

Critical Formations: The Latent Aspirations of Architectural Installation

The utility of the architectural installation to the larger discourse of architecture may lie in its proven ability to transition academic research into the built environment through incremental controlled experimentation and full-scale making. But does the architectural installation carry with it the same potential for reinvention (both professionally and conceptually) prompted by its artistic equivalent, or is it simply a means to an end without loftier aspirations?

AARON M WILLETTE
University of Michigan

ROBERT TRUMBOUR
Wentworth Institute of Technology

Rejecting the Albertian notion of architecture as an allographic practice in which “the carpenter is but an instrument in the hands of the architect,”¹ Design-Build educators have developed coursework that reintegrates the architect into the construction industry, promoting a “process in which fabrication is inseparable from the conception of design.”² Such course are taught “as hands-on clinics to teach students about sites, structures, materials, and joinery,” which additionally provide experience in areas of the profession absent from academia as “resolving conflicts, managing finances, and communicating with clients.”³ Students in prominent initiatives such as Auburn University’s Rural Studio and the University of Kansas’s Studio 804 construct materially and tectonically sophisticated buildings, showcasing the benefit of a Design-Build curriculum.

Yet despite its success, this approach to Design-Build relies upon a definition of architecture dependent upon the primacy of the production of buildings, ambivalent to the possibility that for some the pursuit of architecture may lay outside the traditional definition of architectural practice. Through the advent of new technologies and shifting economic conditions there are an increasing number of alternative approaches to practice in which the production of buildings is not the ultimate end-goal. Anthropology, algorithmic development, philosophy, economics, and robotics have all become part of an expanded field of architecture, each providing novel interpretations to the possibilities inherent to the work of the architect.

Predominately located within the confines of academia, such interpretations are generally in their developmental infancy - proto-agencies yet to be fully vetted by the profession. The focus of the work is not in its application to architectural

production (which is then manifest in buildings), but rather in determining the value of the work itself to architecture. Thus lacking a central focus on the architectural construct, the medium of installation has proved extremely useful to those exploring the territory at the edges of the profession and incorporating their approaches to architecture into the academic structure.

THE ADVENT OF THE ARCHITECTURAL INSTALLATION

As the architectural application of installation evolved out of the use of the medium in the fine arts, to effectively leverage the architectural installation one must first understand the external forces (i.e. outside the realm of the artist themselves) that lead to its development. Such inquiry can identify similarities between these contextualized forces and the forces at play in contemporary architecture, facilitating the identification of opportunities well-suited to the architectural installation within both professional and academic practice.

THE EMERGENCE OF INSTALLATION ART

Following earlier 'proto-installations' by Marcel Duchamp⁴ and Kurt Schwitters⁵, installation art fully emerged as an independent medium for experimentation during the late 1960's and early 1970's. Pioneered by the work of ground-breaking artists who combined the participatory energy of performance art with a desire to challenge the perceived sacredness of surface in the arts, installation quickly became a new art form well-suited to accommodate the demands of their rapidly changing cultural context. The boundaries between performance art, land art and interactive art dissolved as artists began to create holistic environments where object and viewer participated in an active dialog, allowing artists to engage their physical, cultural and social context in a new manner. Installation is a means to explore and understand the inseparable linkage between art and life. As Mark Rosenthal proposes,

“...for modern artists, the old forms and concepts of art needed refurbishment, their premise being that the world is far more complex and rich than earlier practice had allowed. The aspiration of the modern installation artist became in large part how to reflect the experience of life - its complex issues, aspects, and appearances. The technique of installation has proved to be a useful tool by which to rhetorically speak about and investigate life.”⁶

THE ARCHITECTURAL INSTALLATION

Initially participating in installation as artists, architects took on the mantle of the fine arts and co-opted its newest medium as a surrogate for construction. Architects such as Diller Scofidio + Renfro engaged the installation format to explore topics such as memory and place in isolation from architecture, not immediately concerned with how to extend those concepts in the production of architecture. In these situations the installation was an immediate end to approach broader ideas, allowing the architect to better grasp a handful of abstract topics free from the burden of construction.

