

The Predicament of Beginning

Proceedings of the 18th National Conference on the Beginning
Design Student, Portland State University, Portland, Oregon

March 14 - 16, 2002



THE ENIGMA OF THE
FIRST ASSIGNMENT .
CRITICISM AND
JUDGEMENT .
ENCOUNTERING
MATERIALS . LEARN-
ING TO LOOK . RE-
PRESENTING IDEAS .
THE ABSTRACTION
OF PLACE . THE
MODEL OF LANGUAGE
. THE PLACE OF
ABSTRACTION

The Predicament of Beginning

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In convening the 18th National Conference on the Beginning Design Student, the Department of Architecture at Portland State University has endeavored to provide a forum for propositions and debate concerning the possibilities, necessities, paradoxes, and fallacies of beginning education in design.

This document represents the positions and considered research of over 40 scholars from across North America and beyond, and hopes to embody a spirit of active exploration and sharing of ideas, experiences, and models for a pedagogy of initiation.

In making this possible many thanks are due to the faculty, staff and students of the Department of Architecture for their energy and commitment to both the event itself and to the issues that it addresses. We also wish to thank the three guest speakers and the session moderators for their part in provoking and sustaining discussion.

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The Predicament of Beginning

THE ENIGMA OF THE FIRST ASSIGNMENT



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Introduction to Three Dimensional Composition / Dancing on the Digital Divide

Geoffrey Adams and Karen King

University of New Mexico

Students entering the 3.5Y Masters program at UNM, come to embark on a course of study in architectural design. While all student populations are composed of unique individuals from various backgrounds, this particular group is, at least in an academic discipline by definition heterogeneous, possessing skills and knowledge in diverse fields gained through previous studies and/or employment. What they share is a burgeoning interest in architecture and a willingness to explore design in a studio environment, to start down a path toward a new way of perceiving and engaging the world. This peculiar mix of naivety and sophistication coupled with the insecurities of setting out on a radically new tact makes special demands on a beginning design problem. Embarking on this odyssey at the turn of the 21st century necessitates confronting the complexity of nascent digital technology, a tool that offers much both in terms of promise and frustration to the beginning design student. This paper sets out to explore one endeavor to address these issues developed and refined over the past three years. In the process of delineating the introductory problem given to the 3.5Y Masters students some guiding principles employed in constructing the problem have come to light. The salient value of this recapitulation seems as much in recognizing principles governing the construction of the design problem as in the specifics of any particular instance.

The following is a distillation of some key principles that have informed (both consciously and subconsciously) the development of this problem. First, create a problem that you would love to do; a potent design problem should engage designers regardless of their level of experience or knowledge of practice. Enthusiasm is an essential raw material in the construction and application of a compelling design problem. Second; set limits, limits provide the structure, order and form of a design problem. Well-placed limits lay the groundwork for the exploration of a set of design principles and establish landmarks by which to navigate a process. Third, divide the problem into discrete pieces of limited duration, while providing continuity by linking these parts as segments subsumed by a larger whole. Fourth, intertwine and overlap media and content. For example, will a student discover something different when shaping form in a physical model as opposed to a digital model? Finally, provide the student with an opportunity to collaborate in an aspect of the design of the problem; the student's investment is essential. These principles are content independent. In other words, they do not specify a bias regarding which ideas, concepts or techniques should be investigated nor the order in which that investigation might

occur. They do, however, suggest a position with regards to process. A design methodology can be developed through a series of discrete, incremental, iterative design problems linked to a larger whole. This hierarchy endows the problem with a number of desirable qualities. First, by subdividing a larger problem into segments, the beginning student is less likely to become overwhelmed or incapacitated. Simultaneously by repeatedly executing a more or less "complete" cycle of a design process the student builds competence and confidence. Finally the design problem takes on a dual nature, at once broken and continuous, which supports investigations in diverse media and allows the student to develop a visceral understanding of the relationship between medium and design, to begin to dance across the digital divide.

This particular journey starts by giving students three distinct material volumes of different dimensions and asking them to construct a series of three orthogonal compositions each constrained by a cubic volume of 3"x 3"x 3". The material volumes may intersect one another or be coplanar, but must stand as a single unit on a flat surface maintaining an orthogonal relationship with it. Supplemental readings provide an anchor and a vocabulary for discussion about compositional deployment. The problem is to seek a visual balance (not necessarily a physical balance) between the elements, exploring the limits of stasis and dynamism. This is an empirical process involving trial and error. What may seem facile or simple at first offers rich spatial opportunities as nuances of arrangement and placement unfold. As they work students are encouraged to sketch and draw (draft) as a way of exploring 2D relationships of their 3D compositions. To complete the exercise students place but do not permanently attach the compositions on a 4"x 12" base, composing the placement of the three compositions in relation to each other and the field given, while being mindful of sequence. The expectation is that the final three compositions be well-crafted, dimensionally accurate gems because the most elegant and sophisticated design work will be made moot if its physical manifestation is shoddy. This assignment is given on the first day of studio and reviewed in a group session on the third studio meeting. The three elements differ in dimension and material. Embedded in the dimensions of the elements are "hidden" references to proportion both profound and quirky, the golden section (1x 1.618) in the former and the monolith from 2001 (the square of the first three integers) in the latter. This provides a diversionary mystery, which unfolds in parallel to the main task and sets the stage for the next problem, delineation and graphic

Form•Z software application, the drafted plans of their compositions become the template to recreate the original composition in the virtual digital environment. This exercise builds competence in deploying the software to build simple rectilinear shapes, challenging the students to concentrate on precisely recreating the composition dimensionally, thus gaining a sense of control and purpose in this virtual world. Using the digital reconstruction of each of the three previous compositions as a base condition they are asked to create a sequence of two more compositions by employing any of the following transformational techniques: translation, rotation (90 degree increments only), scaling and duplicating. These transformations add to complexity of the compositional problem by an order of magnitude, by using the organizational capabilities afforded by layers the student can easily examine and play with multiple design scenarios. At the end of the second week the second "virtual" presentation ensues. Using the powerful technology afforded by the OpenGL rendering algorithm and digital screen projection the entire class can participate in real time animated critique of the collection of schemes. This presentation technique immerses the viewers in virtual world allowing the group to simultaneously experience an intimate relationship with a particular project and contributing to lively discussion and unique critical opportunities.

The composition and crafting of two orthographic collages takes a step back from the virtual immersion of the previous exercise. Using the nine pieces created in the transformation exercise each student explores a set of linear collages (correlated plan and elevation) observing the following rules: a 5"x37" field is divided into 5" squares each overlapping the other by 1"; paper cut of appropriate size and color material to render the plan and elevation of each piece is then placed in spatial correlation in both plan and elevation collages; each piece must remain completely within one of the 5" squares (intersection of two pieces is possible in the 1" overlap). The students are to explore and develop an overall composition exhibiting balance and harmony. While offering another opportunity to explore compositional strategies and further develop craft skills, the project deliberately slows the process

Fig. 3.nine square composition

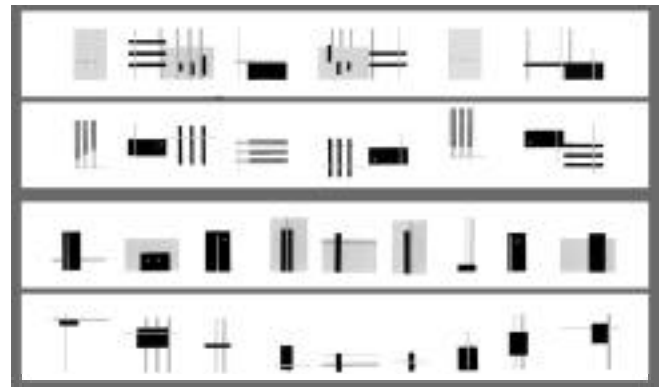
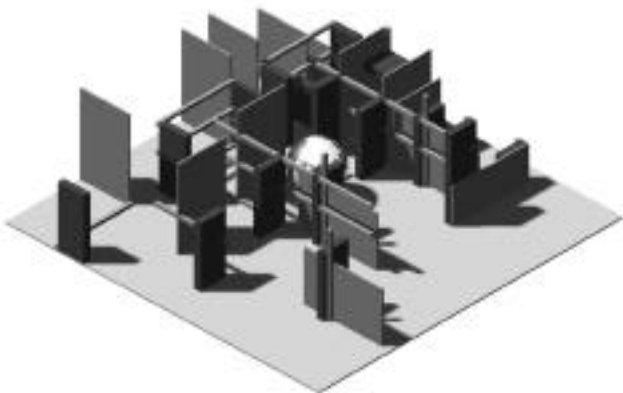


Fig. 4.collage exercise

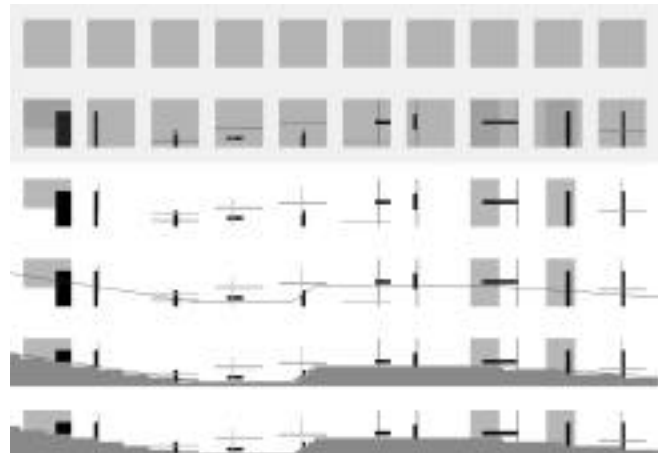
of constructing the plan and elevation, offering students the time necessary to contemplate and gain a conceptual command of these essential drawing conventions. While not dictated, many students chose to use the computer to develop the linear compositions and print out the finished plan and elevation as a template. This strategy afforded advantages of speed and spatial manipulation in compositional study, but the rote manufacture of the printed map somewhat subverted the intent of the exercise.

Jumping back into the digital universe students take their linear collage as a given condition and create a site topography by using no more than five line segments to describe a ground plane. The line must be continuous from one short side (of the elevation) to the other and may not extend above or below the 5" height of the field. Due to soil conditions no slope of greater than 45 degrees can exist. The pieces may be partially or completely subsumed, but must find anchorage in the site. Based on the 5 line abstracted topography they then build a stepped topographic model of the site using Form•Z embedding or placing the nine compositions into this newly generated landscape.

The culmination of the previous exercises forms an existing site condition for the following architectural design problem:

Meet pogo and sphere, they are ambassadors of adjacent civilizations that have recently become aware of each other's

Fig. 5.introduction of topography



what is digital and what is analog will undoubtedly become blurred and may even disappear. Gaps in the digital divide are already starting to fill in, but at this moment it is critical that beginning design students have a foot in both worlds and an intimate understanding of how they complement and contradict one another.

and Jeremy Till, "The everyday was always there, and we, like everyone else, were always immersed in it."² Our aim is to activate students' powers of observation.

The three quarter progression of foundation studios is comprised of courses in linear sequence: quarter one—inquiry and disassembly, quarter two—body ethics and composition, and quarter three—transformation. Each segment relies on subject matter at the periphery of architecture and interior design, encouraging critical thinking before students engage disciplinary production.

In addition to powers of observation and creativity, we endeavor to develop teamwork, communication, drawing, computer, and critical thinking skills in the first year curriculum. Our hope is that students fundamentally versed in these basic skills will be prepared to critically engage future design problems. First year iterative exercises unfold as a type of architectural calisthenics. Students confront, examine, analyze, and critique their own everyday experiences such as eating food, climbing a stair, or listening to music.

the conditions of the second exercise(s):

Before we examine our offering to the predicament of the first quarter, cuisine, it is useful to consider the conditions of the second quarter, four exercises within which we are presently immersed. We will work our way backwards in this paper to the start of the first quarter. The real fruits of our labor are beginning to manifest themselves in these second quarter exercises, as it has taken some time to wrestle through the first quarter set of exercises and convince students, as we are convinced, that they are preparing for a career in architecture and/or interior design. We are also inextricably linked in serial production from one exercise to the next. Thus, the seeds of the beginning are manifest in the fruits of the following set of exercises.

We begin the second quarter of instruction with the residue of parts (and ideas) created from dismantling and documenting large-scale kitchen appliances. Although the theme of the course has moved to "body ethics" and "composition" from "inquiry" and "disassembly" the spirit of the methodology is exactly the same; students find opportunities for exploration outside of the traditional disciplinary realms of architecture and interior design and grapple with experiences of the everyday rendered quite unfamiliar. Where the first quarter deploys cuisine as a stimulus for uncovering students' native understandings of the everyday through inquiry and analysis, the second quarter investigates issues of the body, music, and composition.

robots descending a staircase: body ethics

"Body ethics" is examined through the study of bodies in sequence as they traverse the main artery through the College of DAAP. As the designer of this main stair/review space, in addition to our college building expansion, we naturally turn to Peter Eisenman for inspiration on the topic of the body. He holds that "architecture maintains a presence

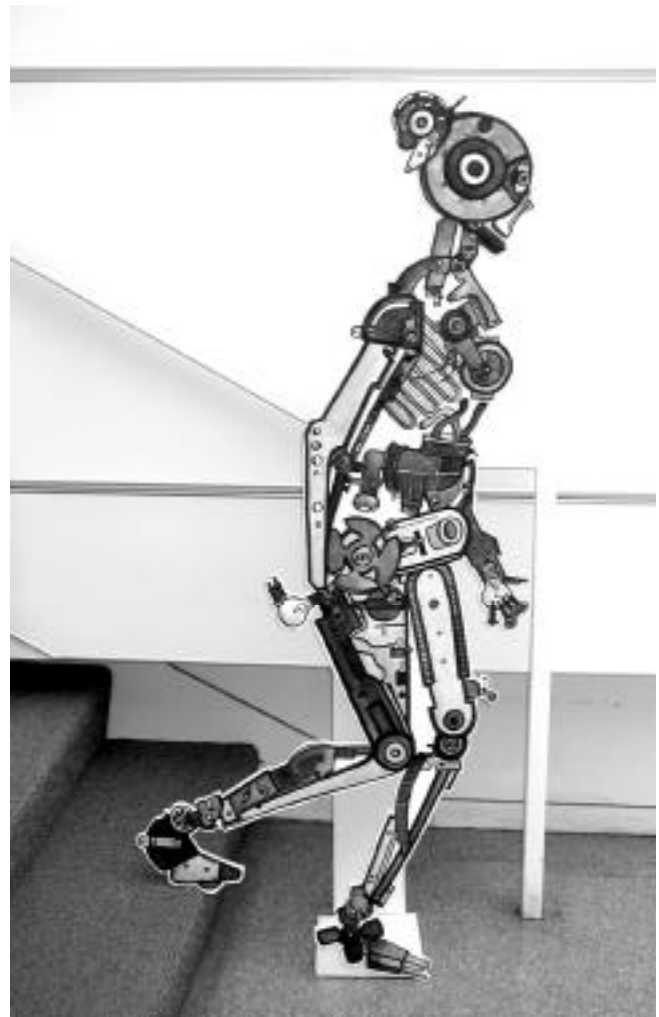


Fig. 2: Completed robot descending the staircase

through an affective relationship to the physical experience of the body."³ Our intention with the "robots" exercise was to create over one hundred affected robotic bodies engaging the main stair artery of our college. These bodies of "robots descending a staircase" are created from composite representations of selected major kitchen appliance parts that the students disassembled at the end of the first quarter.

Students produce abstract portraits of their studio partners drawn from poses along the main arterial stair. They translate the formal characteristics and functional connotations of mechanical objects to similarly purposed parts of the body. Translation of alien parts to human form serves the dual function of introducing students to proportion, scale, and joinery and encourages them to contemplate their own bodies in relationship to inanimate, built form. Additionally, the exercise opens questions of body-to-building relationships. The final "robots" are mounted to rigid boards, crafted as freestanding objects, set up along the main stair of the college in a final celebratory exhibition, allowing "real" student bodies to mingle with "robotic" ones.

Parallel to this first exercise, drawing and computer skills courses reinforce body themes. In drawing skills, figure-draw-

created robots, along with three of their peers' robots. Different points of view and gesture are frozen from three-dimension digital models to create the storyboard narrative layouts.

musical stairs: compositions

We end our second quarter, with a turn towards full scale and looking forward to "transformation" synthesis exercises in the last quarter. This prepares students for full immersion during the sophomore year. Until now, students have drawn the body, played the body, and analyzed the body. Now they create a composition that directly relates to "the body." These compositions, or "musical stairs" are situated between object and environment. Small teams of students are assigned one of eighteen predetermined plots in a public plaza on campus inside which they build a stair. The stair can be no higher than thirty inches and cannot extend beyond the boundaries of the assigned footprint. Each stair is composed in conjunction with those adjacent to it, so that people walking through the plaza might encounter them without difficulties. The stair is less functional and more confrontational; it disrupts the everyday movement through the plaza, and it becomes a device for play, as each tread generates a musical note when depressed by foot. Collectively the individual musical stairs form a type of giant xylophone.

The objectives to this project are three-fold. First, it introduces students to a very basic typology without any predisposition towards the expected image of that type. Second, the project extends the theme of musical performance and composition and relates these directly with bodies in space. The stair pieces are essentially large cousins of the earlier machines for making music project. In this case of the stairs, however, they are played as improvisational pieces created by random student traffic, as typical everyday "stairs" are at once rendered unfamiliar. Lastly, the exercise initiates full-scale design and construction without overextending the capabilities of inexperienced first year students. Issues of craft, joinery, cutting, finishing, and precision are addressed in a project where standard building materials are the media. Structured play extends to scale of building material, as students interrogate typical construction methodology to use common materials in uncommon ways. Unlikely juxtaposition is cited as a platform for innovation and improvisation.

starting with babette's feast: the predicament of the first exercise(s)

Projects such as "Robots Descending a Stair" and "Machines for Making Music" evolve from a set of iterative exercises in the first quarter, thematically driven by the principles of "inquiry" and "disassembly" and revolving around the topic of cuisine. These principles are always presented through exercises that postpone architectural production. We believe a peripheral relationship with design is fundamental to a confidence-building experience for young, often shy, and insecure students. While maybe not comfortable discussing theoretical readings or analyzing complex buildings, most students are at

home talking about movies, restaurants, and magazines. These become the vehicles for rigorous exploration.

"Inquiry" is approached through the analysis of sites. By "sites," we mean everyday environments experienced through field trips. We sustain a critical discussion of place around comparative documentary student presentations that incorporate critical site analyses. "Disassembly" is pursued through the analysis of objects. We focus on the critical disassembly of complex objects from three points of view: physical, textual, and graphic.

The film "Babette's Feast" introduces cuisine. Viewing it is the first activity on the first day of class for the eager first year students. Afterwards, they are immediately plunged into a drawing exercise where we ask them to recall particular scenes from the movie in as much detail as possible. They try to record names of characters, location and orientation of objects, and changes that unfold over time. This proves to be a surprisingly frustrating endeavor. We also ask them to draw only with a Pentel Sign Pen, which, at first, inscribes only fat, awkward lines, and compounds initial frustrations. With practice, however, lines emerge that are deliberate, conscientious, and intuitively immediate. At that moment, focus is on the translation between memory and paper, not pen and paper. As students scour their memory for the detail and minutia of the film, their hands remain loose and supple across the paper. Specificity in thinking is paired against lightness and dexterity in technique. The assignment resonates, because it calls into play like never before students' native abilities to observe and record. It forces them to struggle with their dormant capacities to relate memory to critical thought; to apply form to the formless. The "critique" of these initial sketches prepares students for ongoing observations, analyses, and critique of the everyday.

Students then watch the film a second time and again construct drawings from memory. This time, however, they are observant and critical. A palpable lesson in critical analysis snaps into focus as they can now communicate the details of the film in a way they never could before. By unfolding in this way, the exercise encourages students to discover meaning and purpose through their own questions and observations. They acquire a new disposition: there are no right answers. Students are pressed to be interrogative from day one. Each exercise sets the table for asking through doing and produces work that is inquisitive, not declarative.

pulling design off-the-shelf

In the next inquiry exercise, we ask students to analyze one of a number of popular off-the-shelf home magazines, such as: Martha Stewart Living, Better Homes and Gardens, Nest, Dwell, Wallpaper, and others. Students investigate cuisine and dining articles in relationship to the magazine's graphic theme, writing style, and editorial tone. They present their findings graphically on boards alongside an article hypothetically written for the magazine. While focus is still primarily on inquiry, this project alludes to the cut, and the theme of disassembly to come later in the quarter. The magazine's front cover, for

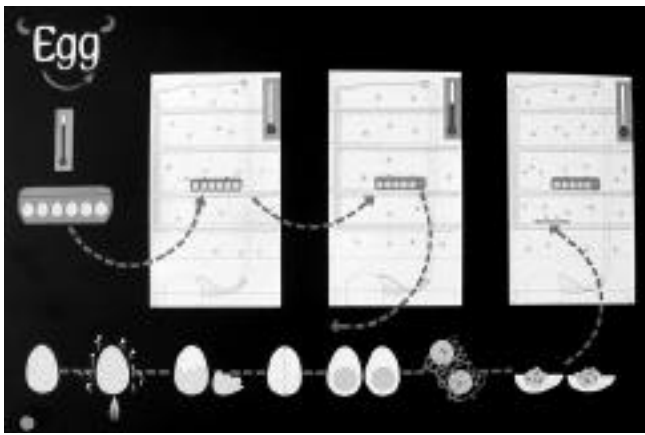


Fig. 8: Diagram of the movement of and egg in time and space

into a wealth of interconnected exercises, from three-dimensional disassembly (utensils, large kitchen appliances) to two-dimensional representations (utensil collages and documentation, appliance documentation, robot representations) and back to three-dimensional reconfigurations (musical instruments). We familiarize students with germane sub-themes, like cutting, by way of marginal studies that instigate questions and reveal previously concealed relationships.

hot, wet, and cold: disassembling large-scale kitchen appliances

The utensil exercises prompt the disassembly of large-scale kitchen appliances. We assign teams of students a kitchen appliance—a stove, refrigerator, or dishwasher, and present them with the task of disassembling and documenting it, similar to the utensil project. This added complexity infuses the project with some new dimensions. First, closely coordinated teamwork encourages students to consider design work as a team-based effort. Second, the increased complexity better prepares students for the layered, multifaceted systems the architect and interior designer must coordinate in the production of buildings and interiors.

Subsequent to this rather overwhelming technical exercise, students end the quarter with a loose, gestural project. They isolate a system from their appliances and diagram it from the perspective of an egg. We ask students to reflect on how their system facilitates the egg's storage, cooking, or disposal. This project nourishes an understanding of complex objects as accumulations of systems. It translates systems organization from everyday objects to buildings, bringing into focus earlier emphasis on parts-to-whole relationships. Additionally, diagramming the path of an egg leaves room for interpretation, personality, and humor. Structured "play" is encouraged. Throughout first year, in fact, exercises pair serious, rigorous architectural principles against the light-hearted, familiar, sometimes funny aspects of everyday experience. We encourage students to carry this disposition throughout their academic careers.

aims and results: implications for our new foundation curriculum

The students seem to find the foundation studio experience awkward at first. They struggle with the relevance of its exercises and are overwhelmed by the enormity of its scope. Some had conceived of an education in which they would be designing buildings from day one, not going out to dinner and viewing films. With time, reassurance, and discussion, however, the pace of first year gains momentum and students become less guarded. They open to the idea that design involves structured play that can be simultaneously rigorous and fun. Students learn to trust the iterative exercises, their instructors, and most importantly their own instincts. Soon, exercises are seen not as a postponement, but rather as a fundamental basis for the establishment of a design language that prioritizes concept over style, "we" over "I", and questions over statements. By arriving at a new language through common objects and everyday experience, students speak of their work with confidence. They grow to become self-critical, but not insecure. They understand the vastness of what an architect or interior designer must know; yet they are not overwhelmed by it. The repetitive, iterative nature of exercises in the foundation curriculum allows students to nimbly oscillate between material and concept, large scale and fine detail, and the unfamiliar and ordinary of everyday objects and experiences.

Notes

- ¹ Our documentation of this foundation studio paper began with the crafting of an abstract with the significant contributions of Daniel Friedman. The content of the foundation studio was developed through contributions of foundation studio Professors Daniel Friedman, Kevin Klinger, James Postell, David Saile, David Lee Smith, Marc Swackhamer, and Melanie Swick.
- ² Wigglesworth, Sarah and Jeremy Till. "The Everyday and Architecture," in *Architectural Design*. London: Academy Editions, 1998. p.7.
- ³ Eisenman, Peter. "Critical Architecture in a Geopolitical World," in *Architecture Beyond Architecture: Creativity and Social Transformations in Islamic Cultures*, London: Academy Editions, 1995. p.81.
- ⁴ *Man and Mask: Oskar Schlemmer and the Bauhaus stage* [video recording], Northbrook, IL: Anthony Roland Films, 197?
- ⁵ Nicholson, Ben. "Collage Making," in *Appliance House*. Cambridge, MA: MIT Press, 1990.

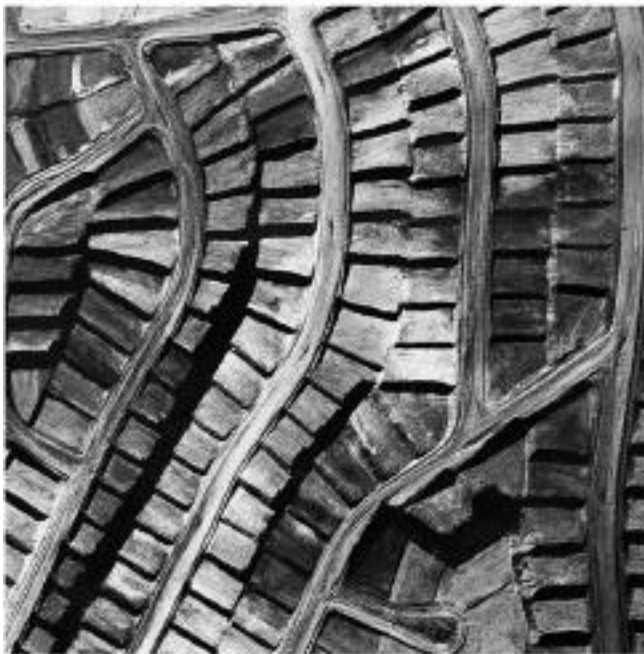


Fig 1. Samples of "Baroque and Suburban" form. "The Abduction of Proserpina" by Bernini and an image from *The American Aesthetic* by Nathaniel Owings (New York: Harper and Row, 1969).

ed as the interplay between a supple and singular surface and discrete insertions of disturbance (attractors and detractors) across that surface. These disturbances manifest themselves as elements, sub-surfaces, maxima / minima, and inflections in the surface.

The suburban notion is found in what J.B. Jackson calls, "an orderly composition of clear cut, well defined forms" that shows, "a preference for the horizontal over the vertical."² The emphasis on the ground plane that the suburban reveals is another moment in practice where design focused on a singular surface and the play across it. In opposition to the disturbing nature of the Baroque there is a formally non-invasive

but intensive apportioning of surface that is manifested by subdivision, alignment, fields, boundaries, elements, and delineations. Either way both of these models push the limits of how surface can exceed, replace, or direct the orientation of Form.³

A persistent condition of both the Baroque and the Suburban is an obsessive manipulation and control of surface. In both of these understandings of Form and its relationships there is study of "the surface" and the discrete conditions that populate it. In each understanding an emphasis is placed on the sculpting of the surface and the arrangement of the objects within it. From the Baroque we gather limits of fluidity and suppleness of the surface and from the Suburban we can take horizontality and a specific quality of density and intensity on the surface. One could suggest that for a Mid-Western first year student such horizontal and "Suburban arrangements" might be the most common sort of form making in their life experiences and "Baroque arrangements" probably are a rare or unknown first hand experience save for some exposure through the literary and performing arts.⁴ Infecting the horizontality and organizational surface of suburban thinking with the disturbing and supple qualities of the surface serves as an underpinning of the way Form is understood.

So, as in both the Suburban and the Baroque, the emphasis (and introduction) here in this pedagogy is on a fluid, finite surface and potential relative relationships within it rather than the sculpting and forming of an artful three-dimensional thing in universal space. The Form Rotation Unit tries to treat this emphasis on a surface as another than three-dimensional or as a quasi-three-dimensional idea but yet more than a study of two-dimensional composition. Specific examples of this spatial model are drapery, flesh, and landscapes or any other things inhabiting what Stan Allen calls "thick two-D".⁵ Focused and thoughtful working in this "in-between" spatial realm of surface draws out and clearly distinguishes issues of Form and form-making specifically by omitting half of the composition of the answer to what makes a Form: Volume. Additionally, centering the study of Form on the Surface repeatedly induces a critical moment in the process when translation between two and three dimensions (and vice versa) occurs in design thinking. But ultimately it is positioned that underpinning the Sandbox exercise with this mix of superficial concepts in the Suburban and the Baroque, thus making the knowledge and skills gathered in the unit both a valuable liberal arts experience and a strong foundation design introduction in the university.

The sandbox and the sand surface:

The sand box interior is 20 by 20 by 10 inches in height and it contains exactly 20 by 20 by 5 inches deep of sand so that the interior of the box is half-solid / half-void. The idea of using a sandbox as the primary vehicle of inquiry in a cross-disciplinary first year design curriculum is transparent with playful innuendoes and diversionary references. Inherent in the use of sand is the opportunity to work with at once a voluptuous and loose, yet massive and volumetric material.

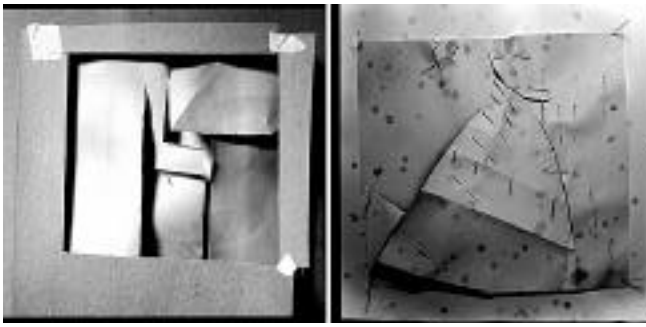


Fig 3. Ventilated drawings.

the surface of the sheet can include folding, slicing, bending, curling, squeezing, twisting, sticking, propping, pushing, crimping, splicing, and shredding the surface according to traces found in the image. As a conclusion to this exercise the surface is painted to obscure the image. Evaluative discussions focus on the ability of the modifications made to the sheet to convey both qualities of surface and form. Questions asked at this juncture are:

What is a surface?

What relationships do form and surface hold?

When surface is a part of form?

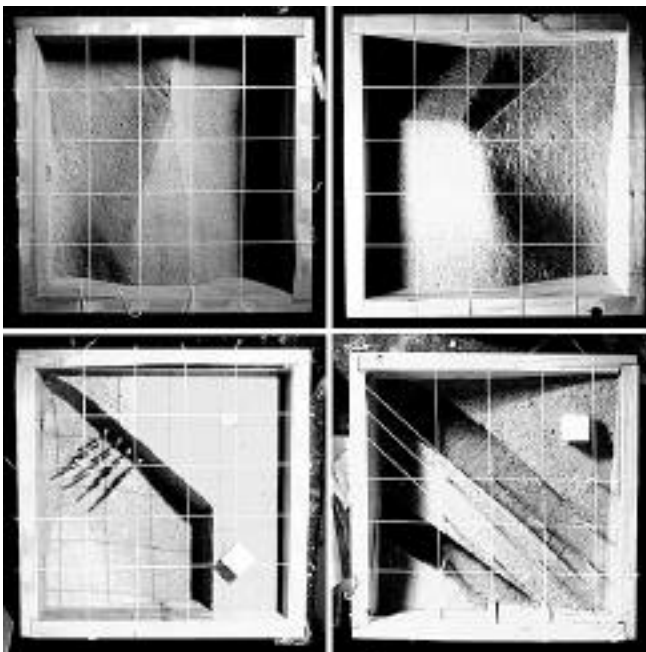
When form is part of a surface?

How is form impacted when a surface is manipulated?

• The Surfacing Exercise

The Surfacing Exercise is a translation of the topographical qualities of a square surface area of the "Ventilated Drawing" into sand. Since no sand can leave the sandbox, the only viable method for shaping sand is by displacement of sand within the cubic area of the sandbox. Sand is scooped, mold-

Fig 4. Progress Photos.



ed, shifted, compressed, stacked, sloped, scored, and smoothed. In the criticism of the work a descriptive vocabulary of surface is developed around techniques of displacement, qualities of texture, and inherent alignments. Again, surfaces are nothing more than visual manifestations of form; not thick and physical crusts of difference, but a privileged and "superficial" position in space.

