July 2007


Katie Swoboda, Editor
University of Nebraska - Lincoln

Peter Bissen, Editor
University of Nebraska - Lincoln

Rachel Reed, Assistant Editor
University of Nebraska - Lincoln

Follow this and additional works at: http://digitalcommons.unl.edu/archinform

Part of the Architecture Commons

http://digitalcommons.unl.edu/archinform/1

This Article is brought to you for free and open access by the Architecture, College of at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in In.Form: The Journal of Architecture, Design, and Material Culture by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
Volume 7:
Art and Architecture
This volume was published with the support of a generous donation from

the Eloise Kruger Fund for Interior Design,

in cooperation with the Kruger Collection

and the University of Nebraska-Lincoln, College of Architecture.
## The Journal of Architecture, Design, and Material Culture

<table>
<thead>
<tr>
<th>Title</th>
<th>Author(s)</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Artistic Expression of Architecture.</td>
<td>Anita Powell</td>
<td>07</td>
</tr>
<tr>
<td>On the Artifice of Art.</td>
<td>Amir Ameri</td>
<td>10</td>
</tr>
<tr>
<td>Traversing Disciplinary Boundaries: Augmenting Speculative Vision through Installation Practice.</td>
<td>Dee Nicholas</td>
<td>28</td>
</tr>
<tr>
<td>Visual Systems and Lighting Design.</td>
<td>James Clar</td>
<td>33</td>
</tr>
<tr>
<td>Adventures in Biourbia.</td>
<td>Elva Rubio and Michael Hanley</td>
<td>36</td>
</tr>
<tr>
<td>The Art of Architecture and Art.</td>
<td>David Cronrath</td>
<td>44</td>
</tr>
<tr>
<td>The Art of Experiential Spaces.</td>
<td>Kurt Schlough</td>
<td>48</td>
</tr>
<tr>
<td>Probes: Merging Artistic Thinking with an Architectural Methodology.</td>
<td>Chris Ford</td>
<td>53</td>
</tr>
<tr>
<td>Sketching with Stones.</td>
<td>Will Wittig</td>
<td>64</td>
</tr>
<tr>
<td>Demimonde: The Art of Architecture.</td>
<td>Pablo Castro and Jennifer Lee</td>
<td>74</td>
</tr>
<tr>
<td>Call For Papers: Volume 8.</td>
<td>In.Form Staff.</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>96</td>
</tr>
</tbody>
</table>
The Artistic Expression of Architecture

by Anita Powell

Architecture has developed well beyond the extent of providing mere structures for protection. As elements deviate from their purely structural purpose, they become elements of art within architecture. The designation where pure functionality stops and aesthetic embellishment begins occurs by several different methods. As the scale of the structure goes beyond the necessary size it becomes an artistic expression. A second aspect is the evolution of structural design in architecture. Art is also found in architecture when architectural elements and designs are incorporated as motifs in furniture design. Also, many elements within the contemporary home are reminiscent of functional pieces that are now purely aesthetic. Finally, elements become completely detached from structure when they are seen in paintings and other purely aesthetic elements.

As structures go beyond bare function, they develop symbolic significance. In order to functionally bury the dead, all that is required is a hole in the ground; and for mass entombment, corridors into the ground are necessary. Any entombment that goes beyond mere burial represents artistic expression. Strong religious beliefs in the afterlife often dictate the artistic decoration of tombs. Cave paintings may be one of the simplest modifications to early tombs. The caves at Lascaux, France are manipulated and transformed into religious sanctuaries by way of their extensive wall paintings. These cave paintings date from 15,000 to 13,000 BC and show man’s early desire to go beyond the purely functional needs of structures.

Tombs of the Etruscans show elements representing structures found in houses. These elements bear no structural integrity to the tomb; rather they are used only for aesthetic and social reasons. The Tomb of the Reliefs in Cerveteri, Italy made use of what rock remained after the tomb was carved away to depict columns by adding embellishments though they do not actually function as column supports. This shows that the desire to show columns was an artistic decision, and not structurally based. The Tomb of the Reliefs also shows the importance of burying the dead with household items that they believed the deceased would require in the afterlife. The actual household items are not placed within the tomb, but likenesses of these items are carved in relief on the walls of the chamber, acting as indication of the physical objects as well as interior decoration. Many Etruscan tombs are meant to resemble houses, becoming in a way a home for the dead. The plan of the Tomb of the Shields and Chairs at Cerveteri is similar to Etruscan and early Roman houses, thus reinforcing the artistic expression of a home for the dead.

Another way that tombs deviate from the purely functional is through the size of the structures. The magnitude of Egyptian pyramids puts them far beyond the scope of purely functional structures. The Great Pyramids at Gizeh express the magnitude of the divine association of the Pharaohs with the gods of Ancient Egypt. The fact that they have been able to survive thousands of years, dating to ca. 2551-2528 BC, also attests to their aesthetic impression and structural integrity.

Familiar architectural elements affect artistic expression in architecture by way of their design evolution. In some regions, columns were initially built of bundles of reeds used to support a thatched roof. As columns were made of other materials, the shape of the bundled reeds was maintained and transferred into fluting, becoming an artistic element in architecture. Egyptian columns at Djoser’s funerary temple show this motif. Although advancements in technology allowed the people to progress beyond the use of the reeds as structure, they still
desired to be reminiscent of their structural origins. When thinking of the required elements of stone columns, all that is necessary is a vertical beam with an enlarged base and top in order to perform a support function. All other embellishments, such as painting, materiality, carved motifs, and even exaggerated base or top, are artistic expressions on the structural piece. For example, caryatids and atlantids are columns in the shape of women and men. Column shafts were often fluted. Capitals often reflected the volutes of the ionic order, echinus of the doric order, and the acanthus leaves of the corinthian capital. Since the extra embellishment of the capitals and shafts are not aiding to the structure’s integrity, they act only as artistic expressions. The idea of colonnades and single columns pass completely into the artistic realm in such uses as engaged columns and pilasters. Architects use engaged columns and pilasters when the aesthetic of columns or a colonnade is desired but not structurally necessary. When columns are no longer supporting structures, they are used purely in the aesthetic sense. Columns depart from their structural purpose in the examples of the columns of Marcus Aurelius, Trajan, and Antoninus Pius, where they are meant to be memorials to the deceased. These memorial columns stand alone and do not support any structures.

Floors are often neglected architectural elements as their function is fairly simple. However, in ancient Roman times, floors were host to some of the most beautiful works of art. Mosaic floors are found in ancient ruins from all around the Roman Empire. Ruins found in Pompeii and Herculaneum provide a wide range of mosaic floor motifs. The fact that floors are subject to the greatest amount of wear and tear did not stop the Romans from ensuring that these aspects of their buildings were a complete artistic display. Many common elements of everyday home design owe their inspirations to a purely functional purpose. Mullions on windows originated because technologies in glass made it difficult to produce large panes of glass. As a result, mullions were used to stack many panes of glass to allow for a larger windowed area. As technology developed and larger panes of glass were able to be produced, mullions remained since many associated these windows with the ideal home. Similarly, wood doors were originally solid, so carved motifs were incorporated to make the door lighter. Though contemporary doors are hollow, faux finishes are added as embellishments to mimic these original doors. Shutters were used to keep the cold air out before glass was used in windows. Now that glass keeps the temperature stable within the house, shutters are attached permanently as exterior decoration with no functional use. Another common home element, fireplaces originally were required to heat the house. Electrical heat now replaces fireplaces, yet many homeowners still choose to have a fireplace for the emotional ties it has to past home-life experiences. In many cases, the fireplace is gas; or often floral arrangements, candles, or paintings are placed in front, completely disassociating the fireplace from its original role as hearth in the home.

Many architectural elements are reflected in furniture. Elements of ancient Greek buildings, such as cornices, pediments, friezes, triglyphs, metopes, architraves, capitals, and column shafts, are referenced in furniture pieces. German cabinets from the sixteenth century are so architecturally inspired that they almost could be mistaken for small-scale buildings. Doors, windows, and all aforementioned attributes of Greek buildings are present in these cabinets. Some pierced slat chairs use Gothic architectural window motifs as inspiration for the decoration of the back of the chair. Canopies over beds often imitate roofs of the same architectural era. Headboards have been made to look like Greek pediments. Tables often have reflections of columns for legs and quite often include frieze motifs around the apron. Chairs and benches from France dating to the late 1400s resemble balconies of buildings due to their Gothic canopies. Gilded motifs using the Italian sprezzatura concept of making the difficult appear effortless found in Rococo architecture also is common among the language of furniture from the Rococo era.

Architectural elements also are viewed as artistic when seen as motifs in paintings, pottery, and wall paper. Many examples of Roman pottery feature the same geometric and decorative motifs as their building counterparts. The wall paintings found in the city of Pompeii are prime examples of the use of architectural elements as art. The Pompeian wall paintings are classified into four styles. The first style uses plaster molded in the shape of columns, pilasters, and cornices to give a faux architecture effect in the spaces. Flat portions of the wall are painted to look like polished marble slabs. A prime example of this first style is seen on the north wall of the tablinum in the House of Sallust in Pompeii. It shows plaster molding around the faux marble blocks as well as pilasters made of stucco.
In the second style of wall paintings, the use of plaster to mold three-dimensional forms is no longer used, and the three-dimensional effect is solely achieved through the use of painting effects done in a trompe l’oeil manner. Columns and other architectural elements still adorn the walls but strictly through these painted techniques. Walls are meant to appear as though they are windows into the outside world. The views appearing to go beyond these walls are typically of city-scenes, including buildings of local towns. In this way, architecture becomes an important artistic focus. The Villa of the Mysteries has excellent examples of this second style of wall painting, where architecture is the primary subject for the paintings. A high degree of third dimensionality is achieved through artistic techniques, yet it is solely expressed by two-dimensional means.

In the third style of Pompeian wall paintings, the architectural elements portrayed are done in a fanciful manner, portraying elements in ways that would not be structurally feasible. The small vignettes painted between the columns often also include architectural references. The Villa of BoscoTrecase and the House of the Fruit Orchard both show these dainty architectural elements framing fanciful scenes.

The fourth and final style is a combination of all three previous styles. The dado, or the lower portion of the wall, often contains the painted faux-marble panels seen in the first style. Some portions of the wall are meant to disappear as though they are windows surrounded by the trompe l’oeil columns of the second style. The third style is represented in these rooms through the fanciful architectural motifs and the small vignettes painted between these elements. Prime examples of this fourth style of Pompeian wall paintings are found in the House of the Vettii, the House of Faus Rufus, and the House of Castor and Pollux. Overall, these paintings show the variety that can be achieved by using architectural elements as artistic expressions.

Many elements begin as necessary contributors to the functionality of space. Over time, more efficient methods are formed and achieve these same functions, while traces of the original design are asserted merely in the aesthetic form. There are many reasons for architecture to take on artistic elements. Political, social, and personal expression all lead to architecture’s artistic expression. Many functional elements were embellished to provide the architecture with a beautiful aesthetic. Because of the success of these styles, the same motifs were often borrowed to decorate other nonarchitectural pieces. To

the peoples of past and present cultures, virtually every architectural surface had become a palette for artistic expression.

Notes
3. Ibid.
4. Ibid.
5. Ibid.
6. Ibid.
9. What is a house?: The dream we live in, Jeffrey Schrank Learning Seed, c1999, Videocassette.
11. Ibid.
13. Ibid.
17. Kraus, *Pompeii and Herculaneum*.
18. Kleiner, et. al., *Gardner’s Art Through the Ages*.

Anita Powell: The Artistic Expression of Architecture
On The Artifice Of Art
by Amir Ameri

Amir Ameri is Associate Professor of Architecture at University of Colorado. He received his Ph.D. in History of Architecture and Urban Development from Cornell University, M.S.Arch from Cornell University and B.Arch from University of California, Berkeley. He has taught architectural history, theory, and design at various academic institutions including Cornell University and Parsons School of Design. His research and teaching explore the dialogue between architecture and culture. His publications range from critical studies in the history of theoretical discourse on architecture, to examining the ideational challenges of the digital media, to the history of cultural institutions and secular building types that house various forms of representation. His articles have appeared in various academic journals, including Art History, The American Journal of Semiotics, Poetics Today, Issues in Architecture Art and Design, Journal of the Society of Architectural Historians, Semiotica, and SubStance.

Abstract
The art museum is the modern embodiment of a historic practice that has long seen to the separation and collection of authentic works of art in a sequestered place. This sequestering is a humanist institutional response to the enigmatic place of art and its inherent supplemental and paradoxical character as a mode of representation. The institutional substitution of a formal, spatial, and experiential clarity of place for the very spatial and temporal dimensions that painting and sculpture fundamentally put in question is an instituted resistance to representation. Spacing is authenticity’s indispensable alibi.

I.
"Sacred symbols function,” Clifford Geertz notes, “…to synthesize a people’s ethos – the tone, character, and quality of their life, its moral and aesthetic style and mood – and their worldview – the picture they have of the way things in sheer actuality are, their most comprehensive ideas of order. In religious belief and practices a group’s ethos is rendered intellectually reasonable by being shown to represent a way of life ideally adapted to the actual state of affairs the worldview describes, while the worldview is rendered emotionally convincing by being presented as an image of an actual state of affairs peculiarly well-arranged to accommodate such a way of life.”

Although Geertz’s description pertains to “religion as a cultural system,” we can readily read into his account a compelling description of the role of ecclesiastical buildings as “sacred symbols” within their broader cultural context and by extension, of architecture as another “cultural system.” We can remind ourselves of the pivotal role architecture plays in shaping a people’s ethos and trace an interminable link from their ethos to their worldview. This is a link without which architecture would be hopelessly lost in having too great a choice of action and not sufficient grounds for delimitation of its choices. We can go on to read the evidence of the “confrontation and mutual confirmation” between the dominant worldview and ethos of, for instance, the Gothic, the Renaissance, or the Baroque period, respectively, in the translucent world of a Gothic Cathedral, the proportional harmonies of a Renaissance Chapel, or the unfolding, infinite universe of a Baroque Church. In each instance, we can detail how the specifics of each design objectified “moral and aesthetic preferences by depicting them as the imposed conditions of life implicit in a world with a particular structure, as mere common sense given the unalterable shape of reality,” and how the experience of each building served to support “received beliefs about the world’s body by invoking deeply felt moral and aesthetic sentiments as experiential evidence for their truth.”

Were we to engage this exercise, we would have the advantage of temporal distance and a markedly different worldview. Both readily allow us to assume the probing role of the “mythologist,” as Roland Barthes described it years ago. Focusing, as we may, on the “distortion,” or the mechanics of universalizing the particular, it is not likely that we will experience the culture under study assume the guise of inevitability through the agency of
its architecture. We will not experience the “confrontation and mutual confirmation” of the worldview and ethos that ecclesiastical edifices were erected to affect. Such a confirmation, when and if it occurs, largely goes unnoted. An edifice plays its cultural role effectively, when we do not see it in the passage of culture into objectivity. It succeeds when we do not take note of the edifice as an ideological construct, or the explicit embodiment of a metaphysics. It succeeds when we take it’s peculiarities either for granted, or else attribute them to pragmatic concerns, and proceed as though the latter were immune to ideological conditioning. This is to say, that those aspects of an edifice which appear to be the most objective, i.e., impervious to ideological and metaphysical conditioning, are often the parts more thoroughly conditioned by such considerations, and at that the most successful from culture’s perspective.

Although it is not with great difficulty or much resistance that we may trace the “confrontation and mutual confirmation” of a culture’s worldview and ethos in the design and experience of its ecclesiastical architecture, past or present, the same does not hold for secular buildings. The latter are far more resistive to such explorations, particularly the closer they are to us in cultural space and time. The more immediately familiar the building type, the greater is the likelihood of its appearing as no more than a pragmatic response to very real, practical needs and requirements. The library as a secular building type does not readily appear to be much more than a response to the need for storage and dissemination of books, the school to the education of the novice, or the museum to the preservation and public presentation of art, etc. It is not evident how the design and the experience of these buildings could lend themselves to a “confrontation and mutual confirmation” of a culture’s worldview and ethos or to what specific cultural variables they tactfully give the guise of the objectively inevitable.

If our secular institutional buildings do not appear as patent ideological constructs, this is not, of course, for want of participation in the construction and objectification of culture. Michel Foucault, in his study of prisons, schools, and hospitals, outlined the modalities of this participation long ago. If, however, the link between the formal and spatial properties of secular institutional buildings and a particular view of the world, or a pervasive metaphysics is rarely, if ever, explicit, this may well be because these buildings manage all too well in formulating “a basic congruence between a particular style of life and a specific (if, most often, implicit) metaphysic, and in so doing sustain each with the borrowed authority of the other”.

Their opacity silently betrays their success. Assuming that every building type, secular or ecclesiastical, is a purposed cultural construct, from its inception and through every stage of its permutation, and that each type serves, among other cultural mechanisms, to turn our assumptions about the world into an objective experience of it, what I wish to explore in this paper is the participation of the art museum as a building type in the cultural process of actualization and experiential objectification of a dominant worldview. What I intend to explore are the ideational, or metaphysical imperatives that have seen to the formation, proliferation, and perpetuation of the institution and the shaping of its architecture. In particular, I will outline the ways in which the specifics of the design and the particular experience of the museum objectify and sustain our assumptions about the nature of the relationship between reality and representation. The latter is the art museum’s specific institutional agenda. The art museum, I hope to demonstrate, is a vital cultural mechanism that along with other allied institutions, e.g., the library, the theater, and the cinema, see to the proper dispensation and consumption of representation in a world of their own making where the reality outside as self-presentation retains its privileges and remains impervious to the challenges of representation, in no small measure because of these spatial constructs.

II.

“The use of objects which have properties is usually prescribed by ritual. There are rules about the way they should be collected....There are regulations regarding their use, the time, place, quantities involved, without going into the sometimes vast array of accessory rites which accompany them and which allow the utilization of their properties and the application of their sympathetic mechanisms.”

Museums are, as one contemporary account has it, “really last-ditch solutions to the problem of knowing what to do with artworks when they have been moved from their original homes for any number of reasons”. It is, we are told, “really as desperate as that. Our civilization has come up with no better solution than to pigeon-hole artworks and lock them safely away”. Curious as this determination may be, it speaks to the same logic as the following account ascribing the inception of the museum to two causes: “a level of physical
wealth which allows an abundant production of art,” and “a form of culture in which this art is seen as a kind of surplus not immediately wanted in any everyday secular or religious activity.” The museum is, both accounts assume, a response to a spatial displacement. Presuming that those works of art that fall outside “everyday secular or religious activity” or “their original homes” present a “problem,” both see the museum as a solution, desperate or otherwise, to arts’ want of a place, i.e., of having to have a designated place. This perception is relatively recent and western in origin.

The museum is barely over 200 years old. It dates back to the Decree issued by the Revolutionary Convention in Paris on July 27, 1793 for the creation of the “Museum of the Republic” at the Louvre. The spatial and formal consequences of this act were not to be fully realized at the Louvre palace for another 190 years. Elsewhere, the spatial and formal development of the museum as a building type had to await the heated debates and final codification of the type in Germany and to a lesser extent England, in the decades of 1810’s to 1830’s.

The formation of the museum at the Louvre palace marked a first in the appropriation of art by a then newly construed entity — the “public.” The practice of collecting art was, however, well precedented in Europe. The “public” merely assumed, then re-defined, and thoroughly re-organized a private practice that traces its history back to the onset of the Renaissance. The practice of collecting art objects, public or private, presuppose, of course, their designation as collectibles. The history of this classification, recent as it is, is not patently different in duration from the history of art itself and it is not all too clear which classification came first.

The “Middle Ages,” Malraux reminded us long ago, “were as unaware of what we mean by the word ‘art’ as were Greece and Egypt, who had no word for it”. What we understand by “art” was the invention of the Renaissance, or rather of a people who, over time, begun to see in the “Virgin” a statue and in the “classical statue” not a “heathen idol or a mere puppet”, but the embodiment of a universal ideal: the beautiful. The invention and the ensuing re-classification of paintings and statues as art required them to relinquish, in Benjamin’s terms, their “cult value” to assume in its place “exhibition value.” In the process of (re)classification as art, paintings and statues had to eschew their cult referents in favor of a subject and submit themselves as objects to aesthetic valuation for the measure of “exhibition value.”

The designation of art objects as collectibles did not exclusively depend, however, on their newly acquired aesthetic value. The transformation of the cult referent into a subject had distinct spatial ramifications and these as well bore directly on the classification of art objects as collectibles. The first spatial ramification had to do with the recognition of two and three-dimensional graphic representations as autonomous objects. As cult objects, paintings and statues were meant to establish a visual link between the viewer and the cult referent. They were meant to be seen, not looked at. They functioned as intended — making the absent referent present — so long as they remained invisible as objects. As works of art, on the other hand, paintings and statues held their newly acquired status so long as they retained a distance from both the viewer and the place they happened to occupy. Taking note of the object and not the referent entailed taking note of the distance and the space between the observer and the observed. As cult objects paintings and statues collapsed space, as art objects they imposed it.

The spacing that constituted an insular frame all around the art object, in effect, displaced paintings and statues from their former allocated place at home, in the palace, the church, etc. The price of autonomy was the loss of place. Once dispossessed of their place, paintings and statues were collected, re-classified, and re-located to a new and specific place, i.e., the “repositories” that in various forms were popular among European ruling elite in the seventeenth and eighteenth centuries. The logic that saw to the reclassification and re-placement of these placeless representations in various repositories is fundamentally the same logic that had seen to their initial placement as cult objects and in time would see to
their re-placement in the museum. Deciphering it will be our focus for the remainder of this work.

Beginning in the sixteenth century, we find dislodged paintings and statues reposited in places that over the course of the succeeding two centuries would develop into two distinct realms: the “cabinet” and the “gallery,” or else the Wunderkammer and the Kunstkammer. The gallery, often a long rectangular room, served as a repository for paintings and statues gathered there for their aesthetic and iconographic value. These works were often tightly integrated with the decoration of the room.

The cabinet [Fig. 1], on the other hand, was a designated place wherein, as Francis Bacon put it, “whatsoever the hand of man by exquisite art or engine has made rare in stuff, form or motion; whatsoever singularity, chance, and the shuffle of things hath produced; whatsoever nature has wrought in things that want life and may be kept; shall be sorted and included.”

The bafflingly heterogeneous body of objects encountered in these cabinets appears to have one thing in common. Rare, singular, or wanting of life, the objects of the cabinet eschewed reproduction. They fell outside the normal cycle of (re)production where they were deemed collectible. Most had their origin in other times and other places. They were unique productions, not necessarily in origin, but where they were collected in the one place outside of which they had no immediate place.

Unlike the gallery, the cabinet was not meant as a place of exhibition or public display. The impetus behind the collection was not to make oddities, rarities, and singularities visible, but to render them invisible. What the cabinet accomplished was not only the preservation of the rare and the singular, but also the institution of a distinct domain that kept the rare and the singular out of circulation and the places to which it did not belong.

Among other oddities, rarities, and singularities, paintings and statues were included in the cabinets of curiosities on account of neither their aesthetic value nor monetary value. What made paintings and statues fit for inclusion in the cabinet and the company of other oddities, rarities, and singularities was their singularity where they happened to be, i.e., their authenticity and historicity, or what Walter Benjamin was to term “aura,” that which “even the most perfect reproduction of a work of art is lacking...its unique existence at the place where it happens to be.”

Although the authotic and auratic objects collected in the cabinet eschewed reproduction, this is not to say they were not reproduced. An entire industry was formed in Italy and elsewhere to feed with fake originals and forged singularities the appetite of the European ruling elite for rare and singular collectibles. In response, another industry was formed to identify, authenticate, and certify the collectibles as such. A branch of this industry would be consolidated in time into the field of art history. It is important to note, however, that both industries owe their development to the European ruling elite’s search for the singular and the authentic, instigated by the desire to collect them in one place. The desire to open-up and set aside a space for authenticity and singularity appears to be independent of the presence of collectibles as evidenced by the active search for collectibles.

The peculiarity of the desire to collect curiosities in one place raises, of course, the question of motive. Why this preoccupation with the spatial control of the singular and the authentic? To postulate an answer we need to follow the development of the cabinet into the museum. For now, it is important to note that inasmuch as the aesthetic and iconographic concerns of the gallery were impertinent to the cabinet, the latter’s preoccupation with authenticity was irreverent to the gallery [Fig. 2]. Unlike the cabinet, the space of the gallery was inclusive of copies and reproductions. Charles de Brosses, Germain Bazin recounts, did not “fret over acquiring originals by the great masters”. Confessedly, he preferred “beautiful copies of famous paintings,” to “having originals by minor masters”. Mr. de Brosses’ preference was not the exception. An entire industry dedicated to the commissioned replication of famous works of art, produced endless copies of old masters for the galleries of the European elite throughout the seventeenth
and eighteenth centuries. The gallery and the cabinet had, in other words, two distinct purposes, reflecting two different, though not mutually exclusive, criteria for valuating art. The gallery, conceived more or less as a path for viewing, housed aesthetics, the Cabinet housed authenticity. In time, the two practices would coalesce into the museum, though the logic of the cabinet would prevail over the gallery.

The questions of how to house art and how to shape its place once it entered the public realm were first addressed in France in the last quarter of the eighteenth century. Museum was assigned as a speculative design problem for the Prix de Rome competition in the Académie d’Architecture on a number of occasions between 1778 and 1810. Boullée and later his student Durand offered designs for an ideal museum. Conceptually and experientially, the library appears to be what the designers of these early prototypes had in mind as the generative model for the museum, i.e., a place to gather, organize, and study art with all that this act spatially and ritually entails. Durand, for instance, in comparing the museum to a library, distinguished it from the latter only on account of having a number of different works to display as compared to only one in the library.

The initial modeling of the museum on the library stems in part from a valuation of art that was deeply rooted in the cabinet, i.e., viewing art as a rare and unique document and not necessarily or primarily as an aesthetic object. Christian von Mechel, who was put in charge of re-arranging and cataloguing the Imperial collection in Vienna in 1779, summed up this sentiment well in his introduction to the collection’s catalogue. “Such a large, public collection,” he wrote, “intended for instruction more than for fleeting pleasure, is like a rich library in which those eager to learn are glad to find works of all kinds and all periods.” The antiquarian Alois Hirt was to echo Mechel’s sentiment in his faithful appeal to Friedrich Wilhelm II in 1797 for a public art museum attached to the academy of art as a research and instructional resource. In the final count, however, the design of the museum would follow a different trajectory. The decisive period was the second decade of the nineteenth century.