However, many of the underlying circumstances that lead to the development of installation art during the 1960's and 1970's re-emerged within architecture during the 1980s and 1990s. Thus a variant of installation, the architectural installation, emerged⁷, quickly establishing itself as a potent tool in both the academic classrooms and professional offices. Capable of challenging and exploring a wide breadth of architectural topics, projects utilizing the architectural installation have no shared formal language. Instead, the shared context of the medium of the architectural installation is the work they perform on the territory of architecture itself.

THE ARCHITECTURAL INSTALLATION WITHIN THE PEDAGOGICAL TERRITORY OF DESIGN-BUILD

Due to the tremendous quality and quantity of work done by figureheads such as Steve Badanes, Samuel Mockbee, and Brian MacKay-Lyons, many members of the architectural community have built their understanding of academic Design-Build around the projects they were involved with. As a result the mention of Design-Build often automatically bring to mind full-scale, community-informed construction projects, and the numerous Design-Build studios and workshops these pioneers inspired mimicked the format they employed.

However, the category of Design-Build is more inclusive than the proliferation of this particular interpretation may lead one to believe, able to accommodate a much more expansive range architectural of scales and agendas. While there is not definitive interpretation of the term, the Association of Collegiate Schools of Architecture described Design-Build as existing “at any scale and may include but are not limited to: products, installations, interiors, and full-scale constructions.”⁸ Similar to how Rosalind Krauss described postmodern sculpture as “an expanded but finite set of related positions for a given artists to occupy and explore”⁹, this definition put forward by the ACSA instead defines Design-Build by its boundaries, providing a field condition in which an individual is free to locate themselves through the work they produce.

When considered as part of an expanded territory of Design-Build, the architectural installation finds itself well-positioned as a potent pedagogical medium, able to pair the immediacy of tacit learning (characterized by the ‘traditional’ interpretation of Design-Build) with the spectrum of possibilities inherent in an expanded definition of architecture. Unfortunately this pedagogical positioning can easily be obfuscated by the formal characteristics of the installation itself, circumventing discourse from the project’s impetus integrated learning towards a less relevant territory of aesthetics. The medium’s potential for incorporating the practice of “thoughtful making”¹⁰ central to the larger Design-Build tradition with its own capacity to expand the pedagogical and professional boundaries of field make it extremely valuable in contemporary architectural education.

PRECEDENT PROJECTS

By combining an intellectual provocation with empirical testing, the architectural installation allows for preliminary conclusions regarding its architectural potential to be realized almost instantaneously. This unique characteristic of the architectural installation is its greatest asset in comparison to a more complete architectural construct burdened by the requirements of high costs, the complexities of permitting, scheduling, and environmental performance requirements. Just as a building can either validate or negate the efforts leading up to its making, the same holds true for the architectural installation. The projects presented below as case studies have been curated from the increasing collection of architectural installations completed in recent years, illustrating the extensive range of ideas accessible to the medium.

ProtoCell Mesh - Philip Beesley and the University of Waterloo (2012 – 2013)

A collaboration between architect/educator Philip Beesley and students/researchers at the Universities of Waterloo, Nottingham, and Southern Denmark, *ProtoCell Mesh* was a single project within Beesley’s ongoing Hylozoic Series that pursues “near-living architectural systems combining lightweight flexible structures, interactive disturbed computation and protocell metabolism.”¹¹ The project “is a very humane response to the contemporary condition of ecology” that “seeks to progress beyond an abstract Modernism to something richer and more productive.”¹²

As an architectural installation, *ProtoCell Mesh* strove to address the fundamental challenges existing in air by deploying methods of carbon fixing previously found exclusively in natural systems such as photosynthesis and chemosynthesis. Utilizing an aluminum meshwork canopy and integrated carbon-capturing array developed out of the larger Hylozoic Series, the resulting synthetic system acted as a filter which processed the carbon dioxide present in the surrounding air by converting it into calcium carbonate. Additional layers of interactivity and responsiveness in the system create an immersive environment which envelopes and engages the observer, combining artificial and natural processes in “an uncanny, hybrid ecology.”¹³