• The Silhouette Section Exercise

The focus in this exercise is on mapping and analyzing the surface in two-dimensions. Two basic ways to consider and measure the surface of a form are through Geometry (radius, inflection angle) and through Topography (matrix, interpolation, and slope). The student is challenged to discover ways to map their surface through a set of longitudinal and cross-section

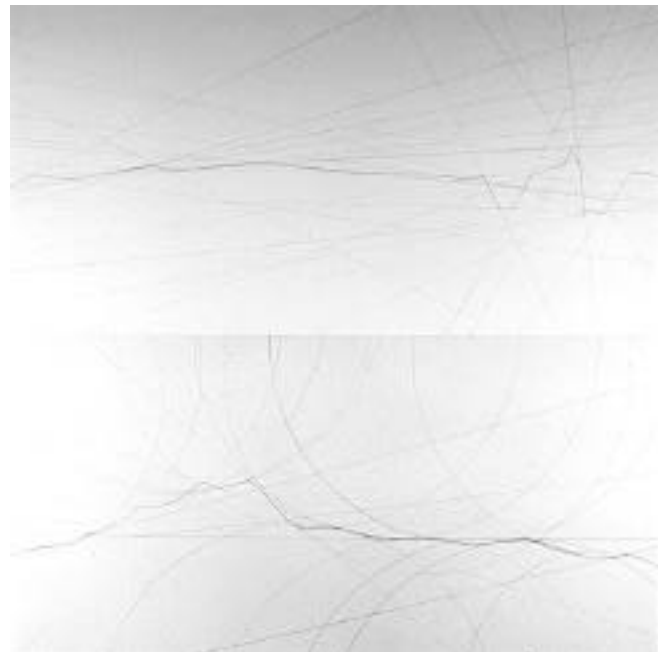


Fig 5. Regulating line drawing.

tion drawings. The resultant drawings are opaque and binary representations of unseen views in the work rather than simply recording the visible plan view from which the work is executed. The revealed sections work as "Proofs" for the "Surfacing Exercise." When completed the "Silhouette Sections" are used as analytical tools for evaluating the surface and informing further adjustments of the displacement of the sand. Questions raised in the execution of this exercise are:

What is the minimum description of a three-dimensional object?

What is a two-dimensional description of a surface?

Outline, Edge, Section

What are techniques for mapping the profile of your surface onto a plane that passes through the sandbox?

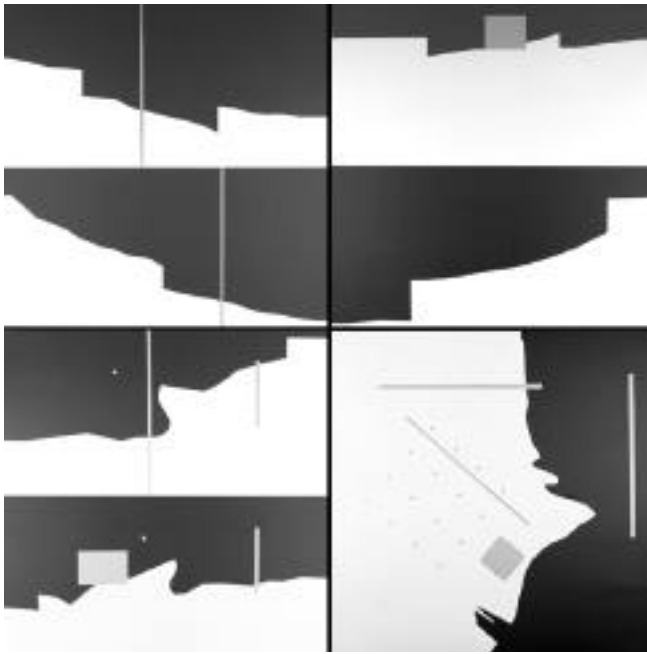


Fig 8. Cut paper drawings.

between elements and the surface,

between elements,

relative to axially,

and the void space / solid space relationships

so that the arrangements intensify in a designed condition.
Questions faced in the making are:

How does one coax the 3rd dimension out of 2 dimensions
in a sophisticated and inventive way?

Is there anything between 2 and 3 dimensions?

Thick 2-D (Purism)

Compressions & Silhouettes (Balinese shadow theaters)

Ventilated drawings (Cubism)

Collage / Montage (grafting, sampling, and naming)

The final efforts of the rotation are a set of "Proofs"

that includes a plan section cut 5 inches from the bottom of
the sand. The final drawing of the rotation is the student's first
effort to abstract the sandbox planimetrically.

Conclusion

The Form Rotation Unit has three distinct periods of making
and reflection:

a) Simple Surface Identification and Manipulation

b) Element and Surface Identification and Manipulation

c) Identified Surface and Element Generation

It should seem that this kind of education should be beneficial
for both kinds of students outlined early on in this paper. For
the traditional "professional-track" (matriculating) design stu-
dent it draws out and limits the construction of form to a few

highly articulated and "in-between" techniques. For the citi-
zens of "visual culture" in our student population (all of our
students, but specifically those who don't matriculate into a
professional design responsibility) the Form Rotation Unit
attempts to speak to the student in terms that are palpable
and familiar by working in familiar but more supple conditions
of Form. The outcome of this effort hopefully results in this
population of the course being able to read, understand, and
manipulate their environment (be it a table setting, a room, a
yard, etc.) willfully and with thought.

Architectural studio education rendered to a broader, univer-
sity-wide, community is an opportunity seldom considered in
current curricular discussions. With this Visual Literacy pro-
gram set up as a freshman learning community in which a
third to a half of the annual participants don't matriculate into
the design professions let alone into architecture, the studio
experience becomes a defacto "liberal arts" course for a por-
tion of the students. Considering this opportunity to teach a
broad "cross-disciplinary" student body and faced with the
task of condensing an introduction to architectonic and artis-
tic form making into an intensive three-week rotation unit, The
Sandbox has been introduced.

Notes

- ¹ At least half of the enrollment in the Visual Literacy course is Pre-Architecture majors (110 students annual-ly) at the outset of first year studies. After two years of matriculation, the Department of Architecture accepts approximately 45 students from the Pre-Arch applicant pool to enter the professional program.
- ² Jackson, John Brinkerhoff, "The Love of Horizontal Spaces", *Discovering the Vernacular Landscape* (New Haven and London : Yale University Press, 1984).
- ³ Isamu Noguchi's work seems to be one oeuvre that particularly develops a hyper-sensitive attention to surface in sculpture, landscape work, and interiors as well as an underlying latent horizontality and scale-ness in whatever he does.
- ⁴ A question of interest to this pedagogy is whether there is any potential in focusing on shared paradigms between very common, vernacular, and visually undistinguished formalism and a very rarified, intellectual, and supple codification of visual organization teaching Visual Literacy.
- ⁵ Allen, Stan, "Field Conditions", *Points + Lines* (New York: Princeton Architectural, 1999).
- ⁶ This technique has a common thread in the pedagogies of most of the studio instruction of the author but was developed while teaching closely with Professor Bennett Neiman for a semester.
- ⁷ Hejduk, John, "The Nine-Square Grid Problem", *Mask of Medusa* (New York: Rizzoli, 1985).



had to be asked in a pragmatic way, even if the underlying intent of the project was to be an abstract spatial exercise.

The first year design curriculum at Southern emphasizes physical and computer models as the primary process media in the first semester and drawing in the second semester. The idea of first developing spatial awareness through models and then subsequently abstracting space through drawings is the larger context for this project. This was a first semester project.

THE PROBLEM AS FIRST STATED:

An eccentric artist has approached you and requested your services for a project she wishes to build. She would like to collaborate with you on the project but would also like each of you to be able to work independently. Her solution is to provide you with a general description of her needs, a number of 'spatial themes', and a basic grid. She also requires generous north light, cross ventilation and clear spatial zones for work, relaxation and storage.

THE PROCESS, an overview:

Students were first asked to make cardboard bases with a prescribed grid drawn on top. As each base was complete it was set aside. Students then each chose/designed three different spatial themes. Themes were developed not to resolve any programmatic concerns but simply to be self-stable and place-making. Once themes were decided upon they were built in sets of three at a scale of $1/2"=1'-0"$ and set aside. A class discussion was then held to talk about how each student

would develop a simple diagram expressing the relationship between the studio and the garden. After diagrams were drawn, a slide show focusing on designs of a similar complexity was presented. Then, with diagram in mind and themes in hand, the students began to assemble their models.

As the models began to sufficiently resolve the programmatic needs as well as reflect the diagrams, the issue of section was raised and discussed. After each student developed a sectional idea they rebuilt their walls and completed their roofs. Finally, reviews of the projects were held.

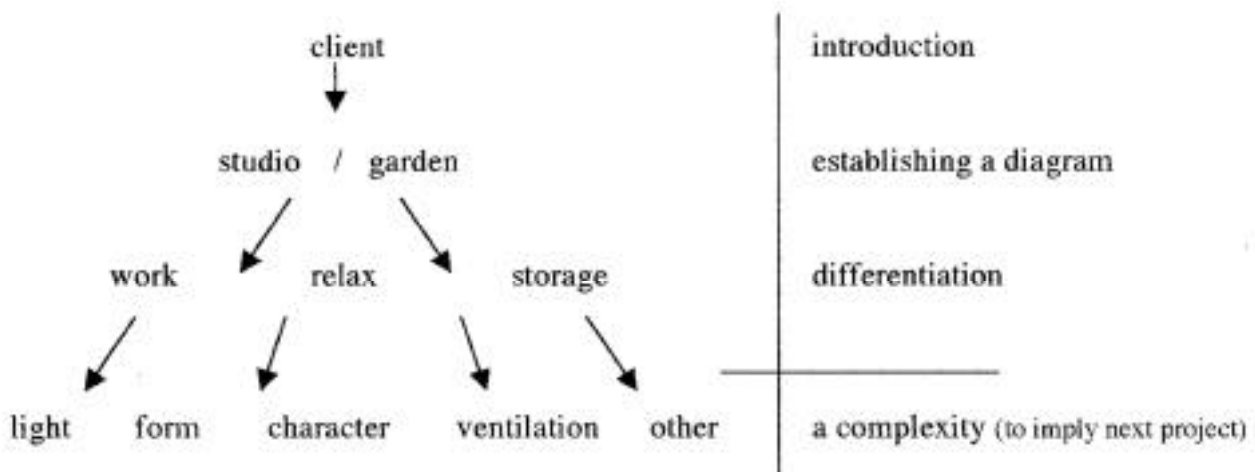
The design project had three major components: program, site and assembly/construction (themes). Each component had a structure that balanced a given rule system with an open-ended quality. The rule systems were a way to tier the project so the idea behind the problem remained accessible while retaining a complexity that grew in step with the students' motivation.

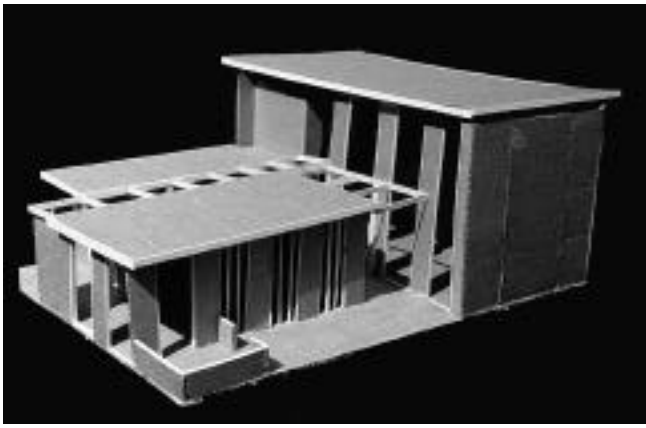
In the process of attributing a functional quality (program) to a formal language (spatial theme), it is the form that can exist as part of the built environment without the other; form is also the one more likely to remain consistent over time. While function is part of the story that the student is trying to tell, it is still form he/she is designing.² Form is the medium students are learning to work and so form is their beginning. Because the design process described here works through three dimensions it also averts the first year student's tendency to design in plan and extrude.

There was a second phase to the project that is not covered in this paper. Students chose three openings in their buildings and developed ways to modulate the light to reflect both the program inside and the cardinal direction of the aperture. Their previous models were used as the starting place for this further articulation of their ideas.

PROGRAM, diagrams:

The logic of the program/client structure was introduced in a series of growing complexities. As the diagram above shows, a client with whom the student can identify is first introduced. The client then established the basic relationship of a studio and garden. The relationship of studio and garden is where





ships. The grid allowed the site and the evolving design to speak to each other as well as to the designer and encourage design as a dialogue. By having students draw out a grid that worked with the module of their spatial themes before building, the relationships between walls occurred with more frequency than one would expect in first year and were understood as architectural devices. The lesson of site was to use the themes to develop macro as well as local relationships. The intention was to reveal a site as an open field with a series of restrictions that could be the form-generating factors of a design: site as a field with which to interact and establish relationships. The site was reduced from an ...urban infill or ...along a river to the idea of developing a few basic relationships, both local and across the field.

In the end it was probably the grid that was the least successful element in the design project. While it had some effect and certainly tightened up all of the projects, it never quite became a device for experimentation. Instead of testing its rules, students seemed to ignore the grid when relationships did not come easily enough. Perhaps the students had enough challenges and some of the more hidden potentials of the grid will be explored in later projects.

SPATIAL THEMES, assembly:

Spatial themes were the generating idea for this project. They were the solution to the concern of eliciting quality work from a situation where students were expected to struggle. The spatial themes were conceived as a relatively quick exercise to pull the basic pieces of design out of the students early in the semester so they could return to them in later projects. The students became involved with the project and worked outside of class, a situation I was not led to expect. The outcome was encouraging.

The idea of spatial themes was introduced with a few examples in plan. The definition provided:

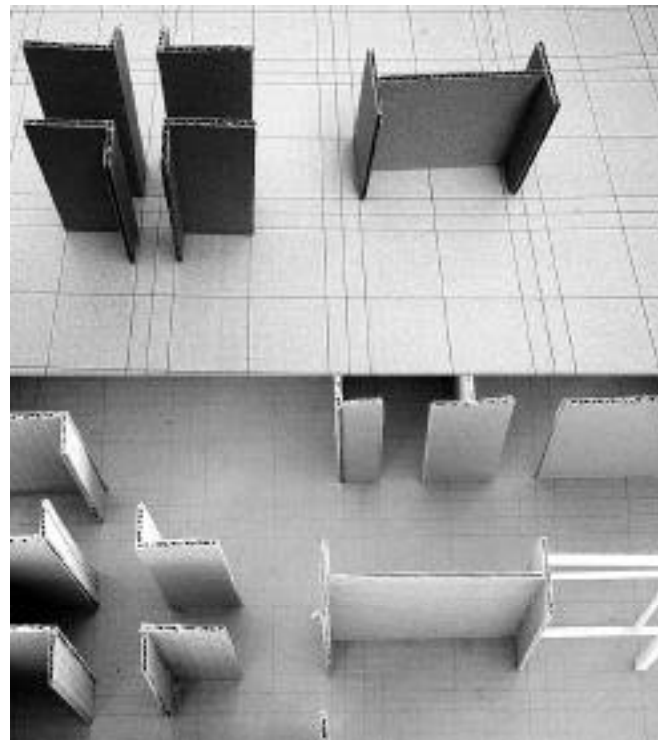
A self-stable configuration of walls that defines multiple "places", ex. three walls arranged in an "I" configuration (in plan). Within any one given spatial theme all of your walls do not need to be the same height. There are an infinite number of spatial themes, do not do as your neighbor!

Experiment! Rotate! Transform!

Students were asked to create three different themes and use each at least three times in their project. After themes were chosen and confirmed through desk-crits, the students immediately built their themes at a $1/2" = 1'-0"$ scale. Their cardboard grid site and their wall constructions were then available for experimentation. Another round of desk-crits evolved conversations that spoke directly about form and the idea of building relationships in three dimensions. At this point the activity in the studio changed solely to designing with models. Once a basic scheme was identified for each student the next issue that was raised was that of section.

Most students originally built all their walls to the same height. The consistency of wall heights was questioned and section was addressed in a very simple manner. How tall are your walls going to be and why? The driving forces became the articulation of the three primary spatial zones and how light might enter each of these. Internal variation of wall heights was also discussed as a means to connect different zones. As these last critiques were considered, students rebuilt walls to adjust heights and used their models for more focused experimentation.

The outcome of the spatial theme component of the design project was the strongest in terms of student development. As the models attest, there is clear spatial articulation of the primary zones and of sub-zones, elements of repetition and layering are exhibited, and a unifying section characterizes almost every project. Some projects maintain a stubborn symmetry, a sign of the unresolved programmatic issues that are often unavoidable in a three-week project. The $1/2"$ scale spatial themes allowed the students to become quickly facile at reconfiguring and experimenting with space, which kept them engaged with their own design processes.



The Predicament of Beginning

CRITICISM AND JUDGEMENT I



In the Beginning - we [design for] humans, an opening studio curriculum for an architectural professional program, Alex Maller, University of Nebraska - Rhetorical Investigations, A General Theory of Design and Architectural Education, Simon Tomkinson, Portland State University

the students' main contribution to his intellectual development. Established design intent can provide the student with a major leap into the exhausting process of analysis and interpretation of the human program. From here on, the search for a 'good fit' between the student's design intent and reality and between proposals and their verification remains a life-long challenge and constantly reinvigorating adventure.⁵

In evaluating their design students were required to address a predefined criterion related to the economy of form. From assignment to assignment this criterion changes and may vary, for instance, between "minimum resources for optimum results" and "optimum resources for maximum results". An implied criterion, related to the economy of form, is addressed by the time allocation for each assignment. The rather demanding work scheduling becomes a significant factor in the design process due to the rather rapid succession of assignments. Students must make decisions on what to focus on and how much to detail in order to communicate their architectural intent.

A brief description and discussion of the work process and work format.

Initially the studio was structured to include seven assignments divided into four design topics. Administrative difficulties eliminated the last topic: the design and execution of the comprehensive studio exhibition. Therefore the actual framework this fall included five assignments covering three topics. The fall semester extends over fourteen weeks, with three afternoons every week dedicated to contact time in the design studio. The reported Fall 2001 studio enrolled thirteen students.

The first topic and assignment - "The animation of the Lied Center", [Fig.1-3] - addressed two specific objectives: to establish an initial transition from basic design to beginning architectural design; and to indicate the individual abilities and personalities of the students. The assignment was an individual design task whose focus was the enrichment of a large performance center. The building, designed in a bare brutalistic style, occupies a strategic location marking one of the two major entries between the University City Campus and Lincoln's Downtown. The assignment required the preservation of the Center's current pattern of operations, while attempting to make the external envelope of the building more responsive to its urban context and the public. The economy of form design criterion was "minimum resources for optimum results". Another significant limitation of the assignment was its short time allocation: one week. Students had to rapidly overcome their hesitations, make design decisions and generate results. This rather compelling process enabled, even the more hesitant students to take risks and, in the process, discover that they have the basic knowledge and inherent intuition to create and represent their ideas. Some students applied their previous basic design experience in order to generate their first exploration toward a design result. Others, attempted to address 'pure architectural' questions such as the suitability of the building's style and the his-

toric context. These explorations generated a variety of approaches: from highly formal and elaborated style-based proposals, to attempts to conduct inquiries into the intrinsic morphology of the given artifact and reflections on the discovered attributes of architectural form.

The assignment established a work pace and intensity that was sustained throughout the whole semester. In addition it enabled the students to become acquainted, in academic terms, with each other, a knowledge that helped them select their team partners for the next assignment.

The second design topic was focused on physical human dimensions and the spatial ergonomic understanding of human activities. The topic included two assignments: a research assignment and an application assignment.

The research assignment, entitled 'Meeting Jo and Josephine', [Fig.3-6] was inspired by an essay written by Henri Dreyfuss [1955]. The students had the option to develop the sub-topics as individual studies or in couples. The time span allocated to this assignment was one week. Each team was assigned a separate common activity such as sleeping, hygiene or food preparation. The focus of the study was the activity itself as performed by the students themselves, not the utilities or the existing surrounding built environment. The students selected the topics and convenient locations. The intention of the research was to identify and document, as accurate as possible, the activity process and record it through direct observations. The time span of the observation was limited to twenty-four hours. The research documentation was requested in two formats: drafted profiles of significant positions, for each activity documented through a plan and two sections in 1/4" scale; and three dimensional compilations of all the profiles represented in drawings and a 3D hard model: the bubble. The study was intended to bring students to the awareness that human activity determines an optimal activity space. Yet the resulting shape, apparently accidental, can be recorded with accuracy. These findings also show that the recorded observations and dimensions, accurate as they may be in reference to each activity of the individual subject, cannot provide a precise spatial result able to accommodate an individual for 24 hours. Human behavior includes many variables, improvisations and interpretations that constantly change the dimensions and configuration of the ergonomic bubble. Therefore the ergonomic bubble should be accepted as a reasonable space indicator to be considered in the design process as a major space determining factor but not the only one.

The application assignment required the design and full-scale execution of a meditation shelter [Fig.7-9] able to accommodate one person for a minimum time span of twenty-four hours and a maximum time span of forty-eight hours. The individual - the student - was expected to spend the allocated time without leaving the shelter. The site: a campus location. The design time span was two weeks with an additional week for full-scale execution. The economy of form design criterion was: minimum resources for optimum results. An additional

expression.⁶ The design development phase, that followed, attempted to provide design proposals in 1/8" and 1/4" scales and hard and electronic spatial representations.

As part of the design evaluation, three architectural features received particular attention: site development, structures and light. The diversity of proposals indicated the wealth of possible interpretations an architectural topic may accept, which illustrate the diversity of the human nature.

As mentioned earlier, the last assignment was not meant to reach an established solution, but to bring forward an intellectual exercise in understanding architectural design, a beginning phase in the students' professional education. The question of the human dimension remained open for continuing discussion. The final critique, conducted with guest critics, reopened the discussion on many of the questions addressed in the design process. The students were encouraged to consider these comments as a recognition of their ability to generate an architectural proposal and effectively communicate it, rather than as a professional confirmation or failure. Too often we tend to attribute to schemes done in school real-life significance, which, in this author's opinion, is pedagogically detrimental. Student work should be first of all appreciated for its educational value and exploratory quality. Academic studio work is a way to develop the student's understanding and ability not a vehicle to compensate for lack of sufficient design research in our profession.

The process described above was intended to be displayed in a final exhibition of all the work done throughout the semester. The students were expected to design and execute the exhibition as a collective effort. This part of the course however was canceled due to administrative limitations. The students used the remaining time to edit their output and include it in their portfolio.

Conclusion.

The learning process, described in this paper, was conceived to appear initially rather vague confronting the students with a study concept of "an undifferentiated unfocused vision" which is "inherent in any creative search" [A. Ehrenzweig, 1971]. Through this approach the students were stirred to reflect on the issues without any preconceptions, to discover and invent knowledge, to ask questions and correct mistakes. In doing so they had to challenge themselves to address the design-doing and the design-making with 'naivete', and expose themselves primarily to their own decisions and critiques. By conducting and establishing a nucleus of a research agenda and findings the students were able to overcome the inhibiting syndrome of 'the empty white board' and achieved a transition from confusion into a productive design process. Initial findings enabled the students to reflect on the topics, generate personal interpretations and enter a condition of incubation and experimentation. Doodling and heuristic reasoning, debates and revisions, which initially may have seem a waste of time, ultimately enabled the students to see beyond their known horizon and enabled them to discover and invent new situations and environments, meanings and forms. This process

of reflection and interpretation, mixing personal ideas and findings, continuously filtered through discussions and critics, became an inspiring environment fertile in unanticipated design thoughts.

We also have to keep in mind that no pedagogical device can and should replace an individual's interest in design studies. Education can enhance and help develop personal abilities but it can also reveal the student's personal limitations. As such, the process applied in this beginning studio enables students to make career decisions already in this early phase of his/her academic education and define their professional priorities.

Finally, the topic of the studio - the design for the human program - has been revealed but remains of course unresolved. And maybe, in the future, through continuous inquiry our students will be able to remember and address as accomplished architects Kierkegaard concern: "It is perfectly true, as philosophers say, that life must be understood backwards. But they forget the other proposition, that it must be lived forwards." S. Kierkegaard, *Collected Works*, 1843.

Notes :

- ¹ The model of the Adjunct course was reported in a previous ACSA publication [Maller 1999]. The integration model between the adjunct and the studio is constantly being revised and adjusted with various degrees of success.
- ² In a lateral way, students are introduced to problems related to aspects of criticism of representation. The intention is to balance the predominantly object orientation students have received in the pre-architecture studios by discussing arguments brought forward by authors such as Walter Benjamin or Massimo Cacciari. For instance, see Cacciari's essay *The Oikos of Wittgenstein*, [1993].
- ³ David Oakley [1970] offers inspiring insight into the intricacies of architectural education in a changing world. In discussing *Architectural Thought* he maintains that: "One cannot climb the tree of architectural knowledge. One prepares the mind so that it may grow within. First the seed has to be sown and character of the growth to be expected broadly indicated. Some facts have to be absorbed. But from the beginning of study most necessary fertilizers are ideas; and some of these must come from the student himself." [pg.15]
- ⁴ It is beyond the scope of this paper to enter a discussion on the architectural connections between phenomenology and hermeneutics. The author subscribes to the position proposed by Paul Ricoeur [1993] a position that is well encapsulated in the following quotation: "All phenomenology is an explication of evidence and an evidence of explication. An evidence which is explicated, an explication which unfolds evidence: such is the phenomenological experience. It is in this sense that phenomenology can be realised only as hermeneutics." [pg. 128]
- ⁵ The reference to 'clarity of intent' and 'good fit' in the academic context should not be confused with an acceptable or good solution. Without a full exposure to the constraints of reality and clients, academic schemes, especially beginning schemes, cannot and should not be viewed as solutions. However, a search for 'good fit' on any level of design thinking, based on clear design intent, can generate and communicate inspiring proposals. In order to make it possible for the student to strive toward achieving a 'good fit' the syllabus must provide well-defined design objectives and evaluation criteria. In this context, George Nelson's essay [1957] on "Good design:

Rhetorical Investigations

A General Theory of Design and Architectural Education

Simon Tomkinson

Portland State University

The Challenge

This paper focuses on the common difficulties in architectural education – its role, and its motives. The construction industry has consistently needed more qualified project managers, more technicians, and better business practices. Yet, a primary tenet of architectural education is that the industry is more qualified to train the student in the intricacies of practice. The education about practice is limited primarily due to the emphasis on design education. What is it that we, as educators, teach in design education?

Architecture draws from many sources and is interpreted through many theoretical constructs. Attempting to define “architecture” is virtually impossible, however, we may have been asking the wrong question. Instead of tactical responses to the relationship of design education to the profession, or the discussing the structure of how something is taught, have we actually defined what we mean by the term “design”? Moreover, how is “design” understood in context to other professions, practices and the culture as a whole?

Design education has always been a precarious and shifting construct, and today we find ourselves in an increasingly difficult position. The pace of the innovation is forcing a commitment to resources that severely constrain what is taught. As architects, we are not alone in this fact, especially when you look to other industries like information and communication technology, biotech and others. The argument that the pace in innovation has resulted in the disjunction between academics and the profession does not hold true. In fact, the opposite is true in other professions. The focus of an argument needs to be on the act of education itself, on how we educate the profession. What we do know within the architectural profession is that there is no real agreement as to what design is, what is “good”, versus what is “bad”, and how it is valued as a distinct competency to the public. The problem of teaching design is in part created by the inability to define what design is, paired with the hybrid definitions on which designers and design educators rely. Where there is no general design theory at hand, it should not be surprising that there is no consistent design pedagogy.

There is a growing need to identify a general theory of design. Designing something and making it where once mutual extensions of each other, however since the industrial revolution, designing itself has become a specialized activity. This specialization has been expressed in the realization of a model, or prototype. In architecture, the model has been two-dimen-

sionally represented through plan, section and elevation, creating a body of theoretical work that supports its analysis and production. Formerly, the model was often made with the traditional craftsman's techniques, through drawing and model making, so the designer could still visualize themselves as craftsman and maker. With the advent of information technology, three-dimensional modeling, and rapid prototyping, all of the craft, drawing, and making based theoretical constructs are being challenged, with virtually no support in terms of historical precedent. The designer/maker is finally severed from the process of making they once controlled absolutely. Design education has not successfully addressed this change in production or the new position of the designer.

Approaches to design have been outlined within distinct professions, but not as a distinct competency in itself. The current approaches do not really address the complexity of the situation. If design is a heuristic technique, then what is its object of study? Heuristic techniques are rooted in a scientific method, however the use of a technique does not make design a science. The view is a defensible one, however other professions also investigate the world in their respective aspects, be it legal, medical, or economic. Under what rubric does the designer investigate the world?

What Is Design?

Design is not a craft, nor is it an autonomous art, standing alone in the world without relationship to other means and methods. Craft relies on the application of prescribed materials and applications, and design does not have these, although skill and craftsmanship is a component of design. Design is also a component of many professional practices, from graphic design and marketing, to engineering and law. Design also can't be reduced to pure aesthetics, as the impulse of design comes from many sources, notably outside the designer in the form of a client. Design is as much a social activity as it is an internal process.

The most common way to define design, in order to get around the lack of a general theory, is to define design as ability, a *savoir-faire*. To this general definition, a general theory of design is not only superfluous, but harmful to the drawing out of “latent” talent from their respective pupils. In this definition, rather than seeking a foundation in theory, design training clings to dominant styles or schools of design. This education then imparts the knowledge, the procedures, the skills, and the attitudes of the selected example, so the students learn to

design and design process is necessary in order to address the continuing questions of what design may be.

In the 1800s, the academic establishment, with its focus on classification and individualization, abandoned the explicit use of Classical Rhetoric as a structural component of all the liberal arts. Specifically, Classical Rhetoric was associated with the intricacies of court presentation within the aristocratic governing systems of Europe. It was the means for the communication, argument and execution of an idea. The rise of Kantian aesthetics and the case of "the individual as authority" devalued the social and cultural underpinnings of Classical Rhetoric. Within the academic establishment, a need arose to codify and qualify the growing classification and delineation of the liberal arts, thus creating autonomous areas of specialization. The search for the "universal" in the modern theoretical constructs further devalued the use of Classical Rhetoric and context driven, reflexive philosophies and theories. Within Postmodern thought, there was also a shift from the search for meaning into the search for structure and syntax. However, the new philosophical approaches that arose from Kantian aesthetics onwards have not shifted the methods and means of constructing ideas in design, and in fact appropriated rhetorical systems for their own use. The stripping of method within the new philosophical systems was resolved through the fracturing of method into the distinct applied arts of writing, art, political science, education and debate. Yet, the underpinnings of the distinct arts never changed far beyond the original structure given to it by Classical Rhetoric.

The methodology of inquiry is centered on the use and application of Classical Rhetoric as a tool for communication and investigation. Classical Rhetoric has been defined as the art of speaking and writing well on any and all matters that fall outside of pure science or technique. As opposed to Science, which attempts to formulate and validate "true" statements, Classical Rhetoric is a distinct structure of thought available to formulate probable statements about matters of human concern. The structure of a rhetorical investigation is formulated to provide and analyze the context within which an idea is generated, supported and executed.

The key to understanding the linkages of design and rhetorical investigation is that each has a reliance on the chain of dependencies that construct thought. Within Classical Rhetoric, the chain of dependencies that one adheres to in the process of constructing an argument have been articulated since Aristotle: *Inventio*, *Dispositio*, *Elocutio*, *Memoria*, and *Actio*. The modern interpretation, in a general sense, is invention, arrangement, style, memory, and delivery.

The following descriptions are from the "Silva Rhetoricae" found online at <http://humanities.byu.edu/rhetoric/silva.htm> :

Invention concerns finding something to say (its name derives from the Latin *invenire*, "to find."). Certain common categories of thought became conventional to use in order to brainstorm for material. These common places (places = *topoi* in Greek) are called the "topics of invention." They include, for example, cause and effect, comparison, and various

relationships. Invention is tied to the rhetorical appeal of *logos*, being oriented to what an author would say rather than how this might be said. Invention describes the argumentative, persuasive core of rhetoric.

Arrangement concerns how one orders speech or writing (Its Latin name, *dispositio* means "placement"). In ancient rhetorics, arrangement referred solely to the order to be observed in an oration, but the term has broadened to include all considerations of the ordering of discourse, especially on a large scale.

Style is a rich and complex concern of rhetoric that goes far beyond the connotation of "personal flair" or the use of figurative language. Unfortunately, the field of rhetoric has sometimes been reduced to nothing but just such a limited understanding of style in which substantive ideas were simply given some attractive dressing or ornamentation.