Mechel’s distinction between “instruction” and “fleeting pleasure” was to form the bases of the heated debates between the artist/archeologist Johan Martin Wagner and the architect Karl Friedrich Schinkel in Munich and later between Alois Hirt on one side and the architect Karl Friedrich Schinkel and the art historian Gustav Friedrich Waggen, on the other. Klenz’s counter argument to Wagner’s was summarized in an 1816 memo, noting: “museum is not a place for artists’ training, but a place in which to show a number of treasures of art to all kinds of visitors in a manner to be worthy of the objects and to create pleasure in them.” This sentiment was later echoed in the catch phrase of Schinkel and Waggen, “first delight, then instruct.” “The principal and essential purpose” of the museum is, they argued, “to awaken in the public the sense of fine art as one of the most important branches of human civilization...All other purposes, concerning individual classes of the population, must be subdual to this.”

All parties to these early debates over the museum’s purpose, it is important to note, assumed that the place of art is instrumental to its perception. The contention was whether to spatially construe and render art an object of study or an aesthetic object primarily. The former presumes penetration and analysis, the latter, distance and reflection. The question at the outset was which should be the spatial and architectural experience of the museum: enclosure and penetration, or separation and distance, an emphasis on arrival or an emphasis on departure. Nonetheless, what all parties realized was that any given perception of art is, to a good measure, spatially construed.

All parties also agreed on the chronological organization of art works in place of iconographic organization, which as Frieherr von Rumohr put it, meant “to seek art outside the field of art”. However, the chronological organization presented a unique dilemma to both parties. Every chronologically organized collection is bound to have “true and significant gaps” as Wilhelm von Humboldt, chair of the court appointed museum commission in Berlin, noted with regret in 1829. To alleviate the problem, Hirt had hoped to use casts to complete the historic sequence in the Berlin collection and later Humboldt suggested the purchase of copies to fill the gaps in the painting collection. Rumohr was quick to remind Humboldt, however, that “all the value of a painting turns around the idea of originality.” The purchase of copies was out of the question and Hirt’s casts were exiled from the collection.

Ever since, the art museum has been, like the cabinet before it, a place adamantly exclusive of the copy. This is to say that to the hierarchy of missions outlined by Schinkel and Waggen, we must add one that superceded all others and was so obvious as to require no elaboration: a sanctuary to the original, the singular, and the unique around which idea purportedly turns “all the value of a
painting.” No painting, regardless of its aesthetic value, can be assigned a domicile in the art museum, if it is not authentic. The copy that had a place in the gallery and even the museum that aimed to educate, has had no place in the museum that has aimed to “delight.”

Of the two initial executed designs for the museum, Klenz’s sculpture museum in Munich of 1815-30, and Schinkel’s Altes museum in Berlin of 1823-30, the latter, having the advantage of hindsight, played the more decisive role in shaping the space that was to render authentic art the object of aesthetic appreciation. We should briefly follow its development, as it would hitherto set the criteria by which the success of an art museum design is judged.

Alois Hirt’s initial appeal for a public museum in 1797 was unheeded until 1822 when, first Friedrich Rabe, and later Karl Friedrich Schinkel were asked to submit designs for an art museum attached to the Berlin Academy [Fig. 3, 4]. Schinkel’s initial design of four enveloping arms around a central courtyard was in the spirit of Hirt’s vision and earlier French speculative museum designs. In the subsequent three years, a number of significant changes to the initial plan were to radically alter the shape of the museum and along with it the experience of art in the public realm.

The first departure occurred on January 7, 1823, when Schinkel made the unsolicited proposal to separate the museum from the Academy building and move it away from Unter der Linden in the center of town to a new site opposite the royal palace on an island on the Spree river (Spreeinsel). This was the first of a series of spatial and formal manipulations that were to create a highly ritualized path to the resting place of art.

Schinkel’s vision for the place where delight was to come before instruction consisted of a free standing rectangular building, raised on a high podium above the Lustgarten. Reaching the art works put on display for public “enjoyment and appreciation” required venture on a journey that was, if not deliberately arduous, meticulously elaborate. The ritual procession out to the new place for art, approached from the initial proposed site on Unter der Linden, required one to leave the dense city fabric behind, cross the Spree river on a bridge near the palace, to enter the large open plaza of the island bordered by a church opposite the bridge and to the sides by the palace and the museum. One had to then turn left and on transverse axis cross the immense void of the plaza, terminated by the ceremonial staircase and the long monumental colonnade behind which the main body of the museum was carefully withdrawn. Ascending the staircase in front of the columnar screen, one was led past this monumental threshold and through the depth of the colonnade to the central recessed vestibule and from there, on axis, through a constricted passageway under the pyramidal mass of the vestibule staircase to the expansive space of the rotunda that put a dramatic end to the first leg of the journey. Much as the colonnade marks the beginning of a new territory, the rotunda is, in a manner, the gateway to this other world. To reach it from the rotunda, one in turn had to continue on axis past another constricted passageway to enter, having now traversed the width of the building, the galleries branching out in transverse and opposite directions.

What Schinkel in effect instituted in the name of “enjoyment and appreciation” of art is a distinct and separate domain for art that is disjoined from the city by a deep and elaborate threshold. This was to be the legacy of Altes Museum. It transformed the conceptual distinc-
tion between art and non-art on the one hand and the 
authentic and the inauthentic on the other, into a spatial 
experience of separation and disjointment played out 
at the conceptual edge of the city. The art that was 
withdrawn from circulation and made invisible inside the 
city before, now became visible outside the fabric that 
characterized the city. This outside, it is important to 
note, was neither literal nor a given, but construed and 
fabricated by the journey and the experience of disjoint-
ment that would become the distinguishing marks of the 
art museum as a building type.

The carefully orchestrated experience of disjointment from 
the city, as the place of habitation, to the museum, as 
the place of visitation, was significantly enhanced by 
four major modifications to the initial design proposal 
between 1825 and 1828 [Fig. 5]. The last and the most 
elaborate modification was to the design of the plaza 
bordered by the palace and the museum. Schinkel 
had initially conceived of the plaza as a unified space 
connecting the palace, the church, and the museum 
together into one integrated composition or what he 
called a “regulated whole.” Crossing the bridge from 
the city, one would have had the distinct impression of 
entering a different realm encompassing in its totality 
the palace, the church and the museum. Wilhelm III 
rejected the proposal in favor of a scheme that disjoined 
the museum from the palace and turned the plaza that 
was before conceived as a distinct place into a ceremo-
nial path across layers of space to the museum. Fol-
lowing Wilhelm’s instruction, Schinkel divided the plaza 
in two and turned the area bordered by the palace and 
the bridge into an open space whose experiential role 
is similar to the rotunda of the museum. It too is placed 
at the nexus of two paths, here at the terminus of the 
access line from the city across the bridge and the point 
of initiation for the path that journeys to the museum 
through cross-axial layers of space.

As the modifications to the plaza further disjoined the 
museum from its broader context, the other three modi-
fications further disjoined the place of “enjoyment and 
appreciation” from its immediate context. The rotunda 
dome that was visible in the initial proposal acted as a 
central visual terminus to the path that leads through the 
center of the building to the gallery spaces. It’s visible 
presence placed greater emphasis on the destiny of the 
path than the journey along the way. The suppression of 
the dome in the final proposal shifted the visual focus of 
the visitor in the plaza from a focal point in the back-
ground to the foreground colonnade and the backward


layering of the compositional elements along the path. In the same vain, turning the vestibule staircase behind the colonnade 180 degrees, to no advantage other than its visual impact, radically changed the perception of the vestibule from a multi-directional space to a uni-directional path through the imposing mass of the staircase. The changes to the ceremonial staircase in front of the Colonnade had much the same impact on the colonnade. Schinkel had initially conceived of the staircase in front of the museum as a multi-directional pyramidal mass gathering up to a landing that lined up with the recessed vestibule behind the colonnade. The strong and funneled visual connection between the two stairs had a negative impact on the perception of the colonnade’s depth. Changing the staircase to a uni-directional path that forcefully cuts through a mass projected from the podium and extending the stairs in both directions past the vestibule space behind, severed the visual tie between them, had the staircase confront the colonnade directly, and reinforced the latter’s depth as the imposing threshold that it was meant to be [Fig. 6].

What these changes, minute as some may be, clearly indicate is that the journey of disjointment past the multiplicity of thresholds imposed in front of the galleries was carefully contemplated and deliberate in the minute. It was also a collective consideration that had its opponents along the way. The most vocal opponent was, of course, Alois Hirt who submitted a lengthy dissenting opinion to the museum commission.

Hirt’s objections to Schinkel’s design are telling and predictable given their differences over the purpose of the art museum. Hirt objected to the new site, the staircase and the podium, to the monumental colonnade in front, and to the rotunda that he regarded, along with the other elements, as unnecessary luxuries. Hirt objected, in other words, to every major element in Schinkel’s proposal that served to locate and place art at a distance in a distinct and disjoined domain, i.e., every element that distinguished the art museum from a library. This is not to say that Hirt objected to the delegation of art to a distinct and separate domain. Rather, he had a different form and experience of separation in mind, i.e., one internally focused on the experience of penetration and arrival as opposed to Schinkel’s external focus on the experience of departure and disjointment.

Schinkel, of course, dismissed Hirt’s criticism and emphatically defended the elements in question as essential to preparing the visitor for the proper “enjoyment and appreciation” of art. Hirt were to subsequently resign from
Like Altes Museum, the design of the Philadelphia Art Museum underwent numerous modifications between 1911 and 1915. Here too, with every modification the designers experimented and in the end further consolidated the disjointment and the perceptual spacing of the museum before settling on the final solution.

Much as the sequence of thresholds in front of the Philadelphia Museum is a dramatic expression of the logic of spacing at work in front of the Altes Museum, the museum building offers, in turn, its own unique interpretation of the key sequestering components in the Altes Museum. The role of the colonnade of the Berlin Museum is played in the Philadelphia Museum by the end pavilions and the forecourt that institute a deep, layered, translucent threshold, past the landing of the front stairs and the encircling passageway, all of which has to be ceremoniously crossed before reaching the base of the staircase in front of the central pedimented portico of the back wing. One must then continue the ascent, cross the columnar screen of the portico and go past two tall vestibules, to arrive at the central stair hall or the Philadelphia equivalent of the nexus point in the Altes Museum: the rotunda. Here as well, to reach the galleries, one must traverse the depth of yet another threshold: a well-sequestered passageway on either side of the hall, leading to the galleries on each floor.

In contrast to the Philadelphia Museum, Whitney Museum offers an abridged, though equally effective expression of the logic of spacing. Having a corner site within the dense urban fabric of New York City, the building forcefully disjoins itself from its context with an economy of expression, all the more remarkable for its effectiveness. To its right, where the building would have had to confront the city fabric, the interjection of a tall concrete retaining wall effectively frames and separates the site from its immediate context. Pulling the cubical core of the building away from this wall and leaving a visible void to frame and separate the building from the wall relieves the core of visual attachment to the city fabric from the side. A similar sequence of frames, in turn, divorces the building from the sidewalk. Here, the disjoining frames are a low retaining wall and a deep moat. The moat whose perceptual depth is made manifold by the weight of the cascading facade on top is as effective in disjoining and placing the museum at a distance from its context as the monumental sequence of the island and the plazas in Berlin or the prolonged sequence of the parkway and the hill in Philadelphia.

At Whitney, the journey of disjointment begins at the retaining wall that literally holds the sidewalk back to form the first threshold. Behind it is the canopied gateway that is carefully divorced and slightly set back from the retaining wall. The divorce is essential to the sequential
layering of thresholds on what is meant to be perceived as a journey out to an other space. The gateway, in its literality, merely underscores the message, while the canopy’s shape and weight add to the momentum of the movement through the gate. With the weight of the building cascading down overhead, urging one’s movement forward, the journey past the gate continues precariously over the moat on the ensuing drawbridge and across the translucent glass curtain wall in front, i.e., the Whitney Museum’s equivalent of the columnar screen in Altes Museum. The drawbridge eventually lands at some distance past the glass wall at the lobby platform and from there one must cross the vertical threshold of the elevators that lead to the gallery floors, now worlds apart from the point of departure.

Another vivid example of the logic of spacing at work in the fabrication of the art museum are the corrective renovations and additions to the Louvre palace (I.M. Pei, 1989) where our museum history begun. The changes, in effect, have belatedly turned the Louvre that was not designed as a museum into a proper museum. Lacking at the Louvre were the requisite spacing and the ensuing journey out. Although clearly defined and well marked off from the city, the Louvre was a palatial realm to be penetrated rather than journeyed to. The alterations that remedied the problem are as telling as they are compelling. The least conspicuous change, that is all the more effective for it, is the alteration to the exterior walls of the palace. Through its exterior walls and monumental doorways and portals, one can no longer enter the palace, because they have been sealed off and turned into an impenetrable limit that inconsolably separates the worlds instituted on its sides. To reach the world within the impenetrable shell of the old palace, one must now make one’s way to and through the forecourt, to the pyramidal glass entry in the middle that marks the nexus point of the world below the ground plane and the one above. The ritual of disjointment and the journey out continues through the pyramidal glass, past the imposing threshold of the ground plane, down twisting stairs beneath the court to the Louvre’s equivalent of the rotunda at Altes Museum and from there through a sequence of mediating thresholds up into the meandering maze of the gallery spaces.

Much as compliance with the museum’s ground rules is expected, deviations from the norm are severely criticized and condemned. The failures are, in this respect, as instructive as the success stories. Frank Lloyd Wright’s Guggenheim Museum (New York, 1959) [Fig. 9] is a case in point. Criticized from inception as an unsuitable place for art, Guggenheim fails on crucial counts. It fails to distance itself from the fabric of the city and thereafter it fails to simulate the experience of an other, distinct, and separate world for art behind its facade.

Although, as Ada Louis Huxtable notes, Guggenheim is successful in divorcing itself from its context by the novelty of form, what it lacks as an art museum is the requisite distance and the ritual disjointment from that context. The unceremonious entry sequence is abrupt and fails to simulate the requisite departure across sequentially layered thresholds to an other space. In compensation for the missing distance, Guggenheim’s critics wished it had been moved “out of the city,” or “relocated” across the street in central park where the Metropolitan museum is located at a visible distance from the city fabric.

The lack of sufficient separation in Guggenheim has had no simple solution and it bears on the interior. “Once inside,” Huxtable tells us, “you understand an art critic’s anger. The interior is not really a museum, but a place for merchandising art, and it oversells.”

The elements here are familiar. Their juxtaposition is not. As opposed to being sequentially layered into a chain of discreet experiences, they form a single or “total space.” Art here is placed not past the nexus point, but at the nexus point. “Unlike the labyrinth common to many temporary shows, the path (ramp) exists in a comprehensible total space. Although the spectator continually moves he is never lost and can see where he has been and where he is going. The entire area has a
single, unifying character that is never lost sight of. “From the “story told in the spiral,” according to another critic, there is “virtually no escape.” Guggenheim is not “really a museum” because in it there is no other space, only a “comprehensible” space that one can never leave behind to enter a world proper to art. “Spreading all the merchandise before the eye,” Mumford tells us, “is a ruinous one for a museum.” This is not because one can see everything in a glance. One cannot. Rather the ruin is brought about by everything being in an inescapable, comprehensible space, where movement produces no alterity.

Guggenheim is not “really a museum,” because in what is “really a museum,” there is a sequential unfolding of discrete spaces through which one travels as though on a journey through a seemingly infinite land. Where there is no sense of continuity, when the space is comprehensible and total, there is a crisis and the space ceases to be “really a museum,” e.g., Guggenheim Museum. The ideal art museum is a space whose boundaries escape comprehension. It is, to a measure, an unfamiliar, external space to the extent that in it one stands the chance of getting lost. It is a space that leaves something to incomprehension. It is a place where everyone is, by design, a tourist away from home in search of the authentic in an other space. Guggenheim does not and is not.

III.

Thus far I have tried to point out that there has been a deliberate and persistent logic to the design of the art museum from inception. Between the public and the artwork, the art museum has insinuated, by design, an elaborate and deep threshold that mediates and over-sees the passage to and from the seemingly infinite world that it fabricates to contain art and the “real” world from which it is sequestered. This spacing, deliberate as it has been, constitutes the criteria by which the successes and the failures are persistently measured in the critical dialogues that have played an indispensable role in the development of the type. The lingering question is, of course, why the persistent spacing and the disjointment of art over the course of the art museum’s short history. What exactly is at stake in the spacing of art?

Over the course of its history, the relationship of Western culture to painting, alongside writing and other forms of graphic representation, has been, in the least, an ambivalent relationship. Conceived at the advent of an unwanted absence, according to a pervasive myth that ascribes the invention of painting to the Corinthian youth, Butades, the site of painting from its presumed inception has been the site of a desired presence that it cannot judiciously fill. As such, painting has been the subject of simultaneous condemnation and praise for its ability to duplicate and perpetually conjure an absent or else invisible referent. It has been at once prescribed and proscribed as a mimetic device that substitutes memory for perception. Plato, for instance, Jacques Derrida reminds us, condemned painting as a mimetic art, much as Aristotle interrogated it in the name of mimesis.

“The painter’s products,” Plato purported, “stand before us as though they were alive, but if you question them,
they maintain a most majestic silence”.

The painted images are, in other words, neither simply living, nor simply dead. They have the appearance of the living and speak with the voice of death: silence. Painting can bring merely to sight what is rightfully out of sight. It can displace and collapse space. Its space is neither the immediate space of the present nor the distant space of the absent. Painting, in a sense, fits into no space and belongs to no one place. The ambivalence toward painting has as much to do with its irreducibility to presence or absence, life or death, as to the cause of the confoundment: mimesis. Plato, Derrida tells us, “is obliged sometimes to condemn mimesis in itself as a process of duplication, whatever its model might be, and sometimes to disqualify mimesis only in function of the model that is ‘imitated,’ the mimetic operation in itself remaining neutral, or even advisable. But in both cases, mimesis is lined up alongside truth: either it hinders the unveiling of the thing itself by substituting a copy or double for what is; or else it works in the service of truth through the double’s resemblance”.

The lining up of painting alongside truth was not to change with the transformation of painting into art. The referent merely gave way to a subject that retained all the privileges of the former vis a vis the painted image [Fig. 10]. Whether painting is seen as the representation of an absolute ideal, as it was by the theoreticians of the Renaissance, or as a mode of expression that renders painting in particular and art in general, as Ruskin put it, “nothing but a noble and expressive language, invaluable as the vehicle of thought, but by itself nothing” up to and including the conception of painting as the “revelation” of the “concealed truth” of the subject or the “reproduction of a thing’s general essence” as Heidegger, for instance, defined it, the priority and radical alterity of what is painted as compared to the painted image has not been a question.

What “Platonism” which stands “more or less immediate-ly for the whole history of Western philosophy, including the anti-Platonisms that regularly feed into it,” Derrida notes, has “decided and maintained” in the face of the confoundment and the displacement that is painting, is “the presumed possibility of a discourse about what is.” “That which is, the being-present (the matrix-form of substance, of reality, of the opposition between matter and form, essence and existence, objectivity and subjectivity, etc.) is distinguished from the appearance, the image, the phenomenon, etc., that is from anything that, presenting it as being-present, doubles it, re-presents it, and can therefore replace and de-present it. There is thus the 1 and the 2, the simple and the double. The double comes after the simple; it multiplies it as a follow-up....The image supervenes upon reality, the representation upon the present in presentation, the imitation upon the thing, the imitator upon the imitated. First there is what is ‘reality,’ the thing itself, in flesh and blood as the phenomenologist say; then there is, imitating these, the painting, the portrait, the zographeme, the inscription or transcription of the thing itself. Discernability, at least numerical discernability, between the imitator and the imitated is what constitutes order. And obviously, according to ‘logic’ itself, according to a profound synonymy, what is imitated is more real, more essential, more true, etc., than what imitates. It is anterior and superior to it.”

“Doubtless,” Derrida continues, “this order will appear to be contested, even inverted, in the course of history, and on several occasions. But never have the absolute distinguishability between imitated and imitator, and the anteriority of the first over the second, been displaced by any metaphysical system.”

What “Platonism” has decided about the order of appearance in the world, it has maintained with a host of distinct ritual practices and institutions. Of these, the art museum, invented as it was at a particular point in time, is an indispensable element. The art museum as an institution and a building type, along with the institutions and practices it supplanted, are indispensable to “Platonism” and its “logocentric” determination.

If the question of art’s place and placement has loomed large since the inception of painting and sculpture as art, it is, in no small measure, a reflection of the problematically undifferentiated and undifferentiable space of graphic representation. It is because art has no decidable place in as much as every place assumes boundaries and outer limits, i.e., an outside. Art at once exceeds and defies any sense of place or any act of placement, predicated upon, in the simplest terms, a clear boundary separating two opposite terms, e.g., here and there, inside and outside. Art has no outside, since outside every presumed or presumable place for representation, one finds only more representation.

To curtail the ever-looming danger of exposure and displacement in the company of art, it is essential to put in place, institutionally and literally, what art defies and denies conceptually: a sense of place. The fabrication of the museum as an other space is, persistent, as it has been, a cultural substitute for what is missing.
and missed: an outside to representation. Within the confines of the picture frame provisionally and within the confines of the museum permanently, art assumes an outside. The logic of spacing at work in the making of the museum puts the relationship between art and all that is to escape its grip in the proper cultural perspective.

From the ever-present picture frame to the cabinet and the museum, the preoccupation with a place for art is primarily a preoccupation with a place from which all that is to escape its “effect” can be safely withdrawn. It is a preoccupation with preserving the presumed alterity of art as measured against the real. Opening up a place for art is tantamount to opening up a place for its presumed other and for otherness as such to representation.

At stake is authoritative control over the determined superiority and anteriority of reality over representation, the imitated over the imitator, the original over the copy. At stake in placing art is, in other words, the presumed order of appearance in the world, which is, in a manner, order itself. If our construed cultural reality is to assume the authoritative guise of inevitability and truth, then the decisive exercise of representation is not a choice that can be readily avoided. If, from the princely and monarchial courts to the public realm authoritative control over representation and its potentially destructive effect is entrusted to the state and delegated to specific institutions, it is precisely because of what is at stake. The institution of the museum is an instituted resistance to representation. No claim to power can go without evidential control over the alterity of representation as measured against the real. To control representation is to control not necessarily what is real, but the possibility of its authoritative being and presence as a non-representational, self-referential entity.

As an institution and a building type, the museum effectively differentiates the undifferentiated space of graphic representation into two distinct realms separated by an elaborate journey. Between the seemingly infinite world that contains art and the “real” world from which it is sequestered, the museum insinuates an elaborate and deep threshold that mediates and oversees the passage to and from the worlds it fabricates as such. It thereby offers the visitor — by design — a spatial experience that is profoundly alien to art as the space of a non-place. The logic that shapes the museum is fundamentally a totemic logic. Past the careful delineation, separation, and processional transitions that are the hallmarks of a successful museum, art is given to stand in the same relationship to its presumed other, as inside stands to outside, here to there, and as do all other binary spatial and formal terms that are called on to shape the museum into an other space. Should one even wish to conceive of the relationship between art and the world from which it is sequestered, in any terms other than in binary terms, one must confront and contradict the immediate experience of the museum. Much as art resists a sense of place, the museum successfully resists its defiance of a sense of place, to the point of invisibility.

The exercise the art museum implements architecturally is a two fold practice. On the one hand, the art museum, as an institution and a building type, exiles the inherent representational characteristic of the real in the name of mimesis and art to the museum. In turn, it curtails the inherent reproducibility that is art in the name of authenticity through the exclusion of the mock. In the world outside the museum, the copy may thereby proliferate without undermining the alterity of the real, because its face is turned toward the authentic in that other place where the copy has no place by design. What makes room for the docile cohabitation of the real and the reproduction is the designated and exclusive place for the authentic on the outside. The copy poses no apparent threat so long as it is in reference to another reality, at the end of a journey, in an other place, i.e., so long as its origin is on the outside. The museum is, in other words, the indispensable reserve to the economy that regulates the widespread and free circulation of images outside the museum.

The sequestering, and placement of the authentic in an other world is not, of course, a practice that is unique to the art museum. The entire tourist industry with which the museum has a historic affinity is predicated on the assumption, MacCannell points out, that the authentic is outside the sphere of everyday life. An extent of tourism is the rite of locating the authentic on the outside, be this measured in spatial or temporal terms. Authenticity is, in a sense, intimately tied to distance. The authentic mandates a journey. It is, to an extent, everything that is inside from the vantage point of the tourist visiting from the outside. The authentic is, in this context, inside a place to which the visitor does not belong by design and by force of label: a visitor. Whereas from the outside the museum as a site for tourism provides the assurance of a place and a receptacle into which we may, in a manner, project our trepidations about language and representations, from the inside it is the place where we face them only to locate repre-
sentation within the bounds of its culturally designated place. The place varies, but the placement does not. The virtual debate over the rite of visitation to the museum between Adorno and Valéry is a case in point. Confessing to be "not over fond of museums," Valéry begins his reflections on the museum by characteristically marking the point of transition from the world outside into the world inside. The memory of the former would remain with him throughout the visit as a point of contrast and a place of conceptual refuge. He marks the borderline by making note of the hand that relieves him of his stick and the notice that forbids him to smoke at the entrance. "Chilled at once by this act of authority and by the sense of constraint," he nevertheless makes his way toward "things of beauty" only to enter a place where, as he puts it, "cold confusion reigns" and the "total impression is something quite intolerable." Moving from the sculpture gallery to the painting gallery changes nothing. As "a strangely organized disorder opens up before" him "in silence," Valéry tells us, "I am smitten with a sacred horror. My pace grows reverent. My voice alters, to a pitch slightly higher than in church, to a tone rather less strong than that of every day. Presently I lose all sense of why I have intruded into this wax-floored solitude, savoring of temple and drawing room, of cemetery and school....did I come for instruction, for my own beguilement, or simply as a duty and out of convention? Or is it perhaps some exercise peculiar to itself...?"