ProtoCell Mesh explores the boundaries of a multitude of topics inclusive but certainly not limited to responsive architecture, atmospheric space making, material research, and the invention of new ecological systems. Taking full advantage of the temporal capabilities of the architectural installation, Beesley’s work provides a wealth of possibilities to the ecological problems that face us today. As eloquently stated by Michael Stacey in a video produced for the *Prototyping Architecture* exhibit, “This architecture is sitting on the frontier of new possibilities; some might say is this art or is this architecture? In a sense that is not what is important about this piece, it is really in the thoughts and provocations it produces. That is where its importance lies.”¹⁴

Elastic Plastic Sponge - Ball-Nogues Studio and SCI-Arc (2009)

Conceived, fabricated, and installed by Ball-Nogues Studio and students from the Southern California School Institute of Architecture over the course of a single semester, the temporary installation *Elastic Plastic Sponge* was developed for the 2009 Coachella music festival. An exercise in flexible social space making and engagement on a strict budget and compressed timeline, the project concentrated on creating a sense of community at a festival that had over 120,000 participants over two days.

Utilizing 250 aggregated cells formed from flexible tubing along with integrated lighting and misting systems, the installation could be twisted and reconfigured in several different configurations to support a variety of socio-spatial conditions ranging from lounging to pure spectacle. As an active structural system the final form of *Elastic Plastic Sponge* was derived solely from its material properties, making student’s typical collection of digital tools fairly useless, requiring extensive physical prototyping. As a result students developed a series of jig assemblies and full size mock-ups to develop the formal language of the project, with the feedback from the full-scale investigations informing the drawing and model making process in the studio.

Ball-Nogues Studio have positioned their own work as “informed by the exploration of craft,” concerned with the design of “the production process itself, with the aim of creating environments that enhance sensation, generate spectacle and invite physical engagement.”¹⁵ *Elastic Plastic Sponge* favors the physical experimentation found in the traditional pedagogical model of Design-Build, while simultaneously introducing methods of material research and systematic design strategies. Of the many contemporary installations completed in the past decade, *Elastic Plastic Sponge* seamlessly combined community-oriented tacit learning, explorations into placemaking, and the rigor of design research into the traditional academic studio environment. In the end this resulted in an architectural installation that addressed the full potential of the medium in an academic setting, showcasing the potential of an expanded definition of Design-Build.

The *2013-2014 Research Pavilion* marks the fourth research pavilion designed, engineered, and constructed by students at the University of Stuttgart under the direction of Prof. Achim Menges of the Institute of Computational Design (ICD) and Prof. Jan Knippers of the Institute of Building Structures and Structural Design (ITKE). Tied directly to coursework taught by doctoral candidates in the ICD and ITKE, the pavilion utilizes biomimicry to provide an underlying structure in an integrated project where the design geometry, structural performance, and fabrication process are all the byproduct of a larger material system.

Using a segmented carbon and glass fiber structure informed by the cellular structure of a flying beetle's shell, the research pavilion explored the territory enabled through of coupling process-specific robotic fabrication methods with "design strategies at the scale of material organization."¹⁶ Combining the efforts of researchers at the ICD, ITKE, Tübingen University, and Karlsruhe Institute of Technology, the *2013-2014 Research Pavilion* transitioned industrial technologies (composite assemblies and robotic fabrication) into building construction, integrating "the various requirements of design, analysis, and fabrication... into one coherent design framework."¹⁷ This cohesive system was used to produce 35 high-differentiated components that were assembled to form the pavilion, which expanded the possibilities of the material system and integrated design/fabrication process in architecture while also identifying areas for further research (which is currently on-going at the ICD).