In classical and renaissance rhetoric, style was in indeed concerned with ornamentation, but in the original sense of that word (from "*ornare*": to equip, fit out, or supply). In other words, "ornamentation" meant to equip one's thoughts with appropriate words and expressions sufficient to accomplish one's intentions. Because style has so much to do with propriety (of the message to the thought and of the expression to the audience), it is closely tied to the rhetorical concerns of decorum and audience. Consequently, style encompasses both very minute and very large scale language choices, all of which affect the overall style.

At first, **Memory** seemed to have to do solely with mnemonics (memory aids) that would assist a budding orator in retaining his speech. However, it clearly had to do with more than simply learning how to memorize an already composed speech for re-presentation. The *Ad Herennium* author calls memory the "treasury of things invented," thus linking Memory with the first canon of rhetoric, Invention. This alludes to the practice of storing up commonplaces or other material arrived at through the topics of invention for use as called for in a given occasion. See *copia*.

Thus, Memory is as much tied to the improvisational necessities of a speaker as to the need to memorize a complete speech for delivery. In this sense Memory is related to *kairos* (sensitivity to the context in which one may communicate) as well as to the concepts of *copia* and amplification.

Delivery, one of the five canons of rhetoric, has often been ignored in rhetorical studies. In antiquity, however, the importance of delivery was emphasized in discussions of *exercitatio* (practice exercises) and was generally divided into concerns of vocal training and training in the use of gestures.

Delivery originally referred to oral rhetoric at use in a public context, but can be viewed more broadly as that aspect of rhetoric that concerns the public presentation of discourse, oral or written. In either case Delivery obviously has much to do with how one establishes *ethos* and appeals through *pathos*, and in this sense is complementary to Invention, more strictly concerned with *logos*.

Princeton Journal, Thematic Studies in Architecture Vol. 3

Richard Terdiman, H. Aram Veese, "Is there Class in this Class?" The New Historicism

Hugues C. Boekraad, Introduction, "Copy Proof"

Charles Sanders Pierce, "How to Make Our Ideas Clear"

Russell B. Goodman, Pragmatism – A Contemporary Reader

John Dewey, "Education as Growth"

Russell B. Goodman, Pragmatism – A Contemporary Reader

Dana Cuff, "Architecture"

Spiro Kostof, "The Architect: Chapters in the History of the Profession"

<http://humanities.byu.edu/rhetoric/silva.htm>

The Predicament of Beginning

CRITICISM AND JUDGEMENT II



Becoming Designers: Intelligent Shape Sorting, Esther Dudley, University of Plymouth - Why Do You Always Make Us Think? Maintaining a Journal in the Beginning Design Studio, Karl Puljak, Louisiana Tech University - Ventures in Dichotomy: Rigor AND Tolerance in the Beginning Studio, Hector LaSala, University of Louisiana - The Silence of the Studio Lambs: How to Hear Your Students' Voices, in a Postmodern Design Studio, Elijah Mirochnik, Lesley University

Intelligent Shape Sorting

Esther Dudley

Exeter School of Art & Design, University of Plymouth

It is a familiar scene. Each September brings its new crop of would-be graphic designers, diverse in their experiences and ambitions, brought together in the lecture theatre by an appointment on their induction calendar, indicating an introduction to design research. It is my task to explain the pattern that this study will take in the opening modules. In this first year of study design research will take place on Wednesdays, regardless of studio projects. It will constitute a certain number of lectures and tutorials, concluding with a specified brief which represents the first phase of assessment. As the routine unfolds I sense that my new audience will have already made some judgments on this particular aspect of their course.

To some, design research will be no surprise. They will have read the student handbook or they will have remembered most of what they were told at their interview. They may have learned about it by that mysterious grapevine which springs into existence whenever students gather together.

I discern a cheerful acceptance, even a flicker of enthusiasm from some individuals, whilst sensing that a few take a different view, entirely. They will have already designated Wednesdays as their opportunity to visit the dentist, or the accommodation office, or the television repair shop. After all, there are plenty of interesting things to do on Wednesdays. But all my audience know that nemesis must await them if they try to hide from the long arm of design research.

After explaining where design research fits into the scheme of graphic design, I proceed to say why it is important. I know that these words are going to be repeated many times, in an attempt to bring even the most estranged into the design research fold. These are the disaffected students who don't even have to utter the words of protest, so plainly are they written in their body language and their faces: 'I don't read much...., I haven't written anything much..ever..., I thought graphics would mean I didn't have to write essays...' and so on.

'Graphic design will be the richer for graduates who are able to engage in criticism, analysis and debate' is the argument which I offer. This may slip by unnoticed in the opening address until I play my trump card: the dissertation, without which it will be impossible to achieve an honours degree.

Timetabling means that design research has to be allocated to a single day each week. Tutors have to be paid, lecture theatres have to be booked and courses have to be administered. The simpler all of this is, the better for everyone.

Design research takes place away from the studio. It is no easy task to convince students that the subject is a natural, ever present function of graphic design. Studio tutors, I should say, are just as determined to draw the twin experiences of research and design together. Yet to the student it could seem that we operate with a paternalistic- and maternalistic- 'we know what's good for you' approach, until they themselves, see the point of it all. Frequently the assumption is made that design research is concerned with what happened in the past. This is a mistake as design research is very often concerned with the present. But in order to know what distinguishes the present from the past, and thus better understand our own time, we really need to know what has gone before. There is no reason why design research should not also be concerned with the future. Designers have always been interested in the future.

Back to the future of history. I can't think where the antipathy to the study of history on the part of designers originates but I am sure that the downgrading of the subject within the national curriculum has not helped. My perception of this is informed by talking to a history teacher at a successful comprehensive school. The history which is now taught in our schools nevertheless fosters some understanding of the contemporary world. Often, however, the new graphic design student has difficulty in conceding that design history could play a useful role in their education. Graphics, after all should be about drawing and designing. The reality is, that it is hard to think of a successful designer, graphic or otherwise, who has not been interested in history. History has vast treasure houses of ideas which wait to be recycled, transformed and turned upon their heads. Design has to be set within a social, industrial economic and political context. Then comes its aesthetic context. Christopher Crouch writes in his article *Why Teach Design History?*³ a compelling case for persevering along the historical route and suggests a concise definition of the designed object " as the result of the interaction of function with ideology." His contention can equally be applied to the graphic designed object and indeed, when he refers to 'codified imagery' we are on very familiar ground.

The relevance of a cultural literacy, the familiarity that a culture has with its processes and their relationship with other cultures, cannot be underestimated.If aspects of a society's cultural life are valued and given prominence, an important arena is created within which social development can take place in an informed and reasoned atmosphere.

nouns were used without question. But the Coldstream Report has stood the test of time and we owe much to it.

The Diploma in Art and Design was elevated to the level of a degree course as the polytechnics, which were later given university status, took over the bulk of the provision of art education. The written component in courses was not inserted to exclude the less academically inclined student, but to ensure that all students would be able to view their own disciplines in a critical way. The dissertation became a key component in a degree which was intended to have authentic academic credibility.

At the Making/Writing Conference which was held in Exeter in 1998, we discussed the differences and affinities of both activities. Our starting assumption was that neither making nor writing should be assumed to take intellectual precedence over the other. Instead, they should reflect characteristics of each other. The maker and the writer could both be described as originators, or creators, with the outcome of their efforts being dictated by external demands. Pavel Buchler's keynote address led us into the theme:

To comprehend writing and making as modes, one must look not at the final product but at the potential contained in the original thought itself. There are undoubtedly perceptions and ideas which call for being articulated in writing, becoming texts, and others which demand being shaped by making to become objects or images. But in the main, it is likely that thoughts, perceptions or ideas will contain a range of such potentials simultaneously (including, most obviously the potential for nothing being done about them at all) and the hierarchy of the modes that may be deployed in realising a particular potential will be a matter of external priorities.²

In academic institutions priorities are usually imposed by those who shape the structure for learning. Paula J. Curran has described the structure and brief of the course she has devised entitled *Designing with Self-Authoring Text*⁴ in which she challenges the historical role of designers as mediators rather than creators of text. There is an obviousness to the process of integrating writing and design that is often overlooked, though they share the simple stages of production: research, creative thought, planning, drafts and refinement. It seems the course allows every opportunity to the student to develop a solution to a verbal and visual communication problem and at the same time, keep a notebook to record the process, a necessary tool in the task of self-criticism and self-evaluation. This is a model we could well consider adopting.

The dissertation is the outcome of a period of intense, self driven research. This is its supreme value. It is a significant rite of intellectual passage: the authoring of a text which is to be validated by academic authority. Yet, despite the recognition of its importance, pressures may be brought to bear on studio based courses which could threaten the continuation of the dissertation as an essential element. In the climate of diminishing resources, departments are forced to consider reducing the time spent on teaching. In the event of a student

failing a module, no extra teaching is available and a sub-standard piece might be accepted as a re-submission, for the sake of moving the student on to a module at which he or she is likely to achieve greater success. Some students experience difficulty with the written element. It is easy to see how the lowering of expectations would undermine the important role the dissertation has for, what is after all, the majority of students.

A former designer for television, who has devoted the latter part of his career to design education, recently recalled his time at the BBC, 'We were actually talking about dissertations. He recalled excellent designers who never got the best plays or shows to design because they were unable to express their ideas fluently, whether in conversation or writing. Directors and programme planners, whose lives are frenetic, have little time for mumbled or written gabble.

'Literacy and the ability to express ideas to colleagues and clients' said my friend, 'are part of the indispensable armoury of the designer.'

An inability to manipulate language is a great disadvantage for a graphic designer. Linguistic laissez-faire should not be condoned. Language is common property and to function it should be widely understood. Jargon, the language of coterie, is swiftly superseded by other jargon. Designers need to make words and images perform on comparable conceptual levels. Credibility for the designer is gained when this is achieved, yet undermined when there is poor control over the mechanics of language. The discipline that gaining such control inevitably requires, should be encouraged, and the skill of writing coherently, mastered. The reality is that writing is as vital to the graphic designer as the making of dovetail joints is to the cabinet maker.

Learning how to use a university library is most important for the student designer. Students are expected to engage with the literature of their subject. By researching and writing we can appreciate more readily the dedication of those authors who bring our subject to life, pushing forward debate and criticism. The discovery of alternative methodologies is essential if our viewpoints are to mature. In order to nourish the creative process, the fledgling designer needs to be aware of how texts and images have been related to each other, not only in the past, but also in the present. Design journalism is alive with comment and debate that the student cannot afford to ignore. The activity of engaging with it on a regular basis is so important that it forms a basis for project work which is assessed in the first design research module that I teach. One expects that the practice, once established, continues throughout the degree course and beyond into professional life. All professions, industries and trades rely on discussion and comment, as the diversity of this area of publishing shows.

Thomas Edison said, 'Genius is ninety nine percent perspiration and one percent inspiration.' The perspiration/inspiration battle applies equally to the research and writing process as it does to the grand gesture of the finished designed piece. It is rewarding to observe, as students work on their projects, the

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The Predicament of Beginning

ENCOUNTERING MATERIALS I



Design as a Liberating Practice: design-build with first years, Eduardo Aquino, University of Manitoba · The Consuming Process, Gregory Herman, University of Arkansas · Assemblies: full scale construction in the freshman design sequence, Aron Temkin, Florida Atlantic University, and Scott Smith, Carnegie Mellon University

Design as a Liberating Practice: design-build with first years

Eduardo Aquino

University of Manitoba

hall the attitude is passive as the students listen to the teacher who prominently controls the nature of how knowledge is disseminated. The studio is a new space where learning is defined by the direct contact between student and teacher. The learning process is more successful through individual engagement. If there is not a deep connection between the learner and the lesson, learning is limited. As a studio educator (instead of "instructor") I have always pursued strategies of engagement as a way of creating a healthy, constructive and exciting atmosphere for learning. I often tell my students that in studio the roles are reversed, as the students assume the position of a project leader and I become a type of consultant/assistant during desk critiques.

Like many design students a question has pursued me since the days I was in Architecture School. If design defines spaces to be experienced tangibly, why do we go through design school without ever having the opportunity to conceive and build the total experience of real spaces, in full-scale and present-time? How can we narrow the bridges between theory and practice? Challenging the traditional notion that design-build experiences are for advanced students, recently I have been using design-build techniques to address issues at the beginning of design education. The intention is to create an opportunity for first year design students to advance their learning through design investigations that culminate in a built, full-scale spatial experience. This is an invaluable moment to assess the distinctions between representation and the physical, phenomenological existence. Design-build exercises build confidence, self-assurance, and creative development at the start of the student's education. Learning in this setting inevitably happens by acting upon the problem through critical thinking, representation, and making.

THE PROJECT

During the past three years I have introduced first year design students with exercises related to full-scale. The project, the last studio exercise of their first year of design education, is a small design intervention that explores design and synthesis of a given set of mediating elements including light, passage and boundary. The investigation addresses interior and exterior relationships through a construction within an existing context. The learning goals for the project include a general understanding of the design process through human factors, environment and culture as influences on form and space making. The student experiment with many design issues using different scales, visual and spatial design vocabulary, critical



Fig. 1. The 4' x 4' x 8' frame in transformation.

human aspects regarding issues of collaboration, compromise, and adaptability, leading to the construction of the final structure. The project becomes a micro model of a real practice. The design process does not exist in isolation, but instead responds to external conditions usually neglected by constrained studio exercises.

Stage Three: Construction

The final stage directs the students through an intense process of negotiation and collaboration resulting in the construction of the final structure/architecture. The scale of the project compels them to help each other by carrying materials, sharing tools, holding a piece of wood while someone else performs a cut, teaching each other techniques they have learned, etc. The circumstances of the project require them to consider every single gesture, every single move while they are working on the construction. Learning is further reinforced through construction techniques, structural resolution, materiality, joinery, etc. The experience is extremely rich and challenging for both the students and myself as we immerse ourselves in the construction phase mainly by doing and dialogue, two actions that require full engagement. As they work at finding solutions to their design problems my involvement becomes more of a collaborator rather than a traditional instructor. The breadth of the project permits the investigation of many issues in the design process, from concept to execution. However, the main learning outcome is a deeper

sense of confidence and a greater ability to collaborate and negotiate.

LEARNING HOW TO LEARN

All the time my ideal of teaching has been to argue with people on behalf of the idea that they are responsible for their own activities, that they are really, in a sense, the question, that ultimately they are what it is they have to contribute. The most critical part of that is for them to begin developing the ability to assign their own tasks and make their own criticism in relation to their own needs and not in light of some abstract criteria. Because once you learn how to make your own assignments instead of relying on someone else, then you really learn the only thing you really need to get out of school, that is you've learn how to learn. You've become your own teacher. After that you can stay on – for the facilities, the context, the dialogue, the colleagueship, the structure, and so forth. But you'll be already on your own.³

Considering Robert Irwin's statement, one may argue that allowing students 'to be on their own' during the first year of their design education might be too early in their learning process. My observations tell me that if an independent attitude is not encouraged from the very beginning, the student will neither learn to assume responsibility for their own education, nor learn to take ownership of the design process. The possibility for students to create their own assignments and find their own answers should be encouraged in the teaching of all creative disciplines. As mature designers we possess these skills, but as educators we might find them to be the most difficult to convey. One can argue that it is impossible to teach someone how to be creative. However, we, as educators, can foster a studio space where creativity and problem solving are promoted. Who is responsible for the student's education? The teacher or the student? Ultimately, success is not the completion of one assignment but instead it is the positioning of the student in society as an active and participating citizen. Thus, design education should not be looked upon as simply the processing of critical information and technical skills, but also as a liberating practice.

Offering first year students the opportunity to design and build a full-scale structure at such an early stage in their edu-

Fig. 2. The individual 4' x 4' x 8' cells being assembled as part of the entire structure.



simply teaching technical skills, critical thinking, and developing creativity, the studio has become a space where students learn to empower themselves to find their own sense of freedom, destiny, and their position in contemporary society.

Notes

(1) bell hooks, *Teaching to Transgress: Education as a Practice of Freedom* (New York: Routledge, 1994, p. 207)

(2) Social recognition as articulated by Charles Taylor in *The Malaise of Modernity* (Concord, Ont.: Anansi, 1991).

(3) Robert Irwin with Lawrence Weschler, *Seeing is Forgetting the Name of Things One Sees: a Life of Contemporary Artist Robert Irwin* (Los Angeles: University of California Press, 1982, p. 120).

(4) bell hooks, *Teaching to Transgress: Education as a Practice of Freedom* (New York: Routledge, 1994, p. 11)

(5) Paulo Freire, *Educação como prática da liberdade* (Rio de Janeiro: Editora Paz e Terra, 1994).

dent a sense of the need to remain involved, and that the thing that is intensively and carefully pursued will provide the most rewards.

The craft theorist David Pye proclaimed,

"The best possible design is seldom the one which is quickest to make, or anything like it; and, even where it is, the best quality of workmanship can usually be achieved only by the workman spending an apparently inordinate amount of time on the job."³

Momentarily forgiving the gender-specific condition suggested by Pye, the quality of workmanship – indeed, the condition of quality itself, comes into question without appropriate "marination." The philosopher John Locke suggested that all knowledge, and as a consequence, wisdom, was attained through sensation and appropriate reflection.

Returning to the issue of technologies, I feel it is appropriate to here suggest the inappropriateness of the use of electronic media in the earliest design courses. At least not yet. Despite the efficiency of digital exploration and representation in the design process, the dismissal of such temptations can only change a student's outlook on the design process. Most students come to the beginning design studio with technological experiences far more advanced than most of us will ever endeavor to employ. And they will use that talent soon in constructing their rendition of the cultural landscape. But to confound that tendency forces the student to reflect upon the process. And in so doing, the beginning design student may reliably attain the wisdom afforded by the Locke-ian pursuit.

Part Two: Projects

The following section presents a number of projects given during the summer term at the University of Arkansas School of Architecture's Summer Option First-Year Design Studio. Projects that were team-taught are so noted. Similar to baccalaureate programs in other schools of architecture, the summer program meets for twelve weeks, Monday through Friday, for seven hours each day. The intention is to model the entire first year of design education during the summer through an exceptionally intense focus upon architectural tasks. Ironically, the very premise of the studio is antithetical to the idea of slowness. Its main constituency consists of those seeking to accelerate their design education and to enter the subsequent school year at a more advanced level than they would have had they enrolled in the design studio during the conventional school year.⁴ By necessity, then, the summer experience demands certain sacrifices – students are enjoined from taking on summer jobs or other distractions that would interfere with the term, however necessary. The summer curriculum takes on a reduced scope in order to work at all with the demanding calendar, and all projects are calculated to develop craft as a normal consequence of completion.

Dividing the summer term into two six-week periods, the focus during the first half is upon aspects more analogous to architecture – components and materiality. The plaster block project occurs during this first six-week term. Students are

first encouraged to develop a system of pattern through drawings. The pattern is often based upon observation of selected plant materials and their subsequent conventionalization, depending on the particular assignment. With approval from their critics, students are instructed to cast at least two blocks, plus more for practice. Though urged to fashion their own tools from simple metal stock, most students chose to purchase factory-made clay working tools for their precision. One year, students were asked to design a fragment of a cornice, and to carve the cornice incorporating a corner condition. What distinguishes this sort of project from most studio projects, of course, is the fact that the course of production of the representation informs design decision-making far more than usual. Indeed, what is crucial about this project, beyond the mere slowness of the production, is the production itself, and the satisfaction that occurs through fabrication. There is an ironic aspect of Bauhaus sensibility incorporated into such projects; that, despite the production of an "out-moded" and "pre-modern" component – a cornice – hand-craft and the judgement calls that are requisite to that process are embodied.

Production time for this project can be extensive – perhaps excessive during such a brief summer term. But it can be demonstrated that ethic is more important than expertise in such instances, and that an analogous treatment of architecture (with certain strictures) can lead into its study just as successfully as can more explicit curricula. Working with plaster is an intensive process, and subject to variations in humidity, length of curing time, and the skill and patience of the caster / carver. Extensive time is required to plan and cut the surface, painstakingly extracting all areas that would reveal the carver's intentions. There is no rushing the carving process, just as there is no rushing the initial curing process of the blocks themselves. Patience and a high degree of hopeful expectation cannot be "micro-waved" into place.

For another rendition of the project, the assignment was to carve the plaster object, and then in a second phase to design and craft a protective carapace for it. The requirements for the plaster object were somewhat different in this rendition: subject matter for the plaster object derived not directly from sketches of plant material but from a more broadly interpreted set of graphic work. With some regret about the results of this first phase of work, the production of the container for the object proved far more successful. At the outset of the project, a number of questions were posed concerning the materiality of the thing, such as: What is the container to be made out of, and why? How will it be constructed? Is the construction process appropriate to the material? Should the container completely conceal your object, or should your object be revealed some? Should the surfaces of the container — inside as well as out — be manipulated in any way? Students were given no due date at the outset of the project — a troubling proposition for them, to be sure. They were told that a due date would be determined later, and that they would be given enough time in which to work intensively. The students were asked to remember that "high craft" would be

Assemblies: full scale construction in the freshman design sequence

Aron Temkin and Scott Smith

Florida Atlantic University and Carnegie Mellon University



Fig. 3. Stand for a collection of books by Matt Kertesz 1991

may be attributed to the tabletop's scale in relation to the particular books. This example was particularly effective in teaching students about the power of simplicity in design along with the greater precision it required.

The faculty realized, after giving this assignment over several different semesters, that they were encouraging greater and greater complexity as a product of their own experience with past students. As a result, the decision was made to vary the shop project more frequently despite its success (Lindsey, 2002).

3 projects: four methods, 1998

In the spring of 1998 the studio instructors took a less familiar approach to the design project - assigning three different

Fig. 4. Stool by Will Bossert, Folding screen by David Tsang, Parsons table by Stephanie Perkal, 1998



furniture types and four different building methods - in an attempt to make students explore a broad range of design solutions in a short amount of time. All three project types were introduced as paradigms. Students were to draw or model stools in response to a position of the body, folding screens which manipulated the transmission of light, and Parsons tables in response to a particular book. Each of the three furniture types was then to be developed in response to four different connection methods or assemblies: stacking/layering (lamination), framing (stick construction), planar (boards joined edge to edge), and bent (boards cut to curves to bent laminations). Students spent the first week developing 12 models or drawings of these designs. As anticipated most students had three or four well developed ideas from this starting set: this smaller group was then pared down further in consideration of complexity and opportunities for further refinement. Of the three paradigms the folding screens exhibited the greatest range of success as a product of weight limitations, the hinge detail required for folding, and the larger size. Overall, as indicated in figure 4, there were many successful solutions.

Table for breaking bread, 1999

Table for a ritual, 1999

Two studio projects in 1999 aspired for students to discover something spiritual in the activities of daily routine. In the first, students were asked to make a table for breaking bread. Material was limited to fourteen board feet of one or more species of hardwood. Tables were to have four legs, a top, and four additional structural members. Design solutions could have up to twelve joints. This project was amongst the most prescriptive cited in this paper. While it succeeded in its intent to limit the cost and scale of the work it was less successful for the fact that more designs trivialized the ritual rather than becoming a stage for the event. One of the more successful translations of this idea was a standing height table by Andrew Kikta that both held the bread as well as providing a standing height pedestal for the breaking of bread (figure 5).

In the second studio students were provided the more general mission of designing a table for a ritual. Students were asked to start by considering where ritual existed within their routine, raising issues of how something acquires ritualistic status. Like the previous example this project required students to take a known object - a table - and consider the juxtapo-

Fig. 5. Table for breaking bread by Andrew Kikta, 1999



to an idea or intention. The fact that they are ultimately responsible for building the final product - in a limited amount of time - is very effective at first forcing students to commit to a direction for the project, and second at forcing them to pare down their idea to the most essential features or components (Smith, 2002).

This focal point of clarifying the idea and using it to derive method and form has proven to be more easily taught where the projects focus less on invention. The several examples above using the Parsons table as a model were very successful at providing students a clear enough foundation upon which to frame a metaphor or intention. The table in Figure 4 by Stephanie Perkal was designed to hold a large book on figure skating. Without evaluating the significance of the particular book, the solution is very effective. She emphasized the rotational movement of skating and the skater's connection to the ground through the edge of the skate's blade by designing table legs that tapered to a linear point of contact with the ground. Mr. Smith remarked that in semesters where there is no clear paradigm for the project students more typically begin construction with only formal intentions wherein he is limited to giving feedback purely on the mechanics of construction.

Design in response to materials (rather than design despite materials)

Effective response to material is realized either in the craftsmanship of joinery or in the method of assembly. In the first condition students gain a greater understanding of materiality through the execution of traditional wood joinery, gluing techniques, and lamination. In the second students gain insight into the directionality of material, as in varying load bearing capacity as per orientation and/or the directionality of expansion and contraction, in methods of mechanical fastening, and in the combination of varying material conditions. All of the aforementioned project statements have led to some good examples of material response, but this has been far more consistent where the design solutions begin as an exploration of assembly rather than an exploration of form. The Bench for two people was very effective due to the tight dimensional limitations for encouraging students to use wood efficiently. The example illustrated in Figure 8 also shows a very strong consideration of joinery as well. The limited board foot requirements along with the limitations of only using wood for Table for a ritual and Table for breaking bread required less extreme efficiency, but did result in a strong emphasis on joinery.

The first example of the library stool - while non prescriptive per board feet or joint configurations - was strongly influenced by structural requirements, as per the point load of a foot. In a later project, Screen for transmitting light, the scale and rigidity of a folding screen required a more comprehensive consideration of joinery methods and assembly. All but the strongest solutions sacrificed a level of material responsibility in pursuit of form.

Encouraging and enabling refinement and revision

In conversations with both Mr. Smith and Professor Bruce Lindsey, former first year coordinator, they spoke of how teaching the shop assignment is a balance between prescribing aspects of the project to limit the scale and complexity, and empowering students beyond these limits in the execution of their work. Having experienced this project as a student, a mentor, a juror, and an instructor perhaps the most remarkable lesson of this assignment is discovering how students persistently surpass our expectations and their own.

In the earliest projects described (1987 and 1988), the three studios, approximately 70 students in all, were broken down into two groups: group A and B. All the students worked simultaneously on the project, but group A was assigned even numbered days to work in the shop and group B was assigned odd numbered days. While this may have permitted some greater exchange of ideas amongst the studios, the potentially longer time line seems not to have contributed to the level of completion or complexity. In 1990, when Professor Bruce Lindsey became coordinator of the first year design sequence, he scheduled the project into three five-week sessions (Smith, 2002). There are several advantages to this system. As enrollments have changed the larger classes have had less impact on overcrowding when the shop is divided into three groups. By running the shop project three times per term in succession some level of programmatic refinement can occur which typically leads to modest improvements in how the project is scaled and taught. Student in the second and third studios have the opportunity to see the work of their colleagues and take inspiration from their ideas, insights, successes, and failures.

Despite many variations in project scheduling the most critical juncture for students comes when they must order materials. Students reach a threshold where they must know both the optimal width and depth of material as well as the quantity of board feet. For many students ordering materials is the first point where they realize the commitment they are required to make in order to complete the assignment. Crossing this threshold may have had less impact during semesters where the limit of materials (i.e. spring 1999) was prescribed. One of the valuable lessons of this project is the opportunity to inform students about design and construction as an evolutionary process, one where changes are not only possible during construction, but anticipated and even welcome. When students order raw lumber for the first time they are typically unprepared for the impact of material variations - knots, checking, and warp - as well as limits in availability. Confronting these unplanned variations provides an opportunity for a design student to clarify his or her priorities: i.e. where may the proportions of a design change to accommodate the limitations of available lumber. Dealing with the inevitability of change, and rising above it, provides a valuable lesson for any construction project.

Summary

The effectiveness of the various project briefs indicates a

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ENCOUNTERING MATERIALS II



GESAMTKUNSTWERK:
Architecture/Interior Architecture -
Elemental Integration as a
Pedagogical Foundation for
Design Education, Rebecca
O'Neal Dagg, Auburn University -
Giving Back: Student Architectural
Product Research in Service to
Practitioners, Jill B Pable, California
State University - The Art of
Recycling, Laura M Terry, University
of Arkansas - An Architectural
Exhibition: "Bench with the Film of
its Own Making", Jonathan A.
Hale, University of Nottingham

Peter Zumthor's and Herzog + De Meuron. Our goal is to generate self-publications of the case-studies to develop a substantial body of research at Auburn on the often bypassed topic of interiors in architectural discourse and to develop the research ability of students prior to their fifth year thesis project.

Our faculty is comprised of three fulltime tenured or tenure-track professors each with teaching and research interests related to interior architecture. Since we spend much of our time on the Architecture faculty teaching other history, theory, drawing, and design studios, a team approach is taken to both the administration and teaching of the ARIA program. For example in the spring, all three faculty cover two courses — the Elements of Interior Architecture I and a research, furniture design, or lighting seminar — dividing the semester into three five-week mini-sessions with each professor focusing on their strength or research interest in the respective course. This allows a shifting five-week period where one faculty member is free from teaching those courses to administer the program focusing on the selection process, development of the web-page, materials library, and publication or research projects. Two faculty are dedicated to the Interior Architecture thesis studio, thesis research, pro-practice, and history in the summer session.

Course content

Early in the Auburn student's education the Elements of Interior Architecture sequence ignites an awareness of the integration of architecture and interior architecture as a cohesive Gesamtkunstwerk idea and remains a popular class among students. "I'd rather work on Elements than studio," says third year ARIA student Kelly Fitzgerald. Elements I isolates and studies the subject matter and its blurred boundaries with a strong basis in Modern Architecture history, in three five-week sessions. The first session isolates and studies the following elements of interior architecture in a lecture format: form, function, spatial composition and transformation, spatial perception and sequencing, light, program, experience, proportion, and scale. Mini-session two focuses entirely on issues of elemental typologies. While session three provides an overview of materiality, which is later expanded in the second Elements course. A photography project, *Intelapture* or *interior-elements-capture*, insists that students begin to alter perception of their environments by seeking out qualities of space that are specifically contributing to interiority and/or to light and materiality. Most of the projects are three-dimensional explorations given as a challenge to extract and develop a strong sense of spatiality from two-dimensional sources. The ubiquitous El Lissitzky *Proun* project as a bridge between art and architecture challenges students to translate a *Proun* painting into the third dimension by extracting space. Resultant projects are capable of fluctuating scale, appearing simultaneously as an object and a city. Students are required to contemplate the base (possibly the landscape) and its relational space-creating capacities in the context of the whole composition. Similarly the *Drawdel* project explores issues of

space, representation, and adds the goal of analyzing an existing interior by fusing a drawing and a model together in one composition. Perhaps the most difficult task is the written Manifesto project which forces students to begin to formulate in writing their personal vision of design. In the core sequence, Elements 2 is devoted entirely to material study, particularly in reference to sustainability. Students are exposed to issues of new materials, new uses for existing materials, sustainable materials, and research through projects such as the Suitcase. Design-build projects often find their way into the course. Other container projects like the found object suitcases, house entire specific material libraries in their interiors as the project requires not only the collection, but also the critical reformulation. Roving library furniture pieces further extend the idea of containment, as introductory theoretical ideas such as nomad, skin, domesticity, gender, alternative programming, and issues of sign versus image (as extension of the wallpaper concept) begin to structure a critical basis for the work and a basis for future studio exploration.

Studio

Implementation of the design of Interior Architecture is taught following and inclusive of two paradigms for practicing Interior Architecture in the studios. Model one is expressed through the design of interior space within and responsive to an existing architectural enclosure and can include issues of adaptive reuse and renovation of existing spaces. Historical examples of operating in this paradigm include Carlo Scarpa's Castel Vecchio, Charles Mackintosh's Willow Room de Luxe Tea Room, and Adolf Loos' American Bar. Contemporary examples of the design of the interior within an existing enclosure include Office dA's Chapel at Northeastern University, Diller + Scofidio's Brasserie Restaurant in the Seagram Building in New York, and Philippe Starck's hotel interiors in Manhattan. Herzog and De Meuron's new Tate Gallery, and La Pena and Torres' monastery are examples of this design model applying adaptive reuse issues with a culture of materials. Model two is expressed through the simultaneous design of the interior and the exterior including the entire building and spatial environment (furniture, lighting, materiality, spatial and contextual relationships.) Historical examples include many projects by Le Corbusier, Alvar Aalto, Eileen Gray, and Frank Lloyd Wright. A specific historical project is Garret Rietveld's Schroeder House. Contemporary examples include Peter Zumthor's Bath at Vals and Raimund Abraham's Austrian Cultural Centre in Manhattan. In the studios these models of practicing interiors are the format for the projects. Third year studios typically follow Model two, completing two projects, one in an urban infill context and the other in a ubiquitous suburban condition. Fourth year studios on the room in the city apply Model one in an urban context, providing students with the chance to design an interior in an existing shell — allowing more time for the development of interior artifacts, surfaces, systems, and material experimentation. Additionally all studios are sponsored by a larger conceptual framework, thus the project type is simply the vehicle for exploring the overriding studio subject matter.