The rite of visitation is indeed an exercise peculiar to itself in as much as it puts the visitor in the grip of language over which he or she has no hold. What Valéry is made to confront at the Louvre is what late nineteenth century museum visitors were designed to confront: a profusion of art works and walls covered with paintings en tapisserie. By sheer force of number, the total impression simply exceeds comprehension. "Only an irrational civilization," Valéry protests, "could device such a domain of incoherence. This juxtaposition of dead visions has something insane about it, with each thing jealously competing for the glance that will give it life". The works of art call from all directions for Valéry's attention, i.e., for the glance that transforms dead vision into living idea, form into thought, writing into speech. For the generation that conceived Valéry's museum, art was, to use Ruskin's words, "nothing but a noble and expressive language, invaluable as the vehicle of thought, but by itself nothing." Valéry presently finds the mind inadequate to the demands of this language. "The mind," he tells us, "can neither follow nor perform several distinct operations at once". The voices that call from all directions cannot be turned into thoughts in this "domain of incoherence." "All alone against so much art," Valéry finds himself incapable of conceiving each work as an individual expression, i.e., as "rarities whose creators wanted each one to be unique". The uniqueness of each expression is lost to the repetition that purportedly "kills" all. The art works are "most inimical to each other when they are most alike." Repetition proves fatal. In defense, Valéry's thoughts take refuge outside the museum in other places and distant civilizations. The uniqueness that he feels lost inside the museum, he re-locates outside it through an act of virtual tourism. "I feel sure," he tells us, "that Egypt, China, Greece, in their wisdom and refinement, never dreamed of this system of putting together works which simply destroy each other".

The "Modern man", on the other hand, is "impoverished by the sheer excess of his riches". Having located what is lost inside the museum at a safe distance, Valéry conceptualizes the loss itself as an attribute of modernity and its characteristic accumulation of "a necessarily unusable excess of capital." The art works in the museum are conceptualized as excess riches, i.e., images in excess of what is consumable. The slippage between image and thought and the inability of images to do what they are meant to do, i.e., merely and readily transport thought, are thus conceptualized as not endemic to language and the consumption of images, but in excess of it. The slippage is conceptualized as being not permanent, but temporal, and within the bounds of the museum also spatial. Valéry's reflections on the museum become at this point both comforting and stupefying. The museum, we are told, "exerts a constant pull on everything that men can make....All things end up on the wall or in a glass case". Since "our capacity to use" the "ever-increasing resources" of the Modern age is "far from growing with them," the museum's constant pull on all that cannot be consumed is comforting. It responds to "the need to concentrate it all in one place". Having collected the excess outside the place of consumption, the collection is, essential as it is, also "stupefying." "However vast the palace, however suitable and well-arranged, we always feel a little lost, a little desolate in its galleries, all alone against so much art. The product of thousands of hours' work consumed in painting and drawing by so many masters, each hour charged with..."
years of research, experiment, concentration, genius, acts upon our senses and minds in a few minutes!...We cannot stand up to it. So what do we do?”

Not being able to stand up to the task, not being able to exert a clear hold over language and bridge the gap between form and content, we “grow superficial” or else we “grow erudite.” We either acquiesce our inability to control language, resign ourselves to not getting beyond form, and “grow superficial,” or we play the language game and substitute for what is not adequately and authoritatively expressed. We substitute “theories” for “direct feeling”, and “encyclopedic memory” for “marvelous actuality”. In either case, the direct and the actual slip away or rather, out.

The solution to being in the grip of language is, as Valéry sees it, to stagger out of the museum, which he does, taking refuge and solace in the domain of the direct and the actual. The “glorious chaos of the museum” follows him out, however, “and blends with the living activities of the street.” It threatens to infect the outside, less Valéry’s “uneasiness, groping for its cause” is put to rest. What remains is to explain the cause of the slippage and the “obsessive feeling of confusion” within the bounds of the museum. What remains is to explain away the slippage as being not endemic to language and art, but peculiar to the museum and as such safely contained within its bounds. What remains is to close the doors behind. Hence, once safely outside the museum, “Suddenly I glimpse a vague ray of light. An answer begins to form itself, separating out from my feelings, insisting on expression. Painting and sculpture, says my Demon of Analysis, are both foundlings. Their mother, Architecture, is dead. So long as she lived, she gave them their place, their function and discipline. They had no freedom to stray. They had their exact allotted space and given light, their subjects and their relationship....While Architecture was alive, they knew their function...”

What is not had in confrontation with art inside the museum is thus merely the loss of what was readily had in another time and another place. In its place art speaks vividly. The hold that is never had over language is thus localized safely within the bounds of the museum at a distance, there. It is symptomatic of that place and of being out of place.

If Proust’s and in turn Adorno’s reactions are any indication, returning art works to their presumed place, e.g., to exhibit paintings in “their original surroundings or in ones similar, in baroque or rococo castles,” is even more distressing than leaving them within the confines of the museum. Both, in fact, advocate leaving art works in the museum, albeit a reformed museum. This is “a museum, where the rooms, in their sober abstinence from all decorative detail, symbolize the inner spaces into which the artist withdraws to create the work”.

There is a museum, in other words, that returns the art works not to the space of consumption, but further back to the space of creation. There is a display practice that is far more familiar to the twentieth century visitor than Valéry’s Louvre. Both practices, however, represent, legitimize, and, to an extent, impose a particular interpretation of art and language in response to one and the same dilemma.

For Adorno, speaking also on Proust’s behalf, the work of art is “neither a reflection of the soul nor the embodiment of a Platonic Idea”. It is not, as Ruskin had it, a “vehicle of thought.” Rather, and this is precisely what Adorno accuses Valéry of not seeing, “even in the very moment of its conception the work confronts its author and its audience as something objective, something which makes demands in terms of its own inner structure and its own logic.” The work of art is a representation that refers only to itself. To appear as “a ‘force field’ between subject and object,” however, works of art have to be “uprooted from their native soil and have been set out along the path to their own destruction”. All external references, pressures, and potential distortions, all traces of prior consumption must be stripped from them, if they are to appear as self-referential representations. They have to be estranged from “human ends,” allowed to die in the museum, in order to return to “life” by the attentive glance of the visitor “who leaves his naiveté outside along with his cane and his umbrella”. This is a visitor who does not “stroll through museums letting” him or herself “be delighted here and there”. Rather, this is a visitor who “picks out two or three paintings, and concentrates on them as fixedly as if they really were idols”. However, only some museums at the time were “helpful in this respect”. There were only some where the rite of resurrection could be performed effectively. These were, common as they are now, museums where the works of art were hung “in discrete separation,” completing their cycle of isolation and decontextualization. Valéry’s museum was neither conducive to the rite of resurrection, nor was it meant to be. It had its sights on the past, and not the future. Both museums are, however, engrossed by a precarious present.
Despite their considerable differences, Valéry and Adorno agree on one thing. For both, the museum withholds death. Valéry likens it to a “cemetery,” Adorno to a “mausoleum.” For both, the museum marks off and removes from within the order of the living what has to be removed by a fatal necessity. This much is vociferously pronounced by both. They part ways locating the life that is presumed absent in the museum. One locates the life of the artwork in the past, the other in the future. One laments its passing and mourns away its felt absence from within the museum, the other celebrates its passing in the hope of resurrecting it. Each responds to a display practice that turns his assumptions about the work into an evidential experience of it. One practice induces and reinforces the dream of a consumption that has been, the other of one perpetually commencing. What neither worldview can consume and digest, however, is what both confront presently.

What both worldviews confine to the museum and what each confronts at the museum is, at the risk of repetition, neither life nor death. The confined defies life, much as it defies death conceived as its absolute other. For this confoundment neither worldview has or could have a place. It erases the very sense of place. If, in turn, both Valéry and Adorno take recourse to supplemental spatial and temporal boundaries, it is only to overcome the confoundment and re-establish order. First, there are the spatial boundaries imposed by the museum to incise the confoundment, then there are the temporal boundaries that serve to deny the confoundment by its conceptual transformation into a life that has been or one that will be. In the meantime, the life that is exorcised from the museum is given to reside safely outside it, in a reality that is thus untouched by the confounding effect of representation. Both operate with assurance of life’s safety on the outside from the vantage point of the museum as a mausoleum: the place that keeps death in place, at a safe distance.

If, as Malraux notes, “all art is a revolt against man’s fate,” the art museum is a revolt against reality’s fate.

Notes

2. Ibid.
7. Ibid.
11. Ibid.
13. Whether they served a religious cult or the cult of remembrance, what had thus far given paintings and statues a place in the world of things, and what had also kept them in that place was their specific cult referent. Once they eschewed their referent, they surrendered their place.
14. For a discussion of the subject see: Impey, et. al., The Origins of Museums; Pomian, Collectors and Curiosities; and Weil, A Cabinet of Curiosities.
15. See: Bazin, The Museum Age, 129 and Impey, et. al., The Origins of Museums, 3. Also, it is important to note the Kunstkammer is not the exact equivalent of the gallery as it was often used to designate a specialized version of the Wunderkammer.
17. Benjamin, Illuminations, 220.
18. For a detailed discussion of the subject see: Jones, Why Fakes Matter.
20. Ibid.
21. See: McClellan, Inventing the Louvre, 8-9 and Pevsner, A History of Building Types, 118.
23. Ibid., 126.
24. Ibid., 128.
25. Ibid.
26. One could site numerous other examples in which the logic of spacing finds a new and different expres-
sion pending the unique circumstances of the context. Among the more celebrated recent examples one that readily comes to mind is Staatsgalerie in Stuttgart, Germany (James Stirling, 1984) with its elaborate entry sequence of stairs and ramps that lead up the slopes over which the museum is carefully lifted. (For a detailed description of the museum see: Davey, Stuttgart, 38-46.) Another example is the High Museum of Art in Atlanta (Richard Meier, 1981) where the journey of disjointment follows the literal path of a long, ceremonial ramp that leads up on a diagonal axis to a terrace on the second floor of the building and from there on a twisting and meandering path through the entrance lobby to the Atlanta’s equivalent of the Berlin rotunda. We find an even more exaggerated expression of the Atlanta journey in the recent Getty Museum in Los Angeles (Richard Meier, 1997) where to reach the museum that is located far away from the city, on top of a hill, the visitor must traverse the distance from the bottom to the top of the hill on a monorail train.

28. Ibid., 336.
33. Ibid., 136.
34. Ibid., 187.
38. Ibid., 192.
39. The customary and celebrated view out from the museum, the one that transforms the world outside into a picture, is the consummation of this withdrawal.
40. See: Lévi-Strauss, Totemism.
41. The allocation of an exclusive place to the authentic, in effect displaces the copy from every place. It dispossesses the copy of a place because inside the museum it has no place and outside it, it is out of place: an outsider. In the company of the real, the copy is an import, i.e., a substitute for what is at a safe distance elsewhere.
42. See: MacCannell, The Tourist, 3-14, 121-158; Culler, Framing the Sign; and Urry, The Tourist Gaze, 11-13.
43. The fake, or the tourist trap is often what is not part of the inside from the vantage point of the tourist on the outside. It is staged from where the tourist stands, i.e., not there, but here.
45. Ibid.
46. Ruskin, Modern Painters, 8.
47. Valéry, The Problem with Museum, 204.
48. Ibid.
49. Ibid.
50. Ibid.
51. Ibid., 204-5.
52. Ibid.
53. Ibid., 205.
54. Ibid., 206.
56. Ibid., 179.
57. Ibid., 184.
58. Ibid.
59. Ibid., 185.
60. Ibid.
61. Ibid.
62. Ibid.
63. Ibid.
64. Ibid.

Additional Works Cited
Bertelli, Carlo, Rossana Bossaglia, and Fulvio Iarce. “Museum Time: A 3 Voice Conversation.” Abitare (Septem-


**Image Credits**


Figure 2 - Wadsworth Atheneum Museum of Art collection.

Figure 3 - Hermann G. Pundt, *Schinkel’s Berlin; a Study in Environmental Planning*. Cambridge, Harvard University Press, 1972.


Figure 5 - Hermann G. Pundt, *Schinkel’s Berlin; a Study in Environmental Planning*. Cambridge, Harvard University Press, 1972.


Figure 7 - United States Geological Survey

Figure 8 - Author

Figure 9 - Author

Figure 10 - Groeninge Museum collection, Bruges, Netherlands.
The boundaries of conventional creation within the discipline lead us to entertain expectations of a dividing line between architectural space and space conceived as art/installation. This article examines the work of architecture students who are considering installation artwork as part of their practice. The students were asked to think of their pieces through the lens of their own studio practices and projects. Installation has typically been the domain of an artist with a strong spatial understanding, but little formal architectural training. For installation artists, spatial understanding is seen as intuitive and based in the generation of conceptual thought.

Architecture requires many years of formal training; for architects, spatial understanding is filtered through a series of speculative conventions such as design drawings and models. There is no doubt that the two areas overlap; however, that overlap has conventionally been an undefined area within both practices. Architects sometimes create installation works, and artists are often involved in the creation of architecture. The inherent flexibility of the boundary between these two disciplines has been something that has been exploited in both directions to the enrichment of our thought about the past and the present. Robert Irwin designed the Dia Beacon Museum by renovating a box factory in the Hudson River Valley in New York, although he is not trained as an architect. Lebbeus Woods creates large installations in existing spaces, although he is trained as an architect. Training no longer connotes practice as rigidly as it once did.

In the twentieth century, artists became ever more interested in the architectural implications of their work. Robert Irwin contends that the modern age is one in which artworks are no longer separate from their surroundings, and in fact the surroundings are a part of the work. His physical treatment of the surroundings for his early dot paintings is an example of this attitude. His later scrim installations also embody this ideal. These works are not placed within a space, they create the space. The user sees the space itself as a piece of art. Irwin himself maintains that he turned from conventional materials in a search to achieve that condition. In fact he renounced the studio, a bastion of fine arts practice, in order to create the installation works that he is known for.

The formal education of an architect is based largely in the consideration of space to scale. Learning to think speculatively to scale is part of what makes the task of becoming an architect a sort of practice that can at times feel myopic. There has been resurgence in the past years of full-scale building within architectural education and pedagogy. The value of design-build projects in the field at full-scale is unquestionable on the development of young architects. One goal of such programs is to introduce students to real life architectural considerations within the design intensive atmosphere of studio. To
conceive of and implement their designs is illuminating for students within the design-build paradigm. The effects of working at full-scale on the development of an architect’s speculative vision are a proven quantity within education circles. “Architecture as Installation/Intervention” was an upper level elective taught in the architecture program at Temple University in the spring of 2006. In this seminar, it was thought that the line between installation art and architecture would be an interesting boundary to explore and a place to uncover new aspects of the ongoing speculative learning that students are already undertaking in their studio practice. Installation was seen as a quick and dirty way to explore ideas in the design-build paradigm without engaging what sometimes makes that practice onerous—budget, permissions, and clients. In this class, different ideas about space and experience were examined both in terms of their value as artworks and as architectural thoughts. The projects were conceived with this duality in mind and pursued with the goal of experimenting across disciplinary boundaries.

Merged Thoughts: Student Work

It was in the spirit of this interplay between space and conceptual thought that the exercise presented here was conceived. Students were asked to study the installation interventions of various artists. They were then asked to create an intervention of their own. They could use materials of their own choosing, but were asked to select a topic and area of inquiry that related to their studio practice as architecture students in some way. The interventions were to take no longer that a few days to conceive and complete. Materials, spatial understanding, and the effect on the user were all important in the creation of these spaces. At the scale of personal interventions, these issues were more closely discussed and referenced in real time as opposed to speculatively. In fact, the crossing of disciplinary boundaries became a way of discussing and describing the goals and outcomes of each project. Each project presented here can be discussed both in terms of the research the student did and their intentions in the studio.

The conventional model of architectural education lacks the experience of making at full-scale. Students create their designs on paper and in model form. They examine issues of scale and inhabitation speculatively. Their vision remains limited by their level of skill at thinking this way. Installation is not seen as a replacement for the more conventional studio process but rather as a possible enhancement of this process. The goals of the project were to allow students the opportunity to create an individual work, considering cause and effect. This was seen as an analogue for their studio practice, but at real size. Students considered the users’ safety and connectedness to the work. Conceptual interpretations that were simply stated became an inherent part of the works. Interventions created at full-scale altered the students’ conception of the possibilities in their other work. The pieces were a test laboratory for what could be accomplished in a short period of time. Moves made in exploratory studio practice do not always take this into consideration. The students were encouraged to work in their sketchbooks and to experiment as they built. Separate investigative drawings were not utilized; instead, students speculated as the piece materialized. The process of creating the piece and the process of designing the piece were meshed together. Each work selected here represents different ideas about space, performance, participation, and materials. These ideas are derived from the students’ conception of what is appropriate; they are grouped according to the topics that the students identified as salient to their cross-disciplinary explorations. In most cases, the works proposed deviated robustly from the works realized. This deviation is an important part of the students’ process of realization. A process via which the difference between speculative and real-time works becomes part of their design knowledge. Here, the works are grouped under topics
that were identified by the class during the final discussions of their pieces. It was found that there were topics that had emerged in the process--these topics were the relationship between chance and poetry; mundane materials; performance and material experimentation.

Poetic Space and Chance
Two works in the class took advantage of the heavy snows that had just occurred that week.
The first is an exercise in creating a contemplative enclosure. These students referenced the works of Andy Goldsworthy and Richard Serra in their investigations. The first student stated that she was interested in creating a space in which one could have an experience outside of the usual experience of this patio outside the architecture building on campus [Fig. 1]. The second work is one in which the student took advantage of the snow to create a temporary site work entitled “Snow Columns” [Fig 2]. Both works are significant because of the way that the public interacted with them. The students were able to create pieces that encouraged the participation of people passing. The towers of snow and their repetition were poetic, and they transformed the space in which they were installed. This space is a transit place on the campus and it is one that people generally move through very quickly; the transformation of a hundred or so pillars of snow caused the audience to change their path and their perception of the space. The small snow enclosure drew attention to how the space is often used, and many people passing stopped and sat in the enclosure.

In both cases, the works were visualized as much more complicated versions than the finished product. As students worked they “discovered” the problem that they were attacking. Here, the second student actually was proposing a more performance based project involving dirt; but the appearance of the snow and difficulties inherent in realizing his initial idea led to a process that resulted in this installation. The idea that a work and its realization are not separate was an important part of the learning process.

Mundane Space and Conceptual Thought
These works are an expression of the students’ interest in mundane, meaning every day, space and materials. Each student was looking for a way to alter the day-to-day conception of the audience and environment. This attraction to the daily space and perception of the audience was discussed in class through the works of Duchamp,
In contrast, the second student chose to reinterpret mundane space by inserting a narrative into the space. He built a wall that appears to be facing away from the viewer [Fig. 4]. Behind this wall, a series of video monitors showed the story of an unfolding narrative. Thus a hallway becomes a secret space, one in which the passerby becomes complicit through a desire to discover the meaning of the images on the other side of the wall. This piece also has the effect of creating an inside and an outside space. This occurs as one realizes his or her relationship to the materials.

The third installation involves the collage of one mundane space onto another. The foyer is a space where one continually comes across sleeping students. This work involves creating a bedroom that cannot be slept in, in that same space. The bedroom set includes a bed filled with logs that have rusty nails [Fig. 5]. The work had poetic value in that it created a new story out of an old scene. Each of these works is about transforming space through a reenvisioning of its use, or an alteration in the way the audience uses it.

**Performance Space**

Performance was employed in creating this work. “Human Powered” is a performance project created to underscore the sometimes-overwhelming effect traffic has on city bike riders [Fig. 6]. The student created a car-sized apparatus for his bike, which he then rode through the center of the city at the busiest time of day. His goal was to reveal the type of space that a car takes up, and to create discussion about the fact that most traffic disregards the rights of cyclists. The piece was conceived and carried out with the intention of existing thought the performative act of “driving” around city hall.

**Material Space**

Other installations were based in experiential material considerations. These works grew from a desire to test or apply materials in an unconventional way. These concerns are considered at a scale that may not have arisen in conventional studio practice. One student created a large cube from chicken wire and plaster. The idea was...
that the application of the material would “filter” the users’ view as they peered through it while at the same time challenging ideas about the relative lightness or weight of a material [Fig. 7]. The next work pictured here is one in which the student considered how to change our conception of an existing space using materials that can be hung [Fig. 8]. This piece entails creating a viewing port through which hung objects can be seen. The viewing port is a red plexi-glass cube that the user is meant to look through, gazing at the hanging forms. Another student concentrated on creating a new enclosure within an existing space [Fig. 9]. This work was conceived in order to enclose a space that is usually open. The student explored different methods of fabricating panels that would be lightweight enough to hang from the existing ceiling system, but could still make a new enclosure in the larger space.

Conclusion
The work presented here was envisioned as art created by architecture students. As previously stated, the participants were asked to think of their pieces through the lens of their own studio practices and projects. They found this difficult to do, and many had grander visions than they were able to realize. Across the board, there were many struggles with issues of use and construction as they worked to finish their projects. The way that one thinks about structure and inhabitation in studio are very different than when one is actually constructing his or her idea; this became an ongoing theme as the next project was a full-scale collaborative work on a site in North Philadelphia. Students took the lessons learned here into that project and created a successful environment. In the end, the value of architects creating art installations is to be seen in the studio practices of the students. Does their awareness of the reality of design change? Are they able to visualize things differently now that they have had this experience? Many of the students in the class have continued to create installations since the class and are considering ways to make this experience part of their mainstream studio practice. Many are interested in design-build as a practice and some have worked in design-build firms over the summer. Considering these works at the boundary between disciplines, their acceptability within both areas is clear. They do not so much represent a final arts product, but the effect of an arts product on an architecture process.

Notes
4. Ibid., 156.
Lighting design, for me, is a pure form of visual design. It deals directly with the light source, its interaction with materials or surroundings, and how this light is perceived by the viewer. Light is the limit at which information and energy can travel and represents a large portion of what we base our reality off.

An early example of this is Plato’s “Analogy of the Cave,” where the person interprets the shadows created by others as reality. This represents an early form of virtual reality and represents how our basis of reality is strongly tied to what our eyes see. This is similar to a movie or television; we observe the light bouncing off the screen. There is nothing physically there, but the image itself is strong enough to garner an emotional reaction. The patterns of light that hit your eye become stored in your memory and alter your psyche.

I graduated from NYU with a film degree and a concentration in 3D animation. I used to spend hours creating virtual worlds and objects using various 3D programs. Once I started graduate school, I started scrutinizing the television medium itself. What I was doing in ‘3D’ could never really be 3D; it would always be flat because the screen is flat. It was then that I decided to create a system for conveying dynamic spatial information. By dynamic I mean having the ability to change its visual output, like a regular TV but in 3D. There are examples of 3D objects all around us, but they can’t change form.

A TV can change its visual output from one frame to the next but only on its 2D surface. The 3D Display Cube (Fig. 1) was a prototype developed to deliver dynamic spatial information. It uses an efficient system of wiring to control LEDs placed spatially within its display to create 3D objects and animation. While in its infancy, its current applications are the ability to display live input spatial imagery or typography for home, exhibition, or retail signage. Higher-resolution versions will have applications in product design, architecture, medical, or other...
professions where there is no proper visual representation.

The two forms of visual information that your eyes pick up are spatial (re-created in the 3D Display Cube) and color.

Line is a minimal lighting system that re-creates color data [Fig. 2]. If you close one of your eyes and look around the room, all you see are areas of color—the area of white from the wall is immediately picked up by your eyes as white. Only after it reaches your brain and memory is attached to it do you assign it the word ‘wall.’

Throughout the day, your eye receives various wavelengths of light. These are materialized into objects through personal experience and memory. For Line, I wanted to re-create color data arrays in a clean, minimal way. Named Line because any visual image has to start with a line, it has controlled full-spectrum LEDs along its array, allowing the user to set various forms of information to color. Red, Green, and Blue can be set as hours, minutes, and seconds, creating various timed colors and patterns. This also allowed the user to think about our own perception of color and how it changes throughout the day according to the sun’s amplitude.

As technology progresses, we will attain stronger control over viewer’s perception of spaces, and a piece that does this on a small scale is the Square Eclipse [Fig. 3]. This creates color animations that bounce off the wall behind the unit, bringing to focus the space made through light. The latest version takes advantage of light’s additive properties, creating sharp angles of color that intersect with each other. As these geometries of light cross each other, they form other geometries of light, creating kaleidoscopic animations that play around the perimeter of the unit. This piece also shifts the focus from the center.
object to its perimeter, allowing people to watch it like an eclipse.

A piece that utilizes technology to alter people’s perception of spaces on a grander scale was the Habitat Hotel in Barcelona [Fig. 4]. This building, designed by Enric Ruiz of Cloud 9 Architecture, had an LED mesh wrapped around it. Each node on the LED mesh sampled the light energy during the day and at night would release a color according to how much energy it received during the day. Each node was autonomous, creating a living mesh that changed from day to day and season to season.

What I think is interesting is the idea of taking various forms of information and transforming it through representing it in different mediums or by storing it to be represented later. While Habitat Hotel stored information (energy) to be displayed later, “Inside/Out” [Fig. 5] instead broadcasted live information from one space to another. This large-scale installation, created in downtown Memphis, sampled the energy levels from within the buildings and transmitted them to a rooftop lighting system, allowing people to look down the street and see which buildings were more active than others. This would allow them to view information that would otherwise be invisible to them and presented to them much in the same way that one might view information in a videogame like SimCity.

Which brings me to an important point: by understanding light, its properties, and how to control and re-create these properties, one can design objects, installations, and environments with greater control. Using a person’s point of view as the reference frame for visual design, one can then take the ideas of information design (Web design), architecture, videogame design, film, art theory, graphic design, and all forms of visual design and cross-pollinate them. People are already doing this; but with the progression of communication technologies, the ease at which people can learn from a different genre or society becomes much easier.
Adventures in Biourbia

by Elva Rubio and Michael Hanley

Elva Rubio’s work has featured in the Art Institute of Chicago’s Ten Vision’s exhibit and with the Mayor’s Institute on City Design Future Visions. Named by Chicago Tribune Architecture Critic Blair Kamin as “One to Watch,” her work showcased in the Art Institute’s Women in Chicago Architecture exhibition.

Elva serves on the Board of the Chicago Architecture Club, for which she is also a past president, chairman of the Burnham Prize, and co-founder of the Chicago Prize and Emerging Visions Competition.

Professionally, Elva maintains her own design practice and is a principal and design director for the Chicago offices of Gensler. Under her direction, the firm has won commissions for the Center on Halsted, the Chicago Transit Authority and the Hyatt Regency. The latter project features in the Museum of Contemporary Art’s Sustainable Architecture in Chicago: Works in Progress, a companion exhibit to the highly touted exhibit, Massive Change: The Future of Global Design.

