology into architecture. Now that architecture can be expressed in relationships of data and information, we need more sophisticated methods of thinking. It seems clear to us that students need to learn these new methods of production. Perhaps this is a reflection of our information age and our need to be connected at all times.

Our interviews show that we are at the brink of major changes in architecture and architectural education. We have come a long way from the days of just paper and pencil, but we should not abandon these methods as we adopt digital technology. We have to find balance with traditional Beaux-Arts and Bauhaus methods and become proficient in both analog and digital production. At the same time, these emerging technologies and software programs are becoming ever more sophisticated and streamlined into efficient workflows. Curricula should challenge students to use both digital and analog methods as means of creating architecture. Having two approaches gives students more options in design. As a closing thought, we offer wisdom from Socrates: "There is no solution, seek it lovingly." Because in the end, isn't "make it work" the only rule in architecture?



SCHOOL

CA+P / SoA LECTURE SERIES

FALL 2011

August 31 / Brown Bag: Ryan Smith
PREFABRICATION

September 21 / Brown Bag: Marco Bagnasacco
ARCHITECTURE AND DANCE

October 19 / Zen and Japanese Gardens: Shunmyo Masuno
JAPAN LANDSCAPE CONSULTANTS

October 26 / Brown Bag: Shalae Larsen L. A.
DESIGN COLLABORATIVE

November 9 / Brown Bag: Peggy McDonough
MHTN ARCHITECTS

November 9 / Problems in Organized Complexity: Steven Luoni
University of Arkansas Community Design Center (UACDC)

November 18 / Todd Schliemann
ENNEAD ARCHITECTS + UTAH MUSEUM OF NATURAL HISTORY

November 30 – Brown Bag: Dialectic

“EXTERIORITY IS NOT ARCHITECTURE. INTERIORITY IS NOT ARCHITECTURE. ARCHITECTURE EXISTS IN HOW EXTERIORITY AND INTERIORITY ARE CONNECTED.” (SOU FUJIMOTO)

“DESIGN IS THE KEY TO CHANGE.” (THOMAS AUER)

**“IF IT WORKS, IT IS OBSOLETE.”
(PETER STUTCHBURY)**

SPRING 2012

January 18 – Brown Bag: Cecilia Uriburu (FFKR Architects)
UTAH + ARGENTINA EXCHANGE PROGRAM

February 1/ Dan Pitera
DETROIT DESIGN COLLABORATIVE

February 22 / Brown Bag : RK Stewart ENVIRONMENT

February 22 Martin Brixen Memorial Lecture: Sou Fujimoto :
“Primitive Future”
SOU FUJIMOTO ARCHITECTS

March 9 / Brown Bag/lunchtime discussion: Taira Nishizawa: Visiting Critic
“People are a part of architecture”
TAIRA NISHIZAWA ARCHITECTS

March 19 / University of Utah McMurrin Distinguished Visiting Professor
Lecture: John Oschendorf , M.I.T.
GUASTAVINO THIN BRICK VAULTING WORKSHOP

March 21 / Brown Bag: Antonio Serrato-Combe
DIGITAL VISUALIZATION

March 28 / Brown Bag: Bob Young and Thomas Carter
HISTORIC PRESERVATION PROGRAM AT THE U

March 28 / Green & Sexy: Thomas Auer
TRANSOLAR

March 29 / Peter Stutchbury “Logical Aesthetic, functional aesthetic...”
PETER STUTCHBURY ARCHITECTS

April 4 / Brown Bag: Brent Bowen
BOWEN STUDIOS

April 4 / Candy Chang
CIVIC CENTER

April 12 / Laura Marks
“Individuation in Generative Artworks and Middle Eastern Carpets”
SIMON FRASER UNIVERSITY

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Visiting Instructor

STAFF 2011/12

THE UNIVERSITY OF UTAH SCHOOL OF ARCHITECTURE

The School of Architecture is a department of the University of Utah's College of Architecture and Planning.

The SoA offers a 4+2 pre-professional Bachelor of Science in Architectural Studies, a 2-year Master of Architecture, and a 3+ Master of Architecture (for students with a non-architecture baccalaureate degree).

The College has been housed in the Art and Architecture Center since 1970. This Brutalist building was designed by Edwards and Daniels Architects of Salt Lake City and is greatly influenced by Le Corbusier's *Maison Jaoul*.

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Dialectic Volume One is set in League Gothic for headings and Helvetica (primarily narrow width) for body copy. It is printed on 80 lb bond and 100 lb coverstock in matte ultra white. League Gothic is an open-source freeware font designed by The League of Moveable Type (www.theleagueofmoveabletype.com/).

Inspired by the northern Utah landscape, the theme colors only emerge in contrast to the muted terrain of the region. While not precisely complementary on the color wheel, the pairing develops tension in the contrast.