Fig. 3. "Information Fest 2001" invitation to professionals.

presentations and brochures (see Figure 4). Many students went beyond the project's requirements and included videos, distributed numerous samples, and performed demonstrations during the event for attendees.

As the occasion was sponsored in part by IIDA, three manufacturers of construction products were also solicited by the professional organization for supporting funds and displayed their products at the event.

Attendees also voted, choosing superlatives for the event in the categories of most informative presentation, most innovative presentation, best Powerpoint presentation, brochure and tabletop display, and best presentation overall. Certificates of achievement were awarded to the winning students during a later class meeting.

Retrospective Assessment of the Project

The Team Approach. The student team mixes of beginning with intermediate students provided multiple points of view and a chance to work in a partnership effort towards a common end, pooling resources and maximizing individual skills. Overall, the team structure was effective and likely provided students a taste of inter-reliance they will witness in their professional work. A pervasive problem was the fractured graphic appearance of the groups' brochures, Powerpoint presenta-

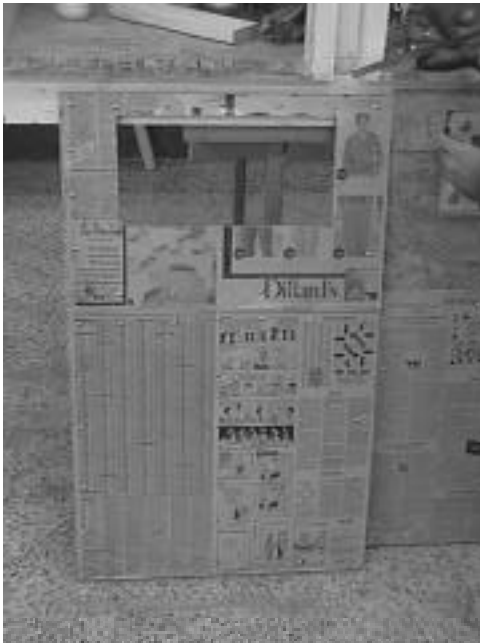
Fig. 4. Student display including digital Powerpoint presentation, video, tabletop information board and demonstration samples.



The Art of Recycling

Laura M Terry

University of Arkansas



The newspaper plates clad the basement installation

construction sites and our own shop. As the final date for completion approached, Team Fins was working consistently, and they were under budget. Some of their goodwill would have benefited their other classmates.

Team Mantis struggled

throughout the construction process. Although the teams were composed randomly, all of the strong-willed and highly

opinionated students ended up on Team Mantis. For the majority of the project, the students could not agree on anything. The interaction with this team more closely resembled a referee at a hockey game than teaching in a studio environment. Their inability to compromise cost them, both in time and in dollars. And unfortunately a substantial amount of material was purchased, cut and then voted out of the project. Team Mantis blew through their budget, leaving the treasurer with the task of collecting a second round of \$25. The main cost was the purchase of four colored stains to be used for the newly designed bin dividers. The colors were playful and accentuated the quality of the birch plywood while offering contrast to the bins. The colors were selected and mixed based on the initial model. A scrap of birch plywood was used to test the colors. Immediately, Team Mantis divided into two camps; half of the students wanted to use the stain, the other half thought the dividers should be painted a solid black. My co-teacher and I, each having different opinions, remained neutral throughout the entire battle. This was one conflict we forced the students to solve. The dividers were painted black - making the stain a wasted purchase and covering the expensive birch plywood in a solid, satin finish.

As the semester and the project drew to conclusion, Team

Team Fins completes the installation



much space their constructions occupied. Team Mantis learned this the hard way when they realized their installation would not fit through the door of the studio. The physical reality of building is an abstract concept for most beginning students. This project provided the opportunity for full-scale detailing within a manageable scale and time frame.

Finally, the students learned the benefits and compromises of architectural design as both an individual search and a group endeavor. This hands-on project relied on student input, research and insight. Team Fins approached the project as a team; they resolved problems as a group and ultimately, embodied the ideal of team spirit. Team Mantis suffered from individualism rather than team play. In the end, both projects were completed successfully, but the experiences for both groups were completely different. Both teams had a central core of students who followed through from beginning to end. Both teams had students who stood around with a hammer but never drove a nail. Despite our efforts to keep everyone busy, a few students managed to never make a contribution. But the notion of team projects has always played a role in the beginning design education at the University of Arkansas, and the failures of a few students will not change this tradition. Teamwork is a valuable teaching method for the beginning architecture student. Few students will work in the profession without experiencing a collaborative design method. And certainly, the making of architecture depends on a variety of team players. Communication through drawings and through exchange is still at the core of the design profession. Through the research aspect of The Art of Recycling Project, the students acquired ownership regarding the recycling of materials, hopefully making them more responsible students and ultimately, architects. Through the team design initiative, the students learned the benefits of compromise and communication. And through the construction process, the students learned the value of planning, of detailing and of working hard. At the end of the semester, the students learned the value of seeing their efforts build a tangible program that benefits the school and the environment.

body to the world that the artist changes the world into paintings." (M-Ponty, 1964: 162). The interface between body and world that takes place through the medium of the paint provides the philosopher with a model for all perceptual activity: the mind's access to the 'outside' world must inevitably arise from the body's movement in it, which also necessarily involves a movement of it:

"Visible and mobile, my body is a thing among things; it is caught in the fabric of the world, and its cohesion is that of a thing. But because it moves itself and sees, it holds things in a circle around itself. Things are an annex or prolongation of itself; they are encrusted into its flesh, they are part of its full definition; the world is made of the same stuff as the body." (M-Ponty, 1964: 163).

Merleau-Ponty's most famous example is that of the blind person navigating with the aid of a stick, where the stick, like a carpenter's tool, gradually becomes an extension of the arm that holds it.

For a development of this notion towards the area of architectural aesthetics, the writings of John Dewey provide another useful reference. As he describes in *Art as Experience* published in 1934:

"The epidermis is only in the most superficial way an indication of where an organism ends and its environment begins. There are things inside the body that are foreign to it, and there are things outside of it that belong to it *de jure* if not *de facto*; that must, that is, be taken possession of if life is to continue. On the lower scale, air and food materials are such things; on the higher, tools, whether the pen of the writer or the anvil of the blacksmith, utensils and furnishings, property, friends and institutions - all the supports and sustenances without which a civilised life cannot be. The need that is manifest in the urgent impulsions that demand completion through what the environment - and it alone - can supply, is a dynamic acknowledgment of this dependence of the self for wholeness upon its surroundings." (Dewey, 1934: 59)

It is here where Dewey opens up this notion to the scale of tools and buildings, that the issue extends from one of tectonics towards the second of my two relationships with the body - the question of patterns of use and the appropriation of space. The same urge to take possession of things in the environment - taking ownership of them as Dewey actually implies - creates a desire to reach out and manipulate the things around us and from this experience, create new knowledge. In spatial terms this is reflected in the use of tools and equipment, which become extensions of the capacity of the body and part of Merleau-Ponty's chiasm, or 'flesh of the world'.

A number of corollaries suggest themselves that might better explain this jump between fields, not least of which is Martin Heidegger's categorisation of object relationships in *Being and Time*. Heidegger himself used a similar two-part schema of body-object engagement, in order to classify the objects around us according to the way the body interacts with them. Objects are either 'present-at-hand', in which case they

demand to be contemplated and interpreted, or they are 'ready-to-hand' like tools or equipment which have to be picked up and manipulated - thereby becoming extensions of the body like Merleau-Ponty's blind person's cane, (Heidegger, 1962: 95-102). In Heidegger's first category come works of art, and also anything in the natural world - at least until they become fuel or raw material, as in the 'standing reserve' of Heidegger's later essay *The Question Concerning Technology*, (Heidegger, 1993). This formulation has been influential particularly in the philosophy of technology, and was used by the American phenomenologist Don Ihde, when he set out the two major modes of engagement with technology, (Ihde, 1990: 72-97). The first, mirroring Heidegger's 'present-at-hand' he labelled 'hermeneutic relations' and these operate in the case of devices which must be read off and interpreted, like thermometers and other measuring devices. The second mode of engagement, he described as 'embodiment relations', which involves the category of tools and equipment, and as I am suggesting even buildings. From these examples, the two relationships I began with can be seen as opposite sides of the same coin, both are inevitably part of a fuller understanding of the way we engage with our surroundings.

The kind of engagement I'm referring to between buildings and their users, also has another important dimension suggested by the study of tectonics. This again can be illustrated in John Dewey's writing on art, where he develops the notion of 'resistance' as a fundamental characteristic of the interaction between the body and the world. If our encounter with materiality gives us a means to calibrate our capacities and frailties as human beings, then this must be due to the relative resistance of a material to human 'interference' and transformation. Clearly this takes us beyond what Louis Kahn has more recently referred to as just "letting the brick be what it wants to be", for, as Dewey takes such pains to point out, it is only through our challenge to a material's inherent resistance that we can begin to understand our own characteristic capacities. As Dewey writes, in discussing the actions of the "living creature":

"The only way it can become aware of its nature and its goal is by obstacles surmounted and means employed; means which are only means from the very beginning are too much one with an impulsion, on a way smoothed and oiled in advance, to permit of consciousness of them. Nor without resistance from surroundings would the self become aware of itself." (Dewey, 1934: 59).

For Dewey, the language of aesthetic experience can provide a means for exploring this awareness, which should also, in a sense, be a part of the richness of our everyday life.

The architect Lars Lerup has also described this mechanism in architecture, in the book *Building the Unfinished*, in his story of the schoolboy carving his name into the surface of a desk. The anonymous mass-produced object suddenly becomes personalised in this act of vandalism, a gesture of appropriation against a degree of resistance inherent in the material. A further, not altogether ironic example can be found in Peter Eisenman's *House VI*, where the owners carried out their own

The Predicament of Beginning

L E A R N I N G T O L O O K I



Bounding Space, Jeffrey L Day
and Brian T Rex, University of
Nebraska · Educating Emerging
Vision, Marcella Eaton and Karen
Wilson Baptist, University of
Manitoba · Musical Beginnings:
musings on teaching with music
in the fundamental design stu-
dio, John Maze, University of
Florida · The Space of Mondrian,
Lori Brown, Syracuse University

Bounding Space

Jeffrey L Day and Brian T Rex

University of Nebraska

Streamlining becomes here an organic force as it relates to the dynamic equilibrium of the motion of the body within encompassed space.

Frederick Kiesler¹

Introduction

The cognition and description of spatial conditions are essential components of any foundation for design and the visual arts. However, the ability to discern subtle spatial distinctions and the limits of spatial boundaries is often clouded by habit and apparent familiarity with the conditions in question. For example, one thinks one “knows” the spatial make-up of one’s bedroom, but can one really see the space of the room from a position outside of this perceived familiarity? Can pre-cognitive knowledge be converted into critical understanding? Or, to invert the question, how can one know a space that one sees with new eyes? Perhaps we need to take Paul Valéry to heart when he suggests that, “to see is to forget the name of the thing one sees.”²

This process of seeing a thing is a process of defamiliarization. Such a process involves an abstraction of the familiar object (or space) which allows one to step outside of the familiar and habitual understanding of the thing. Orthographic Architectural drawings can be part of this process, but as Frederick Kiesler wrote, “The floor plan is no more than the footprint of the house. From a flat impression of this sort it is difficult to conceive the actual form and content of the building. If God had begun the creation of man with a footprint, a monster all heels and toes would probably have grown up from it, not man.”³ The process must be spatial.

As the basis of a first-year inter-disciplinary foundation design unit, we propose that the design of spaces proceeds from the analysis of boundary conditions.⁴ Though in its infancy, we believe that this approach is more directly suited to design education that emphasizes the “holistic” approach permitted by the use of emergent digital technologies. Rather than introduce students to design with exercises derived from modern norms of two-dimensional composition (a skill covered later in the Department of Architecture’s pre-professional program), we have chosen to explore the relations of three-dimensional space with time and motion. This approach is, in effect, digital design without the computer.

Part of the University of Nebraska’s inter-disciplinary Visual Literacy program, this exploration offers foundation skills and a glimpse into the mysteries of the familiar by focusing on a

particular aspect of the formal: boundaries. The seven-week unit, titled Bounding Space© expands the first semester’s emphasis on the superficial (surface) qualities of form to a fully three-dimensional and robust understanding of Form. We conceive the four semester pre-architecture program as an exploration of what we call Everyday Geometries. Each semester can be ascribed a geometric equation that denotes the pedagogical focus of the work. For example, the first semester project, the Sandbox© (described elsewhere by Brian Rex) addresses the notion that form = mass x surface. Projects in this unit introduce methods for describing surfaces and techniques for coaxing supple forms from two-dimensional surfaces. The third semester, in the Basic Design year, students explore compositional techniques that follow the assertion that form » form, of form comes from the manipulation of form. In the final semester of Basic Design thicker notions of site and program are progressively introduced along a trajectory best described as form = use / event. The second geometry, Bounding Space, discussed herein is based on the assertion that event » form or form is the trace of motion.

In the studio project we illustrate developing categorizations of boundaries that range from actual, precise, and material (Bona Fide) limits to spatial, legal, immaterial, and ephemeral (Fiat) boundaries. These terms are introduced in the studio as part of an effort to help the students develop not only a complex understanding of form and space, but also a view of design as the resultant vector of an analytical approach to a place and event. By proposing that analysis is design, we introduce students to design fundamentals in a limited field where a priori concepts are avoided to allow ideas to evolve through the work. Thus, the problematic question, “where do ideas come from” is deferred until the student has developed a more facile and complex ability to describe and manipulate three-dimensional form. For the purposes of Bounding Space, all projects share a common ground as analyses of the student’s most familiar place, her bedroom.

A space is something that has been made room for, something that is cleared and free, namely within a boundary... A boundary is not that at which something stops but, as the Greeks recognized, the boundary is that from which something begins its presencing.⁵

Martin Heidegger

Boundaries

In the same way that direction and speed are the component

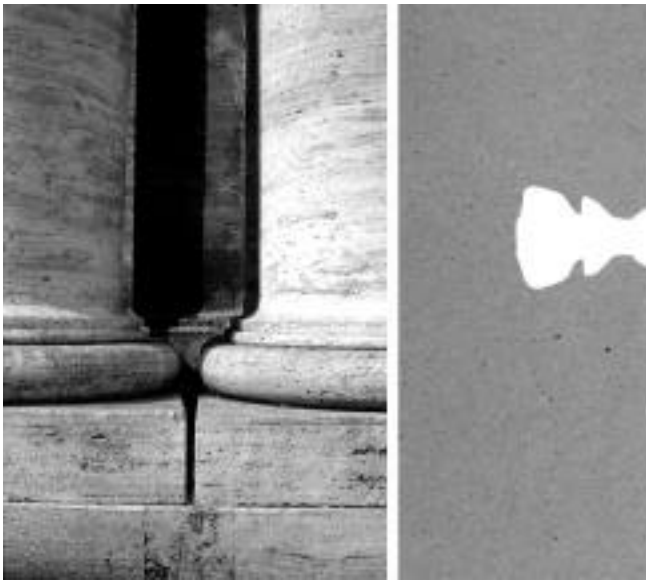


Fig. 2.Profiles- Bernini and Viola Kern's doorknob knife.

terms of a physicist where things are measured according to conditions internal to the event or action in question. As students seek the various bounding spaces of their rooms they will begin with the real and the specific, quantifying individual events or actions by evaluating their own internal structures.

5. Event Catalogs: Catalogs of events that “take-place” within the room: The students make a list of 20 activities that they performed on a typical day in the room. The students title and describe each event on a 3 x 5 index card and a chronological categorization of the list is supplemented with other taxonomies. These groupings could be based on duration, intensity, volume of space occupied, superimposition, and so on. An example set by Nick Neary:

Action List

sleep
 get out of bed
 get clothes out of dresser/closet
 get dressed
 put socks and shoes on feet
 “style” hair
 apply antiperspirant/deodorant
 leave room
 enter room
 sit in chair thinking of ways to pass time
 read
 sip r.c. soda
 mess with stereo
 put kraftwerk record on
 watch pokemon
 make shoddy attempt at rocking out on base
 turn kraftwerk record over
 get snack
 eat snack
 watch alf
 pog
 use wiffle golf ball as a projectile
 drink restaurant quality lemonade
 watch craig kilborn
 homework
 remove shoes and socks from feet
 take off clothes
 get into bed
 sleep

6. Event Diagrams: With the Event Catalog at hand, the stu-

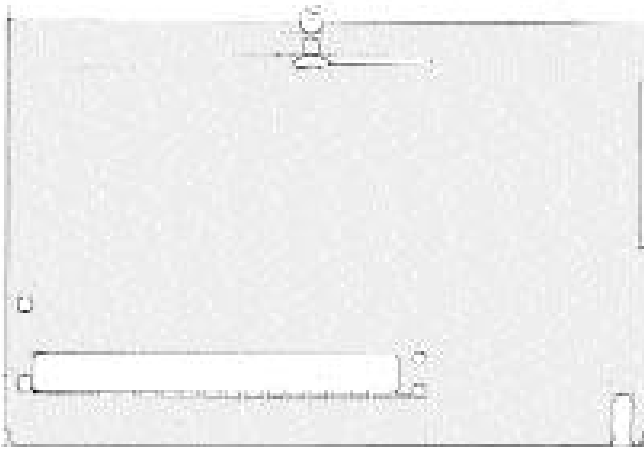


Fig. 6. CAT Scans- Jack Hopkins

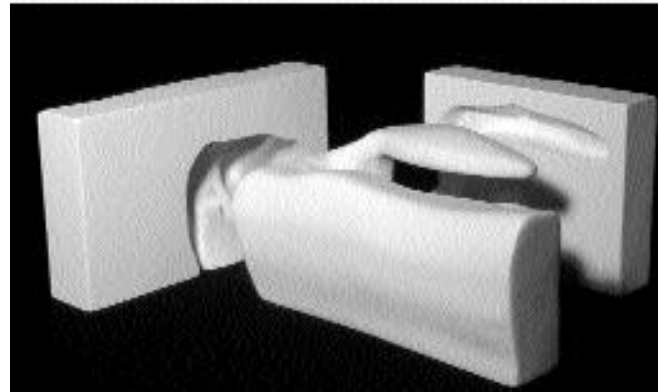
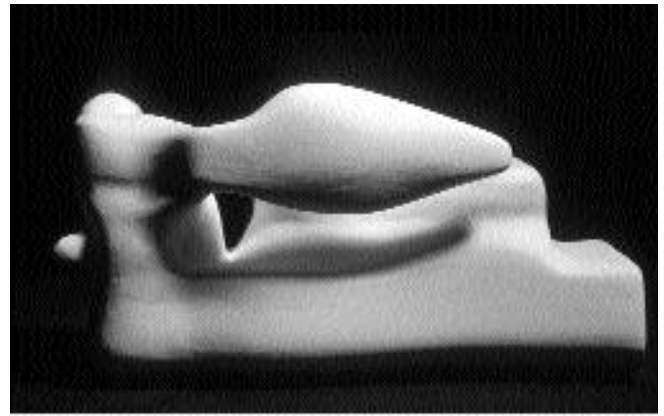


Fig. 7. Radical Reconstruction- Ryan Carman

8. Barry Smith and Achille C. Vazi, "Fiat and Bona fide Boundaries," forth coming in *Philosophy and Phenomenological Research*.
9. Henri Bergson, *Matter and Memory*, (New York: Zone Books, 1988): 189.
10. Carl Andre, quoted by Robert Smithson, Jack Flam, ed, *Robert Smithson: The Collected Writings* (Berkeley: University of California Press: 1996) 95.
11. Avrum Stroll, *Surfaces* (St. Paul: U. Minnesota Press: 1993) 84.

According to Levin, "our vision is not just a biological endowment; it is also a capacity, a potential that can be developed and realized in a number of different ways. ...Vision is socially produced and tends to confirm and reproduce the culture that brought it into being."¹⁴ The importance of the reflective practitioner has long been lauded in the design studio. However, the practical reflection on the importance of the collaboration that occurs in everyday design practice must be encouraged. The development and emergence of personal and shared visions that begin to embrace the other - including the other disciplines in environmental design is important. By inviting students to view the world and the self through multiple lenses of self, educators may encourage the development of truly reflective designers who begin to imagine thoughtful, creative built form from a critical interpretation of nature and culture. This could result in an emerging connective vision within the self and the lived world, rather than the imposition of a culturally reproduced view of the world that we created.

Learning to see requires practice, risk-taking, and a deliberate awakening of conscious perception. Vision which can be interpreted as an integrated human capacity that emerges from the world of lived experience, is participatory and engaged rather than detached and observatory. Learning to look - vision - is deeply subjective, emerging from experience and critical consciousness. When vision becomes clear, educators and students become aware of what was once hidden, lost, or invisible to them. In particular we see this awakening beginning in the assigned journal reflections that accompany each beginning environmental design studio brief. Many of the students feel safer exploring their developing ideologies in the design journals/sketchbooks than through their design interventions or during critique sessions. Students may not be aware that they an emerging vision is happening. It most often becomes apparent when they re-visit their studio work and journals at moments of reflection. Observations from a studio instructor's journal seems to confirm this:

We met next on September 12th. With terrorist attacks weighing heavily on all of our minds, the initial conversation circled around the events of September 11. Students seemed reluctant to engage in a dialogue about the tragedy, although certainly each had a comment to share. I was initially disappointed in the day. I thought the magnitude of the events would create a common ground within the group, which would enable a lively dialogue to take place. Perhaps it was just too soon. Were two days of conversation just too talking and not enough learning?

Sometime later, as I read through the students' reflective journals, I discovered that something wonderful had occurred during those studios. Students wrote of "homecomings", of finally finding a place to belong, to discover, and to learn to see new things. These early days of conversation were the foundations for our community of learning. By honoring our stories, sharing our sorrow and our hopes for a brighter future, we began in trust.¹⁵

Awakened vision requires a response. Students must become

Musical Beginnings: musings on teaching with music in the fundamental design studio

John Maze

University of Florida

scope of architecture, we could better engage the students' minds and create young designers more prone to thinking outside the box.

As musical education has been proven scientifically to improve the cognitive development of students in other disciplines, the potential for improving perceptual and conceptual abilities in the creative arts is limitless. Looking to vernacular musical forms, one can gain insight into the cultural structure of a place perhaps more thoroughly than if one were to only consider the architectural vernacular. Parallels at the level of structural members, ornamentation, scale, color, texture, layering, narrative, and context can be directly drawn between music and architecture. Further understanding these overlaps will foster a more enlightened view of the human condition, and what it means to practice architecture today.¹

Integration

The use of music in fundamental design studios is beneficial to introduce and encourage different ways of knowing the built and natural world. Perception of the relationships between parts is a skill essential to the practice of either architecture or musicianship. In regards to the perception of any given architectural problem, the practitioner must understand how multiple layers of context (each highly complex) connect with programmatic, budgetary, code, zoning, and structural requirements and come together to form a complete picture. Similarly, a composer must be able to bring together the various instrument parts (roughly seventeen in a modern orchestra), musical genre, *raison d'être*, etc. to form a complete composition.

Starting with a beginning student's first design studio and into more advanced architectural studios, music has been integral as a conduit between students' perceptual and cognitive experiences prior to architecture school and the complexities of mastering as holistic a discipline as architecture. This pedagogy attempts to both expand upon the student's prior life experiences and to demonstrate basic design and interpretive skills without the necessity to jump directly to buildings. It is the fundamental understanding of formal relationships (as can be found in music), connections, layering, hierarchies and space-time that one must start with in an architectural education. Perhaps a non-building based curriculum such as this can introduce the tenants of architectural design and help design a highly effective methodology of perception and conception without the aforementioned jump.

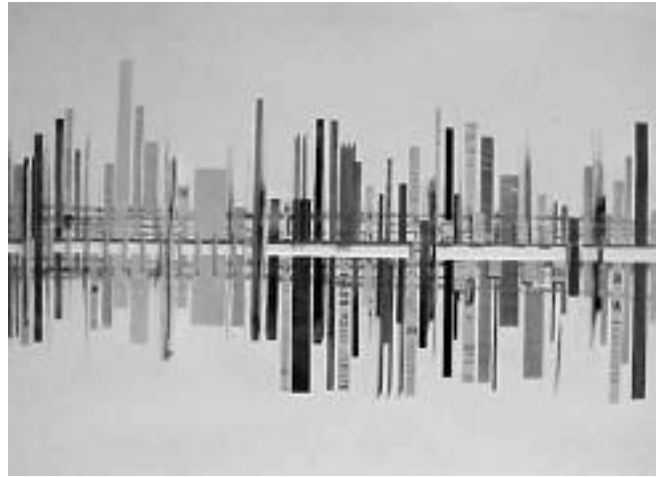


Fig. 2. Notation invented by student of Drumming

perceptual and analytic abilities. Being forced to use graphic means to translate non-visual experience allows students to develop a means by which to synthesize multi-sensory input in new and meaningful ways. Using architecture as the end product of the process, students were able to test their research with a tangible end result. Students learn that a conceptual basis can be maintained through a design process rather than being forgotten along the way, and that design concepts can be found in places beyond just the world of architecture.

Strategy Three: The Tectonic Context

The study of the making of musical instruments and the traditions within which the instruments are used can elucidate greatly beneficial lessons about fundamental design concepts. Notions of interiority versus exteriority of instrument space, circulation, sequence, and thresholds can all be explored through an analysis of instruments as artifacts, but this is only scratching the surface of what is possible.

Fig. 3 Model of Drumming

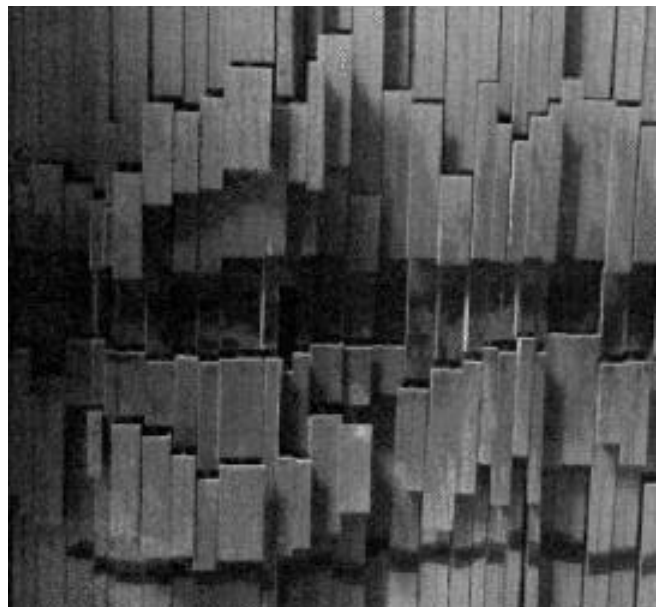




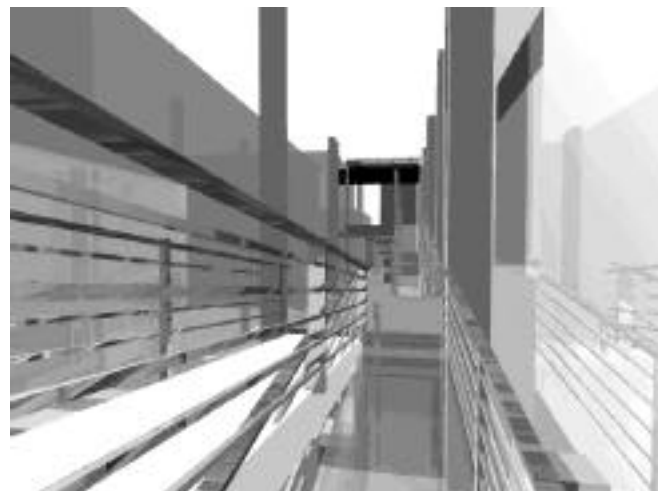
Fig. 6 Uilleann pipemaker Nick Whitmer and students in his workshop in Virginia.

After every additional aspect of the students' observations is conveyed to paper, the tune must again be analyzed in order to extrude or interpret the drawing into the third dimension. The diagrammatic tunes are then given volumetric sustenance and built as abstract armatures of limited materiality. Students are encouraged to not uniformly extrude the tune from the paper as a base, but instead to work simultaneously with negative and positive heights for elements. Similarly, elements on the paper are allowed to remain as additive elements in the built armature, or as voided elements, as long as there is consistency to the logic. One method of determining what is additive and subtractive is the defining of a datum extracted from the music itself. For example, the particular tone that separates two octaves can serve as the datum, placing the lower octave below this level and the second octave above. Tones in phase with the background drone can be treated as either additive or subtractive, while tones out of phase can be treated as the other. Students learn an invaluable lesson of prioritizing systems, and use it consistently throughout the development of a project.

Students are asked to decide how to attach the various layers of their constructions to one another, using rules that they have developed in drawing the relative relationships between notes and notes, notes and the beat, between the melody and any harmony, etc. One method for attachment utilizes the notion of melodic ornamentation, "extra" notes added to a tune in order to separate two like notes when playing legato style, to express or draw attention to a specific passage, or to add a texture to the music unique to traditional Irish music. In many cases, a highly evocative tectonic is developed that can serve as a basis for the next step of the translation.

The tune armatures are then recreated on the computer, allowing for space to be sculpted within the material solids. Using form Z as our digital modeler, students constructed their armatures digitally, ascribing material thickness to each element. What was treated as a solid element in the physically built armature now becomes volumetric with membrane thickness. Since passage through the constructions is now possible, an architectural procession can be mapped through

Fig. 7. View of workshop for guitar maker



The Depraved -
AC/DC's Back in Black
The Modern -

Phillip Glass's Einstein on a Beach

- ¹⁴ Anne Santoro was a student of mine in the summer of 2000. She is a classically trained and award winning clarinet player. Her symphony orchestra was asked to play Carnegie Hall prior to her coming to the University of Virginia. Because of her tremendous musicianship and scholarship (Anne is an Echols Scholar, majoring in both religions studies and architecture) we have been able to share ideas about the integration of music and architecture. It was this integration in fact that has encouraged Anne to transfer to the school to architecture upon completion of her religious studies degree.
- ¹⁵ I believe this project was shared with me and encouraged by Frances Bronet of Rensselaer Polytechnic Institute. If I am incorrect in crediting her in lieu of anyone else, I offer both my apologies for the error and my profound thanks for the idea.