Elva’s work for Pond Studios – a textile and carpet firm’s new headquarters built in LaGrange, Georgia – won both Distinguished Building and Interior Architecture awards from the Chicago chapter of the American Institute of Architects (AIA) in 1997.

She has complemented her professional practice throughout her career with teaching engagements at the School of the Art Institute, the Illinois Institute of Technology and now the University of Illinois at Chicago. Currently, she is an associate professor at the School of Architecture, where she teaches a graduate-level studio.

At the Global Visionaries Symposium held recently in Chicago, Toronto-based designer Bruce Mau said this about the state of urban design:

“Our current governance relies on urban planning tools created in the nineteenth century.”

To be sure, conventional architectural practice considers the city as a “man-made object in a plane of natural precincts.” The problem with this view, Mau said, is that it fails to recognize the significant overlap that the urban environment shares with the natural world.

Mau is one of a growing number of designers who support an alternative point of view of urban design that suggests that our cities have no real geographic boundaries. Rather, like everything else on our planet, cities exist as a part of a larger natural system. “In the end, there should be no distinction between the natural and the...

1. Sasha Zeljic’s biomimetic concept employs recycled human hair, which could be used to fabricate “protein walls” that insulate in winter (Photo: Sasha Zeljic)

2. The protein wall could even be used for providing warmth and temporary shelters in disaster zones (Photo: Sasha Zeljic)
urban,” Mau said. Another way of examining the increasingly blurry relationship between the natural and urban is through the lens of “biourbia.” Elva Rubio, design director at Gensler, defines biourbia as “creating synergies as opposed to creating solitary objects that make no contribution to their environment.” Like Mau, Rubio approaches urban design in terms of “biological planning.” Taking the inverse approach of traditional urban design, architects building in biourbia must first study an ecosystem, then determine how human development fits into that ecology.

For critical thinkers like Mau, Stewart Brand, Hazel Henderson, Janine Benyus, and Dayna Baumeister, this holistic approach to urban design is nothing new. And given that the topic commanded a daylong summit — an event that was graced by the mayor of Chicago and attended by hundreds of other participants — there is new promise that such ideas have reached a tipping point.

In his book “The Tipping Point,” Malcolm Gladwell describes the phenomenon of rapid change: “Things can happen all at once, and little changes can make a huge difference.” Indeed, just as some visionaries have been pushing sustainable design for years, it is clear that sustainability has reached its own tipping point when it enters the vocabulary of traditional firms like Skidmore Owings and Merrill.

So how do we put biological planning into practice? The design studio offers an excellent platform. Rubio recently taught a graduate course in collaboration with Benyus and Baumeister, both members of the Biomimicry Guild. The studio challenged students to develop a design project based on their research of a particular habitat or organism.

In one example, student Sasha Zeljic studied the hair follicle of the polar bear. The follicle is hollow and captures heat from the sun, which is then absorbed by the bear’s black skin and stored in a layer of fat. Drawing on this process for inspiration, Sasha Zeljic designed a new building skin system made from recycled hair [Fig. 1,2]. Users can apply it to windows in the winter. The building’s inhabitants can see through it, but it also absorbs light and retains heat. The student then took this concept even further, arguing that rolls of the new material even have humanitarian applications, proposing that aid workers wrap provisions in the stuff before dropping them into crisis zones. The same material would then be used to assemble temporary shelters and generate heat for users. Architects have long sought ways to change the world through design. One can eas-
imagine applications of this new material as an aid for providing warmth and shelter for refugees. From Katrina to Darfur, this is one example where biomimicry can make a difference.

In another example, student Erik Agustsson studied the turkey vulture, a desert dweller that conserves precious resources by producing no significant waste. Based on his observations, he then evaluated the type of waste

5. The Pond Studios project re-examines architecture’s formal relationship with nature by de-emphasizing the automobile (Photo: Steve Hall/Hedrich Blessing)

6. The building nestles within the tree canopy to maintain a strong connection to its lush wooded site (Photo: Steve Hall/Hedrich Blessing)

In another example, student Erik Agustsson studied the turkey vulture, a desert dweller that conserves precious resources by producing no significant waste. Based on his observations, he then evaluated the type of waste

7. The subterranean lobby of Chicago’s Museum of Science and Industry features a multi-functional ceiling design that mimics the natural world (Photo: Steve Hall/Hedrich Blessing)
produced in the Chicago Loop and discovered that 40 percent of our office waste is paper. So he crafted a new policy that outlawed trashcans in the office environment. Instead, the buildings themselves would recycle their own waste, and create new systems and economies based on resource reuse [Fig. 3,4].

Whether the final project resulted in a new product or a policy, each student project embraced the concept of what it means to mimic the natural world.

**Biological Planning In Practice**

Biourbia is neither an urban nor a rural phenomenon. In fact, it seeks to reconfigure the two as part of a natural continuum.

The first project Rubio designed that adopted this approach was Pond Studios, located in an industrial park outside of Atlanta. This project called for a studio that encouraged outside-the-box thinking and a reconceptualization of architecture’s formal relationship with nature. The client was David Oakey, who is design director for Interface Flooring Systems, a company that has built its reputation on selling products that are not only beautifully designed but also sustainable.

A big swamp previously dominated Oakey’s site, so Rubio Studios started by damming up the swamp to create a new pond [Fig. 5,6]. Likewise, the building is placed on the site so that its users have a strong connection to the lush wooded site. To emphasize this connection, the tree canopy nests the building’s volumes underneath its umbrella like a treehouse so that its occupants never see a road or a car. The sloping roof angles respond to the angles of the sun to maximize light and solar gain. Conversely, the southern facade of the building is completely opaque to block heat.

Putting biourbia principles into action also seemed natural for a project that Rubio designed while at A. Epstein and Sons International. The client was Chicago’s Museum of Science and Industry, a venerated institution whose collections include both natural and man-made artifacts.

The program included a subterranean entrance with ADA access and a four-story underground parking garage. As inspiration for the ceiling design, Epstein studied a beetle wing, a gingko leaf, and the stamen of a flower. The team then superimposed the mathematical formula of their structures into the design of the lobby ceiling. Certainly, this is partly an exercise in mimicking form. But the split in the ceiling is also functional, allowing access for HVAC ducting and audio-visual equipment.

Proof that the inspirations for a project can be many, the form of the entryway also refers to female reproductive organs [Fig. 7].

If it had been addressed with a conventional approach, this project would not have developed into an evocative statement about the natural world, replete with biological and physiological references. This makes a green impression on visitors, now that they are greeted by a verdant lawn instead of a crumbling parking lot.

8. The Biomimicry Guild consulted with Gensler on the design of a new ceiling for Bank One Plaza in Chicago (Photo: Gensler)

9. The two-layer ceiling was designed to produce a higher light level while maintaining a zero wattage increase per square foot (Photo: Gensler)
From Biourbia to Biomimicry

Architects and designers from Frank Lloyd Wright to William Morris have long sought inspiration in nature. Ultimately, though, biomimicry takes the concept of natural design much deeper.

According to Dayna Baumeister, cofounder of the Biomimicry Guild, there are three general ways in which humans exploit nature. The first is bioutilization, in which humans use organisms -- or their remains -- as resources (such as harvesting trees for wood). The second is bioassisted technology, under which humans employ organisms to facilitate in the production of other things (such as using yeast to make bread rise, or using bacteria to purify water).

The third is biomimicry. Biomimicry is not an attempt to literally re-create a specific biological phenomenon. Rather, it’s the emulation of a phenomenon’s intent and consequently adopting that emulation through processes and technologies created in the built environment. As Baumeister said recently, it’s like asking Mother Nature whether you can borrow a recipe.

The inspiration for a project recently completed by Gensler began with one of nature’s most fragile and beguiling creations: butterfly wings.

Gensler was tapped to redesign the ceiling for Bank One Plaza (now Chase Plaza). The old ceiling of the bank lobby comprised a grid of individual can lights. This system did not adequately illuminate the floor sixty feet below, and it required a cherry-picker and one full-time employee to replace all the bulbs.

Exploring how biomimicry might inform the ceiling renovation, Rubio’s design studio studied the electric, indigo-hued wings of the Blue Morpho butterfly. The physical structure of the butterfly’s wing magnifies light, which helps the butterfly attract mates. This effect is so powerful that pilots flying above the rainforests of Latin America often can spot the Blue Morpho with the naked eye.

“The question then became: Can we re-create this at a human scale?” Rubio says. To help find the answer, Rubio’s studio collaborated with Benyus and Baumeister of the Biomimicry Guild.

The design team sought to produce a higher light level throughout the bank lobby while maintaining a zero wattage increase per square foot. The resulting solution was a two-layer ceiling system. The first layer consisted of glass beads; the second consisted of large panels applied with specular paint. Specular paint is a biomimetic product used on products such as cars. In much the same way that the butterfly wings magnify light, Gensler specified this special paint to reflect and magnify light in the space [Fig. 8,9].

Ultimately, the glass beads were value engineered out of the project, and a lower-grade version of paint ultimately was used. Still, the significant light-level increase in the finished lobby proved out the application of biomimetic principles in a real-world project.
Remediation Meets the Loop

Another Gensler project was recently exhibited at the Chicago Museum of Contemporary Art. The MCA exhibit, called “Sustainable Architecture in Chicago: Works in Progress,” focused on seven local firms whose current work promises to transform the urban landscape through the implementation of sustainable technology and design.

The scope of this project is an extensive renovation and expansion of the Hyatt Regency’s lower level between Michigan Avenue and Columbus Drive. The client was interested in building an extension to their existing facilities that netted a zero sum gain in energy usage—despite the addition of several thousand square feet of convention space under Wacker Drive. This meant not only building the new space using sustainable strategies but retrofitting the existing hotel towers for better energy and water efficiency.

The hotel is sited across the street from the Chicago River, yet separated by four lanes of traffic. This important city artery currently has all the charm of a highway underpass.

So an important secondary goal of the project is to emphasize the hotel facilities in closer relationship with the river and the surrounding urban fabric. The project is intended to be a catalyst for the city’s larger riverfront initiative, including an investigation for a future “Green Market.” To that end, Gensler has closely collaborated with Chicago’s city planning department as well as Hyatt during the design process.

Gensler has formed an international design team for the project. This includes climate engineer Matthias Schuler with Stuttgart-based engineering firm Transsolar, who provided a framework of sustainable technologies that could be exploited on the site. We also consulted with Brenda Morawa with BVM Engineering. Morawa is a LEED expert based in Atlanta and has consulted on several large sustainable projects in Chicago.

The Wacker Drive façade is conceived as a layered expression of pedestrian circulation, green technology and

11. The interior of the exhibition hall incorporates a series of shallow pools for reflecting light and humidifying the space (Photo: Gensler)
 enclosure for the Hyatt expansion. The facade will investigate “living wall” systems, in which the idea of a green roof is applied to vertical surfaces, incorporating pockets of living plants into the design of the facade. The form also will act as a light scoop to bring natural daylight into the space under Lower Wacker. Further development of the facade will investigate wind harvesting with turbines installed strategically along its length [Fig. 10, 11].

In addition, the project is exploring geothermal heating and cooling through a vertical ground-coupled heat pump; a strategy for using river water for building cooling; a triple-glazed building envelope with vacuum insulation; a latent heat recovery system; and an underfloor displacement system.

**Biourbia at a Regional Scale**

Because Chicago strives to become the “greenest city in the U.S.,” concepts like biourbia and biomimicry have reached a tipping point not only with local designers but also with city planners and the mayor’s full support. This partially explains the momentum that Gensler’s Hyatt Regency project has gained in recent months. The administration of Mayor Richard M. Daley has long been known for its programs to plant trees and turn streets into boulevards with medians brimming with flowers. And Millennium Park has received almost universal acclaim. (It is, after all, a project that decked over railroad tracks with an urban park.) So it’s not hard to imagine the mayor’s support for a complete remediation of an entire urban area. This was the subject of Rubio’s submission to the recent “Ten Visions” exhibit at the Art Institute [Fig. 12].

Rubio and exhibit-collaborator Ellen Grimes designed a presentation for the museum that speculated on the remediation of Lake Calumet, Illinois, located just to the south of Chicago. Remnants of the area’s original ecosystem are still visible in aerial photographs of the Lake Calumet region, which show patches of striated landscape in which natural wetlands recharge the local water table. What history first transformed into the world’s largest center of steel production subsequently became a vast urban wasteland. This is what Rubio and Grimes identified as “the ultimate postindustrial landscape.”

Their collaborative Ten Visions submission hypothesized on how one might begin to remediate this postindustrial landscape through a combination of biology and politics. Instead of employing conventional urban planning – in which a developer scrapes the site, builds a building, and plants new trees – the team asked the question, “What if we as urban planners design a city by starting with the biology of the site?”

The result was dubbed a “new Savannah at Lake Calumet.” Under this master plan, modern-day pioneers would be given parcels of land to remediate and develop in the spirit of biourbia [Fig. 13]. “It’s like homesteading,” Rubio explains. “If you’re an eco-steader, you’ve got to behave a certain way. But you’re given land to de-
velop.” The exhibit followed the evolution of the region through seven generations of eco-steaders, resulting in the full bioremediation of the site.

Coming full circle with the concept of biourbia, Rubio then introduced this premise in a graduate studio at the University of Illinois at Chicago. Students applied scientific principles to the Lake Calumet bioremediation plan. From there, the students created an environmental evolution map for the region, starting with the creation of natural corridors and ultimately ending with entire buildings [Fig. 14].

Of course, while many biotechnological practices are well-adapted, sometimes they are decidedly mal-adapted. On genetic engineering, Baumeister recently commented, “To suddenly think that we know enough to manipulate [the genetic code], I think that’s awfully brash of us.” Assuming humans are clever enough to distinguish helpful from harmful, biological planning and biomimicry have the potential to reconfigure how we think about cities and nature, and the role that technology plays in shaping both. This approach draws upon billions of years of evolution, taking a cue from Mother Nature for the design of everything from ceiling systems to highways. Rather than seeing nature and urban as opposites, it sees them as part of a global ecosystem.

**Recommended Reading**

- Brand, Stuart. *The Clock of the Long Now*
- Gladwell, Malcolm. *The Tipping Point*
- Henderson, Hazel. *Beyond Globalization: Shaping a Sustainable Global Economy*
- Mau, Bruce. *Massive Change*
- Todd, John. *A Safe and Sustainable World*
- Todd, Nancy Jack and John Todd. *From Eco-Cities to Living Machines: Principles of Ecological Design*
- Venkatesh, Sudhir Alladi. *Off the Books: the Underground Economy of the Urban Poor*
Arguably no place brings art and architecture into a more poignant juxtaposition than an art museum. In the art museum, the two disciplines are of necessity joined tightly together. Springing from their interlacing is, more often than not, a spirited debate over how architecture should relate to the art it houses. When art and architecture are in such intimate proximity, it seems inevitable that a discussion over which is the superior form surfaces. Obviously the debate is struck because there is a difference between them. Architecture and art can be linked and seen as one, but for the sake of convenience, and always when the resulting comparison is to another discipline that is remote to the pair. An example is the dichotomy of art and science. When such a comparison is made, art and architecture pair up on the same side with the humanities and in opposition to science. But even in this simple opposition, architecture begins to lose purchase and leans, if not slides, toward science. Architecture’s move toward science is a way to distinguish itself from art. While we can tie the two together, the union is never easy or durable. They can be made to be partners of sorts, but quarreling ones. Whenever a new art museum is built, the two disciplines are on prominent display and critics haggle over whether the result does proper justice to one or the other. Is architecture the mother of all arts or the sycophant that requires the reflected aura of art to have significance?

To be sure, the museum building houses the art. In this sense we can say the art is contextualized and given meaning because of architecture. Architecture provides the context, the larger frame, within which we view and appreciate the meaning of art. For if a museum is an institution, and it surely is, then it is architecture that circumscribes physical space and establishes the boundaries that provide the context for the activities and rituals enacted within. Without the frame’s structure the institution would not have presence and the value of art would diminish. Before the advent of the modern art museum in the early nineteenth century, art was imbedded in architecture and both were tied to the cult. Architecture and art were peacefully joined first by the magical, and later by the religious. As a result of their pairing, both had their meaning secured by the fabric of tradition and the enactment of the ritual. Walter Benjamin saw art, and by extension architecture, in this early context as having a solidified meaning because of their cult value. The rituals of the cult institution were framed by the conjoined twins of architecture and art. As a consequence they both gained meaning and significance through the direct experience the users had while participating in the ritual. But when art became mobile, its context became fluid; and so did its meaning. This simple change caused art’s cult value to recede and its exhibition value to rise. Art’s freedom of movement brought a challenge to its self-assured meaning and significance. It became dependent on a context or frame, a substructure, which would be physically provided by architecture. The split that gave birth to an independent art also created a tension between it and architecture. An independent and less place-dependent art required the institution of the museum to provide the required context within which significance
The form of the argument revolves around the question of whether art should be privileged over architecture. Without works of art inside the museum structure, it is hard to use the term “art museum” without qualification. Perhaps the best examples of this point are buildings that are given their type name solely because of the art. The Massachusetts Museum of Contemporary Art (MassMoCA) and the Dia: Beacon are two examples that come to mind. Each utilizes buildings originally designed for another purpose. They became art museums primarily because art was added to their interiors and not because of some profound transformation of their spatial structure. In such situations it is hard to say that the architecture dominates the art or that the building design makes the museum since both institutions inhabit buildings originally designed for manufacturing. When analyzing MassMoCA or Dia: Beacon, we find it is the art itself that provides a context that permits us to see the building as an art museum institution. In such circumstances we tend to see the building as a subservient vessel to the form and content of the art that is presented, featured, exhibited, and displayed within. After all, it is even hard to imagine that we would consider MassMoCA’s building as architecture were it not for the art placed inside it.

This conundrum of whether art should be privileged over architecture and thereby used to define its subservient, or the corollary that architecture defines art, is not some abstraction or the fancy of a self-important speculator. Within the art and architecture disciplines, this debate takes a very specific form. It has as an essential quality — an effort by each discipline to deprecate the other and thereby establish its own dominance in the fine arts. For designers and architects, the very notion that architecture dominates the art or that the building design makes the museum since both institutions inhabit buildings originally designed for manufacturing. Within the art and architecture disciplines, this debate takes a very specific form. It has as an essential quality — an effort by each discipline to deprecate the other and thereby establish its own dominance in the fine arts. For designers and architects, the very notion that architecture is the mother of all the arts is at stake whenever this debate is struck.

The form of the argument revolves around the question of the proper design of the art museum building. One group, which houses both architects and artists, argues that the architecture of a museum should be neutral, if not subservient and receding, relative to the art. The other side counters that a strong and artful building is required of a museum. For this second group, an artful vessel will only make exceptional art more meaningful and significant. They argue that true significance for a work of art can only be found when the context is robust and artful in its own right. One camp wants a blank wall on which art is displayed; the other a dynamic assertion. This is not to say that the blank wall/vessel proponents envision a bland architecture. On the contrary, this camp embraces a full range of styles: from Beaux Arts-inspired modernist structures like the Houston Museum of Fine Arts by Raphael Moneo to simple pavilions with high-tech skins designed by Renzo Piano.

To help illustrate the debate, it might be helpful if two contestants were brought into the ring of battle. There may be no better champions of the two opposing views than the two contemporary titans of the museum world — the Museum of Modern Art (MoMA) redesigned by Yoshio Taniguchi and the Guggenheim Bilbao by Frank Gehry. These two buildings are polar opposites. Taniguchi’s building champions the neutral frame perspective; Gehry’s Bilbao the dynamic container.

For some critics the Guggenheim Bilbao is too assertive and compromises the art. Michael Kimmelman writes, “When the museum opened eight years ago, Mr. Gehry’s titanium and glass confection was a tourist boon, architectural icon and tremendous engine of civic revival for this sober, hardscrabble city. But it was also clear that the building wasn’t a practical place for showing art — that, in many parts, it actually warred with what went into it. How practical, after all, is a room shaped like an airplane wing that’s a third again as long as a football field?” (New York Times, June 7, 2005). Obviously, from his comments, Mr. Kimmelman finds Gehry’s museum architecture too strong for the art. While the museum might have been a successful tourist attraction, it certainly was not because it featured the art. To drive home his point, he selects uncompromising words when he states the building “warred” with the contained art. But this point of view is not universal. None other than the great American artist James Rosenquist wrote about Gehry’s building, “I was at the opening of the Frank Gehry museum in Bilbao, Spain, and had two paintings exhibited there. To me, the museum looked like an invitation to artists to come and do their thing, and it looked like a very flexible space” (New York Times, August 11, 2002). There does not seem to be much agreement between Mr. Kimmelman and Mr. Rosenquist on the appropriateness of Mr. Gehry’s structure. Each has efficiently outlined their point of view. For Mr. Kimmelman too much architecture is deprecating the art; for Mr. Rosenquist a dynamic architecture will only make exceptional art have more impact on the observer.

When compared to the Guggenheim Bilbao, the redesign of MoMA takes the polar opposite tactic for its design.

David Cronrath: The Art of Architecture and Art
If Gehry’s Bilbao is too much building for its art (Kimmelman’s argument), then Taniguchi’s MoMA is the perfect antidote. The architect’s oft-quoted remark to Terence Riley, the MoMA chief curator of architecture and design, clearly states the design strategy: “Taniguchi said, ‘If you give me enough money, I’ll design you a beautiful building. If you give me more, I’ll make it disappear.’” (New York Times, November 7, 2004). This point of view, that the museum building should recede so the art can take center stage, is emphasized by Sarah Boxer in her quote and interpretation of Glenn D. Lowry, the director of the MoMA. “A museum is not architecture, and it is not a collection,” Mr. Lowry said. “It is both,” according to Ms. Boxer, who goes on to add to her text using Mr. Lowry’s statement as a launching point: “A museum, in other words, should not compete with its art” (New York Times, May 5, 2004). Emphatically, MoMA as a building does not assert itself over the art.

This concern over the proper role of architecture when it comes to the design of an art museum is not new. This very same concern was central to Alois Hirt’s critique of Schinkel’s Altes Museum in the late 1820s. Hirt’s argument that art objects are not there to serve the museum, but the museum to serve the objects, essentially argues that Schinkel had subordinated art to architecture. Schinkel, on the other hand, argues that the issue is not whether art or architecture is to be privileged but how a greater unity can be achieved that benefits both. Using our examples, Hirt would support MoMA’s design approach, and Schinkel would support Gehry’s design.

What is curious about this debate between the appropriate strategies for the design of an art museum is the manner in which each side takes one part of the art and architecture pair and uses it to supplement the other. These critics use either art or architecture, depending on their point of view, to provide the justification for one to subjugate or enhance the other. On one side a dynamic architecture is used to create the art, to stimulate the art to ever-greater significance. On the other side of the divide, the architecture needs to be recessive so that the art may be featured in an unencumbered manner. On one side, the architecture is the force behind the greatness of art; on the other, because of architecture’s servitude, it also ends up being responsible for asserting the special qualities of art. If we frame the debate in this manner, it is possible to place architecture in the powerful role of being the force behind the appreciation of art. Art needs to fear architecture’s superior position because of its role in determining the significance of art.

Thus, architecture becomes the dominant art form and “mother of the arts” no matter which strategy is used for the museum’s design. On the other hand, if we hold the example of MassMoCA or Dia before us, it is easy to see the opposite is true; that a building called a museum is given its status and standing as a significant building only because the works of art are inside. Architecture shrinks by comparison.

If for a moment we don’t align ourselves with either side of the debate, but instead look upon the argument with a certain amount of disinterest, we find a twofold purpose: to affirm the aura that emanates from superior works and to assert a privilege for one of the disciplines as the enhancer or provider of this aura. In one case art relies on architecture for the production of a more forceful aura. The opposing argument arrives at a similar end but with roles reversed. Why are both sides so concerned with the preservation of aura and privilege?

Both art and architecture share a common problem … on what basis does someone discriminate among the class of objects to determine which are works of architecture and which are mere buildings, which are to be considered art and which are mere decorative objects. It is this problem of discernment between objects that leads to the continual, and we might add irresolvable, debate. The discernment hinges on the recognition of a substantial aura that all superior works emanate. In the debate over the preferred tactic for the design of an art museum, what is debated is whether the architecture is intensifying or deprecating the aura. When subjected to analysis, both disciplines wrestle with the same problem and use the debate for mutual benefit.

Neither side wishes to reveal that all significance is arbitrarily assigned and that significance is never found embodied and emanating from an object. With the acceptance of the assignment of meaning comes a weakening of a work’s aura as the conveyance of an objective meaning to the observer. Under this condition both art and architecture lose their authority to assert any standing among their respective class of objects, and the debate over whether one tactic for the design of an art museum enhances or deprecates the aura of art drifts toward irrelevance. Consequently, a crisis of meaning and interpretation for both art and architecture must be confronted and covered if both are to maintain integrity and significance. The debate we are discussing in this essay serves to preserve the aura of art and architecture as an objective fact and obscures its constructive character. It is one of the means used by both art and
architecture to cover the crisis of significance. Buildings and art objects perform their cultural function best when that function is not noticed. Objects play their universalizing and cultural role when we do not observe their passage into objectivity. This is true for architecture and art. To the extent culture and its processes appear normalized and natural, their constructive quality and objectification remain unnoticed. This is culture’s mechanism for myth production that is used by culture to hide its artificiality and its subjectivity. Here is how the process works. Great buildings, which we refer to as architecture, and great aesthetic objects, which we refer to as art, are both said to establish their special classification because they have qualities that are inherent to the object. We say these objects embody significance and this significance is so special that it is evident only in the original. There is an authenticity to the original that carries an objective meaning to the observer. We know this to be the case because this objective meaning is always deprecated in a reproduction. Simply, and rather crudely, put, it is claimed that under these circumstances the objects’ powerful and intrinsic meaning is not only embodied, but that the special status of great works is self-evident and indescribable. The evidence used to support their status as great works is the very fact that the objects transcend our words when we attempt to describe their aura. The fact that we can not describe the phenomena, it is self-evident to the sensitive observer, is used to justify that the object must be part of a natural and universal system. In the same way that nature resists our descriptive powers, so these great works of architecture and art lie beyond language. It is this special condition that is the essential distinguishing quality that separates these works of architecture and art from other objects. The process used to disguise the assignment of meaning is a cultural production that leads to objectification and naturalizing. Architecture and art, as a class of objects, seems to naturally embody its own significance. The debate over the ability of architecture or art to enhance the aura of the other contributes to the production of the myth of aura. When we debate the relative contributions that art, or architecture, contributes to the significance of the other, we enter into a debate that presumes that the qualities of significance are embodied and natural – that they are not produced. It should be noted that the debate between which design strategy for a museum is most appropriate, MoMA or Bilbao, is not over the functional display of art; for instance, both designs protect art from harmful sunlight. Rather, the debate features a concern over significance and the appropriation of meaning for the object. In the case of the museum and its contents, the debate over whether architecture or art supplant the other as the origin for the other’s significance is used to hide that both architecture and art are used to construct an elaborate cultural web to keep the construction of significance hidden from the observers and users. In one sense the argument over whether art has the privilege of enhancing the aura of architecture (MoMA) or architecture privileges art (Bilbao) is a false one since both the museum building and its contents are subject to cultural processes that rely on a general myth regarding meaning production and authenticity. Neither can claim privilege over the other since significance is not dependent on either one but on a cultural production that hides the assignment of meaning behind a veil of objectification and naturalization. The veil is the mythological structure that leads us to accept the embodiment of meaning and aura as a characteristic of objects that lies beyond our words. The debate between architecture and art occurs on the surface of the veil and therefore keeps the processes of cultural production obscured to the benefit of both architecture and art. Consequently, the debate between art and architecture, between MoMA and Bilbao, must continue, one might even argue it is essential, if art and architecture are to have significance. They are both dependent on the contentiousness for their very survival.