The graphical layout adopts the Brutalist regulating lines and grid modules of the Art and Architecture Building. This graphical language reflects the horizontal dialectic between Salt Lake City's built environment and its

CALL FOR PAPERS AND PROJECTS

ARCHITECTURE BETWEEN BOOM AND BUST

CALIBRATING THE FINANCIAL ECONOMY OF THE BUILT ENVIRONMENT

THEME:

"What ever happened to Architecture?"

"It's the economy, stupid!"

DEADLINE:

Dec 10th 2012

REQUIREMENTS:

Abstract (350 words)

Short CV

While the economic boom of the 1990s and 2000s made architects and media designers the epitome of the urban creative class, the credit crunch of 2008 and the accompanying economic downturn severely shrunk the profession. Not for nothing. The bust of the US American housing market has been arguably the trigger for the current global financial and economic crisis. With the building industry as its main victim, the bust has directly affected architects, whose fees are linked to building costs and built volume.

The second edition of *Dialectic*, a refereed journal of the School of Architecture, University of Utah, invites papers that address architecture's relationship to economy. We welcome contributors who scrutinize architecture's dependency on market forces theoretically (as part of cultural, political and social history), historically (case studies of an alternative practice of architecture) or pedagogically (exemplary formats of architectural education). All these approaches shall contribute to a process of rethinking the profession of architecture in history, theory, practice, and education in relation to economy to meet the challenges of the 21st century.

Dramatic economic turns, while involving individual hardship, are nevertheless great indices for making visible the immanent connections of the discipline to the marketplace and for challenging our understanding of what it means "to architect". One question

raised in the aftermath of the current economic (and architectural) crisis is the failure of the starchitect system that evolved parallel to the real estate bubble in Western societies as well as "new markets" in Asia, the Middle East, Africa and South America. At the 2010 Venice Biennale, Rem Koolhaas was alone in criticizing the gains in artistic freedom, budgets and size of commissions, reminding us how they paralleled a loss of intellectual stance. Public, as giddy decision makers had learned to expect extravagant signature buildings, formal experiments and endless artistic ingenuity. With this, they traded the role of the architect as a public intellectual and keeper of a common good for a celebrity figure who would bring global fame and tourists to their communities.

A series of recent exhibitions have addressed different aspects of the issue at hand. The 2010 "Small Scale, Big Change" at the Museum of Modern Art in New York, for example, featured contemporary architectural interventions from all across the globe that worked on small budgets and the limited scope of community interests. This September, MOMA's "9 + 1 Ways of Being Political" is displaying humble-scaled appliances and equipment from the 1960s and 1970s, that circumvented economic challenges and created politically and socially relevant architecture.

The history of the profession in the twentieth century bears

witness to the attempts of the Modern Movement to bring the elite cultural products to the ordinary man. Modernists took up public commission of schools, industry and infrastructure. They got involved in urban design, workers housing and the provision of public amenities. Architects in the 1960s critiqued the paternalism of their disciplinary forebears and interrogated the role of an architect both as a social engineer and as a moderator of participatory design. The concurrent post-modern turn to semiotics and imagery moved the discipline to the opposite direction of “art for arts sake.”

Advertently or inadvertently, architects who dreamt of the autonomy of design from context—function, material, economy, client, history and site—built the ground for the hedonistic formalism of the 1990s and 2000s. Following the economic downturn in 2008, one might observe yet another calibration of architecture to society. Community engagement, sustainable design, (ecological as well as social), and micro problem solving developed throughout the twentieth century. But in the twenty first century, these as well as other alternative practices became the mantras only after architecture’s meltdown.

We think that these interdependencies of architecture and economy have not been thoroughly theorized yet. We seem to have few alternatives and hence are in desperate need of dialectic reflection. Contributors may ask: Does the engagement with (underserved) communities, with micro-projects, with “green” building performance and with parametric design practices, constitute a retreat or an expansion of the discipline? Is the architecture of scarcity necessarily “modest” or is it as an opportunity for new design acrobatics? Does architecture’s dependency on economy falsify or strengthen the theory of “autonomy”? Where lies the future of the profession of architecture on the spectrum between service provider and cultural producer, between detached artist and public agent, and between technocrat, utopist and DIY? Finally, what can we learn from historic examples such as the Great Depression and the economic recession of the 1970s? These are just some of the questions we would like to put forward for an open debate.

The editors encourage critical statements and alternative practices. An abstract of 350 words and a short CV are welcomed by the editors Ole W. Fischer fischer@arch.utah.edu and Shundana Yusaf shundana@arch.utah.edu until December 10th 2012.

Accepted authors will be notified by Dec. 17th. Full papers of 2,500 words must be submitted by March 1st 2013 (including visual material, endnotes, and permissions for illustrations) to undergo an external peer-review process. This issue of Dialectic is expected to be out in print by September 2013.

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