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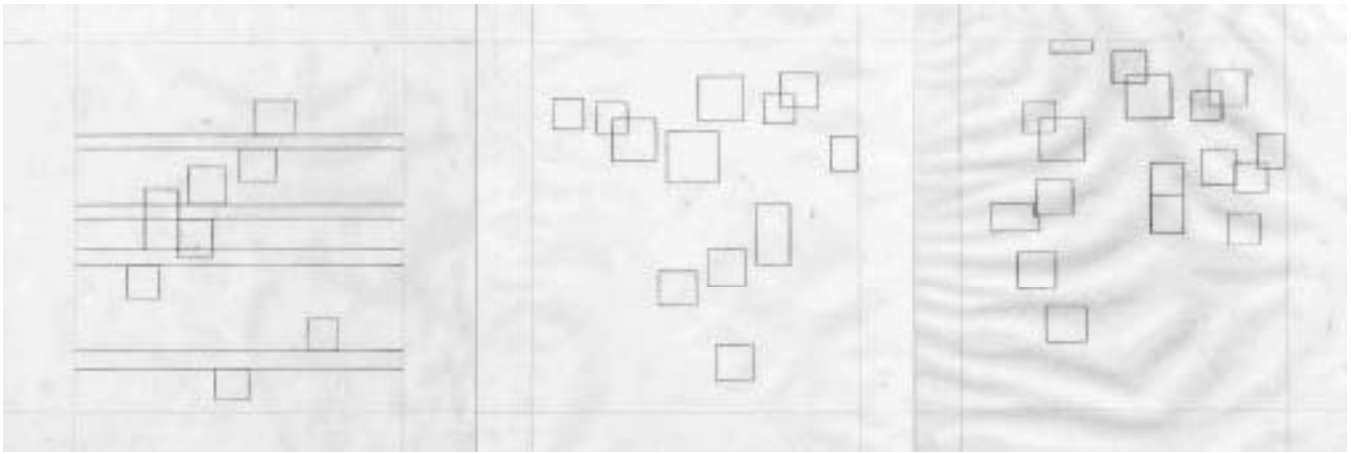


fig 2: excerpts from drawing analysis

use these spatial constructions as generators of the plan or section for the next phase of the process – the design of a retreat for a cellist in India. Once initial site research for the new project was finished, each student created a narrative for his/her project incorporating the last component from the Mondrian studies. The narrative was used as a tool to guide them in their design process. Some students focused on the physicality of the cello, some on specifics about cello concertos, and others dealt with issues of the site.

materiality

The issue of materiality is important for these exercises. Each series of media and techniques allowed a different set of issues about making to be discussed. It allowed the student to begin to develop a language specific to not only spatial and abstract ideas but also material ideas. For example, using vellum and graphite, the students were introduced to line drawing and observing how marks on paper begin to reveal one's observations. Moving into the realm of model making with chipboard and x-actos, the students began to be cognizant of the role precision and craft have in expressing one's spatial

fig 3: first volumetric model

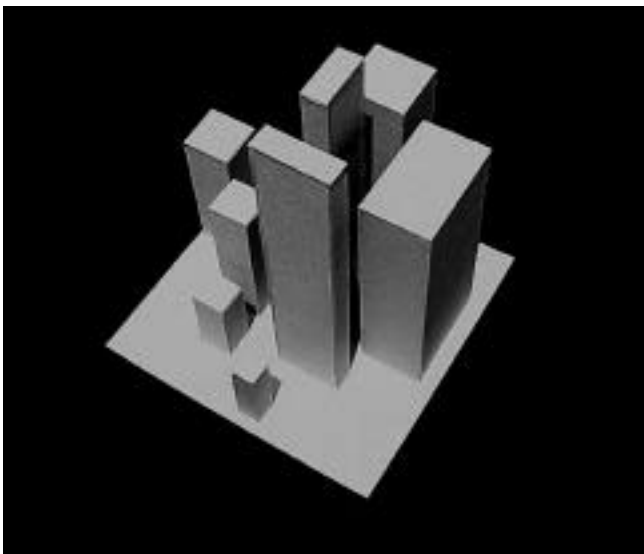
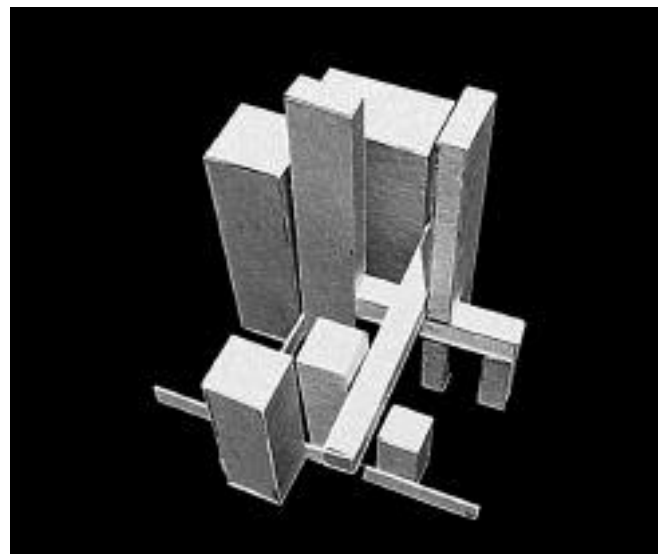


fig 4: second volumetric model



The Predicament of Beginning

L E A R N I N G T O L O O K I I



Listening to the Past: Persuasive
Stories and the Beginning Design
Student, Nathaniel Coleman,
Washington State University -
Seeing/Site: A one-week project,
Peter Hind, University of Nebraska
- A Case for Analysis in the
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Curriculum, Melissa Weese
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Representing Place for the
Design Process, Nancy Yen-wen
Cheng, University of Oregon

Listening to the Past: Persuasive Stories and the Beginning Design Student

Nathaniel Coleman

Washington State University

Stories and the Beginning Design Student

Architecture students tell stories about their work. These stories are meant to convey information about design philosophy, design intent, and design concept. Such stories are intended to have something to do with the work students present. Often, though, what is said is accepted as valid simply because it is said. Closer scrutiny of the relationship between what is said and what is presented frequently reveals a wide gap between intention (what is said) and result (what is done). Incongruity between intention and result encourages a loose way of thinking that fosters a separation of thought (theory) from doing (practice). Concurrently, beginning design students are thought of as requiring skill development above all else. Overemphasis on skills, or technique, though, undervalues developing conceptual sophistication. If students are not introduced to design as an ill-defined problem, akin to effective and persuasive argument, their propensity is to produce work that is unfocused, lacking in conceptual sophistication, and ineffectively developed or represented.

Initiation of beginning students into design culture frequently presents architecture as a specialized form of knowledge unrelated to what students learn about the world through their bodies as they grow up in a culture. This attitude not only undervalues lived experience but also sets up conditions under which history (listening to the past for what it can tell us) is relegated to subject matter isolated from design invention. An alternative approach views architecture and experience as linked. History, as cultural memory, confirms this and provides an avenue for exploring such a claim. History can show beginning design students that listening to the past can have relevance for the cultural work they engage in. The past offers insight into how people have oriented themselves through architecture.

Cultural memory as a resource for design invention reveals persuasiveness—making effective arguments (design projects as well as written and spoken project statements)—as a crucial ability for beginning design students. Students will come to see the world and care about it only if faculty members show them why this is worthwhile. Simply telling students to think and experience differently (or to come to this through abstract design exercises) has little long-term effect—as the built environment often confirms. Coercion based on grading may get short-term results but is ultimately of little long-term benefit. Persuasiveness seems to be the key. Persuasion is far subtler, and less suspect, than one might at first imagine. After

all, what other tool do faculty have as they attempt to win over the hearts and minds of students to a concern for the constructed realm we inhabit?

How though does my desire that my students engage in thoughtful practice (by enacting the interdependence of theory, practice, and history) tally with my primary obligation to help them become employable? I think that each of us who instruct design students must sort this out for ourselves. But what if Tafuri was correct, and the belief that architects ought to, or can, engage in meaningful cultural work is a kind of false consciousness?¹ Furthermore, what if harboring such a conviction and professing it to students only serves to deceive them into believing that they will be entering a discipline formed by predecessors with whom they share little? As a corrective, Tafuri argued that we would serve our students best if we assisted them in taking their place as technicians in the building industry. If Tafuri is correct, as the process and results of much building appears to confirm, then architecture school ought to become more emphatically vocational and technical in its character and aims, which might explain the desire to quantify something that is fundamentally qualitative. My sense though is that most design school faculty (and their students) would be uncomfortable with such a radically diminished conception of architecture's potential and cultural role.

If I am correct, how could beginning design more openly reflect the tacitly critical position of most design schools and their faculty? Especially as they resist the requirements of a profession that more and more demands that schools become preparatory training grounds for office workers who are technicians more than architects in any traditional humanistic sense. Persuasiveness resists the reduced cultural role of architecture. It offers a hopeful dimension in the form of possible reform; reform based on the conviction that architecture might still have an ethical function, which at its most basic is its orientating objective (confirmed by work—introduced to us from the past—that prepares the ground for human occupation in all its depth), a conviction beginning design students do not (do?) arrive at school with.

Evaluative Criteria

Grades are based on quantitative² data but architecture is qualitative.³ A crucial problem for any design faculty and the students they teach, especially beginning design students, is how to evaluate the character of something with a criterion

Even though faculty ought to refrain from imposing too much on their students from above, they can model for their students a high degree of care for the world. If such concern is persuasively modeled, beginning design students will come to care for the world and the projects they invent to transform it. Beyond any marketable skill or technique of design or production students may learn, thoughtfulness offers them a real possibility to practice their discipline in a meaningful, satisfying, and self sustaining way. While all of this may seem obvious enough, its qualitative nature runs contrary to a quantifying habit. But there may be a way to elaborate criteria that are neutral enough to be broadly applicable even as they assist in a re-collection of carefulness about architecture.

Heidegger on the Bridge

So many attempts at re-collection of thoughtfulness about architecture and the world begin with Heidegger (including those by Christian Norberg-Shulz, Joseph Rykwert, Kenneth Frampton, Karsten Harries, and David Leatherbarrow), that it seems reasonable to elaborate on Heidegger in a discussion of how beginning design students might begin to advance persuasive projects (orally, textually, and visually).⁷

In "Building Dwelling Thinking," Heidegger summarizes his investigation into the nature of building and dwelling by stating that "1. Building is really dwelling. 2. Dwelling is the manner in which mortals are on the earth. 3. Building as dwelling unfolds into the building that cultivates growing things and the building that erects buildings."⁸ The first thing that comes to mind when reading the above is its strangeness. For the most part, we live in distraction, which I think Heidegger must have believed was as much symptom as cause of our estrangement from things, others, the world, and ourselves. And yet, it is through the strangeness of his language that he suggests a pathway back to ourselves by unconcealing our attachment to things. My interest in Heidegger's summation, though, lies in what it offers in terms of suggesting an attitude toward architecture that faculty could model for beginning design students.

Beginning with Heidegger's third point, building is how human beings prepare a ground for their stay on the earth, relating as much to the necessity of food production as to preparation of a ground for inhabitation. Kept in mind, this suggests that architecture is always preoccupied with establishing a setting for life. Such a reading is confirmed by Heidegger's second point that we require a place to inhabit during our short stay here; a place constructed that shelters, which arises from the desire for location, or orientation. Consequently, building, as confirmation of human efforts to be located, is really how dwelling is attempted, in the sense that in making the world a setting is established that houses and sustains life. That is how "building is really dwelling (Heidegger's first point)." Often the supposed sophistication of the line of reasoning just pursued is thought to be beyond the comprehension of beginning design students. If it is, what is there to do except default to the teaching of measurable skills? Yet preoccupation with measurable skills abstracts architecture by diverting student attention away from world-making purpose toward architec-

ture as either quantifiable technical problems or toward invention of attractive objects unconcerned with the human drama they will enclose. Neither does justice either to human desire or to human vulnerability.

By preparing a ground for life, architecture could be said to have a permanent function that is always undergoing transformation, in the sense that a ground for life can never be established once and for all, even though a ground for life is always as much desired as necessary. Students know this because they have grown up in a culture. Wanting to be an architect, especially with no prior knowledge to explain such a strange desire, might actually reveal a preconscious desire to make the world a more suitable place for human inhabitation. Strangely enough, this desire is less cultivated in architecture school than skill development and the overvaluation of novelty are.

As the activity that prepares a place for inhabitation through building, architecture must be more than its technical function or its attractive or novel appearance suggests. Heidegger's discussion of the bridge suggests a way of thinking about design that permits it its potential richness, even for beginning design students. Heidegger describes the bridge as something multi-dimensional rather than simply a means of conveyance; in doing so he models a fuller sense of architecture by suggesting criteria for project evaluation that takes into account developing skills as well as evolving conceptual sophistication. For example, beginning design students often represent their designs as if they were located nowhere in particular and could be placed anywhere in an abstract expanse of undefined space. In contradistinction, Heidegger suggests that "the bridge gathers the earth as landscape around the stream" it crosses.⁹ It is human intervention—the bridge—that makes the land comprehensible. In this sense, the bridge, or any work of architecture, is not simply placed in (or on) an already fully formed receiving plot of land; rather, the bridge invents the place that receives it.¹¹ Whether or not students ultimately reject the orienting objective of architecture as its ethical function for some more novel approach, it is reasonable to introduce orientation as a persisting theme of extremely long duration.¹¹ Extrapolating from this, demonstration of concern for place identification by beginning design students could become one of the criteria for evaluating their developing skill and conceptual sophistication. As with the definition of beauty suggested above, place identification need not be institutionalized, it can remain open and mobile so long as a student's project demonstrates a persuasive interpretation of the theme.

Heidegger goes on to discuss different kinds of bridges, including "the city bridge," "the old stone bridge," or "highway bridge," each has a specific purpose to fulfill but does so differently from each of the other bridges. By listing three kinds of bridges with three distinct characters that do three different kinds of jobs, Heidegger introduces architectural propriety as part of how humans prepare a ground for life.¹³ Appropriateness like beauty or place identification/site invention is not nearly as rigid or reactionary an evaluative criteri-

discover architectural ideas, let alone to give rules for building.”¹⁹ Heidegger’s disclaimer is an important caution against instrumentalization of his thought or attempts to identify “dwelling” as a criterion of building quality captured once and for all. Thus, using “Building Thinking Dwelling” as a lead in to a project requiring students to build dwelling is not at all what I am getting at here. Rather, Heidegger’s meditation on building suggests how estrangement from thinking and a care for the world can be bridged. Only through an emerging awareness of and thoughtfulness about the world architects inhabit and make (never by action, empty productivity, or skill development alone) could the stories beginning design students tell resist becoming unexpected and arbitrary attempts to attach perceptible properties to an unknown X.

Notes:

- ¹ quan-ti-ta-tive adj. 1. relating to, concerning, or based on the amount or number of something 2. capable of being measured or expressed in numerical terms system. Encarta World English Dictionary (London: Microsoft Corporation/Bloomsbury Publishing Plc, 1999).
- ² qual-i-ta-tive adj relating to or based on the quality or character of something, often as opposed to its size or quantity. Encarta World English Dictionary (London: Microsoft Corporation/Bloomsbury Publishing Plc, 1999).
- ³ Manfredo Tafuri, *Architecture and Utopia: Design and Capitalist Production*, Barbara Luiga La Penta, trans. (Cambridge, MA: MIT Press, 1976).
- ⁴ Leon Battista Alberti, *On the Art of Building in Ten Books*, J. Rykwert, N. Leach, R. Tavernor, trans. (Cambridge, MA: MIT Press, 1988), book 6, chapter 2.
- ⁵ beau-ty n 1. the combination of qualities that make something pleasing and impressive to listen to or touch, or especially to look at 2. personal physical attractiveness, especially with regard to the use of cosmetics and other methods of enhancing it 3. a beautiful woman or girl 4. something very good, attractive, or impressive of its kind 5. an attractive, useful, or satisfying feature. Encarta World English Dictionary (London: Microsoft Corporation/Bloomsbury Publishing Plc, 1999).
- ⁶ Theodor Adorno, “Functionalism Today,” *Oppositions* 17 (1979): 31.
- ⁷ See for example, Christian Norberg-Schulz, *The Concept of Dwelling* (New York: Electa/Rizzoli, 1985), Joseph Rykwert, *The Dancing Column*, (Cambridge, MA: MIT Press, 1996) Kenneth Frampton, *Studies in Tectonic Culture* (Cambridge, MA: MIT Press, 1995), Karsten Harries, *The Ethical Function of Architecture* (Cambridge, MA: MIT Press, 1997), David Leatherbarrow, *The Roots of Architectural Invention* (Cambridge: Cambridge University Press, 1993).
- ⁸ Martin Heidegger, “Building, Dwelling, Thinking,” in *Basic Writings*, David Farrell Krell, ed. (San Francisco: Harper, 1993), p. 350..
- ⁹ Martin Heidegger, “Building, Dwelling, Thinking,” in *Basic Writings*, David Farrell Krell, ed. (San Francisco: Harper, 1993), p. 354.
- ¹⁰ See David Leatherbarrow, *The Roots of Architectural Invention* (Cambridge: Cambridge University Press, 1993).
- ¹¹ See Karsten Harries, *The Ethical Function of Architecture* (Cambridge, MA: MIT Press, 1997), and David Leatherbarrow, *The Roots of Architectural Invention* (Cambridge: Cambridge University Press, 1993).

- ¹² Martin Heidegger, “Building, Dwelling, Thinking,” in *Basic Writings*, David Farrell Krell, ed. (San Francisco: Harper, 1993), p. 354.
- ¹³ Umberto Eco, “Function and Sign: The Semiotics of Architecture,” in Neil Leach, ed., *Rethinking Architecture* (London: Routledge, 1997), pp. 182-202.
- ¹⁴ Martin Heidegger, “Building, Dwelling, Thinking,” in *Basic Writings*, David Farrell Krell, ed. (San Francisco: Harper, 1993), p. 354.
- ¹⁵ *Ibid.*, pp. 354-5
- ¹⁶ *Ibid.*, p. 355
- ¹⁷ *Ibid.*, p. 355
- ¹⁸ For more on this see Joseph Rykwert, *The Necessity of Artifice* (New York: Rizzoli, 1982), and Joseph Rykwert, *The Dancing Column* (Cambridge, MA: MIT Press, 1996).
- ¹⁹ Martin Heidegger, “Building, Dwelling, Thinking,” in *Basic Writings*, David Farrell Krell, ed. (San Francisco: Harper, 1993), p. 347.

p



Fig. 1. Original Site-the 3D site plan.

the “adequate” symbol and gives the opportunity to develop a way to explore site definition and invention.

1.2 Site selection

Groups of four students are required to survey a ten-foot by ten-foot section of ground that is topographic, one that they believe they know well, and one that they travel through daily. Six lines are delineated; four that make up the perimeter of the ten-foot square and two that bisect these lines perpendicularly.

These lines, each representing a vertical section, are placed on the site using string or tape. Instantly, these lines establish the physical site as separate from its context and a site plan is created at a scale of one to one. Although we have talked about the “site plan” at no time do students draw one with the exception of the original ten-foot square site.

Once the perimeter has been marked, measurements are gathered with regard to a datum line in order to record the surface of the site. The datum line is located three feet above the average ground level but permission is given for variations. The result of locating the datum line above the surface requires individuals to interpolate and discover the spatial limit of the site in a vertical dimension. These often increase or

decrease depending on the condition that is found within the site.

Students do not use traditional surveying equipment. They are shown the concepts and techniques surveyors use but they must then invent their own measuring system. These systems have varied from, utilizing a nearby handrail to tying a string to a group member's belly-button ring. All of the measured points along the perimeter and interior are reduced to numbers stored on note cards. Thus, the first translation of the site from 3D to 2D (abstract data).

2. The Vertical Section

From this first act of data translation, the students draw sections. A sectional understanding (a slice) occurs because the lines of the site plan represent the location of section lines. Each section line is drawn with a consistent width of one half inch and are at a scale of $\frac{1}{2}'' = 1'-0''$. They are re-presented in one drawing that measures five feet wide by the height of the site's understood limit; the height has ranged from two feet to twelve feet high.

On the second day of the first foundation studio, the section drawings are hung on the wall and different groups describe the other group's site. Inevitably, students and invited critics



Fig. 4. The Image-construction-1" site selection

drawn from but also on and in. This stage of the investigation is intended to re-see the spatial conditions that exist in the site by way of altering the presence of implied space.

3.2 The image construction (new site).

After photocopying the photograph so that it is 8"x10" the students are asked to change the spatial implications that exist in the photograph. They slice, cut, and bend the image surface but they are required to keep the 2D surface intact as one sheet of paper.⁶

One strategy could be to push the distant objects further back into space while bringing the foreground closer. Other options are of course legitimate. Some students chose to obliterate the spatial implication offered in the image completely. The action in this phase of the project is one of mining, where the original (the image) is altered by way of careful selection of elements, such as, line, tone, form, and space.

When the construction is complete, it is pinned to a foam board and placed on the wall for discussion. It is evident that an "experience" greater than the image and understanding of the site has occurred. What is stifling is the existence of the image, where by, the new site construction is dependent on the implication of space within the image. This is where the mining begins. Students then remove the image with gray paint and the constructions are hung back on the wall. The result is a new landscape with an abstract connection to the original site.

The issue of the in-between now arises and there is a resolution of the "milk jug." That is to say that the line of division between place and space has the ability to be occupied. Where the object (the original site) has been flattened in both image and abstract section and then re-created to form new relationships and three-dimensional understanding. This suggests that the line between place and space is tenuous and not dependent on initial supposition of the site plan as the definer of place.

3.3 The role of the new construction.

The new 8"x10" gray site is used as a way to generate form. This act is not separate from the original ten-foot site, as this

new construction derives from the original. It does have the ability to exist on its own. Perhaps, we could call it the first "invention" of the site. The difficulty at this point is what to do with this new form? This is where Sherlock Holmes comes in.

Due to the one week time constraint the subject of Sherlock Holmes is only superficially included in the project. The approach assumes that the majority of the students have some, if only vague, knowledge of Sherlock Holmes. The students select a passage from Sherlock Holmes, and highlight words and phrases that refer to the act of searching or finding. After individually reading aloud from their chosen selections, the group is immersed in the syntax and experience of searching. In one instance, a student read a passage about the striking of a match to illuminate a bloodied thumbprint on a white wall in a dark room. On initial reading, the connection to our project was not clear to her but as the student photographed her site in different light conditions, she made a direct relationship between seeing and showing. That is to say, as a designer, it is important to learn how to see but it is equally important to gain the confidence of presentation.

4. 3D Constructions.

With Mr. Holmes in mind, a one-inch white square hole acts as a site finder- a magnifying glass. Just as the original site was found and needed to be topographic, so too does this new site. Once a square of topography is found it is translated into a solid object. The one-inch square translates into a five-inch cube construction. This cube is a limit not a requirement for the translation.

Within this cube, an additional site is derived as a third derivative of the original. The thickness of the surface is questioned and students interpolate spatial information within the one-inch square as a means to find 3D form.

Students now talk about the new objects and not the original site. The final move from 2D to 3D is to produce another iteration of the cube that treats the five-inch cube as 3D surface that contains the possibility of hierarchical spatial conditions. The size of the last construction is a ten-inch cube, which further investigates surface and begins to explore the making of new contained space.

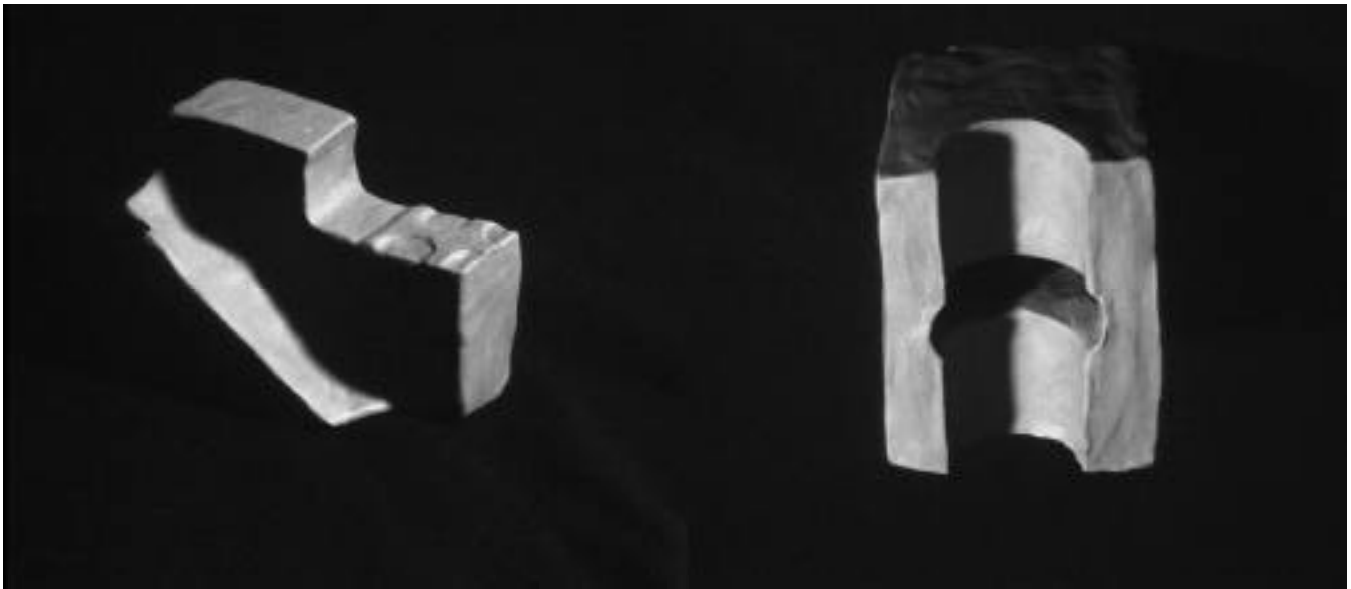


Fig. 7. Castings from the site - artifacts.

history of experience. Polar classifications and definitions about design do not heighten experience. Only experience can change experience. What is critical is the position we assume within the context of looking.

Notes

1. Mark Cousins presented this idea to students at the Architectural Association in October 1998. The lecture series is titled *The Origins of Space*.
2. Alberto Perez-Gomez, "Chora: The Space of Architectural representation," in *Chora 1: Intervals in the Philosophy of Architecture* (McGill-Queens University Press, 1994) pp. 9.
3. *Ibid.* pp. 9.
4. David Leatherbarrow, *The Roots of Architectural Invention* (Cambridge University Press, 1993) pp. 7.
5. Kenneth Frampton, "A note on Photography and its Influence on Architecture," in *Perspecta* 1986, no. 22, pp. 41.
6. I owe the initial idea for this portion of the project to Brian T. Rex whom I taught with my first semester. The change in this portion from that time is that the image is not from an external source.
7. Rachael Whiteread, "Working Notes," in *Looking Up Rachael Whiteread's Water Tower*. Louise Neri ed. (Zurich, Scalo, 1999) pp. 139.

analysis and self-criticism was introduced as the students wrestled with the problem of how the abstract models were transformed by the circumstances of site and program. And finally, the rapid pace of the exercise, with its easily understood step-by-step procedure introduced a kind of rigor that the students sustained over the course of the semester.

In the next exercise, a different approach was proposed - the use of the literary narrative as a generator for ideas. The students were asked to interpret in three dimensions poems which in some form or another alluded to movement and sequence and then apply the three-dimensional construct to the design of a sequence through a garden. The intention was that the literary narrative would suggest an architectural narrative, and that this could form the basis for a parti. This project, one that I personally found more interesting, was wildly unsuccessful, as students struggled with how to turn words into architecture. Poems that had a clearly architectural context seemed to be easier to transform. The lack of success may also have had to do with the average Maryland student, who tends to be extremely pragmatic and concrete in his/her approach to design.

The third project was an exploration of the concepts of the free plan, and in this case, students were given specific free plan precedents to analyze and were then asked to use the precedent as the generator for the design of their project, a small gallery space. The intention of this project was to suggest that a precedent could be used as a parti for a design project, and similar to the first project of the semester, be transformed by the circumstances of site, program and scale. More important, however, it was also the intention to make the connection between analysis and design, as there is often the tendency of the student, once having completed the analysis to discard it and begin anew. This also promoted rigor in process, as it compelled the student to follow through and fully test an idea.

Specific course based on analysis

At the University of Maryland I teach a visual analysis course that is required for all beginning graduate students in the 3 1/2-year Masters program. Students go out and document and analyze works of architecture on-site, using as a venue the architecture and urbanism of the Washington, DC - Baltimore metropolitan region, an area rich in architectural resources. The course is structured so that it begins with a discussion of basic architectural elements and concludes with an investigation of large-scale urbanism.

The course uses as a premise four points set forth by Hurtt and Crowe in their article "Visual Notes and the Acquisition of Architectural Knowledge. These main points are as follows:

1. A person's understanding of a building is enhanced by the act of drawing it.
2. The ability to remember that understanding is enhanced by having made such drawings.
3. The ability to draw accurate facsimiles of exemplary works

of architecture is proportional to one's efforts to do so.

4. Together, these remembered experiences and understandings constitute the architectural memory that we call upon in order to design.⁴

These points seem fairly obvious. If you draw something, you have taken more time to look at it and therefore you understand it better than if you had simply taken a photograph. Your memory of a work is increased by having spent the time drawing it. The more you draw the better you are at drawing, and as stated before, the more you draw the larger your repository of visual images is, which subsequently increases the resources you have with which to inform your design process.

Many schools of architecture have courses devoted to analysis - however, these tend to occur at the upper years, and are often related to a study of building technologies, or are part of a study abroad program. It would perhaps be more useful if an analytical course took place earlier in the curriculum, and it might accomplish a number of tasks.

First, it can increase the students' facility in drawing through a series of rigorous documentation and analysis drawing exercises. Beginning design students are impatient with their own efforts to draw things accurately and seem unable to grasp the fact that in order to become proficient in an art, they must practice. One might blame the instant gratification of the computer, but this impatience can also be found in older graduate students, and is generally due to them having spent their previous lives being proficient in some other area, and being suddenly confronted with having to begin anew. Emphasizing the idea that such things as drawing and perceptual skills and design process actually take a significant amount of time should be addressed early in an architecture curriculum. And of course, by intensive drawing, the students increase their skills, which subsequently supports the design studio.

Second, it can increase the students' knowledge base of important works of architecture and their elements and principles. Analysis is an important venue for accomplishing this - by dissecting the components of a building, students understand that there are universal design principles, and that these can be applied to their own work. In addition, they also increase their vocabulary of possible sources for ideas. The course at Maryland is coupled with readings in architectural history and theory. Graduate students in our program are generally very ill-prepared when it comes to knowledge of architectural history and theory, and so in an effort to bring them up to speed, the buildings that they analyze are placed in a larger context of architectural history and theory through the readings and discussion.

Third, a beginning course in analysis can develop the students' ability to examine critically, and encourage speculation. Beginning design students tend to look at everything equally, and everything is pretty much cool and interesting - analysis breaks down a given composition and they are able to examine the components and assess more readily whether or not design responses are appropriate or inappropriate within a

The Predicament of Beginning

R E P R E S E N T I N G I D E A S



The Viewing Machine, Alice MinSoo Chun, University of Pennsylvania · The Parallel Projection, as Flights of Fancy, Mary Nixon, University of Pennsylvania · Allusion, Illusion and the Beginning Design Student, Albert C Smith and Kendra Schank Smith, University of Utah · The Design Process: Charcoal Drawings, the Qualitative Representation, Mo Zell, North Carolina State University

The Viewing Machine

Alice MinSoo Chun

University of Pennsylvania

Technology in architecture, rhetoric of construction, often expresses an erotic search for knowledge. As Marco Frascari explains, "Technology is the fertile factor for the architectural production of elegant meanings, it deals with both the construction- the logos of techne (elegant art)— and the constructing—the techne of logos (rhetoric)."¹ In this case technology translates from figures of thought into figures of site, and figures of making. It may be construed as a condition that attempts to answer the question: How does one begin? The curriculum developed for the Undergraduate Architecture Program at the University of Pennsylvania provides a place for the cultivation of technology through the demonstration of architectural strategies for making. This is explored through a constant variable, the interest in building: the delight in experimental construction is the adventure into the space of the unknown condition, between conception and execution. This adventure, into the constructional unknown, uses technology and the discipline of drawing as a poetic act. In this sense, technology is demonstrated along with cosmology as it reconciles the art of constructing and constructing. One vehicle for this reconciliation is through a process and product called the viewing machine taught during the first year of architecture. Most of the students, beginning the Bachelors of Arts in Architecture, are quite young and eager to explore the

Fig. 1: Collage

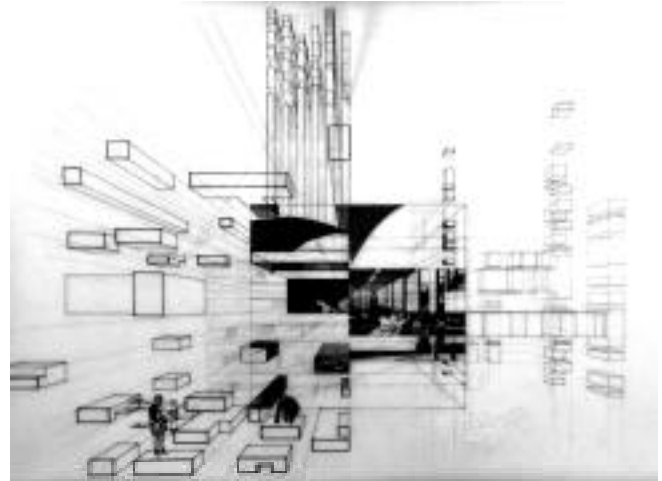
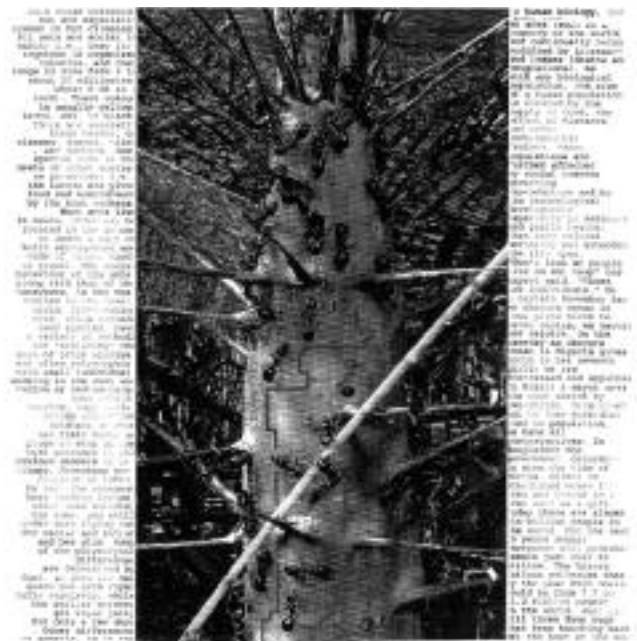
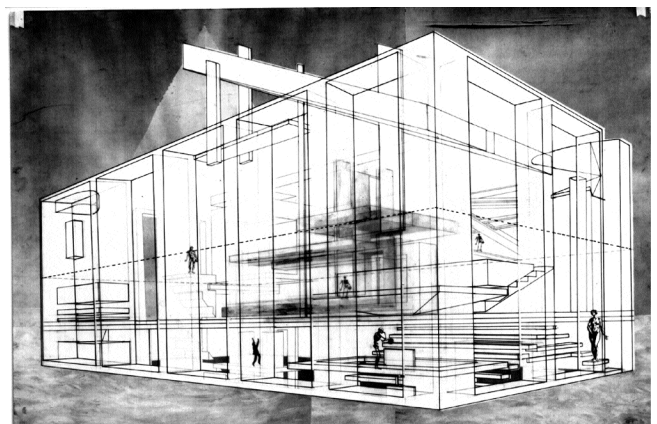


Fig. 2: Speculative Perspective

unknown. The studio meets for three hours, two days a week. The studio begins with an exercise in perspective and speculation.