Notes
“where do i start? where do i begin?”

When the sheer intent in the artistic creation of a space is for a viewer to think and feel as never before, the participants could easily get lost in the experience. Typically, the creators of those spaces expected, anticipated, and often intended those reactions. Sometimes the final experience is unknown and unexpected even by the creator of the piece. Several artists working today often cross into the realm of architecture with their mediums. They create enclosures similar to the built environments around us, even structures using typical building materials, but in essence their pieces are not architecture in the true sense. They are not spaces built to be habitable; they are spaces built to aid in realization. They are meant to help us understand what the artists have seen all along and to possibly grasp the understandings of their world.

And yet, one has to wonder how certain artists can pull off such a feat. How can someone take the elements we all know, elements many of us in the architectural profession design, note, and construct with everyday, and create spaces of wonderment? How does a space built for no specific architectural reason create so much intrigue...so much amazement...so much tension...and so much joy? In the end, what we learn is that the experience of the space is all important. The wonderment is what leaves participants yearning for more.

At this moment, a journey starts through two such spaces...two artworks...two sculptures...two experiences. This offers a study of separate pieces by two contemporary artists, James Turrell and Richard Serra, who both work with space, specifically experiential space, as their medium. For these artists, their pieces boil down to the experience of their participants. Their creations, their overall created experiences, are meant to take you further than a mere four walls and ceiling ever will. These artists push the boundaries of the traditional definition and enclosure of space. Everything in these works revolves around what others see, feel, smell, touch, and hear. One can easily wonder when immersed in one of their spaces: where does it start, where does it begin?

Tending (Blue)...In Many Ways

As with the introduction to any space, this experience starts with the artist’s act of acclimatizing the viewer to what they are about to experience. Walking through the manicured garden toward the large, square, stone-clad volume, a subtle glow beckons from behind two translucent but opaque, frosted-glass doors. The glow offers only a hint of what lies ahead. The midday sun shines down, and yet, a subtle blue tint rests upon the surface of the doors. The doors themselves are set back several feet within a square, tube-like volume providing a slight shelter from the elements before the actual point of entry. The feel is not really one of a front porch but more of a space providing a visual point of departure...a defining moment stating simply what is and what is not part of the experience.

The entryway cladding on the walls, ceiling, and floor, in
addition to the ceiling plane, further accentuates the brightness and luminosity of the portal ahead. The doors have no hardware save for the spring-loaded hinges giving reluctantly against the pressure exuded on them. A small cut rectangle in each door, located where your hand logically falls, acts as an intuitive starter, telling you where to push, to pull, to enter [Fig. 1].

Once fully inside, as the doors swing shut behind, the haze of their surface cuts the harsh light from the warm, Tex-as sun; and your eyes begin to take in the soft glow of the smooth surface of the curving wall before you. The subtle glow of the seductive curving wall ahead and to the left leads your gaze toward the right where the corridor continues. This channeling space, with the bluish ambient glow, is just the first nod to the events awaiting you in James Turrell’s Skyspace Tending (Blue) in the Nasher Sculpture Center’s garden, located in Dallas.

Turning to the right and continuing down the short corridor (in both length and height) leads you into a space that is the whole purpose of this work where Turrell’s Skyspace unfolds above and around you. The light within the room is strong as the sun shines through a square sliced aperture in the ceiling. What becomes immediately apparent (at least during the daylight hours) is the most important element within the space; directly above you lies a cut opening…the ceiling sliced…the ceiling opened. A perfect square is cutout of the ceiling’s plane overhead and creates a frame to view the theater of the sky beyond. The presence of the opening is felt immediately. The passage above is almost Pantheon-like. The atmosphere imparted by the opening, the cut, is palpable [Fig. 2].

And here is where it begins…the understanding. The opening, focused on the sky above, is only discernible by the space created around it. The plane must exist to be cut. The sky, omnipresent, must be framed by the artist. The surrounding space allows the opening and, in turn, the sky to become something powerful. The ceiling provides the surface to be cut…sliced; the walls provide the support for the ceiling and the backrest for the continual bench.

The room itself has a reverential feel, somewhat meditative as a whole. Simple detailing and a slightly larger-than-life scale to the one humanly measurable item within the room (the bench) gives the space a majestic presence similar to ruins left behind by ancient Latin American cultures. Similar to those vanished peoples and their rooms with hidden uses, the reason for this room’s being, the reason the room was constructed, is not immediately apparent. The realization of the space’s purpose comes over you slowly. The understanding begins to move across you as you notice the sun tracking slowly across the wall and above you a cloudscape is framed. You begin to see the light differently. You begin to take notice of the subtle changes in the sky, in the clouds, in the colors above. You begin to grasp the nature of the space. You begin to grasp why this place exists.

At this point, as you take a seat on the continuous stone bench ringing the room, the artist’s intent fully hits you. Sitting now, your gaze is directed upward by the slant of the seat back….and this is when things gain clarity. Your peripheral vision fills with the stark white upper walls intersecting the ceiling plane in a pure and simple fashion…no trim….no ornament. A simple ninety-degree corner was constructed so as to not call attention to the joint. The spare ceiling plane gives the room an impression of effortlessness. But the reality is that this place was formed with utter purpose. Turrell’s Tending (Blue) was created to focus your observation on the opening overhead and more importantly, the sky beyond.

The actual opening in the ceiling is approximately twelve feet by twelve feet and terminates with a thin, knife-
edge detail. At the edge, no perceivable thickness exists. Unbeknownst to the casual visitor, the roof is detailed so the thickness of the structure is kept at a steep enough angle to remain hidden from view. This detailing, the knife-edge, helps create a planar quality to the sky, which produces an experience unachievable when the dome of the sky fills up our view. The framed view, the experience of observing the sky in a way we haven’t seen before, the change of the light, the subtle shifting of the clouds…this is the sole purpose of this space. Observance. Experience. The space was created for experience. The space was created to make us feel [Fig. 3].

Turell primarily focuses his creations on light and the way light is perceived. Creating space in which to experience his vision is essential to his work, but in essence his end goal is not to create an architectural space…a habitable space, a space for living, a space for banking, a space for shopping…his goal is to provide an experience or many experiences. In most cases, he is working to provide an transformative experience to change previous perceptions and open the eyes of those who have looked before but not necessarily seen.

Even after the experience of the planar sky element afforded by a daytime visit to Tending (Blue), the most impressive and intriguing moments offered by the space come at dusk and after nightfall. A light trough mounted by Turrell out of sight behind the backrest of the bench governs the light color and intensity of the overall room after the sun sets. Slowly, so as to be almost imperceptible, the color of the lighting within the room shifts and morphs from one color to another…red to blue to white to red and back again. Slowly. Methodically. The colors within the room cause the sky colors outside to constantly shift to contrasting tones. Red colors on the interior create green tones on the roiling clouds above…blue light within creates orange clouds, which appear to bubble and boil within a shallow square pot. Your eyes grow accustomed to the intensity only to be burned by the hot whiteness as all color goes out of the lamps and the room becomes a white lantern. The aperture in the ceiling reverts to a single black square of night. Nothing discernible beyond the edge. Nothing but night. Hours can be lost in a space like this [Fig. 4].

**Solidity with Lightness**

And then…the next moment, the next experience, starts with gravel crunching beneath your feet. Daylight again. The air surrounding you in this inner courtyard is brisk.

3. Tending (Blue) -- Section (Photo: Author)

Cold, even. A heavy coat wraps around you, and your hat is pulled down tight to keep the little bit of warmth that you still hold from being indoors moments ago. Your breath creates a misty ether that you walk through as you head farther out toward the hulking steel mass before you. A single breath is matched by several steps. Again and again you walk through a cloud of your own making. You continue forward, heading intently toward the single earth-toned object in your view. Everything surrounding the gently curving, rusted-steel element setting before you, all of the built material, the confines of this inner courtyard (concrete, glass, white metals), are all muted even further by the grayed-out overcast St. Louis sky. The object playing off of those neighboring elements, the object sitting still but gracefully twisting and turning, beckons you to come forward. The massive steel curving form begging you to try to pin it down had a simple origin as a single spiral line inscribed on the ground.

When looked at as a line sketched on the surface of the earth, the form seems incredibly simple. A single spiral. A starting point and an ending point. An “A” and a “Z.” But the deception in its simplicity is what makes this sculpture so intriguing [Fig. 5].

4. Tending (Blue) -- Nine Moments (Photo: Author)
Directly ahead towers an opening of sorts. A large wall of steel curving to the right seems impermeable, solid. To the left, a two-inch-thick steel shell peels away and leans outward, leaving about six feet between itself and the large, rusting wall. The sliver of space is enough to entice, enough to draw one in, enough to cause wonder...to cause excitement.

To create this form, named Joe after Joseph Pulitzer Jr. (one of the founders of the Pulitzer Foundation for the Arts), artist Richard Serra used 125 tons of weathered steel in the form of two-inch-thick sheets of metal. Somehow, without the use of smoke or mirrors, the subtle curve of the steel, the boat-shaped thrust of the walls, all seem almost effortless. The ballet of shapes and shadows playing off of each other draws you in. Serra once commented about these pieces, saying they cause individuals to speed up, to move faster...and he’s right. As you move into the fold, into the opening that curls away from the remainder of the adjacent curvilinear mass, you immediately speed up your steps. You try to follow the form, but it continues to move away from you. You become disoriented. Your pace quickens as if in reaction to the gravity that the walls exert upon you. There is always something more ahead. Maybe not an actual corner, but the anticipation, the desire of finding out more, pulls you in faster and faster. As you continue on the path toward the center of the spiral, you quickly lose sight of the sliding glimmer of light that was the entry [Fig. 6].

In actuality this form, this sculpture, is different from the others that came before it. This form, Joe, which resides within the inner courtyard of the Pulitzer Foundation for the Arts in St. Louis, Missouri, is the first in a series of torqued spirals by Richard Serra. Serra’s works immediately prior to this piece were a series of torqued ellipses. Sculptures similar in feel but different in their point of departure. The overall forms of the torqued ellipses were created by taking a flat ellipse and twisting it on an axis as it moved up and away from itself. The spiral is quite literally a new twist to these form studies. The spiral allows Serra to take one line and follow through its ins and outs as the form reencounters itself. Simple...but simple is again deceptive.

When the entry disappears, all orientation shifts. All sense of horizon is gone. All that exists is rusted steel, crushed gravel, and the gray sky overhead. Looking up, the edges of the steel plates curve on either side of you, dancing a tango of sorts. They are at once close and not too close. They swoop and curl against the utter flatness of the gray winter sky beyond. The lack of color overhead adds to the starkness of the steel. The sheer mass, tinted red-orange with a flaky covering of rust, surrounds you...an arm of the spiral embraces you as the other side of the corridor nestles into you. Even when viewed up close, straight-on, the weight of the steel seems immense. But somehow, the steel before you defies gravity and is flying. The shapes soar against each other and against the sky and earth.

The slippery shapes of one copper-shaded boat form play off of shadows and the adjacent rusting wall. The way the two sliding planes move and sweep in and out from each other seems familiar, comprehendible even. But, the walk through the vertiginous cavern created by the two walls leaves one feeling incredibly disconcerted.

Your eyes focus on the surface, looking for a reference, looking for something to provide a straight line in the topsy-turvy fun house space created by the leaning planes overhead. But there is no reference, no straight line to set everything right. Once inside the inner chamber of the spiral, once the opening is far beyond eyesight, everything is governed by the curve. There are curves where the steel meets the earth, curves where the walls reach to the sky, and curves bulging and leaning on all of the vertical surfaces. Without any reference to the horizon, or even a vertical line offered by...
a neighboring building, the space created within these curves is vertiginous. Once again, you come to the moment of realization. The moment of understanding exactly what is formed by these elements, what is to be seen here, what is meant to be viewed. Serra’s sculptures have nothing to do with what you initially perceive. He stated “I wasn’t interested in the aesthetics of these pieces…” and “I wasn’t particularly concerned with what the skin looked like.”

Serra continued “In these pieces,...I was starting with the void, that is, starting with the space, starting from the inside out, not the outside in, in order to find the skin.” The forms are simply the shells for what is to be experienced. About his sculptural works, Serra stated, “Everyone thinks my medium is steel. My medium is space. I use steel because I know how to make steel function in relation to holding volume. But, my medium is space.”

Analysis

So again, the question comes down to this: how does space as architecture differ from space created for the realization of art? Is a difference perceptible? If all space were thought of as more than transitory, as more than a mere covering over our heads, as more than mere shelter, then maybe, just maybe, all spaces could be more experiential. Spaces could be more “of the moment” and less “as required.” Spaces could originate from an Architecture that causes one to feel. Experiential spaces create an emotional bond to a place in a way so many transitory spaces miss. Experiential spaces would, in some essence, force acknowledgement of themselves. Not necessarily in a bullying way but in a way that makes the people take notice over time and feel pride of knowledge when the understanding washes over them. If done right, a space need not scream its presence, but through whispering in the right way, the space’s purpose could be understood by many.

When describing his art, Turrell has stated, “I am involved in art, as opposed to architecture, although what I do is a structuring of reality by building. I think my work could be closest to someone who works in acoustics, who is designing stages and things like that. Acoustical engineering turns out to be much more of an art than we have ever expected it to be. For me, building with light is a little bit along the same lines.”

In analyzing Turrell’s Tending (Blue), participants quickly understand the artist’s intent for the entry element was not to be a simple porch. The last bit of exterior one experiences before completely immersing themselves in the whole of the piece is meant to be a beginning, a primer for the rest of the experience, a palette cleanser of sorts. And yet, what makes the intent of the entry space to the Nasher Skyspace so obvious? Does the obvious lie in the lack of Adirondack chairs sitting within the space or quite possibly does the knowledge of something greater beyond pull the visitor forward? Does the sense of anticipation offered by the glow within plead the visitor to shift past this transition zone? Is there an unexpected something around the corner? Is there an understanding that this is not architecture in the sense of something that is habitable for long periods? Or does the understanding come from the simple feeling called wonder? Once again: where does it start, where does it begin?

This exploration has been about spaces built for the experiences they afford. These spaces were not constructed to be architectural feats, but they use architectural means, or at least architectural techniques, to aid in the realization of the final desired effect. Turrell’s Skyspaces require a structure to block out the surroundings, a structure to hold a plane, a structure to hold a cut surface. His rooms create the space from which to see. Serra’s sculptures were built from the inside out. His focus was in using a shell to form the environment one experiences. His forms are space confiners, objects necessitated to show what is inside, but not to become inside. Both artists have, with their works, created experiential spaces which cause wonder in the participants. And wonder as purpose is important. After all, wonder was needed to create these works in the first place. So again you are left to beg the question: where does it start, where does it begin?

Notes

3. Ibid.
5. Hatje Cantz, *JAMES TURELL the other horizon* (Germany: MAK, 2002), 165.
Probes: Merging Artistic Thinking with an Architectural Methodology

by Chris Ford

Chris Ford received his Masters of Architecture from North Carolina State University and earned several honors and awards during his time there. He worked as a project manager for Richard Meier & Partners Architects and as an associate for Rick Joy Architects and Rob Paulus Architect, Ltd., both in Tucson, Arizona. While working with Rob Paulus Architect, Ltd. he served on a design team for the Ice House Lofts and as a project manager for Barrio Metalico. Both projects were featured in many publications, including Architectural Record and Residential Architect, and won several awards including the Sonoran Institute’s “Building from the Best” Award and regional AIA Merit and Honor awards. He also received the 2006 Larry Hawthorne Faculty Award for his work as a design studio instructor at the University of Nebraska, Lincoln, where he currently works as an Assistant Professor in the College of Architecture and Landscape Architecture.

If scientists are responsible for expanding what is known, then artists are responsible for expanding what is possible. Recognizing this dichotomy immediately places the designer, as one who serves these dual interests simultaneously, in a vulnerable position. Nonetheless, no matter the lay of creative terrain in the execution of their respective process, artists and designers face similar challenges in the execution of their creative methodologies.

Admittedly, there are enough similarities between art and design that the two are often used to describe each other. When experiencing an artistic object for the first time, one may interpret an art piece as having architectural qualities. This same person may then interpret an architectural work as having artful (i.e., “sculptural” due to their shared three-dimensional realm) qualities.

While both art and design require creative thinking, both also arrive at their end result having traveled through a particular creative process. For instance, both artists and designers use journals similarly, work with similar modeling materials, and place high value on the execution of the finished work. However, there is an important distinction between art and design – all objects of art serve an aesthetic intent whereas all products of design serve an intent of use. This is not to say that art is not useful, but it does illuminate an important performance criteria to evaluate the effectiveness of a work of design, whether it be a teapot or an architectural work.

In today’s mainstream architectural practice (i.e., in recognition of the high number of professional practices that emphasize architectural service over architectural product), there exists a prevailing tendency to address the

1. Design probes that explore the phenomena of (from left to right): processed / unprocessed materiality, the act of harvesting, and perception through scalar oscillation (Photo: Author)
programmatic and performance criteria of an architectural project in an isolated manner divorced from experiential and aesthetic consideration. For those architectural designers interested in breaking this prevailing tendency, one method for doing so is to incorporate a more artistic thinking into their architectural methodology. Design probes present one such opportunity.

What Is a Design Probe? [Fig. 1]

If we agree there is a direct relationship between an architectural work and the particular design process employed by its author, then the incorporation of a design probe in one’s design methodology creates a pathway to higher architectural creativity. Artists and designers alike may perceive design probes to be within the seemingly natural movement between initial generative idea to end creative product; however, since design probes are not typically present in more normative design methodologies, we should understand the probe is first a deliberate action. Only after reflective examination, can it fully serve as a new point of departure for further creative thought. It becomes an important milestone in a designer’s process, albeit an indirect one.

The very decision to execute a probe is to affirm a willingness to travel on a creative trajectory tangential to one of a more conventional methodology. While architects are certainly capable of generating compelling architecture without utilizing design probes, their use facilitates an ideological detour away from the impending approach of the often-emphasized aspects of site, program, and user and further provides an opportunity for architectural creativity to flourish. Design probes are useful to both architecture students and practitioners alike and are especially helpful to both when one decides to embrace an abstracted approach.

To execute a design probe, one must first identify a non-architectural idea or a phenomenon that is 1.) of sustained interest to the designer and 2.) believed to be a strong heuristic device for the design of a forthcoming architectural work. The success of a probe is largely proportional to the mutual fulfillment of these two requirements.

The design probe is a finished artifact whereupon additional discoveries can be made through critical analysis of its physical, performative, and/or phenomenological characteristics. Therefore, probes are executed at 1:1 scale and must consider their own physical presence through materiality, aesthetic expression, and craftsmanship. Depending upon the generative idea or phenomenon that a probe manifests, it may also need to consider its own function or utility. Furthermore, since a design probe is a deliberate and intentional construct, found objects alone are not design probes. However, a design probe may in fact contain found objects as part of a more deliberate composition.

The intentional employment of design probes, as a precursor to architectural design, becomes a vehicle for ideological programming. If we believe that architecture is capable of manifesting ideas and phenomena through its physical form, then in the least, design probes serve multiple roles in the formulation, refinement, and execution of a particular generative design intent. At most, design probes themselves may become wholly encapsulated heuristic devices for making architectural design decisions.

Necessary and Dangerous

Designing with imported ideas and phenomena outside of architecture is simultaneously a necessary and dan-

2. Oyster (Photo: Tony Boon)
In architectural history, we can find at least one faction of architectural thinkers who believed that appropriate architectural solutions emerged from a designer’s specific attentiveness toward the fundamental aspects of site, program, and user. However, in 2007 we are witnessing an explosion of compelling architecture that emanates from a variety of other sources: unprecedented ideas, observations on existing and emerging systems, observed phenomena, parametric thinking, algorithmically-generated geometries, and material theory, to name a few. No longer does the majority of architectural practice emerge from a particular methodological cannon. However, while there seems to be a lesser number of design methodologists who champion the creative potential of site, program, and user, perhaps this is due instead to these particular aspects having never acted as meaningful heuristic devices.\(^3\)

Despite finding congruencies between a designer’s particular design intent and properties found inherently within a design problem at hand, these found properties are not of generative potential for architectural design. The fundamental properties of site, program, and user are creatively vacant for establishing any specific expectation for architecture, whether it be environmental, functional or aesthetic in nature.\(^4\) And while some architects may argue that context lends itself as a heuristic device, herein lies another fallacy.

**The Fallacy of Context**

Designers who emphasize contextual architectural solutions oftentimes do so from a subconscious awareness of architecture’s empty origin; for the contextual thinker, context provides a familiar environment within which to operate. The execution of otherwise independent design decisions are solved by reflecting either similar or identical physical characteristics found in its immediate contextual surroundings. Oftentimes, the resulting design of a contextual building may incorporate projected regulating lines, similar building massing, a shared material palette, a nostalgic architectural technology, a building method, or a simplified ornamental detail as not only a means for fulfilling its own compositional needs but is then presented as an architectural solution increasingly more appropriate with each additional reference to its surrounding physical environment. Unfortunately, we now have so many American architects who invoke context as a means for justifying their end architectural result that in turn, the contextual architectural response has become a mainstream cultural expectation on behalf of many American non-architects.

Beyond visual appearances, the fallacy of context also applies to the question of program. The method of zoning used by municipalities is one that rewards an assemblage of programmatically similar buildings within a defined area. While improvements have been made to our nation’s urban areas with improved development standards for mixed-use buildings, thereby collapsing the distance between where city dwellers live and work, many suburban municipalities maintain opportunity-based zoning strategies that still foster sprawling growth, thereby extending the distance between where suburbanites live and work. For suburban cities such as Lincoln, Nebraska,
the impact of a solitary big-box store is made only more detrimental in its amplified impact through municipality planned amalgamation; given the land-use impact of an isolated big-box store, it is believed to be more contextually responsible to locate other similarly scaled programs in a congruent manner.

The use of context as a heuristic device for architectural design is flawed. However, for designers with noncontextual interests, different contexts present opportunities for physically transcending that which surrounds it, and to contribute to its surrounding environment not through physical replication or stylistic consideration but through ideological transformation.\(^5\)

The Opportunity for Probes

As previously stated, the execution of a design probe requires the identification of an idea or phenomenon that is of sustained interest to the architectural designer. Allowing this idea to first engage a surrogate, yet nonarchitectural construct, further insures the transformation necessary for serving as an effective heuristic device. Ideas that are used as generators but remain untransformed are highly problematic experientially for architects and nonarchitects alike. The unfortunate reality of untransformed ideas is to equate the experience of an architectural work with its aesthetic image, which immediately fails to exploit a greater range of potential architectural experiences. Altogether, it drastically reduces expectations for architectural experience (far below any cultural expectations otherwise); to a point it might be interpreted as patronizing its group of users. The untransformed idea, or rather the image-based representation of a generative idea, becomes the architectural equivalent of a comedian’s flat one-liner that only gets laughs from the obnoxious drunks in the back of the room.

There are several examples in which users can accurately interpret the aesthetic of an architectural work synonymously with the referenced generator. Frank Gehry’s frequent interest in the formal qualities of fish have appeared in several of his projects, the most literal of which is the Fishdance Restaurant (1987) in Kobe, Japan. The company headquarters of the Longaberger Basket Company (1998) in Newark, Ohio, by NBBJ Architects so accurately represents the proportion of one of Longaberger’s baskets that it also features basket straps in order to complete the viewer’s cognitive understanding. Both of these projects maintain a cognitive clarity between their respective design generator and fully-realized state of architectural finish, which in both of these cases achieve an iconic state of being due to the use of an image-based generator instead of an ideologically based one.

Nonetheless, the question remains: if it is necessary to reference something other, then how does one do this in a meaningful and beneficial way? One successful method is to embrace an abstraction of the other idea or phenomena through the deliberate vehicle of a design probe.

Design probes have value in their multiple roles of identifying, refining, and executing a particular generative idea or phenomenon. Its author will find that it provides several developmental benefits, including the memorialization of a design intent, and the creation of a physical

3. Contour drawing of a bow and a gesture drawing of a bow.
three-dimensional artifact through which idea abstraction can be executed in physical form and then analyzed. The probe is not an architectural option, nor a mere iteration within a range of architectural options. The design probe is a destination unto itself and plays an orbital role to an otherwise linear architectural design process.