A project of this complexity would have been beyond the reach of most students and major institutions less than a decade ago, but by integrating the research at the ICD with the coursework taught by the researchers dramatic gains were able to be made in understanding the agency of fabrication logics and design processes in experimental architecture. Participating in this in-depth of a project while still a student provides young designers new insights into emerging design methodologies and material explorations, experiences which can trickle out into professional practice. While admittedly the pavilion-scale project sits precariously at the threshold that separates the architectural installation from full scale building, this robust investigation of material properties, digital fabrication methodologies, and the role of robotics made manifest through the medium of installation demonstrates the potential of the medium as a research tool.

THE ACADEMIC POTENTIAL OF THE ARCHITECTURAL INSTALLATION

As a pedagogical tool the use of the Design-Build format has primarily been directed towards an understanding of construction methodologies and tectonics. Residing at the core of making buildings, both topics involve complete and holistic outcomes which are measured by their ability to address the full range of building constraints and pragmatic demands. Architectural installation on the other hand expands the discipline's capacity to apply research in a surgical manner thus allowing architects to mask the larger constraints tied to buildings and instead providing the means to precisely focus the attention on what architecture can be and where its boundaries lie. As demonstrated in the earlier precedent, projects that utilize the medium of the architectural installation expand upon two critical aspects of architecture: the role of the architect in practice and the role of the project in practice.

THE ARCHITECT IN PRACTICE

As a disciplinary activity the architecture is a complicated network of forces that can be challenging to navigate even for those familiar with it. This is even more so true in contemporary practice, as there are an increasing number of alternatives modes

of professional participation available besides the 'traditional' model of practice championed by professional organizations such as the AIA, RAIC, and RIBA. The network of disciplinary relationships can be simplified into a conceptual model having three facets: praxis, pedagogy, and discourse. As there is no established hierarchy between them the value assigned to each varies between projects, with each component providing insight and influence to the others. The architectural installation is capable of accommodating all three, allowing practitioners to better understand how they are able to participate within the practice of architecture.

Praxis

Of these three areas, installation has been utilized in the praxial investigations of architecture the longest, leveraging the capabilities of the architectural installation as a methodology to explore ideas in the built form. The reality is that the construction industry revolves around clients and contractors, banks and building codes: elements rarely concerned with or prepared to accommodate the systematic interrogation of the polemic presented by the conceptual, social and technological potential of architecture. Just as it did with the arts, the medium of installation's inherent fluidity coupled with the immediacy of its returns permits in-depth explorations into topics of concern without preconditions or preconceptions. The architectural installation provides the profession with a format sympathetic to the desire to explore these polemics through the built environments.

Pedagogy

A long-standing critique of the academic arena where architectural pedagogy unfolds is that the design studio is too dependent upon conceptual projects. Students are often taught to be more adept at exploring the theoretical aspects of architecture completely removed from the real-world design implications of context and construction. In direct response to this commentary, academic design studios across the globe have begun to utilize the immediacy of architectural installation alongside its conceptual ambiguity as a means to bridge this divide and participate in both hemispheres of the discipline. The development of an installation's theoretical goals and formal characteristics allow students to explore the full potential of the built form, while participating in its physical construction provides them hands-on experience with the act of making and the specifics of construction.

Discourse

Discourse has proved to be the most difficult of the three facets for architectural installation to incorporate itself into. As praxis and pedagogy have employed installation as vehicle for auxiliary explorations instead of critical examinations of the medium itself, architectural installation has remained largely off the radar of the institutions (physical or conceptual) that are driving architectural discourse. That is not meant to imply that discourse has been completely blind to the increasing role being played by the architectural installation. Symposium, competitions, and exhibitions have increasingly turned their sights towards the medium in an attempt to better understand its value to the profession, while it has it is increasingly being used as a component in larger academic research initiatives as a way to test, iterate, and present ideas.