In the viewing machine, site and sight are explored in conjunction with this exercise in speculative drawing incorporating geometry, perception, and precision with precise instruments; the plan, being the construction of a heptagon and the projection of a perspective, is developed as an interpretation of a given narrative. These drawings are in themselves a type of artifact or construction of sorts, as Erwin Panofsky describes the conception of modern space in Perspective as Symbolic Form. "Hence homogeneous space is never given space, but space produced by construction.... it is a technique that symbolizes a certain triumph of the 'distance denying' "

Fig. 3: Speculative Perspective



ships to build a condition of programmatic possibilities. It is closer to what Martin Heidegger describes in *Poetry Language, Thought*: "...The taking of measure is what is poetic in dwelling...Measure taking is no science, Measure taking gauges the between which brings the two, heaven and earth, to one another. This measure-taking has its own metron, and thus it's own metric."⁴

"Geometry meaning, 'earth measurement' connected the need of ancient Egyptians to redefine land properties after each flood of the Nile."⁵ This notion is revisited with drawing the experience to the site. Viewing through the machine, the student must draw, construct, and craft a succession of maps and topographical sequences derived from the experience of employing the artifact, in addition, literal recordings and survey of a site are plotted. The maps and sequence of drawings require cunning to weave, collapse, and knot other perceptual or intangible phenomena, (sound, wind, time, regeneration, movement). The pata-physical observations and reinterpretations of them are expressed through projective ways of seeing, (perspective, collage, and montage). The dialogue of relationships between the uses of mediums tests the extents of the material as well as creates a phenomenal dimension (opacity, transparency, translucency, depth of field, etc.) "Every man-made form - and in particular, every architectural form - does not exist solely as a static consequence to an otherwise irrelevant act of production, but conversely, that the nature of form is inlaid in the process of making."⁶

Programmatic sequences generate a narrative of an implied spatial experience, along with the interpreted archeology of the site. The plans, sections, and elevations are tracings of this story that is invented. Program is concealed where the desire for order is to be set by twisting and knotting, reversals of fortune, where opposites are bound. In this case program is the effect of the imagination. As Viollet-le-Duc states: "An architectural program includes a partly revealed and partly concealed narrative of what is expected to go on in the spaces designed by the architect."⁷ The concealed program allows for the discovery of something unknown. It becomes a generator of new views. This method of making asks of the student: How can your visual image captivate, maneuver, seduce and catch a subject inside a field of vision...cause a desire to see more? What is the desire or wonder that is caught fixed in the drawing and urges the maker to put something into operation?

Drawing discipline and the discipline of drawing are explored as the interaction of knowledge and communication. A result of the process of employing the elements of the cosmology in metis through the viewing machine, it may be thought of as a theoretical as well as an empirical conundrum. It is a process for the translation, exploration and representation of the intangible, yet it is also the construction of an artifact or product, drawing or detail. One aspect of this translation explores the visual dimension by re-presenting idea and issues of technology, (the poetics of making) through the implementation of methods in construction such as assembly, collage and montage: the philosophy of the butcher's knife vs. the surgeon's

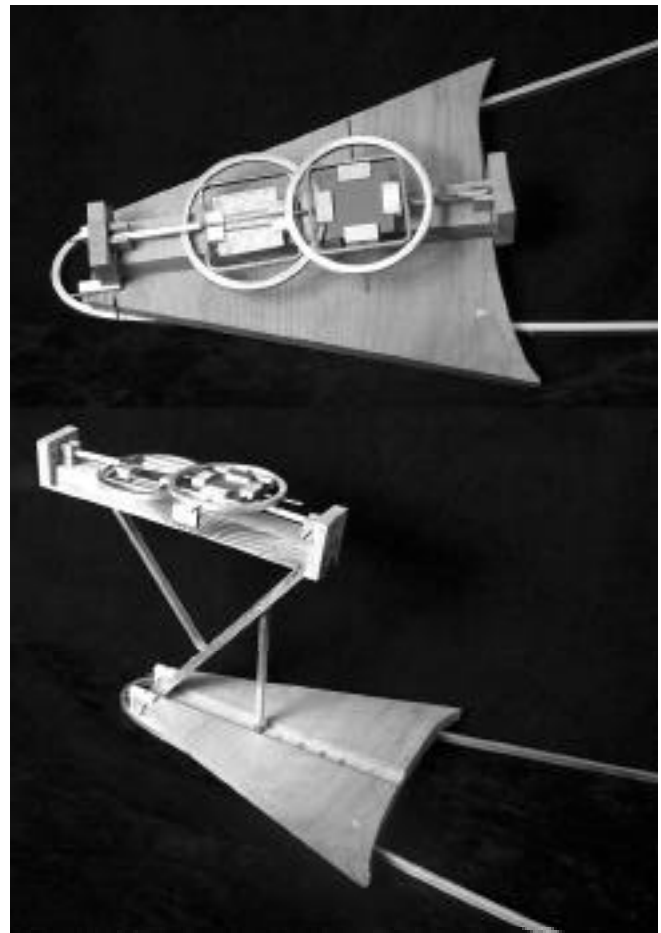


Fig. 6: Viewing Machine

knife. It is this precise use of sectioning, cutting, and layering, that the beginner begins building. This step is devoted to the conjuring of idea as a tectonic between the eye of the mind and the body of building possibilities.

Invention relies on how one sees, being just as relevant as what one sees. Representation of the invisible: time, memory, speed, and motion, are articulated through the construction and strategies of geometry, proportion, and assembly. The cosmology of how something is made is woven with the technology of what is made, thus the origin of technology is necessary for the representation of cosmology.

Cosmology here is both order and discourse of space and object. Cosmology may be defined as the language of the world as a totality of phenomena, spatial and temporal, ordered within a harmonious plan. In historical western tradition, the language of architectural cosmology manifest itself through a plan devised by proportion and geometry, a necessary scaffold around a haphazard human experience of the phenomenal world. Cosmos for the Greeks also referred to the tension between order/adorning and chaos of the mundane. "This cosmetic kosmos on the female body was about making Hera visibly beautiful by donning wonderfully crafted artifacts up about her body, and then asking Aphrodite for desire."⁸

Architecture deciphers the structure of physical and pata-

The architect gains knowledge through acts of making and in turn, the predicament of the beginner architect becomes the predicate of architectural cosmology through demonstration.

Notes:

- ¹ Marco Frascari, *Under the Sign of Wonder: Seminar on Thaumaturgic Architecture*, (Philadelphia, University of Pennsylvania, 1991).
- ² Erwin Panofsky, *Perspective as Symbolic Form*, (New York: Zone books, 1991).
- ³ Ann Bergren, "The(Re) Marriage of Penelope and Odysseus: Architecture, Gender, Philosophy," *Assemblage* 21, Cambridge, MIT Press 1993.
- ⁴ Martin Heidegger, *Poetry Language Thought*, (London: Harper & Row, 1971)
- ⁵ Manfredo Massironi, *The Psychology of Graphic Images*, (London, Lawrence Erlbaum Assoc. Inc., 2002.)
- ⁶ Giuseppe Zambonini, *Seminar: Notes for a theory of Making in a Time of Necessity* (Philadelphia, University of Pennsylvania, 1990.)
- ⁷ E-E. Viollet-le-Duc, *Historie D'une Masion*, (Paris: Henzel 1873, reprint Brussels: Mardaga, 1979, 104.)
- ⁸ Indra Kagis McKewan, *Socrates Ancestor*. (Cambridge Mass: MIT Press, 1989)
- ⁹ Alfred Jarry, translated by Simon Watson Taylor, *Exploits & Opinions of Dr. Faustroll, Pataphysician*. (Boston: Exact Change, 1996)
- ¹⁰ Manfredo Massironi, *The Psychology of Graphic Images*, (London, Lawrence Erlbaum Assoc. Inc., 2002.)
- ¹¹ Giambattista Vico, Trans. T.G. Bergin, *The New Science*, (Ithaca: Cornell University Press, 1970)

Figures:

(All work completed in the first year of the architecture program)

1. Collage: Darby Forman
2. Speculative Perspective: Andrew Evans
3. Speculative Perspective: Farzana Gandi
4. Viewing Machine: Lydia Lee
5. Viewing Machine: Lydia Lee
6. Viewing Machine: Steven Tran
7. Sight/site Survey: Eric Ho
8. Sight/site Survey + Viewing Machine: Steven Tran.

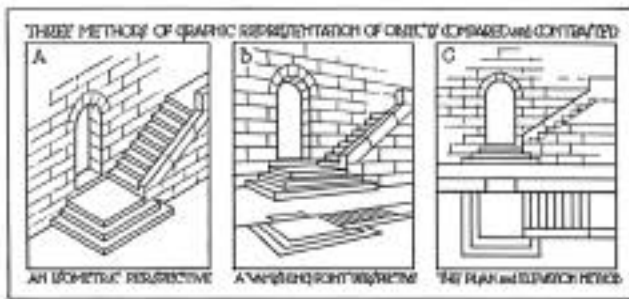


Fig. 1. Claude Bragdon, three methods compared and contrasted

toward flight and our view from above, we can better understand the use of the parallel projection as a representational tool. These thoughts are supplements to the histories of this drawing choice already published by Yve-Alain Bois and Massimo Scolari.¹¹

The parallel projection views as a bird views. It hovers or flies above its object.¹² The bird's-eye-view is a privileged one and as an everyday occurrence it is foreign to us. We are bound by gravity. Because of this we have watched from an early age creatures that have mastered this reality and we have wondered what it is like. We climb trees for that high advantage and swing on swings for that thrill of flight. There is "the conviction of many children that they can fly, a conviction often felt so strongly that they cannot resist throwing themselves from walls and windows."¹³ Underlying this childhood conviction are the desires to escape the bonds of gravity and venture out into the world. This is something Jimmy Stewart's character in the movie *It's a Wonderful Life* knows all too well. George Bailey longs to see the world, go to school, and to "build things, design new buildings, plan modern cities." When his plans for school are dashed, he still dreams of travel. Mid-way in the movie he tells us "the three most exciting sounds in the world are...anchor chains, plane motors and train whistles." And just as these sounds are emblems for adventure so are certain sights, like the expansive ocean, the distant horizon, or the flying bird. They are reminders "the world is vast, beyond this speck of a place, and there's a way out."¹⁴

But has the desire to fly always been universally welcome? Clive Hart in his book *The Prehistory of Flight* answers no. "In premodern times, psychological unease was increased by associations of flight with the idea of inescapable judgement and vengeance."¹⁵ Although they do not form a simple linear sequence, Hart lists three broad groups in which the ideas about the air explored fall:

One is the notion of an animated cosmos, beginning at least as early as Hesiod (probably eighth century B.C.) and repeatedly reinvigorated by Platonising writers until the eighteenth century. In such a concept of the world not only is the air, along with everything else, in some sense alive and active, but it stimulates the imagination because of its invisibility, its unpredictability, and its special position between heaven and earth. A second is the set of Aristotelian tenets about the physical structure of the

world which, although often modified and sometimes vigorously questioned, remained generally dominant until the seventeenth century and was especially important in European natural philosophy from about 1100 A.D. While not necessarily incompatible with the notion of an animated world, Aristotelian physical concepts were more readily associated with the idea of a self-governing, self-sustaining, deanimated universe; the earlier world view was gradually supplanted by the more mechanical model. Deprived, by this evolutionary process, of its own personality, the air nevertheless long remained inhabited by truly aerial creatures—demons and fallen angels—which made it a hazardous region for man to explore. The remaining group of ideas emerged with the so-called New Science of the seventeenth century, during which knowledge of the nature of the air expanded rapidly.¹⁶

In premodern times the air was the providence of the gods and their minion, and it was through the air that the gods made contact with man usually in the form of spectacular weather phenomena.¹⁷ This was a long held belief. We can witness the perceived hazards of flight in an Italian engraving of 1710. (Fig. 2) It is entitled "Democritus laughed" and shows the Greek philosopher pointing to three attempts at

Fig. 2. *Democritus ridet*, engraving by F. Aquila, 1710



and more ruinous than from the...misuse of the compass, of gunpowder, and of printing."³⁴ These new fears of flight continued to echo the old ones, namely, there are dangers above. Man did learn to fly however. Along with great fanfare in the fall of 1783, two men in a hot-air balloon cut their tether and were free to fly. The balloon was the invention of brothers, the younger one trained as an architect.³⁵ Although manned balloon flights were used in the French Revolution, as well as the American Civil War, the fears of earlier generations, in the main, were put aside.

Advances in mathematics, science and technology continued and in the later nineteenth century we entered the grand age of exploration and travel. This "was the first age in which almost all the cultures of the world had been made available through writings, illustrations, museums, photography (later film) and increased opportunities for safe travel itself."³⁶ The world was getting smaller. An interesting by-product of this wealth of knowledge was the increased sense of separation between man's physical world and his spiritual world.³⁷

Many of the avant-garde artists and architects of the late 19th century and the early 20th, who embraced and championed the parallel projection, were generalist. They were interested in many things. Their interests included architecture, painting, publishing, illustration, theatre, color, music and film. They also had strong philosophical leanings, which stressed higher consciousness, and preferred parallel projection for more than

just practical reasons. And whereas the premoderns feared the above and used parallel projection in practical ways, the moderns redefined the above as higher consciousness and used the parallel projection in thoughtful ways. (Fig. 4)

The form as well as the process of the drawing spoke about the form of their ideas. That is, the drawing construction was important to them not just as a depictive format but as a quotient of meaning as well. As symbolic of their polemical position, it was opposed to the hierarchical order of classicism and the emphasis on façade. Instead, they strived for an architecture which could have an equivalency of elements in space, no front, back or sides, no near or far, top or bottom, major or minor, no interior or exterior. Space was to be neutral, amorphous, infinite, and the axonometric drawing form reinforced this sense of infinite extension.³⁸

Yve-Alain Bois goes into greater detail regarding this period of revival of the parallel projection in his "Metamorphosis of Axonometry." He ends that paper by comparing axonometry to the flying horse Pegasus. He begins that paper with a quote and two illustrations by the American architect Claude Bragdon (1866-1946). Bragdon is seen as "enthusiastic" and given credit for discussing "isometric perspective", but he is dismissed by Bois. Epistemologically, Bois feels, "Bragdon bears no relation to the modern architectural movement: A master of Art Deco, his concern with axonometry grew out of his occult and theosophic studies of the fourth dimension."³⁹

Bragdon I feel is an important contributor to the history of this drawing type and represents the hinge between premodern and modern attitudes. Bragdon's chapter on "Isometric Perspective" in *The Frozen Fountain* of 1932, originally appeared in article form in 1926. At this point in his life, Bragdon had already given up his architectural practice, moved to New York and was working in the theatre. He had left his home in Rochester, New York, known as Cro Nest⁴⁰ and relocated to a "single room in a cliff-like New York skyscraper," in his "high aerie in the Hotel Shelton."⁴¹ He had "witnessed the inception of the telephone, the electric light, the automobile and-naturally-the airplane." He added to that list the passenger elevator, calling it "a nine-days' wonder."⁴² Even though Bragdon credits his theatre work for reemphasizing the advantages of the parallel projection,⁴³ he had already mastered its use. His earlier publications were profusely illustrated with diagrams and examples of this graphic means. (Fig. 5)

The first reading of Bragdon's chapter may give the impression of a how-to, step-by-step guide to developing isometric drawings with theatre stage-sets presented as samples. On closer inspection we can find the synthesis of practicality and philosophical intent. According to Bragdon: "Isometric perspective...less faithful to appearance, is more faithful to fact, it shows things more nearly as they are known to the mind...there is no far and no near...and the eye of the spectator everywhere at once...Isometric perspective is therefore more intellectual, more archetypal, it more truly renders the mental image-the thing seen by the mind's eye."⁴⁴ Some of

Fig. 4. El Lissitzky, Tatlin working on the monument, 1921/22



of types and methods, (NY: John Wiley & Sons, 1997), pp.65.

Frank Ching, *Architectural Graphics*, pp. 53

Iain Fraser and Rod Henmi, *Envisioning Architecture, an analysis of drawing*, (NY: Van Nostrand Reinhold, 1994), pp. 46, 48.

Claude Bragdon, *The Frozen Fountain, being essays on architecture and the art of design in space*, (NY: Alfred A. Knopf, 1932), pp.61, 62.

Iain Fraser and Rod Henmi, *Envisioning Architecture*, pp. 54.

See: Yve-Alain Bois, "Metamorphosis of Axonometry," *Daidalos*, (September 1918, vol. 1), and, Massimo Scolari, "Elements for a history of axonometry," *Architectural Design* (London: 1985, vol. 55, no. 5/6).

Claude Bragdon, *The Frozen Fountain*, pp. 60.

Ibid., pp. 59, 60.

See: Yve-Alain Bois, "Metamorphosis of Axonometry," Massimo Scolari, "Elements for a history of axonometry," as well as, Yve-Alain Bois, "From negative infinity to zero to positive infinity, Axonometry, or Lissitzky's mathematical paradigm," in El Lissitzky, architect, painter, photographer, typographer, (Eindhoven: Municipal Van Abbemuseum, 1990).

Yve-Alain Bois, "Metamorphosis of Axonometry," pp. 57.

Clive Hart, *The prehistory of flight*, (CA: The University of California Press, 1985), pp. 125.

Mary Howard, *Discovering the body*, (NY: HarperCollins, 2000), pp. 127.

Clive Hart, *The prehistory of flight*, pp. 116.

Ibid., pp. xiii, xiv.

Ibid., pp. 185.

The American Heritage Dictionary, 4th edition, 2000

The Columbia Encyclopedia, 6th edition, 2001

Dictionary of Phrase and Fable, 1898

Tom Crouch, *The eagle aloft*, (Smithsonian Institution Press, 1983), pp. 20.

Ibid., pp. 23

Clive Hart, *The prehistory of flight*, pp. 116.

Yve-Alain Bois, "Metamorphosis of Axonometry," pp. 42, 51.

Hanno-Walter Kruft, *A history of architectural theory*, (NJ: Princeton Architectural Press, 1994), pp. 109.

Massimo Scolari, "Elements for a history of axonometry," pp. 74.

Yve-Alain Bois, "Metamorphosis of Axonometry," pp. 51

Hanno-Walter Kruft, *A history of architectural theory*, pp. 109.

Massimo Scolari, "Elements for a history of axonometry," pp. 74

Hanno-Walter Kruft, *A history of architectural theory*, pp. 117.

Clive Hart, *The prehistory of flight*, pp. 125.

Ibid., pp. 123, 124.

Ibid., pp. 116.

Ibid., pp. 117.

Tom Crouch, *The eagle aloft*, pp. 22

John M. MacKenzie, *Orientalism, history, theory and the arts*, (England: Manchester University Press, 1995), pp. xiv.

Clive Hart, *Images of flight*, (CA: University of California Press, 1988), pp. 244.

Iain Fraser and Rod Henmi, *Envisioning architecture*, pp.

55.

Yve-Alain Bois, "Metamorphosis of Axonometry," pp. 41.

Wendy Kaplan, *The art that is life, the arts & craft movement in America, 1875-1920*, (MA: Museum of Fine Arts, Boston, 1987), pp. 351.

Claude Bragdon, *More lives than one*, (NY: Alfred A. Knopf, 1938), pp. 319, 269.

Claude Bragdon, *Merely Players*, (NY: Alfred A. Knopf, 1929), pp. 47.

Claude Bragdon, *The Frozen Fountain*, pp. 59.

Ibid., pp. 61.

Claude Bragdon, *More lives than one*, "My theatrical life," pp. 185-241.

Yve-Alain Bois, "Metamorphosis of Axonometry," pp. 56.

Clive Hart, *The prehistory of flight*, pp. 184.

Eva T. H. Brann, *The world of the imagination, sum and substance*, (Maryland: Rowman & Littlefield Pub., 1991), pp. 25.

John Keats, "Fancy," *The poetical works of John Keats*, 1884.

leads into new interpretations and allows the representation to remain fluid for as long as possible, a function that may be an advantage in the design process. Alternatively, the etymology of illusion is presented as: [illudere – to make sport of, jest, or mock at, ridicule, il + ludere, to play, against play].⁵ Illusion is a mocking false or unreal appearance, deceived or eluded by appearances, a false conception of ideas, and unreal visual appearance, deceptive belief or the sensuous perception of an external object. The illusion then, may be seen as the illustration to envision the new and never before seen. Although illusion viewed as a falsity may also be the ability to see the future, to visualize the conceptual and physical idea. Both of these words with their roots in 'play,' assist an understanding of how media such as drawing and models, influence the process of design. Play, as a philosophical concept, provokes the actions of 'give and take' that can become a design dialogue. Other aspects of play include the boundaries that surround the activity of play, along with representational qualities that makes something 'stand for' something else and qualities that allow participants to become so involved in the play that they feel outside themselves. The importance of play is often the intelligibility or the learning that results from the activity of play; the repeatability allows the chance to alter and manipulate to discover something new. We learn through the simulation, the process of representation.⁶ Again, we return to the question at hand, how does the ability to see media as having propensity to 'play with' or act as an agent 'against play' influence how we use and perceive this media?

Allusion of illusion and the illusion of allusion/ Chiasmus

This dilemma concerning our use of media may be explored through viewing allusion and illusion through a chiasm. A chiasmus describes a word play where reversing the order of a phrase, clarifies through its new noun/verb position. Additionally, it can be "a grammatical figure by which (opposing diagonal arrangement) the order of words in one of two parallel clauses is inverted in the other."⁷ Here the reversal of the order may help us to better understand the opposition in these words.

The first half of the chiasmus "the allusion of illusion" questions the long-standing validity of the illusion. We may compare illusion to magic, something that is conjured up out of no-where, hiding or concealing, where allusion shows us the process of connections and relationships that may be more truthful.⁸ A 'realistic' image may not allow play or finding the truth through play. In using allusion as a modifier to an illusion, the reference may be giving the illustration qualities that question how this image may also convey something less definitive. The question may arise if we, as architects, wish not to make conclusions, if the life in the ambiguous image helps us continually enjoy the process of imagination and reference.

Museum Project

The museum project, (developed with Julio Bermudez), was designed to introduce beginning students to basic issues of

architectural communications.⁹ Our general position was that architects depend on representation for the description, design, communication and criticism of architecture. We believe there are at least two reasons for this. First, architectural designs cannot be developed and tested in full scale for obvious and practical inconveniences. Second, the human mind has clear limitations in generating, sustaining and communicating credible simulations of architecture without external recording.

We assigned this project after a series of conventionally based graphic studies of a new art museum recently built on the campus. This final exercise of the semester involved the subjective qualities of the building. Here representation was to become an expressive yet abstract instrument used to capture the metaphoric nature of architectural sensations. The students were asked to represent the intangible, unmeasurable and the felt, as the end result of a progressive realization of architectural attributes. Using 3D digital models our students were asked to create four alternative depictions of the art museum. Each representation was to express different sensorial conditions found in the objective realm. The students were asked to develop a radically abstracted transformation of the existing architectural grammar to express the following: 1). The sound of the place, 2). The smell/taste of the place, 3). The feeling of the body in the place (kinesthetics), and 4). The synthesis (an edited combination of all three).

This project was pedagogically important to our students because through their translations they were required to clarify (a) the sensations of the place, (b) its metaphoric correlation to the visual field, and (c) its architectural expression. Through the project the students learned about issues of conceptualization, metaphor, analogy, caricature, grotesqueness, exaggeration and symbolism. By using representations to articulate and communicate architectural actions and thoughts, architects not only give solutions to these problems but also create a language without which no architectural work would be conceivable. In this project the students could begin to understand the reference of the image (allusion of illusion). Distorting the "look" of the museum conjured up associations and references. It questioned how the emotions of the building, the intangible, could be expressed tangibly. The students could employ colors or shapes that evoked dimensions of sensations to find the allusion of the illusion.

The second half of the chiasm that reads the 'illusion of allusion,' may evoke the picture of the thing that is less tangible. A seeming impossibility, this may involve how we try to make more defined the not-yet-physical forms of our architecture. For example, the fact that the drawings of Michelangelo or DaVinci are 'accurate' does not destroy their allusive qualities. They may still create emotive or ephemeral qualities. In comparison, our renderings on the computer, may seem a clearer view of the future building, again they resemble an abstraction as they present a three-dimensional building on a two-dimensional surface.

Place/Architecture/Ritual

defining our terms.¹² Again, we may consider the atmospheric 'finished' look, the image that best defines. In opposition to this basic tenet, Miller questions the validity of a set definition, by stating that "a static definition is neither experimentally or logically possible."¹³ The seeming advantage that images look completed may now be a disadvantage. Since the design is substantially set, these images do not allow for further definition, or recalibration of definition. To further clarify this point, any object continually needs new relationships, but it first requires a beginning to specify its mark.¹⁴ The major focus in this explanation of definition might be the idea that in the process of making a mark to start to define, it is necessary to allow the manipulation and alteration that can continually refine and re-define.¹⁵

We may need to ask if this makes all architecture a system of constant re-definition? An answer needs to be yes, as the architecture is defined through the architects' mind, takes on new connotations as it is built, and takes on new definitions as it is inhabited. We may liken this to an example of fourth phase simulacrum, where the simulation takes on new and unique qualities that separate it entirely from the original intention.¹⁶ Is it then, futile to attempt definition if we know it will constantly change? We may find little use for definition, if it is elusive and impermanent. Miller questions this problem of ambiguity, and concludes that although definition changes with respect to other definitions we are continually compelled to "search for a relative permanence."¹⁷ The allusion may embrace this change and does not necessarily make the illusive image invalid. Being undefined it embarks on a questioning that asks about the change, how is it possible and what does it mean.

Conclusions

Having begun with the concept of the chiasmus, we are reminded of the two faces of Janus that indicate the two-sided-ness of an issue.¹⁸ Janus was the god of gates in Roman mythology and is depicted as a face facing opposite directions. In his role as the guardian of gates and doors, he was also thought to represent beginnings (January). The explanation for this belief comes from the idea that one must emerge through a gate or door before entering a new place. The 'beginnings' also speak of the mark that is the first definition. It also may mean that we must go back and forth through this door to understand both sides and unite our comprehension. We may also be going back and forth through the gate to make the things invisible, now visible.¹⁹ The faces of Janus see both ways and find the place to begin, providing the mediation that helps in the complex issue of architectural representation.

If the chiasmus helps us see new relationships in reversal, then we may start to view how the place of their conceptual crossing makes them less distinct. Possibly viewed as an "X", the moment of their crossing causes them to resemble each other. Although the illusion may be immersed in the false image, it is the only image we have, especially since the illusion

is an attempt to state a future in known terms. We may allude to, or refer to, the illusion but we depend upon its view. In a similar way, the interpretation can also be misleading, sending us in many associative directions. Since the illusion is human made and inherently imperfect, we must constantly question its role and how we use its vision. Maybe the object of our attention is not necessarily human made, as much as human conceived, a statement that still puts the illusion in question.

In conclusion, allusion and illusion need each other since they are two sides of the definition (the future building) and help us to comprehend both the conceptual beginnings (allusion), and the view of the future (illusion). This may be the value of 'playing with' our design media and the way to use constantly changing definition. In our schools, it may also be artificial to separate the communication classes from the studio, since the definition of the product may need the reflection of design. This attitude may also keep our beginning design students from being seduced by the 'eyewash' of their skills in making beautiful renderings. And again, it may be artificial to separate the 'illusion' from the 'allusion' as they may be one and the same (two sides of the same issue).

Notes

- ¹ Joel C. Weinsheimer, *Gadamer's Hermeneutics: A Reading of 'Truth and Method'* (New Haven: Yale University Press, 1985) p. 104. "[N]o play is perfectly free play ... to play is to sacrifice freedom and accept limits ... being limited, being played, is a condition of playing at all."
- ² Richard Kearney, *The Wake of the Imagination* (Minneapolis: University of Minnesota Press, 1988), the theme of the whole book.
- ³ Jorge Gluesberg, editor, *Deconstruction: A Student Guide* (London: Academy Editions, 1991).
- ⁴ Gluesberg, op. cit., p. 7.
- ⁵ Definitions of allusion and illusion, *The Compact Edition of the Oxford English Dictionary*
- ⁶ Ideas on Play come from; James S. Hans, *The Play of the World* (Amherst: The University of Massachusetts Press, 1981); Gregory Bateson, *Steps to an Ecology of Mind* (London: Jason Aronson, 1972); Hans-George Gadamer, *Truth and Method* (New York: Crossroad, 1989); Johan Huizinga, *Homo Ludens: A Study of the Play Element in Culture* (Boston: Beacon Press, 1955).
- ⁷ Definition of Chiasmus, *The Compact Edition of the Oxford English Dictionary*
- ⁸ Marcel Mauss, *A General Theory of Magic* (New York: W.W. Norton, 1972).
- ⁹ ARCH 3050 Julio Bermudez and Albert C. Smith, Fall 2001, Graduate School of Architecture, University of Utah.
- ¹⁰ Arch 4010/6010 Julio Bermudez, Kazuo Matsubayashi, Peggy McDonough and Kendra Schank Smith, Fall 2001, Graduate School of Architecture, University of Utah.
- ¹¹ Patrick Waldberg, *Surrealism "The Exquisite Corpse"* (New York: Oxford University Press, 1965), pp. 93-95
- ¹² John William Miller, *The Definition of the Thing* (New York: W.W. Norton and Company, 1980), p. 38.
- ¹³ Miller, op. cit., p. 42.
- ¹⁴ Miller, op. cit., p. 41.
- ¹⁵ As a diversion, etymologically the word 'design' has connection to the ability to 'make a mark.' It is through the

The Design Process: Charcoal Drawings, the Qualitative Representation

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describe how light can help define space and its relationship to the traveler. The project was intentionally small in scale and internally focused to increase the students' awareness of the play between space and light.

Although this discussion of charcoal drawing within the beginning design studio will focus on the first project, I will briefly describe the two subsequent projects in the semester since the programmatic elements between all three assignments were interrelated. A two-week analysis project of Greenville, SC (the location of the 3rd project) followed the room project while the remainder of the semester was spent designing an indoor public pool. Each assignment built upon the previous. The projects progressed from the scale of the individual to that of the collective in an urban setting. The scale of the individual was also relevant to the pool project, especially in the transition spaces from the lockers to the pool. Throughout each exercise, charcoal drawings were used to express evocative qualities that traditional hard line drawings could not reveal.

As part of the traditional method of representation and to allow for an overall understanding of all the projects, students were asked to prepare plan, section and perspective drawings. The interior perspective views were generally rendered in charcoal. As seen in the images, the students were able to explore the intimate spatial conditions of the room through light. As beginning design students, the ability to render "designed space" is difficult. Therefore, studies of existing spaces around the school and on campus formed the core of drawing lessons at the beginning of the semester. Several days each month were spent drawing existing spaces including the diving and lap pools, thus linking the drawing assignments to the design assignments. Drawing sessions were often started with blind drawings to allow students to free their minds from preconceived notions of objects and space. The sessions also enabled students to practice their sketching and drawing techniques using the charcoal.

As mentioned, the first project, a room for a traveler, challenged the students to deal with intimate space and the human figure. Each student was asked to design a place of occupation for a single traveler seeking solitude during his or her travels. The room was to be thought of as a temporary-resting place for the traveler, but permanently located within a building near or at the airport. Two walls were considered interior and could not be punctured while the remaining two walls and ceiling were all exterior and could be penetrated.



Fig. 1. Billy Algiere, *A Room for a Traveler*, Charcoal Rendering and Model

someone inside the space and thus could be used to help further develop the intention and meaning of the space and light. Students focused on the relationship between fixtures, walls and occupied space at the scale of the individual, while recognizing the significance of the body, its measurements and its manner of movement. (insert Figure 4 here) The charcoal renderings emphasized these specific elements of space, movement and light. Inherent in the project is the idea of ritualistic movement from space to space. Though small and compact, each position within the room could be thought of



Fig. 2. Billy Algiere, *A Room for a Traveler*, Charcoal Rendering.

relative to the wall openings, wall surface and carved spaces.