To understand the value of designing in a non-direct, non-representational way, consider the role of gesture drawings [Fig. 3]. In his title The Natural Way to Draw, artist Kimon Nicolaïdes introduces the use of the gesture drawing to his student audience. For Nicolaïdes, the role that gesture drawings serve is fundamentally different from observation-based contour drawings; gesture drawings are interested in the *impulse* of a subject, not its edges. When executed correctly, there may or may not be anything in the gesture drawing that suggests the physical, observable identity of the subject. The gesture “will sometimes strike the edge (or contour) of the form, but more often it will travel through the center of forms and often it will run outside of the figure, even out of the paper altogether.” Divorced from establishing the visual cognition of contour drawings, gesture drawings will likely reveal a physical, yet non-observable presence within a subject that might otherwise remain hidden from the illustrator’s consciousness. It is within this same spirit that three-dimensional design probes operate and flourish as perfunctory acts. Although design probes must be three-dimensional, they relate to a forthcoming architectural design just as Nicholades’s gesture drawings relate to a forthcoming sustained contour drawing. As such, probes present an opportunity for ideological programming.

Since design probes possess the same physicality as its corresponding *raison d’etre*, similar two-dimensional investigations are highly challenged to yield value proportional to that of three-dimensional design probes. Whereas architect Steven Holl’s watercolors clearly play an instrumental role in his probing of architectural possibility, they differ from design probes considerably due to their identified subjects, timeliness of execution, and ultimately, the limitations of their media.

While Holl’s most memorable and distinctive watercolors are those executed without regard to a specific creative need, it is surprising then to find in *Written in Water* that 233 (or 63 percent) of Holl’s watercolors are actually of architectural subjects whereas only 138 (or 37 percent) of his more-familiar watercolors are of an abstracted nonarchitectural subject or found object. In turn, the majority of Holl’s watercolors serve as a catalog of spatial conditions or architectural sequences, while maintaining a healthy distance away from site issues and programmatic requirements, upon which future architectural solutions may be based. For Holl, two-dimensional watercolors are a vehicle for capturing fleeting thought – to identify, as Holl credits Louis Sullivan, his “seed germ” – instead of furthering its development within the chosen medium. Holl’s watercolors represent various three-dimensional subjects within a flat two-dimensional medium.

### Extracting Value from Probes

As an architectural educator, I have typically required students to design and build design probes as an immediate precursor to their forthcoming architectural design problem for design studios of third-year standing or above. However, the design probes featured in this writing were generated as part of a fourth year architectural design studio at the University of Nebraska whose primary curricular goal is Tectonics. Prior to the introduction of the design probe assignment, students were provided with full site, program, and user group information for the larger architectural design problem. Of the thirteen weeks spent on either project, the first (2.5) weeks were earmarked for the design and execution of a design probe. Students enrolled during the Fall 2005 semester proposed designs for a Museum of Agricultural Technology whereas Fall 2006 students proposed designs for a research center for renewable energy. Both projects were designed for different sites on the University of Nebraska campus in Lincoln. The most recent assignment, as issued, requires that design probes shall:

1. identify an idea or phenomena that is both:
   - of sustainable interest to the designer.
   - believed to act as a strong heuristic device for making three-dimensional design decisions.

2. physically manifest the chosen Idea or Phenomenon through the deliberate construction of an abstracted three-dimensional construct.

3. not exceed a collapsed or compressed volume of two cubic feet.

4. consider their own materiality, aesthetic expression, and craftsmanship. (The design probe is a physical artifact; it is not a representation or scaled model of an artifact.)

5. consider their own operation, function, or utility (if applicable).

6. be of deliberate intent and meaningful construction – a probe is not a found object, although it may contain

Chris Ford: Probes: Merging Artistic Thinking with an Architectural Methodology
found objects. From these studios, I am convinced that design probes serve multiple heuristic roles in a designer’s thinking, whether from a conscious or subconscious level. However, as a means for a student designer to consciously extract value from a design probe, more often I find that the student designer does so from one primary set of probe attributes. While students are not limited to extract value from exclusively one set, it allows for an expediency in applying the assessed value to the immediate architectural design problem at hand. Also, the identification of one set of attributes allows the student designer to prioritize their appreciation for the design probe and reserve the right to intellectually revisit the design probe on an as-needed basis. While the student examples that follow can be categorized into three distinct groups, it would be unfair to conclude that either the student designer’s thinking, or the latent value to be extracted, lies firmly within the compartmentalization of these suggested categories. However, in the spirit of quantifying the role of a design probe in an architectural design process, probe attributes can nonetheless be categorized into three groups; the physical, the performative, and the phenomenological.

The first design probe example demonstrates how the physical properties of a design probe may serve as a heuristic device for architectural design [Fig. 4]. As student designer Kevin Augustyn familiarized himself with the spatial needs for a renewable energy research center, he also began to consider the relationship between energy and larger society. Citing an increased proliferation of electronic devices (such as computers, cell phones, iPods) and a decreased cultural awareness of the variables that form the national electrical infrastructure, he identified that energy issues receive society’s highest attention in energy’s absence. Whether due to blackout, brownout, or sporadic downage due to storm conditions, other energy issues such as environmental impact remain secondary to the primary simple interest of necessitating a constant supply to meet demand-at-will.

The probe design consists of an exoskeleton made of cut and welded threaded rods, painted with a black finish. In turn, this exoskeleton enabled the attachment of various items that would be suspended within its own cubic cavity. Specifically, there are two axles, each spanning the diagonal of the cube and set perpendicular to each other. Each of these axles is attached to its own radio-controlled electrical motor; however, both motors share the same frequency and are run from the same remote.

4. Design probe investigating the duality of energy’s presence and absence (Photo: Author; Renderings: Kevin Augustyn)
As each motor spins its respective axle, they also rotate two shaped blades, made of aluminum flashing, located at the extreme ends of the axles. When all four of these blades are rotating in motion, they cradle their implied, shared centroid, which is occupied by a halogen lightsource. This halogen lamp is supported by its own structural support and operates independently from the axles themselves. Although it is not clear if the rotating blades are working to contain the centroid or if they are providing the centroid protection from external entities, the performative aspects of this design probe create a theatrical event in its transition from its latent state as a fixed aesthetic object to its fully kinetic state as a compelling demonstration of quickness, brightness, and the beauty of an electrical machine. Despite its operational characteristics, however, upon a postproduction analysis, the student designer identified two physical characteristics of the design probe that were of generative value for architecture.

The first physical characteristic is the composition of the blades proper. Once identified, it was important to the student designer that these characteristics found themselves again in the forthcoming architectural work. The geometry of the design probe blades possesses an angularity of its shapes in both elevational profile and section. This prompted the student designer to consider multiple, angular, three-dimensional compositions on the site that, while accommodating the designer’s programmatic intent, would also have to simultaneously satisfy a particular aesthetic expectation. The final architectural proposal therefore reflects angles that separate and converge as the building meets the ground plane. In plan, the research center is nestled into the far southwestern corner of the allowable site area and finds an obtuse angular geometry in plan, informed by a bicycle path to the west and a vehicular roadway to the south. However, the final architectural composition itself seems to erupt from the ground rather than being placed upon it – while the elevational profiles of main walls and the sloped roof possess the same obtuse geometry as found in plan, the ground plane behaves much more acutely, as found within the transverse section. Beyond geometry, the student designer also identified the materiality of the blades as having desirable characteristics; and therefore its gray color, dull finish, yet high metallic sheen was also present in his final design with his specification of a titanium panel rainguard system.11

The second characteristic is both the presence and the
absence of the light source. Whereas the design probe fixes the position of the light source and plays an instrumental role in the visual aesthetic and experience of the probe in full operation, the student designer chose to strategically regulate the light levels within the architectural composition so as to teeter on the threshold of just barely enough and not enough illumination in public areas. While the student designer provided full artificial lighting for the needs of energy research labs and private offices, the intentional contrast between these occupied spaces and the public corridors was to serve as a consistent visual reminder for the important work conducted within the facility. To this end, the student designer decided to not allow for any apertures in the titanium envelope. Instead, the interior of the building only receives ambient daylighting, which is the result of two glass endwalls above grade and a longitudinal break between earthen retaining wall and the building’s below grade enclosure, also a glass storefront system. This same architectural enclosure, which by day mediates the amount of ambient light emitted into the interior spaces, is by night the locations of filtered light from within, as it gently sheathes the hard titanium surfaces in a warm glow, similar to that found in the design probe. In fact, it is a similar interest in the direction of light that brings us to the next example [Fig. 5].

The second design probe example demonstrates how the performative properties of a design probe may serve as a heuristic device for architectural design. Once a program for a 40,000+sf Museum of Agricultural Technology was issued, student designer Cole Wycoff identified an interest in the dramatically enhanced phenomenon of light when inverting its natural direction. If we share a recognition that solar lighting is typically from above and cast downwards, then this design probe investigates the potential acquired when reversing its source direction. The designer’s interest in this dynamic was prompted neither by a congruency with the site, nor program, nor user group— the origin of this designer’s interest was admittedly from outside of the given design problem proper.

The designer’s first conceptual image was a computer-generated fissure in an earthen surface from which a highly intense lightsource pierces upward toward the atmosphere above. In his further development of a probe that would best demonstrate this identified phenomenon, the designer concluded that a construct with more volumetric qualities would be more appropriate to showcase this phenomenon than a mere flat plane. The student designer first secured an electrical light source with a thumbswitch on its cord and a compact-fluorescent bulb fixture. Since the compact fluorescent emits significantly less heat than an incandescent bulb, this design decision would allow for a greater number of enclosure designs divorced from any internal ventilation requirements. When considering the character of various enclosures, the designer allowed himself to choose its materiality first. The student secured a long piece of Bolivian Rosewood due to its distinctive color and densely-compacted wood grain. The source Rosewood material was planed and cut to a maximum possible width so as to execute this panel method while also maximizing the size of the internal cavity to accommodate the light-source. The student conceived of a methodical panelized system that would use small armatures to connect the structurally rigid wood panels to others immediately adjacent. Individual wood panels were 4.5” x 4.5” and the constructed design probe has the maximum physical extents of 9.5” x 9.5” x 9.5”. By quickly equating the overall form of the design probe with a cube, the designer allows himself to better consider other physical aspects that were believed to be of greater importance and/or informative impact.

The quality of the Rosewood material prompted the designer to expand his original generative interest. Instead of the probe investigating the surprise that comes from perceiving an object illuminated from an internally lit light source, it morphed into the dynamic between two things: the perception of an object with light bombarding its exterior surface and the perception of that same object with light emerging from its interior instead. Upon completion, the probe was found to perform in a way identical to this generative interest but also commanded interest as a beautiful, aesthetic object. Perhaps not surprisingly upon a postproduction analysis, the designer recognized a parallel architectural dynamic between his probe and any architectural work exposed to a natural day/night cycle. This motivated the student designer to strongly consider the visual appearance of his Museum of Agricultural Technology design during nighttime hours so as to increase its public curb appeal.

As the designer engaged the architectural design problem and contemplated how to interface his phenomenological expectations with the issued site, program, and user group, he maintained an interest in a certain aesthetic performance first discovered in the execution of his design probe. The final solution bears a strong physical resemblance to the final probe; however, the architectur-
al solution operates at a scale of 40,000+ sf and whose composition is dependent upon more than one mass: most of the architectural program was relegated to the stereotomic basement and ground floor areas to maintain proportional control for a tectonic enclosure above. In turn, this tectonic enclosure serves as a premiere hall for showcasing historically significant tractors. Due to the fondness for its aesthetic qualities, the designer chose, however, to retain as many physical qualities of the probe as possible in his final architectural solution. For instance, apertures were kept at exaggerated vertical or horizontal proportions, and it allows for visual access to the continuously running structural frame beyond, similar to that of the probe. While the red finish of the architectural proposal was originally prompted by the Rosewood found in the probe, the designer cited a congruency with the University of Nebraska team colors as a reason for retaining this finish. Finally, due to the floor area necessary to properly showcase the Museum’s collection, the designer chose to not insist upon a cubic form for the grand hall but instead allowed the programmatic requirements for the architectural design problem to prevail. This is not to suggest the designer conducted a mathematical calculation for determining the floor area provided but rather found another desirable three-dimensional proportion that in fact exceeded the minimum requirement for museum gallery area.

The third probe example demonstrates how the phenomenological properties of a design probe may serve as a heuristic device for architectural design [Fig. 6]. Student designer Britt Woolf demonstrated initial apprehension toward the employ of a design probe into her architectural thinking. The design probe was not seen as an opportunity for enhancing her approach to the design of a Museum of Agricultural Technology but rather as a hurdle to realization. With a declared interest in the design of a building’s tectonic enclosure, the design probe requirement was perceived to delay her engagement with more universal architectural issues. However, once the opportunity for a design probe was more fully recognized, the student designer identified a phenomenological congruency between the agricultural program of the forthcoming facility and agricultural crops themselves. Although this student designer’s interest was grounded firmly in the architectural realm, she decided to systematically deconstruct and re-present the multiple layers evident in an ear of corn as a means for making new discoveries.

A corn stalk is composed of the stalk proper, the husk, the corn kernels, and the corn cob. In identifying these...
The design probe has overall dimensions of **12” x 6” x 6”**. The design probe is organized in a way that could be described as an exploded section cut. Within the probe, each layer of corn stalk material is organized and attached to its own steel subframe, and is suspended with high-strength fishing line from above. The subsequent subframes are rectangular in profile, but of incrementally dimensioning scale. Of the main four elevations, only one reveals the section view of these otherwise exploded ear components. While it is the most visually revealing, it is also clear to see how the organization of the probe has influenced the design of the corresponding architectural envelope. (Whereas in the previous two examples we have witnessed the sequential development of a physically manifested idea or phenomena that is then evaluated and applied to the architectural realm, this example is in full concurrent engagement with both the physicality and prevailing character of constituent materials as they suggest an architectural application.)

As a larger site strategy began to interface with the generative potential of the design probe, the student designer intentionally extracted value from the design probe as it related to the question of architectural tectonics. In so doing, we see a clear correspondence between the corn stalks forming the outside perimeter of the probe and the exoskeletal frame of the final architectural solution. Moving inward, we also see a correlation between the woven husks of the probe and the wood *briese soleil* just as the suspended kernels of corn loosely correlate to the plane of glass enclosure to the final MoAT design. The barren cob lacks a specific role in the overall assemblage other than it providing an internal structure for supporting its outer associative layers. Perhaps it may represent a patron/occupant who unknowingly becomes a key participant in a full reading of probe-to-architecture correlations.

**Conclusion**

While the probe is to serve as a vehicle for exploring a particular idea or phenomena in nonarchitectural terms, upon completion it also plays a communicative role to others in its ability to physically manifest a generative idea or phenomena. However, new observers often utilize an internalized cognitive analysis to come to terms with a probe’s physical and nonphysical qualities. Due to the level of abstraction necessary for the success of design probes, there should be no expectation for new observers to interpret the probe with the same understanding that generated it. This does not, however, diminish its communicative power. A design probe, like architecture, is capable of physically manifesting an idea or phenomena. However, we must continue to recognize that observers will typically employ interpretive metaphors to understand what they see and experience, especially when they encounter something new. The deliberate creation of a design probe, as a precursory act to a specific architectural design problem, is an opportunity for ideological programming. For the architectural designer, the design probe presents multiple opportunities. It serves as a vehicle for manifesting a nonarchitectural idea or phenomena in physical three-dimensional form without the complication of additional considerations for the universal aspects of site, program and user group. It serves as practice territory for making three-dimensional design decisions that stand the test of construction. It has an aesthetic that arises out of its deliberate physicality and perhaps, if applicable, additional ones that arise out of its operation or local phenomenology. It provides an opportunity to test and evaluate the helpfulness of a chosen generative idea or phenomena as a heuristic device. Furthermore, its assessment provides the author with an opportunity to tweak, amend, jettison, or switch the observed idea or phenomena prior to using it in the larger architectural design problem. The aesthetic qualities of a design probe lend themselves most easily to helping designers make architectural design decisions. However, if through the creation of a design probe the designer is able to enhance one’s understanding of the *essence* of an identified idea or phenomena, then the designer has extracted its best value and has discovered why design probe investigations are both a provocative and creative methodology for architectural design.
Notes
2. Ibid., 44.
3. The term “heuristic devices” is used in the same spirit as introduced within Peter Rowe’s “Design Thinking.”
4. I anticipate that architects interested in sustainable architectural design will argue that a specific site will lend itself to several environmental heuristic strategies. I do not disagree: some sites will have better access to solar, wind, and geothermal resources. However, these site aspects are highly general and none of which directly affect the specific aesthetic or experiential expectations for the architectural design proper. To this end, many LEED buildings today are aesthetically and experientially indistinguishable from non-LEED buildings.
5. In his January/February 2001 Details article titled “Building Envy,” author Kevin Grey asked architect Richard Meier about the then-forthcoming design for two eighteen-story residential towers with floor-to-floor glass in Manhattan’s Greenwich Village. Since the sites for both towers were directly engaged with West Street, the project was not subject to the same Greenwich Village historical review, required on the eastern half of the same city block. Therefore, when the contextually minded author asked if the 173/176 Perry Street development would pay homage to the aging brick structures next door, Meier responded, “No, why should they?”
7. Ibid., 15.
9. Ibid.
10. Most nonarchitects understand the term tectonics to mean plate tectonics in a geological sense. However in the discipline of architecture, tectonics refers to the physical systems necessary for architectural enclosure, which are considered on both theoretical and technical levels. These systems include but are not limited to floor, wall, and roof assemblies in conjunction with their associative materiality.
11. While this student designer had committed to the use of a titanium panel system early in his architectural thinking, this decision was reinforced in late October 2006 during a class visit with the student’s positive response to the Denver Art Museum addition designed by Daniel Libeskind.
Sketching with Stones

by Will Wittig

Will Wittig is an Associate Professor at the University of Detroit Mercy School of Architecture, where he teaches the Masters Thesis studio, ecological design, a design-build elective studio, and an introduction to physical development course for the Community Development program. He also holds the position of Co-Director of the Masters of Community Development Program. He is a registered architect and is a founding partner of Crossings Architecture. He holds a professional Bachelor of Architecture from the University of Kansas, and a Masters of Architecture from Cranbrook Academy of Art.

Introduction (Medium)

Conventionally the act of design is often restricted to a linear process that hopes to prescribe a very specific and predictable outcome. In architectural speculation in particular, the process of design is typically limited to the creation of illustrations that attempt to suggest a phenomenological condition, and a set of graphic instructions that the designer hopes will lead to the realization of the imagined condition. All too often, the modes of representation rather than the actual materiality of the constructed environment are thought of as the architect’s medium. This disconnect between design and the actual stuff of building diminishes the potential for meaningful feedback during the design process and tends to amplify the breach between our speculations and the real pleasure of our works in the world. However, if the design process can directly engage materials and acts of making, perhaps the limits imposed by conventional prescriptive and representational methods of design may be expanded.

A painter’s medium is not particularly elusive, but as architects, we sometimes lose sight of the actual medium of our work, which is the stuff of building: the smooth stones along the path or the timber beam with its weight and fragrance. Our medium is not intellectual constructs, and likewise it is not lines of graphite or data. As a simple analogy, if one were to compare a child’s shoe to a small stuffed bunny, there is a profound difference between the two objects [Fig. 2]. Conceptually the bunny, like the architectural rendering, cannot even exist without referring to something else. The shoe, however, is an independent entity. Its construction may be indicative of a specific culture or its place in the lineage of shoe design, but in the end, it is simply a shoe. In comparison to the stuffed bunny that’s all you

1. Eva Hermesmeyer, “Plastic Stones” (Photo: Author)
really need to know.
Likewise, on some level a house is just a house. It can only be distinguished by its own making: what it is made from and how it is assembled. The house does not exist within a frame, set apart from the world, but is inevitably of the world. It is essentially a confluence of materials, assembly, structure, and form without referent. It may be influenced greatly by site and inhabitation, and by the designer’s response to the human condition; but at its core as a physical presence, architecture is primarily about its own making. Therefore, if we expect our work to aspire to the poetic, this sense of meaningfulness must somehow be present in the actual thing itself in order to be felt by the inhabitants of our work.

This point of view, which is understood to be limited, serves as a departure point for two investigations: one a body of student work and the other developed by the author. The premise of the work illustrated here is that, if we accept this somewhat unconventional position and we hope to achieve different results, we necessarily must adopt a different method of working. If the designer has become disconnected from the act of making as well as from the material artifact itself, how can we shift the design process to restore an understanding that the actual making of architecture is our medium?

ACT I: Constructing a Body Circumstance

Pedagogy (Positions)
Act I will present an experimental design process explored over the last several years by students in an upper level design-build seminar. Students work toward the creation of a full-scale construct not by developing plans and models but by working directly through material investigations as the primary, if not the exclusive, form of design speculation. Material studies serve to inform the development of the work at every stage and on every level, from conceptual ideas to the testing of detail conditions to the realization of the final inhabitable constructs. The work operates generally at the scale of furniture but is never described using terms associated with furniture typology. The initial portion of the course includes some traditional seminar work where a number of issues are raised to lay the foundation for a shift in the relationship between design and making.

In the beginning of the course, using the writings of David Pye and Kenneth Frampton’s writings on Gottfried Semper’s theory of the four elements of architecture (a hearth, an earthwork, a framework/roof, and an enclosing membrane), we engage in a lively discussion of craft and manufacturing, the status of materiality relative to the contemporary making of things, and the relationships between designer, maker, and the object of their work. Initially a case is made for the fundamental importance of the relationship between materials, tectonics and form using basket weaving as a metaphor. The Semperian discussion in particular leads us to an understanding that the architectural vessel is essentially derived from textiles, or the stitching of one material to another—what might be referred to as aggregation. Generally, as with the basket, small parts are combined according to a pattern to create planes and eventually volumes. Taken to its conclusion, following Frampton’s interpretation of Semper, this line of reasoning suggests that all architecture is inevitably understood by the joint, the moment when materials are joined.

We then move on to question the importance of materiality in our contemporary material culture. This enables us to consider, for example, the differences between a tin watering can and a plastic watering can. A case can be made that, in our culture, we demand a constantly changing landscape of form and novel variations of function; but the actual material qualities of an object are of little significance. We are not really a one-size-fits-all society but what one might call a one-material-fits-all society. If an object has a fresh, eye-catching look and it performs a designated task, then we are not particularly concerned with its tactility, its material properties, or
how it was made. Its materiality is pressed to the margin. The argument here is that if we continue to dematerialize our material culture, eventually design itself may cease to be of any value beyond pure co-modification.

In the student’s work, the threads of Semper’s textile metaphor are evident: architecture is made from building blocks that are joined together to create form and space, often in a very repetitive manner [Fig. 3]. However, the work has avoided the prevalent digital mode of aggregation in an attempt to keep the process of design firmly rooted in methods of making that require the direct engagement of the designer with the stuff of buildings. The course is also designed to intentionally confound the methods used in the design studio, which typically rely heavily on the myth of the predictable realization of a preconceived outcome. In this case, the process emphasizes constant experimentation and testing with the selected materials [Fig. 4]. The design and even a sense of the purpose of the final piece evolves out of this testing method, with very few drawings or models used to illustrate the final construct.

Although the class is sometimes referred to as a design-build course, if the class was based on a conventional process but simply added the component of constructing their designs, students would undoubtedly spend a great deal of time developing the image of the piece they hoped to construct. In that case, the only feedback that would be available to them would be the familiar form of speculation based on how their critics believe one might react to the piece once constructed. Perhaps to some degree, it is precisely this limited form of engagement with the work that leads to the dematerialization of the designed object mentioned previously. The product of our design work is typically representational; however, we expect our realized work to be brought to life by inhabitation — by the engagement with and the interpretation of the physical environment by inhabitants. Ultimately, this is how our work is understood, and yet the conventional design process never provides an opportunity to truly test the phenomenological aspects of our proposals. Additionally, it is very likely that a linear design plus build process would result in countless errors in judgment about the actual feasibility of constructing the objects. Although the improvisational method does carry its own set of risks, given the students’ inexperience with materials and assembly it is likely that a conventional prescriptive method would result in even more cases of structural failure and unconstructability. Conversely, the expectation that the final construct must engage an anticipated inhabitant is also a critical component in the process. To allow the investigations to remain comfortably located in the realm of open-ended material investigations would limit the role of the exercise as an analogue for architectural design. The process does begin with open-ended experimentation, but eventually there is an insistence that the final construct must respond to a specific human necessity or desire.

**Process (To Make)**

To begin, each student selects a material and a set of processes used to manipulate the chosen material. Although the students are aware of the general goals of the final construction, they are not allowed to design the piece or even determine the purpose of the piece initially. Working from Richard Serra’s list of action verbs as a foundation, students explore methods of casting, cutting, crimping, etc. to begin to understand the proper ties and potentials of the materials they are exploring. Although these choices may be somewhat random initially, through this process of testing, each student inevitably finds a combination of material and technique that they are interested in exploring further [Fig. 5]. At a certain point in the process, a need for some kind of intention develops. Without a desire in mind, it can become difficult to know how to continue with an open-ended material exploration once an initial set of tests...
have run their course. At this point, the students are asked to add light to their material palette as an external element that requires a reaction. This subtle inflection in the process allows them to begin the search for a desired effect. They are not asked to design a light fixture (and the artifacts from this stage are definitely not evaluated as a light fixture design might be) but they are asked to simply do something with their material exploration that responds directly to a light source. This sense of intention shifts the open-ended material “play” into a realm where solving technical challenges in service of a desired effect naturally becomes a part of the process. They are not yet designing a finished object, but this simple requirement allows the material studies to seem purposeful [Fig. 6].

Once the light study is complete, they are given a very short period to invent a circumstance that will frame the intention of their final construct (essentially a “program”). In the end, the only rigid parameter placed on the final work is that it must anticipate some form of human interaction that gives it a sense of usefulness. For example, we would never say in the class that someone is designing a chair, but the construct certainly might anticipate the human body finding a comfortable reclining position. In order for the premise of the course to be fully tested, it is important that the process ask questions about materials and assembly relative to human interaction in a way that might occur in an architectural situation.

Students do not make a visual proposal at this point but simply a narrative proposal, which may not name the piece using typological nouns (i.e., chair). The articulation of the circumstance then allows the students to continue the material explorations with a more specific intention in mind. They now know generally how they want users to react to the final piece, which inevitably raises new questions about the properties and potentials of the selected materials.