THE PROJECT IN PRACTICE

As the architectural installation is capable of bridging the gap that exists between the intellectual and physical pursuits of architecture, the agency of the constructed artifact in the architectural installation is of no less value than the disciplinary value highlighted above. Equally capable of accommodating a formal agendas as

disciplinary agendas, the medium allows practitioners to freely and rapidly experiment with the numerous aspects of the physical instantiation of the architectural installation. Similar to the manner in which praxis, pedagogy, and discourse provide a conceptual model to discuss the disciplinary value of the architectural installation, the agency of the physical project can be approached through the categories of memory/time, body/space, tectonics, and process.

Memory/Time and Body/Space

The themes of memory/time and body/space are long-standing topics in architectural discourse, addressing the temporal aspects of design (time and space) through the human condition (memory and body). While select architects have been able to successfully incorporate these topics directly into their practice, explorations of memory/time and body/space have been largely addressed via writing and drawing. Projects dealing with the memory/time and body/space pairings tend to closely resemble work explored by artists, more so than any other category being explored through the architectural installation. It is a common critique of these projects that they're more sculptural than architectural, lacking the Vitruvian *utilitas* considered by many as a definitive characteristic that separates architecture from sculpture. However, in light of the architectural installation as part of a larger, iterative process through which architectural ideas can be tested and explored, the value of these experimental projects to the profession as a whole becomes evident.

Tectonics and Process

As architecture is a physical, constructed medium, it is only natural that tectonics and process are taken into consideration as part of the territory being explored by the architectural installation. While not necessarily the expressive tectonics advocated by Kenneth Frampton, the architectural installation allows for practitioners to experiment with the logics of construction, expanding their understanding of the relationship between geometry, material, and production in a specific architectural assembly. Process, on the other hand, allows one to experiment with developmental logics, crafting methods through which architecture is conceived, instantiated, and understood. Both tectonics and process are uniquely fertile territory than can be explored independent of one another, yielding worthwhile gains that are not necessarily intertwined. Process in particular is a valuable category to those looking to transition theoretical agendas into the built form, facilitating new ways of conceiving and working with architectural constructs originating outside of the built realm.

CONCLUSION

The role of the architect as the “master builder” is frequently referenced when positioning the Design-Build studio, aligning itself with individuals such as Filippo Brunelleschi and Antonio Gaudi that actively engaged the art of making as a design tool in the production of architecture. And while this approach to architecture is no less valid in contemporary practice, with the advent of new technologies and shifting economic conditions there are an increasing number of alternative approaches to contemporary practice in which the production of the built environment in the form of a building is not the ultimate end-goal. Just as the Design-Build curriculum challenges the Albertian model of architecture, the architectural installation similarly challenges the premise that architecture is immediately tied to building, encouraging new interpretations of architecture to develop alongside its contemporary context.

Architectural installation, coupling design research with the tradition of making found in Design-Build, offers new opportunities to increase the architect's

relevance in a larger cultural context. Through this temporal and untethered medium, individuals trained as architects can more easily participate in the larger dialog of contemporary culture. With the increased expertise gained through the applied research facilitated by the architectural installation architects can now transcend the role of aesthetician and instead be seen as a major contributor to the solutions to our cultures most pressing challenges. From sustaining the delicate balance of our ecology to examining the architectural potential of sociopolitical agency, the architectural installation, when approached as a component of an expanded definition of Design-Build, is positioned to allow students to not only directly participate in these topics, but more importantly understand how they can impact their approach to architecture as both a disciplinary and physical pursuit.