The charcoal drawings were not only presented at the final review, but were part of the entire design process, as part of the study of the ideas. They were the basis of the dialogue between the students and myself that allowed them to help express the quality of spaces they were designing. The importance of these drawings in reviews was also immense. Sharing the quality of space with the audience was more important than describing the plan, section and elevation of the design. Hard line drawings described how one creates the space while the charcoal drawings described the quality of that space. Also of equal importance was the use of study models throughout the design process. Study models were used in conjunction with the charcoal drawings. The models served as a clear indicator of the light quality and light direction that the space would accommodate. The process was an iterative one. Ultimately, the drawings were able to describe the experiential character of the sequence of spaces seen in the models.

Methodology

The actual method of drawing with charcoal usually started with a blank white sheet of Strathmore paper. Each student would shade the entire page with the side of their charcoal stick. By reversing the page from stark white to shaded black or gray, students were relieved from making that first mark on the page. By putting down a tone of gray the student can

page depending on the length of the charcoal stick, pressure applied by the artist and the positioning of the stick, whether vertical, horizontal or angled.

In addition to the constraint of the implement being used, I asked the students to focus on just black and white charcoal drawings leaving color to other mediums or other days. I felt that it was important that students' focus on the aspects of high contrast found in black and white charcoal instead of the variations of colors. Using black and white charcoals allowed the student to focus on the aspect of lighting as a major element. Similar to black and white photography, the essence of the space and light has revealed in charcoal drawings. Color often adds layers of less important information, which mutes the strength and clarity of the high contrast rendering.

Jurors were always impressed with the charcoal renderings students produced. The poetic quality of the spaces was revealed to the viewer. This drawing type enabled students to reveal the experiential nature of the space in a very evocative manner. It enabled students to describe their design and their intentions through high contrast, light enriched drawings.

Similar art forms like photography rely on the sense black and white to enhance and reveal spatial qualities. Walker Evans, well known for his black and white documentary photography, only started using color photography much later in his career. He has suggested that until one has mastered black and white photography, they should not try color. This suggestion also translates to charcoal drawing as well. In a sense, there is plenty to discover within the realm of light and shade.

NOTES

Johnson, Nell, Light is the Theme: Louis I. Kahn and the Kimbell Art Museum (Fort Worth: Kimbell Art Foundation, 1975) pg. 17.

The Predicament of Beginning

THE ABSTRACTION OF PLACE



Building the River: An Introduction to Urban Design in Savannah, Georgia, Christian Dagg, Auburn University · Rethinking Studio Pedagogy: Teaching Introductory Architectural Design at the Graduate Level, Michael E Gamble, Richard Dagenhart and Chris Jarrett, Georgia Institute of Technology · Learning from Cultural Space: Connecting Culture and Environment in Beginning Design, Jeffrey Hou, University of Washington · deTail of Two Cities: Utilizing urban analysis and recombination as the first project in the fundamental design studio, John Maze, University of Florida

Building the River: An Introduction to Urban Design in Savannah, Georgia

Christian Dagg

Auburn University

The contrast between particular and universal, between individual and collective, emerges from the city and from its construction, its architecture... It manifests itself in different ways: in the relationship between the public and private sphere, between public and private buildings, between the rational design of urban architecture and the values of locus or place. —Aldo Rossi ¹

This paper discusses one strategy for exposing architecture students to beginning questions in urban design and how this exposure can be structured within the design studio. Focusing on the city of Savannah, Georgia, the study of urban morphology and resultant building typologies are a basis for the studio research and design proposals completed in the spring of 2001 at Auburn University in Alabama. The studio was co-taught with Brian Mackay-Lyons, who has established his own Architecture and Urban Design practice in Nova Scotia. MacKay-Lyons' practice served as a backdrop for the studio through an emphasis on contextual research, through the sequence of design exercises and finally through the products of the studio. This studio served as a precedent for teaching the conceptualization of the contemporary southern waterfront city at the level of both urban design and architecture.

By focusing on a limited cross section of the city, perpendicular to the riverfront, Savannah's local and idealized conditions are revealed. One ward of the original urban plan was utilized as a site in order to discover localized typological and morphological variations inflected upon this ideal order. Additionally, a length of the riverfront was utilized as a site to take full advantage of the unique conditions of Savannah's orientation, climate and topography. Eventually, the studio identified five distinctive site types, and more importantly ten distinct street types, out of a total of sixteen project sites. A series of emergent conventions arose out of the interaction between the distinct sites that allowed not just for the consideration of a "redeveloped" Savannah, but also provided the space for speculation about the possibility of an ideal city type appropriate for any waterfront condition. This possibility was encouraged by historical research that revealed that the initial necessity of the Savannah ward soon became irrelevant as the social structure of the ward changed and the historical core disintegrated. The incomplete formation of this ideal urban form left the studio with the liberating possibilities of invention through modern design propositions.

Several pedagogical questions arise at this moment. This appears to be the description of a fourth year housing studio that one would find at almost any school of architecture. The

studio consisted of both third and fourth year students and fit into the curriculum at the same time that other studios were dealing with urban sites and the question of housing. The difference should really be understood as the one between Urban Architecture, the insertion of a singular proposal into an urban site, and Urban Design, a proposal for the space between two or more developing buildings. Students were simply confronted with a topographic condition and prescribed block dimensions, the rest of the context developed in the midst of group discussions. Design presentations became negotiation sessions where students confronted their neighbors, sought out uniformity between the projects, and in several cases reconfigured the streets and spaces between their projects. Alleyways turned into shared green space and the slow ceremonial streets between the squares became envisioned as a pedestrian means of traversing the city. Additionally, height and priority was given to certain corner conditions, and many students began to understand the importance of providing good, generic city fabric as a part of their proposals.

The studio was broken down into a series of five exercises, coordinated with Brian MacKay-Lyons' visits to Alabama. The exercises in chronological order were; Urban Analysis, the design of the Ideal House, Aggregation of the Ideal House, the establishment of Studio Rules for the design of the Ward and finally the development of a Wall Section. Within these steps certain lessons and issues of the discipline of architecture were covered, such as historical precedent, typology, the generation of architectural form as an additive or subtractive strategy, and contextual response. Only during the last step, when students were asked to design at the scale of the detail, were regional factors considered. The detail served as a device to be critical of earlier assumptions or solutions that concerned site, topography, orientation, climate, and material sustainability.

Brian MacKay-Lyons' practice and teaching were an important framework for the formation of the entire studio in three ways. His appreciation of regionally available building technology, the use of three "house typologies" in the configuration of his own residential designs and his insistence on high density, low rise, zero lot line urban development all contributed to the formation of the studio requirements. MacKay-Lyons has been practicing in Nova Scotia, the island province of Canada, since 1985 and teaching in Halifax for just as long. When inserted into a place like Savannah where one free standing house covers two lots, where building technology relied upon

that extended from the riverfront. It was at this point that the common lands of the original charter were exhausted. Additionally the students made maps of existing green spaces, street names, square names, and current institutional buildings. Another group of students created graphic timelines of Savannah's history and measured drawings of Savannah's "primitive hut", the original house type placed in the first ward. Through these group exercises, students had a clear working knowledge of the city within two weeks.

Without describing the complete history of Savannah, there are several historical conditions, discovered through the Urban Analysis, that give light to the development of this Southern city. Savannah itself was established in 1732, the last capital of the British colonies in America. There were four conditions that made Georgia a unique British colony. It was to defend Carolina from the Spanish in Florida, it would be made up primarily of England's poor and foreign Protestants, it would be in the hands of twenty one British trustees for twenty one years, and it would be an important node for trade with England.⁷ There were three results from these ideas. First, the establishment of an urban grid based on the form of military encampments. Second, there were restrictions on the ability to own land that perpetuated the use of this unique city grid for twenty-one years. Third, that England became an immediate source of wealth and cultural influence once restrictions on land ownership were lifted.

In 1732, James Oglethorpe was placed in charge of this venture, mostly because of his military experience. It appears that Oglethorpe had laid out the plan of the original blocks, or "wards" as they are known, before he arrived in Georgia. It is

important to note that the ward layout resembles military encampments developed and utilized by English tacticians for hundreds of years.⁸ Oglethorpe's plan calls for a centralized square, to the east and west of the square are four "trust" lots for public buildings and to the north and south by four tythings. Each tything was then divided into ten lots measuring sixty by ninety feet given to the original colonists. The military arrangement of this layout is quite clear. Each lot belonged to a family, therefore it was assumed that there were ten men in each tything who were prepared to bear arms, they reported to the tythingman who then reported to the Constable of the Ward. Forty men were then easily mobilized within the square of each ward in defense of attacks from the Spanish forces in Florida. In addition to marching grounds, the squares also provided a defensible haven from attackers for livestock and other settlers who might not be living directly in Savannah.⁹ In terms of urban design, it was very clear what types of buildings should go on the "trust" lots of the wards. A church, an infirmary, a "House for Newcomers" and the Town House occupied these sites in the first ward.¹⁰

In 1750, many of the restrictions that had confined Georgia's economic prosperity were lifted. Up until this time the private ownership of land was not allowed. Colonists could not mortgage their land, or sell it to another settler; and only a son could only inherit the land. The inability to accumulate land or to use slaves in order to work larger farms, which was illegal, certainly stunted the development of Savannah as an economic force in the early southern colonies. However in 1750 all this changed. Slavery, rice, indigo as well as additional settlers soon migrated from South Carolina into Savannah.¹¹ As private farms got larger outside of the city, the rich rice planters and shipping merchants became the most powerful members of Savannah society. The "trust" lots that had once been for public buildings only, soon became preferred real estate for the wealthy classes to build their homes. As Savannah exists today, the important institutional building facing the square have given way to row houses that preference different streets even in the same block, or large mansions imported from England.

Despite this focus on the ideal city grid of Savannah, the river and topography played equally important roles in the shape of this city. The city is only ten miles from the ocean, adjacent to the Savannah River, and forty feet above the level of the water. The areas east and west of the original six wards were actually unoccupiable marshland. These areas would later become the rail yards. The forty foot change in elevation at the river's edge required a crane that raised goods from the river to the bluff. The wards started far enough back from the bluff to allow an area to work and unload the ships. Today this area is known as the Factor's walk, a zone of irregularly shaped warehouse buildings that are four stories tall along the water and two stories tall when seen from the city. Another decision made early in Savannah's history was the location of the cemetery and common grazing lands. Originally placed far away from the city, today the cemetery is surrounded by apartments and the grazing common is known as Forsyth

Fig. 2. Original Savannah House

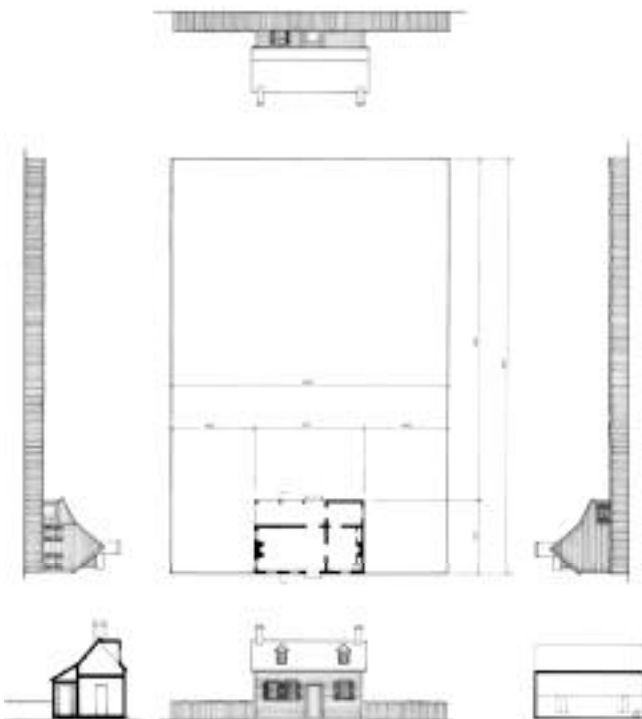




Fig. 4. Final Model

through streets and insist on turning the squares into automobile rotaries. (insert Figure 4 here) Fig. 4. Final Model.

There are several minor street types worthy of identification. Each block is separated by alley ways, intended to be used as a practical way of removing garbage and other unwanted material from the lots. These alleys are rather narrow and not well paved. Around each square is a one-lane street that splits the north-south street traffic and directs them around the square. Along the river's edge is the Esplanade, a green space separating the warehouses from the water. Finally, the buildings located on the bluff can be accessed from either forty feet above river level or residents can descend stairs to the submerged alley inside the bluff. This area provides Savannah with one of its most memorable images of small, suspended pedestrian bridges reaching over the Factor's walk on their way to the upper levels of the warehouse building across the gap.

Within this seemingly simply urban grid there exist a rich mix of widths, speeds and focus for the street types. The sites then responded to a combination of as many as five street types around their periphery. The student projects began to respond to this mix in terms of massing, circulation, and elevation composition. Mezzanines, courtyards, and light atriums also started to develop as a response to the site and context. Additionally, the alleyways and the east-west square streets were seen as sites for collaboration between the students. The alleyways disappeared and became shared green space between several projects. The space between the "trust" lots became seen as a green boulevard connecting the squares across the city from east to west. There seems to be little blocking this gesture, as the only real barrier is the ward dividing street running north and south.

In the end, the value of this studio was more in the questions students were able to articulate than their final product. By focusing on the constituent elements of a high density, low rise, zero lot line sense of urbanism, one will inevitably deal with the smaller elements that make up our cities. Typological consistency and locally available building technology are the

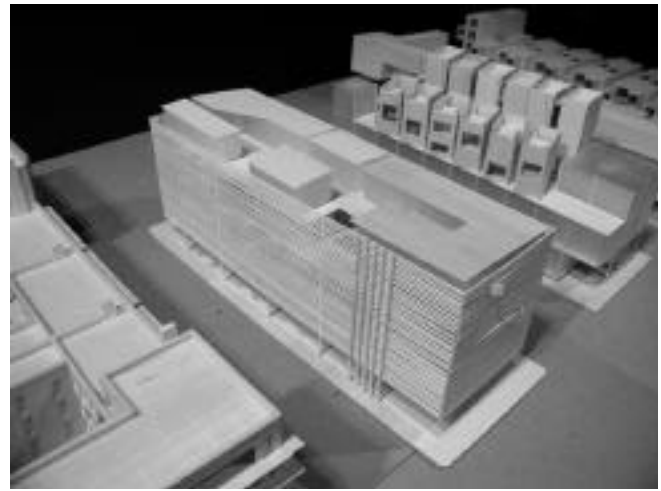


Fig. 5. Final Model

building blocks of cities. It also encourages a design process where students are able to look beyond their own project and begin negotiating with other designers for the betterment of shared space between proposals. Savannah's idealized urban grid and its current formal confusion provided a compelling site for an introduction to the discourse surrounding urban design principles today.

Students

Elizabeth Blaney, Danny Brindisi, Jared Fulton, Ryan Hastings, Jamin Heiftje, Jason Hunsucker, Jude Johnson, Robert Maurin, Robert McCown, Gabe Michaud, Bill Nauck, Derrick Owens, Ryan Puett, E. Matt Redden, Jennifer Sherlock, Michael Sims, Robert White.

Notes

- 1 Aldo Rossi, *The Architecture of the City*. (Cambridge, Massachusetts: The MIT Press, 1982), 21.
- 2 *ibid.*, 70.
- 3 Brian Carter, "Sighting Land/ Building at the Landfall". Brian MacKay-Lyons: *Selected Projects 1986-1997*. (Canada: Tuns Press, 2000), 9.
- 4 Brian MacKay-Lyons, *Brian MacKay-Lyons: Selected Projects 1986-1997*. (Canada: Tuns Press, 2000), 41.
- 5 *Ibid.*, 75.
- 6 *Ibid.*
- 7 Lane, Mills. *Savannah Revisited*, 4th ed. (Savannah, Georgia: The Beehive Press, 1994), 11-12.
- 8 *Ibid.*
- 9 *Ibid.*, 35.
- 10 *Ibid.*
- 11 *Ibid.*, 27.

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Rethinking Studio Pedagogy: Teaching Introductory Architectural Design at the Graduate Level

Michael E Gamble, Richard Dagenhart and Chris Jarrett

Georgia Institute of Technology

Durability will be assured when foundations are carried down to the solid ground and materials wisely and deliberately selected . . .

Vitruvius, Book I, Chapter III

Introduction

Over the last two years, our Architecture Program committed considerable intellectual capital to the rethinking of graduate level introductory design studio pedagogy for students entering our Masters of Architecture I / 3 ? year program. This reevaluation concentrates on several unique challenges intrinsic to the graduate level introductory design curriculum, which include:

the inherent differences between the age and personality profiles of undergraduate and graduate students. Many programs treat the curricula as equal, with graduate students executing the same exercises as undergraduates, only at a faster pace.

the developmental gap that exists in the second year of most M. Arch I programs between students with architecture and non-architecture backgrounds.

Our goal is to retool the core design studio pedagogy in order to bring those students with undergraduate degrees in non-architecture disciplines up to the same level of design skill development as 1st year graduate students with 4 year Bachelors of Science in Architecture degrees. In short, these incoming students are disciplined, mature and educated and need a highly structured environment that works to: develop skills in design and the conventions of representation; teach theory as a part of everyday studio work instead of a separate activity; and introduce an understanding of design strategy to enable mature projects to emerge more quickly.

This paper focuses specifically on innovations in and the implementation of the pedagogy in the pivotal Core II Studio, which is taught in the Fall.

These core studios, which begin in the summer, are comprised of 3 consecutive terms of intensive design training aimed at the continuous introduction, development, and reinforcement of a variety of skills. In general:

Core I is concerned with the understanding, developing and manipulating of space and form through conceptual and experimental generative operations while simultaneously learning multiple media. Almost all of the exercises are concerned with the formal and compositional aspects of design,

distanced from the palpable aspects of lived space. In these space/form investigations, the objective is to develop an agility and intelligence in creative and generative processes.

Core II furthers the development of student skills in design, process, representation, and collaboration, emphasizing both analytical and an analogical approaches to creative problem solving, while simultaneously targeting the development of cognitive and critical thinking skills.

Core III emphasizes the synthesis of skills learned in Core I and II with continued introduction to critical discourse through the design of a medium scaled building on a difficult site over a 15 week period. Co-requisite courses in construction technology and lighting supplement design studio instruction with topics integrated into the project.

The core 1-3 studio sequence represents 3 of 7 design studios in which the M.Arch I students participate. Following the core sequence, students advance to 3 options studios, which by definition, are concerned with more complex studio platforms which emphasize advanced research and application in the areas of history and theory, urban and environmental design, culture and practice, electronic media and construction technology, depending on the instructor's critical and ideological interests. The Masters Project Studio is equal to the Masters Thesis emphasizing the integration of disciplinary and professional skills through the formulation of architectural propositions grounded in critical, speculative, and creative research.

Innovation

But we are unable to seize the human facts. We fail to see them where they are, namely in humble, familiar, everyday objects. Our search for the human takes us too far, too deep. We seek it in the clouds or in mysteries, whereas it is waiting for us, besieging us on all sides.

Henri Lefebvre from *The Same and the Other*

This revised curriculum is innovative on three key fronts in response to the overall charge of our graduate program, the prerequisites of the Options studios, and specific needs of the students. In our new structure, Core II centers on the early delivery of aspects of the 'real world' into the graduate design curriculum, in juxtaposition to the traditionally abstract/formal/academic aspects of early design education, intersecting the formal and the disciplinary with the everyday and ordinary. Urban and suburban parking lots, vacant lots, backyards, cemeteries, and aspects of the center and periphery figure

ing and drawing impressions, defining possible programs, and presenting your observations, documentation and programs to the class. Each person will individually select a parking space within the lot for their project, prepare an existing site plan and define a program. The project is assigned 20 August (Monday) with a preliminary presentation on Wednesday and a final presentation of this part on 24 August (Friday).

Part 2: Design Proposals

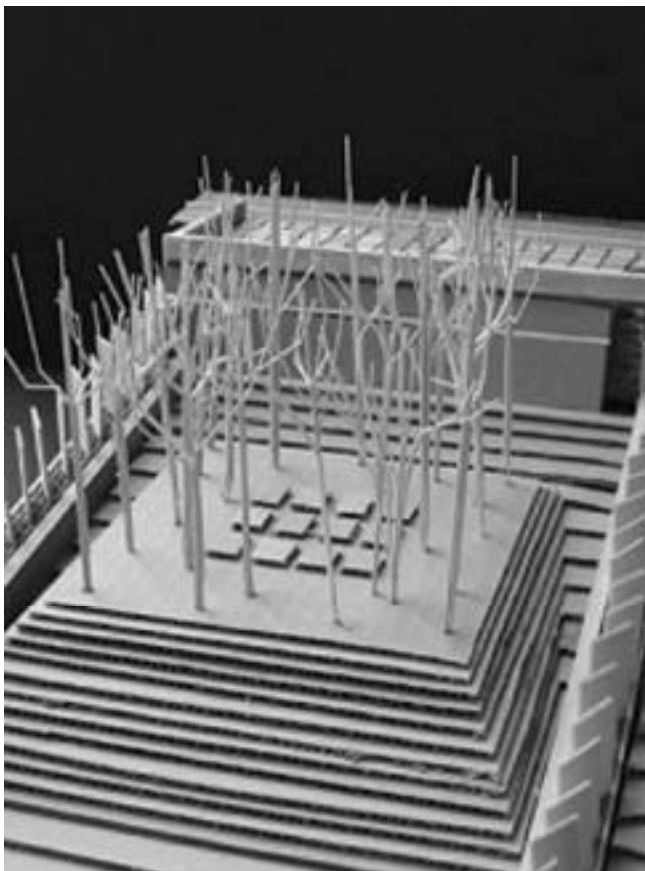
At the end of the day Friday, each student will have a parking space (a site) and a program for their building. The building must fit within the following envelope: 8 feet wide, 16 feet long and 12 feet high. This allows the building to fit in one parking space and to fit on the back of a truck, or if it has wheels, to be towable or driven to another location, if desired. Although the enclosed space cannot exceed this envelope, up to three parking spaces can be occupied by other things, and the building itself can have parts that fold out, lift up, etc.

Review Format

Instructor review with student discussion.

Project 2

BUILDING A LANDSCAPE: A Cemetery



The first project focused on the design of an enclosed space – a building. Each solution had a direct programmatic connection to its parking lot site, but there was no specific physical

relationship to the site: our buildings did not need permanent foundations or site work.

The second project focuses on the site itself as an architectural design problem, equal in importance to the design of a building. Just as building design overlaps industrial design; site design overlaps landscape architecture. Instead of concerns with organization of space inside, we are concerned with the organization of spaces outside. Instead of wood and steel and concrete for structure and enclosure, we are concerned with plant materials – the shapes of plants, the texture and color of leaves, seasonal changes, the process of growth. Instead of shedding water to protect the interior, we are concerned with the uses of water and experience of water – pouring rain, ice, drizzle, fog, snow, morning dew. Instead of thresholds from outside to inside and from ground to floor, we are concerned with the ground itself – its physical and spatial contours – and thresholds made by design of surfaces. Instead of climate controls to regulate heating and cooling, we are concerned with the seasons, the path of the sun, prevailing winds.

Site

The site is located in a wooded area on the edge of Atlanta's periphery. A small parking area sits at the top of a hill while the site slopes across a meadow down to a large lake. Your cemetery plot is one of 23 plots proposed to be constructed on residual space owned by the Georgia Department of Transportation. This space, for years used only as place for cyclers, joggers and picnickers, will be converted into a public cemetery for the burial of Atlanta's forgotten, displaced and indigent population.

Review Format

Formal individual review with Professors Allen, Green and Dye – 20 minutes. Prepare a 4 minute, concise introduction to your project.

Project 3

BUILDING A CITY: Buildings and/in/of Context – Athens, Georgia

The first project focused on the design of a small building as a construction independent of site and context, while the second project examined the site itself as an architectural design problem, equal in importance to the design of a building. The third project addresses an additional set of design considerations for any architectural project: context or the relationship of the building to its site and its surroundings, whether urban, suburban or rural. For this project, the context situation is downtown Athens, Georgia, which is known nationally for its successful urbanity. Set within a framework of small blocks are small buildings of many types and ages, a diverse mix of uses – retail, entertainment, government and upper level residences, and streets and sidewalks that enable and encourage all forms of transportation – automobiles, pedestrians, bicycles, and the nationally acclaimed public transit system shared by the City of Athens and the University of Georgia. Although

house. This team will gather information about the house, analyze it to discover design strategies, prepare interpretative diagrams and models, and present it to the class. There are three primary parts of the project. First is to collect drawings of the house - context, site plan, building plans, sections, elevations, etc. and draw them to the common scale of 1/4 inch. Second is to read about the house - from the perspective of the architect, historians, critics, etc. - to discover the rich variety of ideas that shape design strategies - circulation and movement, visual transparency and opacity, structural form, vertical and horizontal organization of space, enclosing skins, color and light, etc. Third is to represent your analysis through drawings, collages, and models to explain to the class your discoveries of the major and minor design moves of the architect.

In addition to assigned readings, each team will complete in-depth reconnaissance of all pertinent related material from the Library.

Required Panels for Presentation

Design Strategy Model: This model, required for all teams, is a detailed section model - either a horizontal or vertical section - through the entire house at 1/4" = 1'0". It is to be constructed from white foam core board and white museum board to allow easy comparison of the selected houses. Prepare at least 4 photographs of the model and format 11 x 17. Digital cameras may be checked out at the Helpdesk.

Context and Site Strategy Drawing or Model: This may be either a drawing, collage, diagram, or small model (11x17 format) explaining or interpreting the building's relation to context and design of the site itself. Both plan and section of site and building are significant. Prepare at least 4 photographs of the model and format 11 x 17, if applicable.

Spatial Strategy Drawing or Model: This may also be either a drawing, collage, diagram or small model (11x17 format) explaining or interpreting the building's spatial order - horizontal and vertical organization of space, enclosures, sequence of movements, transparencies/opacities, etc. Prepare at least 4 photographs of the model and format 11 x 17, if applicable.

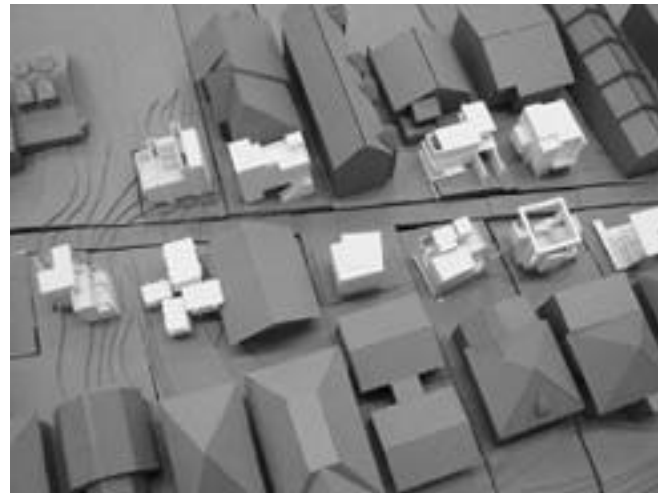
Structure/Construction Drawing or Model: This may also be either a drawing, collage, diagram or small model (11x17 format) explaining or interpreting the building's structural/construction/enclosure strategy. Prepare at least 4 photographs of the model and format 11 x 17, if applicable.

Each project, formatted 11x17, will be included in a reference booklet.

Review Format

All drawings must 'speak for themselves' with no supporting verbal presentation. Students are required to conduct peer review of group projects with discussion. Come prepared to make compliments, criticism and ask questions. Grades will be determined on the clarity of your analysis and participation in the discussion.

Exercise 5



Comprehensive Design Project: Garage Apartment in Midtown, Atlanta

Introduction

Previous exercises have addressed in incremental ways, various conditions and conventions of architectural thought and production. This final comprehensive project combines these different facets of architecture - object and site, the everyday and the unique, the collective and the particular. Drawing from past exercises, your challenge is to design a small garage apartment in a centrally located, ethnically diverse historic neighborhood in Atlanta - Midtown. The project sites are between 10th and 7th on Myrtle street. All houses facing Myrtle Street have alley access to the rear yard. The alley serves as a rear drive to all properties. Historically, many of the houses maintained detached garage apartments for rental and car storage. Today, many of the apartments are in ruin, or have been razed. In your site assessment, you should identify a specific lot in need of a secondary structure. Call it a real cool garage apartment.

Design regulations are as follows:

- There is a 10-foot minimum rear setback.
- There is a 5-foot minimum side yard setback.
- The maximum cornice (or soffit) height in Midtown must be no greater than the tallest building on either side of the site.
- The maximum height cornice (or soffit) height at the rear property boundary is 35 feet.
- The maximum buildable depth below grade, measured from the level of the sidewalk, is 12 feet.

Construction

There are three ways to increase affordability of housing: reducing construction costs, reducing the buildable area, and financial subsidies. In this case we can assume all three are important. Construction should be of common building materials for structure and finishes. If possible, the living unit built area should be less than the maximum of 1400 s.f.

Learning from Cultural Space: Connecting Culture and Environment in Beginning Design

Jeffrey Hou

University of Washington

Introduction

In environmental design education, exercises using primary spatial forms and principles have long been a prerequisite. However, the methodology based on a singular and narrowly focused abstraction of space and spatial phenomena is inadequate in preparing the students to respond critically to the increasingly complex social and cultural processes in the production of space and the making of the everyday environment. In addition, such approach often fails to connect to the students' own spatial experience and contextualize their understanding of space and environmental design. Furthermore, it does not recognize that the students' life experiences and cultural background are rich assets for learning about complex dimensions of space.

Contemporary studies of space, geography and cultural landscape testify to a growing understanding of the complex processes of space making. In critiquing against a singular discourse of space such as the Cartesian notion of space as absolute, Henry Lefebvre argued that the making of space requires understanding of spatial practice, representation of space and representational spaces.¹ In addressing the complex spatial processes in an urban environment, Dolores Hayden argued that studies of urban landscape need to confront the complex economic and social forces, rapid change, proliferated layers and abrupt spatial discontinuity². Building on Lefebvre's work, Edward Soja proposed that the production of cityspace can be studied in at least three ways: first, as a set of materialized "spatial practices" that work together to produce and reproduce the concrete forms and specific patterns of urbanism as a way of life; second, as a "conceived space of imagination"; and third, as a simultaneously real-and-imagined, actual and virtual, locus of structured individual and collective experience and agency³.

However, how can such complex issues and processes and the multiple and shifting spatial discourses be adequately approached at the beginning stage of a design education? How can the students' own experience and knowledge of space and place play a role in learning about the complexity of space and spatial processes? To address these questions, this paper examines a beginning design exercise assigned for the first-year environmental design students at University of California, Berkeley. In this exercise, the students were asked to each create a three-dimensional collage of the dwelling space from three generations of one's family. Using J. B. Jackson's essay "The Westward-moving House" as a refer-

ence,⁴ the project was intended to allow the students to reflect on their cultural background, experience and memory of space, and family history and incorporate the reflections in the making of a spatial artifact. The paper begins with an introduction on the background of the course, the students, and the assignment. It then introduces a selected group of projects, including the opportunities they have created for discussing the multiple dimensions of space. By examining the students' projects, the paper looks at how the exercise provides a vehicle to connect the students' life experience to design, and how the complex issues of culture and multiplicity of space can be introduced at the beginning level. The paper concludes with an observation on the multiple instrumentalities of the exercise and its broader implications for beginning design education.

The Course

The course, Introduction to Environmental Design, is the first of a sequence of required courses for undergraduate students in environmental design majors at Berkeley. The course provides an introduction to the professions of architecture, landscape architecture, city planning, urban design and environmental planning. The instruction takes on the forms of lectures, readings, discussions, field trips, and a series of hands-on design exercises. The course material consists of five major topics — "House Making and Architecture" — looking at house form as influenced by functions, meanings, technology and culture, "Garden Meanings, Machinery and Nature" — looking at gardens and buildings in their environment, "City Planning, City Design, City Making, City Living" — introducing issues of a larger urban context, including power and alternative visions, "How to Design" — looking at various ways architects, landscape architects and urban designers approach design, and "Sustainable Design" — focusing on ecological processes in design from energy efficient buildings to creek restoration.⁵ The class typically has an enrollment of approximately 150 students from diverse ethnic and cultural backgrounds. Many of the students come from families of recent immigrants. Because of its size, the class is divided into ten discussion sections, with five graduate student instructors each leading two sections.⁶

The Assignment – The Westward-moving House

The assignment to be examined here is the first of a series of exercises aimed at tapping the students' own experiences into design and class discussion. In this assignment, the students

The project served as an excellent example to examine the physical and non-physical dimensions of spatial change, i.e., the forms of the actual dwelling and the collective mental space of memories, meanings, values and imagination. The model also demonstrated an effective design strategy in combining the multiple narratives and revealing the multiple dimensions of spatial and social transformation. The project presented a powerful manifestation of the process of migration and cultural change contained within the space of home.