Most students do create some simple sketches or perhaps even a study model of the piece along the way, but these typically fall into one of two categories. In some cases, the sketches attempt to loosely capture the spirit of the piece as it would be inhabited [Fig. 7]. In other cases, sketches are used to begin to anticipate the tectonic details that may be involved in the assembly of the piece. Sketching is rarely used to test out the shape, proportion, or formal configuration of the pieces; and it certainly does not substitute for a real tactile understanding of the materials in question. By this point in the process, it is interesting to note that this de-emphasis on representation occurs naturally without a formal declaration that “no plans will be drawn.” (In some cases, admittedly, this lack of compositional testing is evident in the aesthetics of the final constructs, but for most students, questions of proportion, scale, and composition seem to take care of themselves without being painstakingly “designed.”)
The final step in the testing phase is to produce some type of mock-up that anticipates the final construction. Depending on what needs to be tested, this might take the form of a mock-up of a particularly difficult detail, or in other cases, it may be a smaller version of the final piece [Fig. 8], or a crude assembly of the entire piece.

Finally, the students begin production of the final piece. In many cases, there is still a level of uncertainty about the success of the piece in terms of stability, comfort, or other forms of what might be called “performance”; but experimentation and risk are encouraged through the final stages of the process. In the context of a one-term, three-hour course, the best that one can really hope for is the completion of a first “prototype,” which means that some aspects of refinement that might be expected of a “well-crafted” object are not considered to be important [Fig. 9].

In the end, the measure of success is not the level of craftsmanship or comfort that has been achieved (although these measures might be discussed). The primary measure of success is the extent to which a student has allowed the material explorations, rather than a preconceived formal idea, to guide the process of development. In creating a built condition that anticipates human inhabitation through the confluence of material, assembly, structure, and form, the final question is simply this: through the work of their hands, have they discovered “what the brick wants to be”?

ACT II: Homespun

To Sketch

This second project takes on the question of how larger work, in its speculative stages, might exist in the world rather than being understood only through the frame of representation. With the previous example, students are working towards a finished object. In this case, the objects created by the author are asked to straddle the “frame” to operate both as “finished” objects that should be understood on their own terms and also as a form of open speculation.

When working more directly on architectural proposals,
rather than something that essentially operates at the scale of furniture, the fact of scale creates an inherent necessity for representation in the development of our ideas. Regardless of the chosen media, what the architect produces remains as “model.” In conventional practice, one might say that we can only hope to create a compelling “stuffed bunny,” and we are destined to fall short of creating anything that has the direct clarity of a well-made shoe. The question of whether or not, or in what ways the proposed building takes on the question of representation is irrelevant; the method of development is still trapped within this paradigm. How then can the mode of speculation be altered to include ways of working that are not simply representational?
Can we construct artifacts that expect to be engaged on the terms that are presented by the objects themselves, without a FRAME of reference? Again, we expect our work to be brought to life by inhabitation, by the engagement with and the interpretation of our proposals by their inhabitants. One might ask how the stuff we produce along the way can also take on this quality of open-endedness that demands the tactile engagement of others?

The project illustrated in Act II presented a situation that served to test this theory at a slightly larger scale. The work is based on a series of speculative house proposals; but rather than beginning the design process with plans for a house, the project proposed to begin the process with a series of speculative constructions to be exhibited in a gallery setting. The concept of three wall-fragment installations was accepted by a museum as part of a small group show exploring material recycling in architectural and furnishing prototypes. The agreement was made with the museum before any of the pieces were constructed, which meant that the pieces would not simply be the by-products of an open-ended material testing process but would be expected in some ways to be finished products in and of themselves. A literal wall section, for example, would inevitably be understood diagrammatically as a representation of a larger thing; once the visitor understands what it represents, there is no lingering sense of wonder, or invitation to engage the piece on its own terms. If the installation instead hopes to elicit a direct intuitive response from the gallery visitor, as an abstract sculpture might, perhaps this transaction might be closer to the experience of an actual building [Fig. 10].

At its core, the work illustrated here is intended to question the nature of the process of speculation. The proposal is that the actual stuff of building can be treated as a sketching medium. The project that served as the vehicle for this exploration is a larger architectural design project that seeks to develop a series of sustainable house prototypes. The idea is to then consider the development of a residential block that grows from an aggregation of variations and combinatory hybrids of several house prototypes. The design of each house begins with a specific material concept that hopes to combine the recycling of everyday materials with various natural (passive) design techniques. The houses will eventually be designed based on the knowledge gained from this initial speculative research.

10. Wall Fragment with Museum Visitors (Photo: Author)
11. Exposed Wood Plank Wall Sheathing (Photo: Author)
Building Fragments

The ambition of this first step was to attempt to uncover the spirit of each house by constructing what might be referred to as a wall fragment, but these constructions are decidedly not meant to be understood as literal wall sections. Although in some ways they were used as a means to test certain conditions, they were primarily thought of as a method of sketching—uncovering what each house wants to become based on an understanding of a full-scale manifestation rather than a pre-conceived form. The process also required a sense of improvisation that is expected of a sketch given that the time allotted for fabrication of all three pieces, including installation in the gallery, was only twenty-seven days. It is hoped that each installation is a complete artifact that may be engaged without any consideration of a life outside the gallery. Each is also, at least from the author’s perspective, an imperfect and incomplete sketch that suggests a range of additional iterations on a trajectory that anticipates the design of a complete house.

Plankhouse

This piece was done in collaboration with a non-profit-building deconstruction organization, The Architectural Salvage Warehouse of Detroit, which donated the material as well as the harvesting labor. The term "deconstruction" is not used here accidentally, as the buildings are literally deconstructed in a manner that is basically the reverse of the sequential process that is used to construct a building. Using this method, up to 90 percent of all the materials in a building can be recycled. The design of the piece was inspired by the wall sheathing of homes built in the early part of the twentieth century. When a home from this era begins to lose its cladding out of neglect, a layer of 1” x 6” plank sheathing is often revealed [Fig. 11]. The idea was that if one were to recycle this lumber, it could become the finish material if the exterior wall was detailed as a rain screen (in this case, the floor structure and subflooring was used in a similar manner) [Fig. 12]. The openings in the wall fragment are meant to suggest opportunities that are presented by the plank detail such as integral shelving and window seats [Fig. 13, 14].

In considering the future development of the house, the design hopes to allude to the concept of a quilt or a patchwork. The idea is that the use of recycled materials...
would be celebrated in the design of the house so that its previous life could be revealed. In this case, although the fragment was made from a very limited palette of materials, care was taken to ensure that the diagonal marks in the patina left by the floor joist were preserved in the finishing process.

**Paperhouse**

This piece is intended to suggest that a house could be constructed out of products that are made from paper, paper derivatives, and elements that are accessory to the paper industry. Sigeru Ban for example has demonstrated several exciting structural systems made from paper products. Cellulose (recycled newspaper) insulation also brings to mind alternatives such as shredded and bailed paper used as wall blocks, and there are traditional examples, both crude and refined, of paper used as a substitute for glass. This piece was also influenced by the vernacular tradition of placing newspapers flat in the walls and floors of a house to distract evil spirits who presumably will never finish reading the text on their way into the house [Fig. 15].

From all these possible explorations, the installation focuses on one very simple idea: aluminum plates that are used to print the daily newspaper could be reused directly as a cladding material for the house. The plates are installed using the existing holes and crimped edges that hold the plates in the presses (the bottom edge of one plate is hooked under the folded top edge of the previous plate to prevent uplift) [Fig. 16]. Newspapers sealed with polyurethane serve as a kind of “peasant’s glass,” and continue the uninterrupted skin of text. Recycled newspaper in the form of Homasoate is used for the structure of the wall fragment, although at this point it is not meant to suggest a legitimate structure for the house. The prototype uses thirty plates, which represents less than one day’s worth of printing for a typical city newspaper (It should be noted that the plates used here are rejected plates that did not make it to the presses) [Fig. 17, 18]. The average single family house, which has approximately 1,950 square feet of skin, would require 1,181 plates or roughly three weeks.
worth of printing. In a relatively subtle way, the fragment is meant to demonstrate the formal possibilities of folding that are offered by the use of pliable sheet metal.

Waterhouse

This installation was inspired by the vernacular tradition of including glass bottles in masonry walls to allow for some measure of translucency [Fig. 19]. If the bottles were filled with water and placed behind a curtain wall, this practice could be combined with the phenomena of thermal mass to create a wall that could simultaneously store the heat of the sun and create a fantastic quality of light [Fig. 20].

Wine bottles were selected for the container system because typically wine bottles are not recycled. In many locations, green glass in any form is not recycled, which means that even wine bottles that are collected privately are destined for the landfill. In testing the stacking of the bottles, it was discovered that some bottles that appear to be straight actually taper slightly from the shoulder to the base of the bottle. This fact suggested that the stack of bottles might want to be curved in plan. When collecting bottles randomly, not all of them have this ideal shape. Test stacks showed that a gentle radius was created naturally, and these tests determined the precise curvature of the wall in plan. The steel frame configuration in elevation was also derived from the natural sixty-degree stacking pattern of the bottles [Fig. 21-23].

The prototype has a capacity of 832 bottles. In a properly designed house, this would provide enough thermal capacity to stabilize the temperature for approximately 210 square feet of living space. The gauge of the steel armature could easily be increased so that it could also serve as the structure for the house, which was implied by the joist elements in the installation. The curve in plan would also increase the effectiveness of the thermal storage, as it would allow the south wall to remain more closely aligned with the sun as it passes from east to west.

Conclusion

A strange form of detachment from the subject of our work so often dominates the activity of the architect.
While our work, perhaps more than any other art form, is decidedly in the world rather than being about the world, our efforts are simultaneously more detached from the actual product than any other art form. In the two examples presented here, a modest attempt has been made to release the designer from the confines of representation in the hope that our reengagement with the stuff of building might ultimately result in a more poetic making of place.

**Works Cited**

Although specific citations have not been made, the following texts have influenced the work shown above and the explanation of the work, as well as the development of the class content referenced in the text.


22. Waterwall Installation (Photo: Author)

23. Waterwall Installation (Photo: Author)
Demimonde: The Art of Architecture

by Pablo Castro and Jennifer Lee

OBRA Architects was founded by Pablo Castro and Jennifer Lee in the year 2000 in New York City. The work of OBRA has been exhibited at the Museum of Modern Art, PS1 Contemporary Art Center, Rhode Island School of Design, the Chicago Athenaeum, as part of the ACADIA Fabrication Conference held in Ontario, Canada, and at the Sandton Convention Centre in Johannesburg, South Africa. OBRA Architects was named one of 2005 Emerging Voices by the Architectural League of New York. Their work has been honored with two American Architecture Awards by the Chicago Athenaeum Museum of Architecture and Design and was published in a monograph by the United Asia Arts and Design Cooperation in Beijing, China in 2005. They have been published in A+U, Summa+, Architecture, Architectural Record, The New York Times, The International Herald Tribune, Concept Magazine (Seoul), and Il Giornale Dell’Architettura. OBRA is the winner of the 2006 PS1/MoMA Young Architects Program competition and will be participating in MoMA’s Conversations with Contemporary Artists series in February of 2007.

Pablo Castro was born in San Juan, Argentina. He was educated at the Universidad Nacional de San Juan in Argentina and holds a Masters of Science in Building Design from Columbia University Graduate School of Architecture, Planning and Preservation. He has taught design studio in the Graduate Architecture Department of Pratt Institute in Brooklyn, New York, and at Cranbrook Academy of Art as Architect-in-Residence. He has lectured at the Architectural League, Universidad Nacional de Chile, Universidad Diego Portales, Universidad Nacional de San Juan, New Jersey Institute of Technology, Rhode Island School of Design, Columbia University, Cranbrook Academy of Art, and the University of Minnesota. In 2003 he was named a de Montequin Senior Fellow by the Society of Architectural Historians. Pablo Castro is a 2006 fellow in Architecture/Environmental Structures from the New York Foundation for the Arts. He is currently a Visiting Professor at Parsons the New School for Design in New York.

Jennifer Lee was born in Washington, D.C. She holds a degree from the Irwin S. Chanin School of Architecture at the Cooper Union for the Advancement of Science and Art in New York City, and she graduated with honors from Harvard College in Cambridge, Massachusetts. She assisted in the publication of Soundings, Architectures in Love, and Adjusting Foundations by John Hejduk and The New York Waterfront published by Monacelli Press while working at the Irwin S. Chanin Architecture Archives at the Cooper Union. She has taught at the Graduate Architecture Department of Pratt Institute in Brooklyn, New York, as well as at Cranbrook Academy of Art as Architect-in-Residence. In 2003 she was named a de Montequin Senior Fellow by the Society of Architectural Historians. Jennifer Lee is a 2006 fellow in Architecture/Environmental Structures from the New York Foundation for the Arts. She is currently a Visiting Professor at the Cooper Union.

Architecture as art is not, at least not directly, related to the creation of new form. Architecture as art concerns itself mostly with what may be vulgarly regarded as the trivial things of the everyday, by simply providing the hollow background for all things to be, and it does so in a way that awakens us to the mysteries of existence lurking beyond the quotidian. In the continuous refinement of this role, architecture enables the uncovering of the depth of relationship between our selves and everything else.

A creature of such relationship where the delight of pure form coexists with what may seem simply necessary and prosaic, architecture is found existing in an artistic demimonde contaminated by the material qualities of the world around us, yet through its form, it obscurely radiates the enigma peculiar to the intentionality of conscious being. The finest works of architecture do not come into their own through capricious elaboration of possible configurations, but rather in consultation, so to speak, with the conditions encountered, leading to
the discovery of new modes of inhabitation allowed to proliferate.

**Faint Disjuncture**

A work of architecture is typically made up of a large number of dissimilar elements. All this matter somehow conforms to define an architectural whole, often surprising us in its sudden emergence. In the economy of its form, architecture finds the depth to elicit a meaning already latent in matter. In the best work, form and matter coexist in a delicate balance; if form holds matter too tightly in its grip, a significance is lost, and the work leaves us unmoved. The grip of form on material must be loose enough to tolerate a faint disjunction between elements to allow their material aura to slip through the natural cracks of the whole.

**Passage**

The paradox of the perception of architectural space, an unstable image that we can enter and inhabit, resides in the apparent flatness of its essential depth. Architectural space is experienced in the moment, briefly wedged between, behind, and beyond, its flow hinging, as we move through it, on the memory of the moment that has just passed. Viewed in this light, memory appears as the point of contact between psyche and the physical experience of architecture, the obscure passage between matter and space, the dimensions of the world, and time and memory; those of the soul.

**Unfolding**

A superficial disjunction is sometimes drawn between architecture and construction along the lines of their intended purpose, the contention being that to be of artistic value, architecture must be only for architecture’s sake. This view assumes that when something is given over to a purpose other than itself, it is made to relinquish its own meaning and accept a lesser role as a means to an end liable to be discarded once the objective, whatever that may be, has been met. But through a less reductive lens, the journey becomes the purpose and objectives, ever-distant and unreachable, are rather gradually inhabited in a continuous unfolding. Understood this way, the work of architecture is a perpetual work-in-progress whose aspects, those related to the imperatives of construction methods or perhaps the requirements of physiological needs or material comfort, those elements which are oft considered concessions to practicality can cease to be seen as artistic liabilities and simply become instances of a continuously unfolding intercourse between the impenetrable being of things and the solitary life of the soul.

In an evolving sequence of art that passes from image and object to action and environment, architecture, seen as the locus of unfolding lives, stands critically positioned towards a credible vision for the future of art.

**Works in Process**

Works of architecture, as inhabited hollows, are endowed with a behind and a beyond from which we find ourselves perpetually excluded. Because of this, to know a building demands an investigation that unfolds in time. The knowledge of architecture, comprised of what we see and what we have seen, takes place at the confluence of perception and memory: according to Bergson, the very reservoir of all experience in conscious life. OBRA’s design methods, aware of the nonlinearity of thought, rely on flashes of intuition sparked by the placement of heavy obstacles in the path of the intellect, forcing detours of enrichment in the design process. Many of these detours are effected through a reliance on team and interdisciplinary work. Removing the process of design from the control of one consciousness points toward previously neglected streams that can carry the work to unforeseen levels. But the shortcircuiting of the intellect through intuition relies mostly on memory, both personal and shared. In the process of designing a work of architecture, morsels of memory are harvested by striving for a deep understanding of site. It is of course important to know yearly maximum temperatures, structural characteristics of the soil and prevalent winds, but beyond that are realities that inhabit the history of the place, events, real or imagined, past or future, local beliefs, favored construction methods, even proposed programs. These complete, so to speak, the image of site we get upon initial examination of the physical, and through the project they become present in a tangible architectural way: the invisible, through architecture, becomes visible.

In the Aqueduct Housing project in Guanajuato, Mexico [Fig. 1], a need for housing is used as vehicle for the creation of a grand network of artificial rivers with innumerable tributaries and its own mysterious underground lakes from which the water will be drawn and used to grow a giant man-made forest amongst which people will live.

A house to be built in an orchard by the Andes, the House of Multiple Horizons [Fig. 2], proposes trees as markers
of unfolding lives with shadows that grow wider and denser with the years. In their multiplicity, juxtaposed within the house, the trees speak of the impenetrability of the other and the sometimes smoldering oppression of family life.

A summer pavilion designed for Coney Island is tightly defined by its spherical domes, and yet the integrity of its image is called into question by the changing light filtering in and out through its double-layered facade, making it appear circumspect and practical by day, yet festive and irreverent by night.
Part I: Beatfuse!

PS1 Contemporary Art Center, Long Island City, New York

For the Young Architects Program 2006 selection process, experts in the field of architecture, including architects, curators, academics, and magazine editors, nominated the finalists from a pool of twenty-five candidates that included both recent graduates and established architects experimenting with new styles or techniques from both the US and abroad. The five finalists presented proposals to a panel composed of Glenn D. Lowry, Director, The Museum of Modern Art; Alanna Heiss, Director, PS1; Terence Riley, Philip Johnson Chief Curator, Department of Architecture and Design, The Museum of Modern Art; Klaus Biesenbach, Chief Curator, PS1 and Curator, Department of Film and Media, The Museum of Modern Art; and Peter Reed, Senior Deputy Director, Curatorial Affairs, The Museum of Modern Art. OBRA Architects was chosen as this year’s winner and completed the project in June 2006.

This year marks the ninth summer that PS1 has hosted a combined architectural installation and music series in its outdoor galleries. Inherent in the challenge of this project are constraints of not only budget but time, with competition proposals prepared within six weeks and construction taking place in less than twelve weeks. While such demands in the past have led to solutions tending towards a more sculptural nature, the intent of the constructed gallery installation by OBRA Architects aims to envelop the inhabitant, pushing the experience towards an interiority that suggests a bridge between the realm of art and that of architecture.

“No two New Yorkers are alike; everyone moves to a different beat. When the warm-up disc jockeys match tunes, beats fuse. Form follows flexion and air is suffused with mist and light, as all dance under a penumbra of moiré.”

Warmup 2006
Beatfuse!

Oneness

This project is about the people of New York City, both as a whole and considered individually. We propose the construction of a structure of pervasive interiority, a context to be entered and experienced from within rather than observed from without as object [Fig. 3, 4]. WarmUp has developed into an anticipated annual ritual celebration of the city’s cosmopolitan culture without losing its soul of neighborhood block party. The summer WarmUp event is filled to capacity with New Yorkers, most of whom are not originally from New York; a quick review of the artists featured in the Greater New York 2005 show reveals that only 13 of 146 included in the exhibition catalog were born in New York. Most of the New York population actually come from somewhere else, looking for something they deem important for their lives, they are seekers. They may or may not find a version of what they seek, but they always contribute the uniqueness of their

4. Beatfuse! Interior Rendering (Photo: c/o OBRA Architects)

5. Concertina Unfolding (Photo: c/o OBRA Architects)
individuality, their ONENESS to the multifarious culture of the city.

WarmUp is the recurrent moment in the city’s annual cycle when this multiplicity converges in one place at one time in one great happening. Everyone becomes an artist. Each unique voice blends together into a whole for a few moments every summer Saturday without losing its individuality, like two dissimilar songs seamlessly eased into each other by a DJ’s masterful beatmatch.

**Fusion**

The creation of a space with interiority, a background to the figure of the WarmUp crowds, requires precise architectural operations. To evoke a sense of interior space the proposed structure extends to the boundaries of the site, and matter is spread thin to achieve the most with the least. When we refer to the creation of such space we refer to the physical, but also to what it means to manipulate the things of the world. In keeping with Joseph Beuys’ claim that we could become the revolution by fusing life with art, we aspire to effectively lend a consciousness to the matter enlisted in our construction.

**Concertina**

The large triangular gallery is partially covered with seven shells that are manufactured and assembled in a workshop and later deployed on site. We refer to these shells as concertina, since in their accordion-like capacity to fold into a relatively small size for transportation they resemble concertina devices such as pantographs, household shower mirrors and folding gates [Fig. 5]. These concertina are modeled digitally to achieve their dynamic curved form and then overlaid with a diagonal grid approximately 2'-0" x 2'-0". The resultant transformed mesh is flattened and its members are cut using a CNC router into 4 1/2"-wide strips out of 1/4"-thick plywood which has been chosen for its light weight and structural behavior. The fact that these items will be manufactured mostly indoors will provide economy, precision and speed of construction.

6. Model Studies of Concertina Structure (Photo: c/o OBRA Architects)
7. Hexagonal Scales of BEATFUSE! Dome Creating Penumbra of moiré (Photo: c/o OBRA Architects)
8. Tidal Pools at different depth settings: top, maximum water, bottom, minimum water (Photo: c/o OBRA Architects)
Once brought to the site, the concertina are expanded and lifted to previously installed curved plywood beams of an approximate 4” x 12” section. These beams rest on steel plate footings and steel bracket connectors that allow them to attach to the concrete walls without damaging them. The geometry is designed so that, although all the concertina are different, they flow into each other seamlessly [Fig. 6]. Once the concertina are in place, gravity will force them to assume again their original form. They can then be secured and their shapes fixed by the tightening of their connectors.

By virtue of the thickness of the material these structures would seem unlikely to span the 20 to 30 feet distances required, but by forcing the pieces into curves and connecting them into an irregular grid, we can elicit the emergence of a tension that allows them to adequately reach much further than that. Simple inert matter is made “conscious” of its hidden potential.

Penumbra

Once the concertina are in place, the final step consists of adding a skin made out of polypropylene mesh scales approximately 4’-0” x 4’-0” [Fig. 7]. These scales are cut in hexagonal shapes and attached at only one point to the structure. The scales allow wind and rain to move through them without excessively taxing the structure with lateral or lifting loads while providing soft penumbral shade. The inexpensive material is rigid enough to return to its original position after the wind dies down and yet flexible enough to seamlessly adjust to the curved surfaces of the concertina while overlapping in ways that generate gently nuanced patterns of moiré texture.

Tidal Pools

The pools are designed to adjust to the conditions on the site: just as the concertina contract and expand to facilitate construction, and the scales gently open to let wind through, similarly the pools grow to their maximum footprint (1,600 square feet for the larger pool and 700 square feet for the smaller) and shrink into discrete circular ponds ranging between 300 and 500 square feet [Fig. 8]. This allows the inclusion of larger crowds and access to slightly raised levels where one can stand, sit or dance. During times when there may be fewer visitors, the pools can expand to their maximum size to fill the space with reflections of the sky and the concertina above. The potential of such behavior, reactive to changing external conditions, is another instance of matter’s own awareness that the project seeks to enable.

The basic design of the pools’ geometry is circular, making it easy to move around them and allowing them to encircle the most surface with the least perimeter. The pools are constructed out of 3/4” CDX plywood on a bed of sand. The plywood is finished with fiberglass cloth tape and epoxy resin. The 12” high pool rims provide ample seating around the water.
Light Strainers
Water misters are provided throughout the project at four locations. The misters are not only fun and refreshing for people entering into their clouds of atomized water, but they also play an important role in lowering the temperature of the surrounding air as well [Fig. 9]. The misters are protected under three-foot diameter steel mesh hemispheres that resemble giant kitchen strainers. Inside each strainer is a light fixture which, when turned on the mist, will solidify the light beams into constantly changing formless shapes, a phenomena similar to that of light siphoned out into nebulous space by clouds caught atop the Empire State Building on a stormy night.

Unseasonable Temperatures
The WarmUp crowds are an aesthetic experience and therefore their presence must be prolonged. We hope to encourage visitors to stay longer by offering climatic comfort and variety through architecture.

Caldarium [Fig. 10]
The rectangular side gallery is designated the Caldarium. It has little to no shade, an array of radial chaise lounges for sunbathing and a large soaking pool. The barbecue grill is located here. To enhance the bathing experience, the museum shop will carry a line of PS1 MoMA matte black rubber animals that will float on the pools for ambiance. The BEATFUSE! rubber ducks are currently on sale at MoMA Stores in New York City.

Tepidarium [Fig. 11]
In the large triangular gallery, as shade lowers the temperature of the ground by deflecting radiation, as pools and misters cool the air by evaporation, and as the concertina shells bring the soothing breeze down to people, the overall effect can lower the temperature by as much as five degrees. This space called the Tepidarium is appropriate for conversation, eating, drinking and impromptu dancing.

Frigidarium [Fig. 12]
Finally, for those who may feel they have already had enough of summer, the small square gallery is configured as a Frigidarium. To that end, the walls are lined with inexpensive foil bubble reflective insulation which is also used for the scales of the concertina atop this outdoor room. Every Saturday morning for the duration of WarmUp, blocks of ice will be arranged at the bottom of the wall to create an ice bench.

Structure [Fig. 13]
The elegant simplicity of the piece lies in the inherent stability of both the arches and the concertina. And their interactions are supported and enhanced by this stabil-
ity. Both the arch and the concertina rely on the flow of purely axial forces to maintain smaller shapes and simpler connections. The concertina’s inherent tensions are anchored to equal and opposite tensions through the thick base of the arch and the arches inherent compression is resisted either by concrete footings buried in the earth or by simple tie rods that carry the balancing thrust at the base.

OBRA’s response to the limits of span - for both the concertina and the arch - was to add a few more key arches, which both braced the longer arches and reduce the overall span and area of some of the larger concertinas; making the resulting piece both efficient and feasible from a structural point of view. Further, the elasticity of the elements and the reliance on the basic principals of mechanics allows for further refinement and variation as the actual piece is finalized without any loss of design. It is an easily additive or reductive form from a structural point of view.

Climate Engineering

Transsolar develops and validates innovative climate and energy concepts for buildings. While our scope is limited to providing highest quality environments with a minimum of energy use, we recognize that all aspects of design influence environmental conditions. Therefore, we work collaboratively with client, architect, mechanical engineer, and other consultants from the start of the design process, considering each step from the standpoint of fundamental thermodynamics. This generates a climate concept in which form, material, and mechanical systems are synergistic components of a unified climate control system; and conversely, an environmental control strategy that supports and enriches the architectural concept.