ENDNOTES

- 1 Leon Battista Alberti, *On the Art of Building in Ten Books*, trans. Joseph Rykwert (Cambridge, MA: MIT Press, 1988), 3.
- 2 William J. Carpenter, *Learning by Building: Design and Construction in Architectural Education* (New York: Van Nostrand Reinhold, 1997), 3.
- 3 Joseph Bilello, "Learning From Construction," *Architecture*, August, 1996, 145.
- 4 Beginning with *Advance of the Broken Arm* (1915) Duchamp elevated the everyday object to the status of art through the curatorial process, intentionally intensifying the problem of objectivity within art. In doing so the viewer, through the questioning of the work's relevance and validity, becomes an active participant in the piece, activating the space between the work and the viewer.
See Andrew Benjamin, "Matter and Meaning: On Installations", *Art & Design Magazine*. 30 (1993): 31-33.
- 5 Schwitters's *Merzbau* (1919-1937) is often referenced as the first documented installation piece. Evolving over a twenty-year span in the artist's apartment in Hanover, Germany, the end result was a built environment which effectively combined aspects of collage, interior design and sculpture into a site-specific environment.
See Mark Rosenthal, *Understanding Installation Art From Duchamp to Holzer* (New York: Prestel, 2003), 33.
- 6 Rosenthal, 26-27.
- 7 It is important to note that the architectural installation has not displaced the fine-arts installation within architecture, as while not as popular, it is still an approach being used within the profession. Practitioners such as Catie Newell of *Alibi Studio (Detroit, MI) still operate as artists, treating an installation as its own end rather than as an iterative tool that helps transition ideas into construction.
- 8 Association of Collegiate Schools of Architecture, *Design Build Award*, <http://acsa-arch.org/programs-events/awards/Design-Build/> (September 24, 2014).
- 9 Rosalind Krauss, *Sculpture in the Expanded Field*. October, Vol 8 (Spring 1979) 42.
- 10 Carpenter, 3.
- 11 Philip Beesley, "Protocell Mesh," in Michael Stacey, ed., *Prototyping Architecture* (Cambridge, ON: Riverside Architectural Press, 2013), 60.
- 12 Michael Stacey, "From Flat Stock to Three Dimensional Immersion," in Philip Beesley, ed., *Kinetic Architecture and Geotextile Installations*, (Cambridge, ON: Riverside Press, 2010), 59.
- 13 Phillip Beesley, "Orgone Reef," *Architectural Design* 75 (July/August 2005): 48.
- 14 The Building Centre, *Protocell Mesh by Philip Beesley* [video], <http://vimeo.com/54278708> (September 24, 2014).
- 15 Ball-Nogues Studio, *Maximilian's Schell*, <http://www.ball-nogues.com/#project-105> (September 29, 2014).
- 16 Marshall Prado, et al., "Core-Less Filament Winding: Robotically Fabricated Fiber Composite Building Components," in Wes McGee and Monica Ponce de Leon, eds., *Robotic Fabrication in Architecture, Art and Design 2014* (New York: Springer, 2014), 275.
- 17 Prado, 276.

So aspiration can be used as another way of telling if some syllables are stressed or not. We can tell that the final -to of potato is completely unstressed (even though it has an [o] instead of a schwa), because its t has become tapped (as we expect in an unstressed syllable) instead of aspirated (as we expect in a stressed syllable). On the otherhand, the final syllable does have secondary stress in undertow, and its t is aspirated: [É˘ÉœndÉ¹]© ÉœtÉ °o].Â Aspiration is really a delay in the beginning of vocal fold vibration after the end of the stop. When a voiceless unaspirated plosive is followed by a vowel, the time when the vocal folds begin vibrating for the vowel will coincide almost exactly with the time when the plosive is released (give or take up to 20 milliseconds). Architecture - Architecture - Architectural planning: The architect usually begins to work when the site and the type and cost of a building have been determined. The site involves the varying behaviour of the natural environment that must be adjusted to the unvarying physical needs of human beings; the type is the generalized form established by society that must be adjusted to the special use for which the building is required; the cost implies the economics of land, labour, and materials that must be adjusted to suit a particular sum. Thus, planning is the process of particularizing and, ul Architectural style comes in of course; that was the core of my training, But Tam as concerned with use and structure and urban process, with motivation and ritual sequence. I would not be at all un- happy if the book were to be seen as an offering of cultural history Despite its seemingly ecumenical reach, this cannot claim to be a world history of architecture. That task would entail a fat balance in the account of architectural 13 ditions in all ages and on al continents. We are preoccupied with our own Western tradition. ven with the most permissive attitude, other cultures stand as foils