The design for the PS1 pavilion responds to the uncomfortably hot and humid New York mid-summer climate with a series of moves that goes beyond making the thermal environment comfortable to making it delightful. This is achieved by constructing a variety of microclimates, using mostly passive means. The scheme is structured as a Roman bath, with the main courtyard as the tepidarium, the northeast courtyard as the caldarium, and the small courtyard as the frigidarium. The tepidarium is constructed through highly effective shading, channeling of cooling breezes, and misting.

The structure employs two types of shading material. One is a foil-backed bubble insulation material with reflective surfaces on both sides. The upper surface reflects much of the sun and re-radiates accumulated heat gain upward. The low-emissivity aluminized finish beneath acts as a radiant barrier, preventing the same type of re-radiation downward. In comparison to a typical shading material, this has a pronounced cooling effect. The other material is a woven mesh that blocks much of the sun, while allowing some light through, especially useful during twilight hours. The two fabrics are arranged in a mosaic, in response to varied solar radiation intensity on the domes during a sunny mid-summer afternoon. The high edges of the domes catch breezes from various directions and channel them down into the occupied zone. As the fabric tiles give way under strong winds to avoid overstressing the structure, this also reduces the incidence of uncomfortably high winds in the occupied zone. Misters in the open courts between the domes cool revelers’ skin and the ground by the evaporation of water droplets. Pools of water also cool the ground in and out of the shade. On a sunny day, this strongly lowers the temperature of the ground, in turn reducing thermal radiation from its surface. Surrounding surface temperature has as much influence on comfort as air temperature. The caldarium, being open to the sky, takes whatever conditions the local climate provides. While these are (typically) oppressive heat and humidity, the central pool of water, sun bathing chairs, and barbecues transform these conditions from a source of discomfort into a source of delight.

The small courtyard suggests a frigidarium because its comparatively small size allows economical cooling. A dome clad entirely in the foil insulation material darkens the courtyard and seals it from above. Foil-clad bubble wrap insulation resists heat transfer through the surrounding walls, and a rubber panel barrier at the entrance holds a pool of cool air inside. Blocks of ice delivered each Saturday generate cooling.

14. Climate Analysis Diagram (Photo: c/o Transsolar Energietechnik GmbH)
Part II: Architettura Povera: Wall of Lessons

Rhode Island School of Design, Providence, Rhode Island

Architettura Povera proposes the homonymous art movement from the 60’s and 70’s as a sympathetic lens through which to envision a future for architecture, one favoring experimentation unhindered by tradition, openness to materials and processes and the rejection of stylistic armatures. The exhibit is surrounded by a student-assembled wall made of 5,690 lasercut plywood units etched with brief “lessons” which compensate with thought what was built by the students through labor [Fig. 15, 16].

The installation featuring the work of OBRA opened at the BEB Gallery of the Rhode Island School of Design in Providence, Rhode Island, in March of 2004.

On March 20, 2004, OBRA Architects exhibited three projects at Rhode Island School of Design’s BEB Gallery. The school offered minimal exhibition expenses and generous student labor to help install the work. The exhibit is entitled ARCHITETTURA POVERA in the spirit of the guiding principles of experimentation unhindered by style and complete openness towards materials and processes which characterized the “Arte Povera” movement of the late 60’s and early 70’s in Italy.

The work is surrounded by an eight-foot Wall of Lessons constructed of 3/32” thick luan plywood interlocking units. Over the course of two months, 5,690 units were produced in our workshop and then shipped in boxes from New York to be assembled by RISD students. Units on the outer perimeter of the wall are etched with brief “lessons” [Fig. 17]; thereby the physical effort of assembling the wall is itself an educational experience, providing a glimpse of accumulated thoughts and ideas in which the works were created. Handmade lamps constructed from lampholder taps with extension wiring hang from existing track fixtures, brought down to the level of the museum table on which the works are displayed. The table supports are made from additional luan units extending from and interlocked with the wall, and carry thin luan plywood tables. The perforated surface allows light and sound to escape, encircling and demarcating the space while casting shadows on the walls beyond.

Luan plywood has been chosen for its low cost, lightweight and structural behavior, its color and texture, and its material nature unadorned by ornamental pigmentation or surface finish. Its low density also facilitates the speed of lasercutting technology which is affected by both thickness and density of materials. The pieces have been lasercut for speed, precision and economy, the burned edges revealing the quality of congealed energy, the nature of all things. Coated with linseed oil, they lend a fourth dimension to the space, one that can only be experienced with the nose.

RISD Wall of Lessons Assembly Instructions
- There are four types of panels, which are referred to as SINGLES, DOUBLES, SINGLE CAPS and DOUBLE CAPS. The SINGLES and DOUBLES are also called wholes.
- Height: Walls running North-South will have 10 wholes with 2 caps (base and top), walls running East-West will have 11 wholes; Table supports running North-South will have 3 wholes with 2 caps (base and top), table supports running East-West will have 4 wholes.
- All the DOUBLES on the exterior face of the walls should
be the etched pieces. At the corners, when only half of the DOUBLES are visible, use those with the text on the visible side.

- The connecting panels, which run perpendicular to the main wall surfaces, consist of SINGLES and SINGLE CAPS and are not shown on the panel assembly plans.
- At the corners (where two walls, wall and table support, or two table supports meet at 90 degree angles), the DOUBLES and SINGLES alternate.
- The bottom two rows should be assembled first for all of wall one, wall two, and wall three with the associated table supports. Then check to make sure every panel location matches the plan. Make sure that the DOUBLES on the exterior side of walls are etched, and the corners have alternating SINGLES and DOUBLES.

The pedagogic nature of the exhibit’s setting presented a special opportunity to explore an ethical alternative to the current dominant trends in architectural “education” and “practice.” Arte Povera’s disdain for added artistic gloss and pretensions of conceptual superiority resonate with the idea of an architecture that, while oblivious of stylistic trends and superficial embrace of technologically determined programs, tries to transcend the limitations of a utilitarian conscience of contemporary society. Architettura Povera seeks to shed light on the mysteries of perceived reality, lifting the veil of objectification that weighs on all things to reveal their substantial vitality. The work aspires to be an architecture that can bring “inert” things to life.

The contents and media of these architectural proposals: the red dirt and conical baobab tree trunks of South Africa, the rain creating mud at the edge between the natural and the manmade in Mexico, and the southern sky framed by the spontaneous architecture and rudimentary functionality of the houses in Chile, seem fitting elements in a laboratory of Architettura Povera.

Notes
1. OBRA Architects, PS1 Young Architects Program 2006, winning entry.

Credits: BEATFUSE!
OBRA Architects
Pablo Castro and Jennifer Lee

Project Architects:
Shin Kook Kang, Akira Gunji, and Selin Semaan

Project Team:
Luis Costa, Kaon Ko, Alice Bo-Wen Chang, Dasha Khapalova, Tobi Bergman, Paul Chan, Niall Gallacher, Eric Gewertz, David Karlin, Jung Min Kim, Joshua Lehman, Kim Shkapich, Glen Barfield, Macky Bergman-Clarke, Luis Berrios, Justin Bhagat, Manuel Castro, Panos Chatzitsakyris, Po Chen, Terri Chiao, Nancy Clarke, Erica Gibson, Cho Won Jang, Aoi Jesse, Seung Hyun Kang, Sojin Kang, Katerina Kourkoula, Paul Cheng-Hao Lo, Wendy Meguro, Keiko Sasaki, Jeff Sturges, Jose Torrecilla, Michele Torrecilla, Stelina Tsifti, Nicole Vlado, and Leah Young

Site Assembly, Terry Chance, fabrication contractor
Sciame, Jim Kilkenny, Marco Alvarez, Scott Jones, construction manager
Island Acoustics, Stephen J. Kistulinec, installation
Robert Silman Associates PC, Nat Oppenheimer, Pat Arnett, structural engineering
Transsolar Energietechnik GmbH, David White, environmental engineering
Tillett Lighting Design, Linnaea Tillett, Stephen Horner, Yeune Kyue Kim, lighting design
Dr. Gerald Palevsky PE, pool consultant
Omnivore, Alice Chung, Karen Hsu, t-shirt and truck graphic design
iLevel by Weyerhaeuser, Timberstrand and plywood
Shaw Stewart Lumber, CNC routing
Solors Optional Axis, CNC routing
Maloya Laser Inc., metal lasercutting and fabrication
Caliper Studio, metal fabrication
Delstar Technologies Inc., polyethylene mesh
West System Inc., epoxy products
Owens Corning, rigid foam insulation

Pablo Castro and Jennifer Lee: Demimonde: The Art of Architecture
Four Corners CNC Services, CNC routing
DD Wire Company, light strainer fabrication
Atomizing Systems Inc., misters
Targetti North America, lighting
Radiant GUARD, foil insulation

Support for this project has been generously provided by:
Site Assembly
Sciame
Island Acoustics
iLevel by Weyerhaeuser
West System Inc.
Owens Corning
Four Corners CNC Services
Maloya Laser Inc.
Bartco Lighting Inc.
Caliper Studio
Targetti North America
Radiant Guard

Credits: Architettura Povera: Wall of Lessons
OBRA Architects
Pablo Castro and Jennifer Lee

Project Architect:
Kaon Ko

Project Team:
Akira Gunji, Betsy Irwin, David Karlin, Richard Knox,
Megumi Mieno, Adriana Miranda, Michelle Rosenberg,
Masahiro Shinohara, Kim Shkapich

RISD Participants:
Anthony Acciavatti, Myles Bennett, Jenny Chou, Geraldo Dannemann, Arthur Furman, Steve Haardt, Eva Huang,
Sejung Kim, Tighe Lanning, Brennan McGrath, Angel Steger, Zac Stevens, Shane Zhou
Public Works

Projects in Play

by Eric Höweler and J. Meejin Yoon

Höweler + Yoon Architecture is a multidisciplinary practice, operating in the space between architecture, art, and landscape. Engaged in projects of all scales, they believe in an embodied experience of architecture, seeing media as material and its effects as palpable elements of architectural speculation. Specializing in interactive environments and interested in the relationship between technology and the body, they are determined to translate conceptual ideas in the real world, testing projects ranging from concept clothing, artist books, installations and architecture through the dynamic interaction between the construct and the larger public.

Höweler + Yoon’s work was featured in the 2006 National Design Triennial at the Cooper Hewitt National Design Museum in New York. Their work has been exhibited at the Museum of Modern Art in New York, the Los Angeles Museum of Contemporary Art, and the Museum of Contemporary Art in Chicago. They were one of five finalists in the 2006 PS1/MoMA Young Architects Competition and were selected for the Architectural League of New York Emerging Voices in 2007. Their work has been reviewed and published in the New York Times, Boston Globe, the New Yorker, Domus, Archis and ID Magazine.

Eric Höweler (b. Cali, Colombia) is a registered architect, architectural writer, and co-founder of Höweler + Yoon Architecture. He has taught at the Harvard Graduate School of Design and the Massachusetts Institute of Technology. Eric Höweler is a registered architect in New York, the District of Columbia, New Jersey, Washington DC and Virginia. He is the author of ‘Sky-scraper: Vertical Now,’ published by Rizzoli/Universe Publishers in 2003. He received a Bachelor of Architecture and a Masters of Architecture from Cornell University.

J. Meejin Yoon (b. Seoul, Korea) is an architect, designer, and educator. She is an Associate Professor in the Department of Architecture at the Massachusetts Institute of Technology and founder of MY Studio (2000) and Höweler + Yoon Architecture (2005). She is the recipient of the Rome Prize Fellowship in Design (2005), the Metro New York 5 under 35 Award (2005), the Young Architects Award from the Architectural League of New York (2002), and Fulbright Fellowship (1997). She received a Bachelor of Architecture from Cornell University with the AIA Henry Adams Medal (1995), and a Masters of Architecture in Urban Design with Distinction from Harvard University Graduate School of Design (1997).

Architecture, as described by Walter Benjamin, is unlike art in that it is experienced in a state of distraction. Experience from the street, the work of urban architecture is embedded in the city, surrounded by signage, infrastructure, vegetation, and other buildings. Architecture in the public realm is rarely encountered as a ‘work’ to be engaged by a public in a purely contemplative state – it competes with other elements of urban life, is open to its multiple publics and is engaged in a multitude of activities. Public art also arguably exists outside the institutional frameworks of the gallery and the museum. In an urban context, public art is similar to architecture in the seeming absence of an institutional framework. A multiplicity of perceptual modes, ranging from extreme states of distraction to varied forms of engagement, is enabled by the invisibility of the institutional infrastructure that supports it. Encountered on the street within the normative activities of urban life, public art engages a distinct discourse of the public realm.

While architecture has traditionally defined the limits between public and private realms, the public realm is not merely a residual byproduct of architecture. The public realm is an actively constructed physical and social space, the parameters of which are constantly negotiated and renegotiated. As a “collective” space, the public realm is governed by distinct rules and behavioral
norms. While traditional sites for art have been conditioned by the institutions they are housed within, the perception and reception of public art is distinctly different. Architects and designers of urban buildings, public spaces, and public art must contend with the reality that any intervention in the public realm engages spatial and behavioral codes distinct from those of the museum context. Design in the public realm that seeks to engage the "distracted" viewer in an interactive scenario must deploy perceptual devices and effects that provoke a response, slow the passerby down, or entice him/her to enter into a new type of public space.

As architects and designers of interactive public space installations, we are engaged in design research that tests modes of behavior in

1. The Defensible Dress equips the wearer with a sensor activated quill garment. The dress enhanced body reinscribes a notion of personal space around the wearer (Photo: Höweler + Yoon Architecture/MY Studio)

2. Quills area actuated when a body enters a predefined area, causing the dress to lift and bristle (Photo: Höweler + Yoon Architecture/MY Studio)

3. Quills are made of metal tubing and a Flexanol wire that contracts when it is charged by a current (Photo: Höweler + Yoon Architecture/MY Studio)

4. The two hinge points allow the Flexanol to act as a tendon, pulling the lever up without the use of servos motor or gears. The material contraction produces the mechanical deployment (Photo: Höweler + Yoon Architecture/MY Studio)
public space. MY Studio / Höweler+Yoon Architecture have been working in the space between architecture, art, and landscape to design interactive environments informed by new media and new technologies. Interested in interventions that are both conceptual and the corporeal, we investigate media as material and its effects as palpable elements of architectural speculation. We believe that these interactive environments are part of a larger body of cultural production, one in which disciplinary boundaries are necessarily blurred. Our work as architects and designers span a variety of scales, but are bound together by a mission to create a dynamic interaction between the construct and the larger public.

As part of our ongoing research into architecture and interactivity, we have designed and built several projects that engage the public through “play.” 2 Play can be understood as recreation, the opposite of “work,” and can be defined as: jest, fun, or sport. It is also understood as the freedom or room for movement, as in the play or tolerance between two materials. The second definition of play is a state of being active or operational. Our use of “play” is both recreational and strategic. Our public space projects seek to create environments that are both productive of new modes of social behaviors, but also strategic interventions that maneuver architectural elements technologies and materials to create new and interactive urban spaces.

Our projects, designed for public spaces, are test cases for urban environments. These projects are immersive and interactive, utilizing electronics and materials, sensor technologies, light and sound response mechanisms, to create new public space environments. These sound-scenes and light-scenes are new ways of creating public spaces within cities, introducing behavior and effects as instruments of design. Public spaces that are responsive to their occupant’s movements and activities encourage new activities and new modes of occupation public space, and contribute to the vitality of cities and public life.

Defensible Dress

The Defensible Dress project engages the notion of space as an intimate environment of the body: personal space and its increasing encroachment on, in everyday life.
Even within the public realm we each maintain a spatial perimeter around our bodies that is personal space, which is both culturally, socially, and individually constructed. Personal space is increasingly challenged and violated by external pressures including density in urban living and new behavioral norms.

The Defensible Dress marks the wearer’s personal space by developing a space-defining physical projection around the body [Fig. 1]. The dress employs sensor technologies, a circuit board, and a series of actuated quills that are programmed to lift and bristle when activated [Fig. 2-4]. The wearer of the dress can customize his/her personal space threshold by numerically defining a personal space comfort zone. The dress project is a piece of concept clothing. Although worn on the body, it engages the wearer in an interaction with its context. While not architecture in the traditional sense, it is a spatial and territorial instrument operating between public and private realms, defining territories of the private even as they are immersed in the public realm.

**White Noise/White Light**

The second project extends the research initiated in the Defensible Dress to produce an urban environment. White Noise/White Light was one of nine temporary interactive urban installations commissioned and installed for the Athens 2004 Olympics from at the entrance to the Theater of Dionysus below the Acropolis as part of the ATHENS 2004: Catch the Light Program. Part of the programmed ‘Listen to Athens’ route, the project inserted a luminous interactive sound- and light-scape within an urban public plaza to create a constantly publicly choreographed field in flux. The project utilized fiber optic strands, infrared sensors, and outdoor speakers to create a temporary field of light and sound that invited users to engage the new space. Activated by the passersby, the fiber optics transmit light...
from white LEDs while the speakers below the raised deck emit white noise. Just as white light is made of the full spectrum of light, white noise contains every frequency within the range of hearing in equal amounts. Each stalk unit contains its own passive infrared sensor and microprocessor, which uses a software differentiation algorithm to determine whether a body is passing by the stalk [Fig. 5]. If motion is detected, the white LED illumination grows brighter while the white noise increases in volume. Once motion is no longer detected, the microprocessor smoothly decreases the light and fades the sound to silence. The movement of pedestrians creates an afterglow effect in the form of a flickering wake of white light and white noise, trailing and tracing visitors as they cross the field. The project creates a unique light- and sound-scape: at night the sway of flexible fiber optic stalks produce a surreally luminous environment in the city, while the sound-scape produced by the aggregate sounds mask out the urban noises, producing a place of sonic refuge within the city [Fig. 6]. Depending on the time of day, number of people, and trajectories of movement, the project is constantly being choreographed by the cumulative interaction of the public. The field becomes an unpredictable aggregation of movement, light and sound. The effect is of a temporary field of play in the city. Visitors, drawn into the field immerse themselves in the new environment, taking pleasure in leaving light and sound traces. The behavior of the public participants is transformed as they engage the field in play, testing its limits and trying to decode its logic. Socially accepted behavioral patterns...
are abandoned as adults and children engage in a playful choreography with the new public environment [Fig. 7].

**Low-Rez/Hi-Fi**

Another project, Low-Rez/Hi-Fi (LRHF) is an interactive public-space project that activates the sidewalk and engages the public by creating a new environment that occupies the interface between the public space of Vermont Avenue and the interior space of the lobby. Sited at 1110 Vermont Avenue in Washington DC, the project consists of a full-scale LED matrix (Low-Rez), which traces the movements of passersby, and a field of interactive sound poles (Hi-Fi) [Fig. 8-10].

Low-Rez engages the public by broadcasting digital imagery on a custom LED pixel net. The net is made up of 8,000 LED pixels suspended by tension wires within glass vitrines. The glass vitrines occupy spaces perpendicular to the building facades and align to create a relationship between inside and outside. The pixels are custom designed and fabricated to be addressable, meaning that each pixel can be turned on or off individually. Working together, the pixels make up a new “screen,” capable of carrying text or an image as a video signal. The LED net has a pixel pitch of 2.4 inches, making it a very low resolution image, but one where
14. Left - Each touch sensitive Sound Grove stalk consists of multiple segments. Each segment plays a distinct note. Each stalk is a distinct instrument (Photo: Höweler + Yoon Architecture/MY Studio)

15. Right - The grid of sound poles form an inhabitable musical instrument on the street, allowing for collaborative and impromptu compositions (Photo: Höweler + Yoon Architecture/MY Studio)

Part of a large scale renovation of the existing 1970s office building, the LRHF project participates in the project of re-branding the building, acting simultaneously as building signage, public art piece, and civic gesture. The emergence of branding as a design objective signals a new mode of commercial image making. Everything contributes to the brand: architecture, signage, lighting, paraphernalia, and word of mouth. By commissioning an interactive installation for the project, the client underscores a new mantra of real estate: Identity,
Identity, Identity. The two parts of Low-Rez and Hi-Fi straddle the line between inside and outside, public and private. Attention is a commodity, and architecture is pressed into the service of an engagement with the always already distracted public. Distraction and attention are the new terms of the outdoor space as a territory of cognition.

Loop
Our proposal for the PS1 courtyard interprets the program of the “urban beach” as a hybrid space, between the contemplative space of the gallery and the event-driven public space of the beach. Our proposal, Loop, creates an immersive condition as a scaffold for activities. Rather than a discreet architectural object positioned as a feature within the courtyard, Loop presents a “loose fill” of architectural form, allowing simultaneously for complete porosity and total coverage [Fig. 16]. The geometry is generated through an analysis of cellular aggregates, suggesting an uninterrupted lattice of form which outlines connections between spaces. There is no enclosure and no exposure, but a suggestion of continuous spatial division. In packing the single continuous space of the courtyard with a network of smaller spaces, Loop both encourages and defines the formation of discreet activity groupings that occur spontaneously during the warm-up event. The closely packed geometries house the closely packed...
activities -- forming an infrastructure for recreation [Fig. 17].

Part landscape, part infrastructure, Loop is a pliable lattice-work, a jungle gym for adults and children, containing and supplying a number of interactive activity clusters [Fig. 18]. Its lower surfaces are sculpted and reinforced for lounging, while the upper canopy provides generous shade and dramatic shadows [Fig. 19]. Its various spaces are wet, bubbly, and bouncy: wading pools, waterfalls, bubble jets, a foam chamber, and a giant trampoline. Some of these areas -- the waterfalls, foam chamber, and bubble jets -- would use motion sensors to automate their activation, allowing Loop to respond to its occupants. The bar area is defined as an outdoor lounge, while the unobstructed dance floor is outside of the lattice. Easy passage through the courtyard is facili-

18. Clusters of loops form pools and showers, while others accommodate wading pools and trampolines (Photo: Höweler + Yoon Architecture/MY Studio)

19. Section cut through the courtyard showing the various activities: dancing, bathing, showering, jumping, and lounging. The dense and open lattice accommodates various uses and encourages the invention of new ones (Photo: Höweler + Yoon Architecture/MY Studio)
ated by greater porosity in the central, high-traffic areas, and greater density at the periphery, which both allows for movement through the center and encourages loitering at the edges.

The main components of Loop, the loops themselves, are designed and fabricated through digital processes. The three-dimensional components, formed out of polypropylene sheets, are first modeled in the computer. These shapes are then unfolded and divided into segments which are nested onto 5x10 sheets to minimize material waste. The segments are milled and labeled offsite, then transported to the PS1 shop, where they will be joined with a plastic welder. Finally, the individual loops would be mechanically fastened together onsite.

Loop aspires to be a completely immersive social environment. It seeks to create an atmospheric thickening of the ground plane, providing a field for the unpredictable unfolding of social exchange. Through its employment of computational design, fabrication techniques, interactive technologies, and its concern for the impact of these technologies on material effects, Loop positions itself within contemporary theoretical discourses in architectural practice. Its geometry is controlled through computational tools that anticipate an optimized “output” through CAD CAM technologies. Its form, however, is not simply “digital” – it is also the result of a highly manual process that takes material properties (ductility, elasticity, bending) and exploits them through computational techniques.

Although the museum courtyard is not a truly public realm in that it exists within the institutional framework of the museum, it does represent an instance of the museum extending its mission beyond the gallery and into the space of event programming. The form of Loop ultimately acts as a scaffold for the warm up event producing a range of occupiable moments and atmospheric effects.

Programming Publics

Each of the projects discussed above constructs scenarios where an intervention in the public realm creates situations where the public is invited to enter a new space of “play” within the city. The projects utilize architectural devices as well as electronic technologies to create an interactive architecture, encouraging people to engage the work and with each other. In each case the notion of “program” becomes more than a description of the anticipated use. The programming occurs simultaneously at the level of the level of code, as in computer programming, and at the level of architectural use, as in the architectural brief or program. For our projects, the notion of program is the same: a computer code dictates the control and behavior of the circuit boards, while an interactive, public-space effect creates atmospheres and effects that enable event programming.

Public space has taken on a new set of meanings and constraints after September 11, 2001. Concerns with security and terrorist threats have altered the stakes for public space. New York’s “If you see something, Say something,” campaign has attempted to create vigilance amid the public, imploring the public to report suspicious packages and suspicious behavior. The scanning performed by surveillance cameras takes on a new dimension as visuality in the public realm is altered. Now more than ever, the need to think hard about what is public about the public realm and how a public architecture can participate in its meaningful construction. The design research involved in these projects suggests new ways to make architecture that is information dense, real-time interactive, and constructive of new modes of public-space making.

Notes
In.Form, a peer-reviewed journal of Architecture, Design and Material Culture invites you to assess:

The INFORMation Age

In.Form announces a unique issue committed to evaluating the use of computers and technology in architecture and design. Articles may discuss how architecture and design differ when computers and technology are implemented into these fields. For example, how has the use of technology benefitted the field of architecture and design? How could the use of technology be improved? In addition, articles may incorporate how technology is used in the design of interiors, exteriors, and all related fields to design. Is the use of computers and technology necessary in the development of design? What about cultural differences—is the use of computers and technology in design different in North America than it is in Asia? - or how has technology improved communication?

The deadline for submissions for Volume 8 is October 1, 2007. Only complete papers will be accepted – please do not send abstracts. Authors, artists, and designers will be responsible for obtaining copyright permission for images submitted with text.

1) Submit three paper copies, one electronic copy, and your Curriculum Vita.
2) Please follow The Chicago Manual of Style.
3) Notes should be separate from the text and placed at the end of the manuscript.
4) Images, if scanned, need to be 250 dpi or higher. All images should be supplied on a CD or Zip disk. Slides and BW photos are acceptable. Do not embed images within the text.
5) All images should have captions.

Volume 8, 'The INFORMation Age' will debut April in 2008. Back issues of In.Form include:

In.Form is sponsored by the College of Architecture and the Interior Design Program of the University of Nebraska-Lincoln in conjunction with the Kruger Collection.
In.Form Staff
2006-2007

Editors
Katie Swoboda
Peter Bissen

Assistant Editor
Rachel Reed

Faculty Advisors
Betsy Gabb
Mark Hinchman
Stephanie Kuenning
Amber Mohr