Project B – Vertical Past and Horizontal Present

This project was produced by a student whose family actually took the course of East-West migration in the U.S. Started in New York City, the family migrated to New Jersey and then to California. As described by the student, the model depicted the transformation of the larger environment and the configuration of space from the verticality of the dense apartment buildings in New York City, to the suburb in New Jersey, and finally to the open landscape of the West. The transformation was expressed through a strategic combination of wooden scraps and a collage of images depicting aspects of the differ-

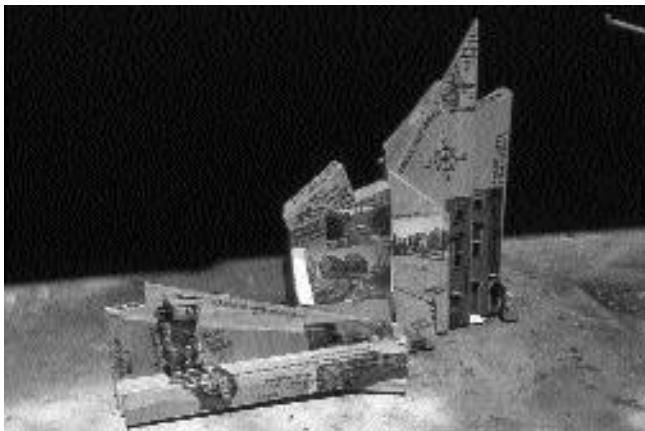


Fig. 3. Project B

ent environments and spatial settings. In addition, words and sentences were written on the model describing specific events in the family's history, materials of the dwellings, and information associated with the larger contexts, that together superimposed another layer of change in the family's history.

The model provided an opportunity to discuss the larger urban and geographical context, spatial scale, and experiences outside the immediate dwellings, and the connection between the change in the larger settings and the change in the life of a family. Specifically, it provided a chance to discuss the implications of urban development and population migration from dense urban environment to suburban and exurban contexts. The model also provided an excellent example showing the strategy of combining physical forms, images, and text to reveal the multiple layers of meanings and dimensions of personal experiences, accumulated through time and space.

Project C – Third World Urbanization and Industrialization

This project was produced by a student whose family emigrated to the U.S. from South Korea. The project reflected the student's childhood experience of the urban and rural transformation in South Korea. Instead of making a composite model such as Projects A and B, he used three separate models to depict the different dwelling spaces inhabited by the different generations of his family. As a series, the three models showed a progression of change in the scales and configurations of space as they become denser and more enclosed. The first model (fig. 4, right) represented a house in the rural area where his grandparents lived. The second model (fig. 4, center) began to show the process of urbanization and spatial change, as the house of his parents' generation sat on a subdivided lot surrounded by walls. The third model (fig. 4, left) depicting an elevator in a high-rise building represented the present condition of housing in the city. The series of models revealed the multiple changes that have occurred in the process of urbanization. On one hand, it expressed the change in term of spatial characteristics and social relations. On the other hand, using images and found objects including a bottle of wastewater in the elevator, the models also pre-

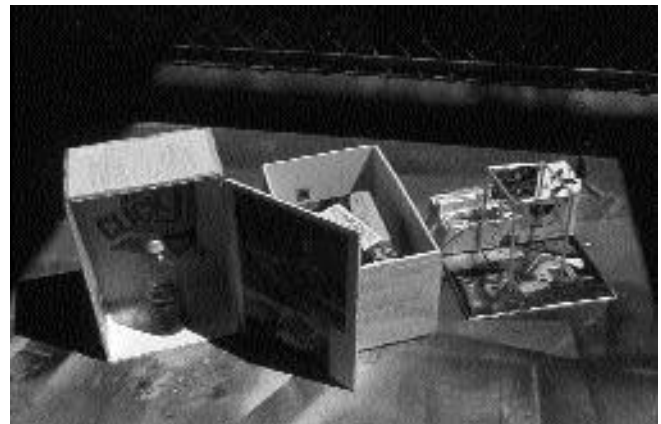


Fig. 4. Project C

sented commentaries on the change of environmental characteristics, from the pastoral setting of countryside to the density and degradation of environment in an industrial city.

The project provided an opportunity to discuss the urbanization process in other development contexts, namely developing and newly industrialized countries. It also allowed for a discussion on the urban-rural migration and social and environmental implications of rapid urbanization, including the change in social pattern and environmental quality. In addition, the project provided a point of comparison with Project B, in terms of the different development patterns, directions of spatial changes, and the contrasting environmental and social implications of urbanization, suburbanization and exurbanization.

Project D – From Communal Courtyard to the House of Machine

As in Project A, this project was also produced by a student



Fig. 7. Project F

of the house as represented in the models were equally as powerful as the transformation, and are themselves reflection of the characteristics of spatial change in the specific cultural and social context. In Project G, the student chose a different strategy to represent the changes. Instead of showing the exterior form and structure of the dwellings, the student chose to depict the different spaces by using found objects with different materials (wood, carpet, etc.) to represent the generational changes. Rather than focusing on the distinct spatial form, the dwellings here are depicted as rooms demarcated and yet held together by the different objects and materials. As a result, the model could be read both as a series of rooms or as a collage of materials. The duality further reinforced the multiple narratives expressed in the model. Again, both projects were excellent examples for discussing the multiple dimensions of space and spatial change. In addition, they also demonstrated effective strategies in design and representation.

Observations

As described above, the projects reflected the rich cultural background and experiences that each student brought to the class. In addition, the projects served as effective vehicles for discussing the complex spatial processes and phenomena. It

Fig. 8. Project G



also allowed one to see various design strategies that could reflect and represent these processes and phenomena. In the following, I will try to summarize the multiple instrumentalities of the exercise and the themes emerged from the students' projects.

Multiplicity and Reciprocity of Spatial Change

The students' projects revealed the multiple changes occurring in the environments and societies, particularly the coupling of spatial and cultural changes in the everyday environment. In many of the projects, as the students tried to represent the changing physical conditions of the houses and their living environments, their depiction of the spatial changes often reflects the changes in cultural and social values embedded in the family's life in the broader socio-economic context. This was most vivid for students in the immigrant families. But it was also evident in the projects with more subtle changes. These multiple changes as reflected in the students' projects showed effectively the multiple social, economic, cultural and physical dimensions of space and their reciprocity.

Examples of Specific Spatial Processes

In addition to revealing the multiple dimensions of space, the projects also provided concrete examples of specific spatial processes taking place in the context of urbanization, development, migration, immigration, and globalization. The different projects provided convenient opportunities for introducing and discussing these complex contextual processes to the beginning design students. They allowed for a reflection on the impact of the broader processes on the making of space and the life of individuals and communities. Specifically, Projects B and D were both powerful expressions of the processes of suburbanization and migration. Projects C and E were both examples of urbanization particularly in the context of developing and newly industrialized countries. Project D specifically reflected the changes in the meanings and functions of home in the context of immigration. Project E provided an excellent example showing hybridization in the process of urbanization and globalization.

Spatial Strategies and Representation

Not only were the projects capable in revealing and reflecting the multiple changes and specific processes occurring in space, the model themselves also revealed a variety of possible design strategies to portray and represent these changes. Through various strategies of representation, many of the projects have effectively addressed the multiple changes. In fact, the strategies would not be possible if the exercises were simply ones about abstract formal manipulation. The strategies included creating exterior and interior, revealing changes through sequences and progressions, use of multiple media (images, texts, physical forms and materials), and framing of space (as in Projects C and D). The projects provided excellent opportunities to discuss various spatial and representational strategies in design. In addition, they revealed the ability of the beginning design students to address complex spa-

deTail of Two Cities: Utilizing urban analysis and recombination as the first project in the fundamental design studio

John Maze

University of Florida

Learning from the existing landscape is a way of being revolutionary for an architect. Not the obvious way, which is to tear down Paris and begin again, as Le Corbusier suggested in the 1920's, but another, more tolerant way; that is, to question how we look at things.

-Robert Venturi¹

Introduction

Once upon a time... is the beginning to many a childhood fable in which two characters fall in love against the wishes of family or friends. In the end, one of the protagonists defies the odds and makes an extreme sacrifice to prove his or her love for the other. If they are lucky, they persevere and all live happily ever after. These fables describe a contested terrain commonly found in literature and folklore, a landscape of adversity and danger fraught with heartbreak and familial feuds. It is common for these tales to impart on a younger generation a set of moral standards: lessons of tolerance, perseverance, love, and forgiveness. It is the coming together of two distinctly opposed familial conditions that is perhaps the most interesting, especially when such tales bring together the pauper's son and the king's daughter, or the prince and the poor stepsister. In any case, it is with this in mind that I have developed a methodology of contextual analysis and critical urban recombination that teaches students how to understand the essence of a place, teaches them about different settlement patterns, and teaches them an abstract, contextually based design ethos.

In the fundamental design studio, I have been using two disparate cities from dramatically distinct topological and topographical situations as the protagonists in an American urban love story. Students dissect the essential structure and quality of each city into discernible layers of data, and speculate about the similarities and differences between the two. Then collaboratively, students "mate" the cities together to form an offspring city that contains the "genetic" layers of data from its parents. The teams of collaborators must critically transform both cities into one, designing the insertions and overlays from one into the other at the regional scale, precinct scale, and block scale. This project is followed by a small urban institution situated within the newly recombined city and addresses some of the new contextual inventions asserted by the students.

These projects, affectionately named by the students such titles as "Baltinix" or "Richnix", explore the boundaries of existence between two distinctly different settlements: one colo-

nial, the other post war; one geographically formed, the other gridded; one industrial, the other a city of leisure; one a coastal city, the other a desert city. In doing so, students not only are asked to analyze different contexts and settlement patterns, but are required to apply their findings to the task of designing a new city based on those studied. The contested terrain between two such different topological existences is exploited in this project and paper, perhaps shedding light into how other conditions of contradiction can be mitigated and transformed.

History of Project

In the Fall of 1997, I began introducing second year architecture undergraduates at the University of Virginia to basic principles of urban analysis. This was partially an attempt to help breed a new concern for context in students, and mostly a means to help students learn more about how human kind dwells and settles. Few would argue that a student aware of how a place comes to be is typically more facile as a designer of the built environment, and can more effectively design within this understanding a contextually appropriate architecture.

In this exercise, students were asked to observe and analyze either Richmond, Virginia or Baltimore, Maryland and analyze concurrently Phoenix, Arizona. Each group will be assigned a specific urban issue represented in the plan documentation of a certain moment in the city's history. The city will be explored with particular interest to the following urban topic areas. Some of these exercises will require thoughtful speculation on qualities suggested from the formal structure of the plan. Other qualities may be identified through critical reading of significant developments within the city's history.

The intention of this project is to introduce students to different human settlement patterns by critically analyzing different urban conditions throughout the western world, followed by direct application of the lessons learned into urban design projects. Through juxtaposition of dramatically different cities, students comparatively are taught why human settlement takes the forms that it does. A secondary lesson learned is how students used to working individually on their own discrete projects can work together as a design team, similar to how they will soon work professionally.

Students first are introduced to various cities throughout Europe (does not need to be so limited, and perhaps will not be in the future) and the different growth patterns of each as specific to its particular topographic situation. Students then

Baltimore

Baltimore, like Richmond, dates to the 17th century, and is situated at the fall line between Piedmont and Tidal Maryland. It began as a collection of harbor towns including Canton, Federal Hill, and Jones Town (later to become Fells Point). It was laid out as Baltimore Town in 1730, but did not grow significantly until the late 18th century.³ Being on a bay, the industry of Baltimore has historically been shipping and ship-building. As the innermost harbor in colonial America, Baltimore became a major immigration entry to the United States and is this day still very diverse, complete with ethnic neighborhoods settled by Jewish, Irish, Italian, and Asian immigrants.

The plan of Baltimore is radial, due largely to the collection of small towns around the harbor that grew into the city. Shifting grids all come together towards the north of the harbor where it is oriented cardinally. The topography slopes gently away from the waterfront as rolling hills, and while the city itself is devoid of an expansive tree canopy (as opposed to Richmond's lush vegetation) the city is surrounded by forest and plains as is much of the inland east coast of America.

Methodology

Intelligent observation and analysis can lead to specific and often unexpected insights into a given subject of study. Abstraction is both desirable and necessary in the process of extracting particularized observations from something as complex as a city plan. In addition, abstraction allows the architect to transform ideas that may inform a new context. This notion of exploring the new through the critical study of existing traditions and conditions can influence an approach to both urban and architectural design. The balance between continuity and change is an important aspect of the architect's

Fig. 2. Detail of Baltinix. Note new river/canal system and its realignment of grid at entrance to harbor.

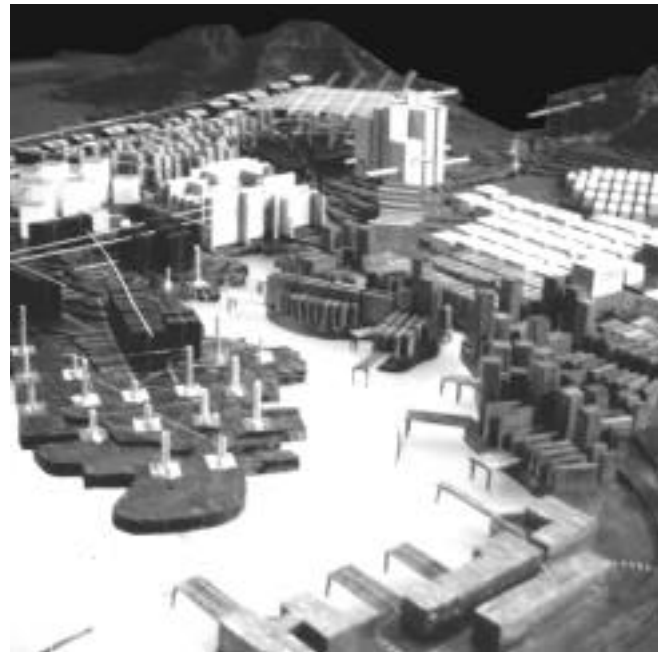


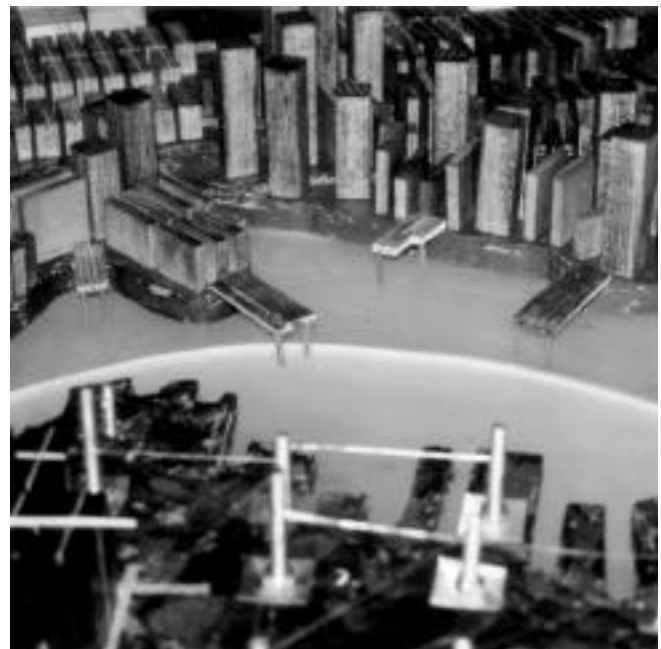
Fig. 3. Detail of Baltinix. Note imported terrain behind city (borrowed from Arizona).

education, and these issues apply equally at the distinct scales of the city, the precinct, and the architectural artifact. This exercise will form the basis for a building design problem that will complete this semester.

Project Goals:

- To investigate the conditions of landform and its effect on urban ordering systems
- To explore abstractions and reinterpretations of urban form through a variety of two and three-dimensional material

Fig. 4. Detail of Baltinix. Note buildup of density at waterfront (to north of harbor).



of spatial quality or qualities do these systems define in the city, particularly as ordering devices?

Spatial Nodes & Connections

These joints and connections are the place of overlap and mediation of the systems described above. It is a system of street intersections, of spatial thresholds between public, semi-public, and private spaces, of edges between fields, of openings and passages within blocks into internal alleys, courts and vestibules. How can an abstract language be invented to describe this layer where overlap occurs?

Cities all have different historical reasons for existing and different site-specific conditions to which the form of the city evolved in response, whether industrial, hilly, and amorphous (Pittsburgh, Pennsylvania), leisure, flat, and gridded (Las Vegas, Nevada), or other (linear, radial, etc.) Students have to discern how the form of a city evolves as a response to its socioeconomic history and its site conditions as well as other determinants. Usually these forces are intermingled the site conditions more often than not tied to the major industry of the place.

Transformation

The real crux of the project begins when the two analyzed cities are juxtaposed for the first time. Typically one specimen will be larger than the other, in which case students can discern where the boundary between urban density and suburban sprawl exists and work with the former rather than the latter. In most cases, discrepancy between sizes does not pose a problem since the cities are being compared at the level of diagrammatic abstractions. It is the structural characteristics coupled with socioeconomic forces that form the

basis of the transformation.

Transformation begins with the topographic conditions of the place. In the case of Richnix (Richmond, Virginia and Phoenix, Arizona), the common element of the river remains, but the flat silt basin of Phoenix is transplanted by the sloping topography of Richmond. The extreme volcanic mountains of Phoenix that surround the city and are interspersed throughout are now placed into the topography of Richnix. The ancient irrigation canals of Phoenix are also placed into the new city, and wind their way between the river and mountains. The newly constructed landform, river valley sloping up to jagged crags of mountains, now forms the initial basis of the transformation.



Fig. 6. Overview of Richnix. Note the proliferation of new waterways through city (major arterial disruptions of grids).

How then would a city be laid out on such a topography? The students must first decide the socioeconomic basis of the city. In the case of Richnix, a colonial resort city, the form of the city is a direct response to the water. The canals, no longer needed for either irrigation or the transport of industrial goods, are now used for recreation. The street grid in many places through the city is oriented to front the canals and river rather than turn their backs to them (everyone in Richnix gets to vacation or live on or near the water). The one-mile grid of Phoenix becomes contorted to respond to the river as a

People, The University of North Carolina Press, Chapel Hill, North Carolina, 1994.

³ Olson, Sherry H. Baltimore, The Building of an American City, Johns Hopkins University Press, Baltimore, Maryland, 1980.

⁴ I want to acknowledge the great support that faculty at the University of Virginia have provided over the years as this project has developed. In particular, former departmental chair Peter Waldman, who when hiring me in 1997 encouraged me to somehow integrate my thesis work in Arizona with the analytic curriculum of the second year studios at Virginia. Little did he know that such madness would result. Lucia Phinney, Distinguished Lecturer in Architecture was also helpful in developing the transformational pedagogy.

Students Credits:

Quentin Bearse, Keirsten Deegan, Derek Drish, Todd Fenton, Kerri Frick, Jennifer Hall, Graham Hill, Crystal Miller, Meri Tepper, Aaron Weil, Lovita Wibisono, Cathy Crawford, Jean Wang, Angela Morton, Emily Taylor, Gabe Robertson, Abe Ahn, Jeff Evans, Edgar Nelms, Melissa Tronquet, Alex Butler, Marissa Cato, Debbie Chen, Joe Coleman, Forrest Frazier, Huali Fu, Megan Glynn, Jeremy Kline, Sarah Pullen, Jenna Solomon, Lukas Thorn, Nicole Triden, and others.

The Predicament of Beginning

THE MODEL OF LANGUAGE



Education of an Architect: Through African-American Constructions, Scott Ruff, Syracuse University - Design's Community of Knowledge: , Identifying and Organizing Design's Fundamental Concepts to Support Teaching and Learning, William R Benedict, California Polytechnic State University - While Mind Dances with Heart: Nurturing Design Vocabularies Through Personal and Cultural Identities, Shenglin Chang, University of Maryland - Design As Language , Patrick Louis Carrico, Portland State University

Education of an Architect: Through African-American Constructions

Scott Ruff

Syracuse University

through a casual conversation, which became the subject of a full class discussion on Rap music, the Hip-Hop movement and the strong Oral / Story telling tradition within African Diasporic cultures. The project, which had been in the back of my mind as a method of form generation in my own work was introduced not as Rap but as poetry. Allowing the students to have a sense of control over the material in which they would become extremely intimate over the course of two weeks. The project description and hand out again being extremely simple and not cluttered with esoteric notions that were beyond the entering students interests and to some extent their grasp, many of the complex issues being addressed through group discussion and one on one conversation.

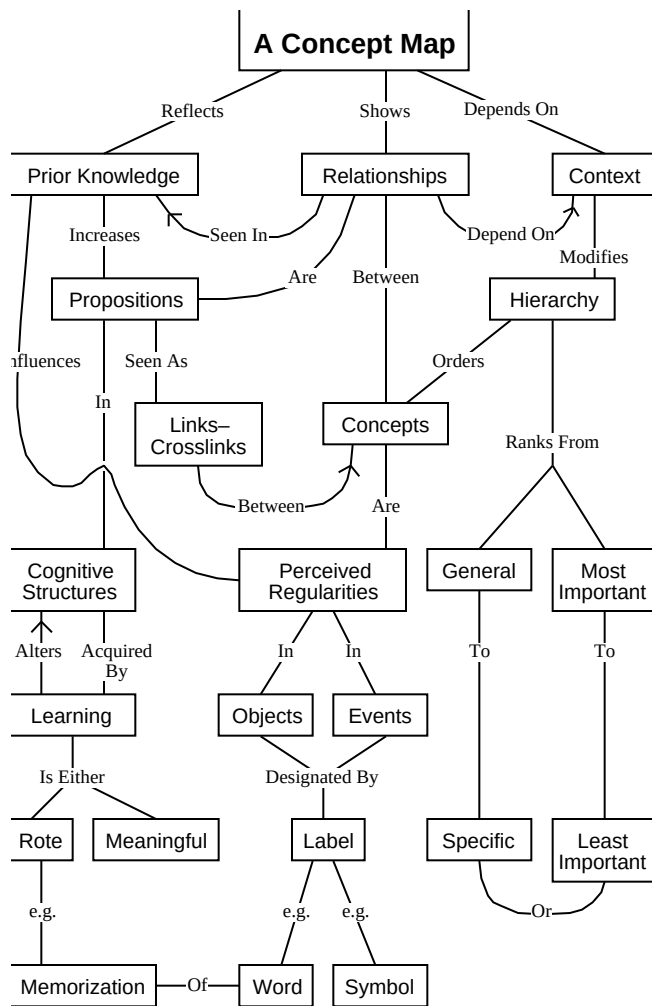
The Strip composition project and the reading of *Mama Day*, by Gloria Naylor were actually integrated into one project that covered approximately 6 weeks at the end of the second semester of first year design studio. This longer more involved investigation evolved from a need to fall in line with a Hampton University campus wide tradition/policy known as the campus reading. Each year the university chooses a book to be read by the entire freshman class. This reading is then to be integrated into a lesson or a series of lessons within each of their courses. In the past the architecture department had not truly engaged in this tradition, but due to current campus politics it became a good ideal for the department to participate in at least one of its courses. First year design studio became the laboratory for this experiment. Having already established a schematic syllabus, which was flowing quite well, the task became how, was the story and its references going to be integrated into the curriculum of the studio. After much thought a project that dealt with tectonics as its main focus (the strip composition project) became the framework on which the narrative would hang.

The project was introduced to the students approximately one week after the beginning of the campus reading of *Mama Day*. Through a long discussion about the story and some of the literary and creative mechanisms found within the text to help the students understand how this process can be understood as an extended version of the poetry readings done in the previous semester. A project description was handed out that paraphrased that lecture/ discussion and explained what they were to do with this information.

This final project, *Mama Day* was presented during a NAAB Accreditation visit, which included observers from China. Some of who sat on this review. After the presentations the question was raised by one of the observers: "Do you (the faculty) feel that some of the first year work is too conceptually complex?" The answer to such a question is yes and no. Yes, the work is extremely conceptually loaded, but no it is not more than the students can handle. Although these projects do not have large prescribed introductions based in established philosophical texts, they are not one liners. They are done in a manner, which seeks to completely immerse the student into the practice of rigorous critical thinking and critical translation. Teaching the students how to learn and think

architecturally, not confining them to preconceived notions of what one is. Since each exercise had an open range of difficulty, they became ideal for dealing with students that had various levels of development. In this way each project and studio became much like a vertical studio or a one room school house.

The evaluation of these projects by the overall school faculty found that while the projects were ended at an extremely abstract point in development, they, the faculty, could see the strengths the students had gained. They were extremely engaged in their work. They exuded a confidence in the ability to do anything. Each individual understood with great clarity and detail the conceptual content of their work. Also, because of the complexity and challenging nature of the compositions the students had to push themselves in the realm of aggressive descriptive geometry and material craft and usage.



From the perceiver's point of view, something has a set of physical attributes to which meaning is assigned. From the designer's point of view, there are means through which design goals and intentions take form to afford meaning. Attributes are the characteristics or qualities of things. Means are that by which something is done or obtained. They are the conceptual categories of physical choices available to a designer. Once chosen they establish the physical attributes of perceivable things. Means and attributes are the same concepts seen from different points of view. The designer makes decisions about means with the intention of affording meaning to the user. The user is confronted with the specific thing, perceives its attributes and assigns meaning.

The fundamental attributes/means are the minimum set of independent variables that are always present and required to create something that can be perceived. They are the raw material of every experience and design. All the possible attributes/means of form can be grouped into seven fundamental conceptual categories. These categories can be expressed in terms of the following questions.

What **size** is it?/What **size** should it be?

What **shape** is it?/What **shape** should it be?

What **material** is it?/What **material** should it be?

What **context** is there?/What **context** should there be?

What **number** are there?/What **number** should there be?

What **variety** is there?/What **variety** should there be?

What **relationships** are there?/What **relationships** should there be?

The seven fundamental attributes/means are independent in that you can change the size and not the shape, number and not the size, etc. Furthermore, they are interrelated in that changes in one can affect the perception of others.

Given the seven fundamental attributes/means, the task is to relate the myriad of other concepts that identify the breadth and richness of design thinking. The Means/Ends illustration represents my attempt to map the relationships. The goal is to make sense of what can easily become an overwhelming number of seemingly unrelated ideas. I am indebted to the authors of the many books on design and my teachers and colleagues who have provided terms that appear in the concept map. What I have contributed is the organization and some linking concepts.

Defining Key Concepts

It is beyond the scope of this paper to define all the terms included in the concept map. Furthermore, most of the concepts will be familiar to you because they are part of the community of knowledge that is basic design. The following defines those key terms that are illustrated in the map.

Size is the quality of a thing that determines how much space it occupies. Size defines the measurement, proportion or scale of things. Experientially size can be defined in terms of height (up and down), width (side to side) and depth (front to back) or by terms such as small, big, gigantic etc. Rationally size can be defined in mathematical terms using the three axes (x, y and z) of the Cartesian coordinate system and a unit of measure. Relative size can be judged in terms of a unit of measure, another thing or a person.

Shape is the quality of a thing defined by the relative position of all points composing its outline or external surface. Shape includes the concepts of dimension (point, line, plane or volume), presence (positive, negative), completion (explicit, implicit) and configuration (geometric, rectilinear, organic and accidental).

The shape of a thing is of particular importance in terms of affording meaning. The meanings afforded by shape can be conceptualized as falling along a Representational/Symbolic/Abstract continuum. A shape is representational (classical, figural, other-referential, historical, consumed for what it means) if it is recognized as looking like something in the natural or man-made world. A shape is symbolic (type or archetype) if it has a codified meaning which stands for something else and requires prior knowledge of the code. A shape is abstract (modern, iconic, self-referential, consumed with what it is) if it contains minimal representational or symbolic content.

Material is the quality of a thing afforded by its surface and substance. The physical existence of things is perceived directly through our sensory systems. As a result they are perceived as having a palpability, temperature, weight, inertia, inherent strength, etc. The surface qualities of material are perceived through our visual perception of surfaces including illumination, color, uniformity, reflectance, and transparency. The substance qualities of material are perceived through our haptic, audio and taste/smell systems and include rigidity, texture, temperature, weight, composition, sound, smell and taste.

Context refers to the location and orientation of an element relative to the observer and/or frame of reference. All things must be some place and be perceived within some context. Once established or recognized by the viewer, the context affords the recognition of an element's location and/or orientation.

Number refers to the quantity of elements. A designer must decide on the number of elements that are to be incorporated into a design. However, this is not as straight forward as it may seem because, although we can count from one to one hundred, we do not perceive from one to one hundred. We have a variable threshold in the vicinity of seven plus or minus two for recognizing a specific number of elements.

Variety refers to the degree of difference between elements. Variety is the number of ways and the degree to which elements are different in terms of their size, shape, material and relationship. Multiple elements exhibiting a pattern can function as an element within the whole.

Relationship is the quality that establishes an association or connection between elements. Anything that exists must be somewhere and if it is somewhere it has some relationship to other things and/or the person perceiving it. Relationships identify phenomena that afford the perception of association or connection between things. The perception of relationship is necessary for meaning to be afforded or constructed because elements without relationship are perceived as random and meaningless.

Four Relationships

There are four fundamental kinds of relationships. They are all operating at some level all the time. They include relationships of pattern, hierarchy, contrast and balance. Pattern must exist for contrast or hierarchy to be perceived. Contrast is created by deviating from a pattern. You cannot create a contrast if there is nothing to contrast with. Hierarchy is the systematic control of contrast. In the simplest terms, pattern affords relationships of commonality while hierarchy and contrast afford relationships of differentiation. Relationships of balance employ some combination of pattern, hierarchy and/or contrast to achieve equilibrium or instability.

Pattern refers to a predictable relationship between things. To perceive a pattern is to extract some underlying ordering system and/or shared qualities exhibited by some set of things. To propose a pattern is to identify some intended relationships that will guide design decisions. To recognize a pattern

is to be able to know when something breaks the pattern or how to extend the pattern.

The simultaneous employment of multiple concepts reinforces the clarity of a pattern—it makes the communication clearer. If all the concepts work together they reinforce each other—they build redundancy and thereby clarity into the communication. On the other hand, if different concepts address different ideas within a composition the complexity of the communication goes up—more ideas can be communicated.

The fundamental concepts available to create patterns are proximity, joining, alignment, repetition, sequence, rules and organization. Proximity refers to the distance between things. Joined refers to the physical contact and connection between things. Alignment refers to the relationship between the edges, surfaces and axes of things and the context. Repetition refers to the sharing of one or more attributes by two or more things. Sequence refers to the ordering or response of things to a phenomena which produces movement or the perception of process or change over time and/or space. Rules refers to the specification of how things can be related to each other and/or another relational concept. Organization refers to the system or structure to which things respond through their selection, attributes and/or alignment.

Hierarchy refers to the quality that affords the perception of the relative importance of things. Hierarchy is the systematic control of contrast to afford a sequence of relative importance. It is the essential means by which a designer can affect the way viewers interact with a thing because we tend to look first at those elements within a thing that are dominant.

Contrast refers to the quality that affords the perception of difference between things. Relationships of contrast show variation that ranges from subtle changes in amplitude or gradations to complete opposition or the unexpected. Contrast breaks the pattern. It introduces surprise or variation in a system of relationships.

Balance refers to the quality that affords the perception of symmetrical or asymmetrical equilibrium within some attended set of things. Balance is based on weight and motion—the two existentially based expressive meanings that things can afford. For a composition to be perceived as balanced it must possess a distribution of weight and motion that appears to be in equilibrium. Our bodies provide the basis for assigning weight to and sensing balance between things. Our understanding of balance is based on our bodily experience of resisting gravity. Because of this, we try to find balance in all things. It is so fundamental that we do it automatically.

Complexity

The most important formal decisions a designer makes are those that establish a thing's level of complexity. The level of complexity of things reflects the designer's personal aesthetic and the goals of the problem being addressed. In addition, the level of complexity directly affects people's interpretation of what is beautiful or pleasurable and the ability of things to

design thinking and aid in communicating design ideas to others.

Means support the rational and feed the intuitive. In rational terms they help us isolate parts and see the world from a particular point of view. The new point of view can provide insights not previously evident. Using different concepts to describe a composition is an effective way to provide a new point of view. For example, seeing and thinking of a pattern of elements as a radial organization that was previously thought of as a grid can lead to new ideas for its development and/or evolution.

During the time the attributes/means are being explored on a conscious level they are helping us build our understanding and knowledge. This understanding is then available to our unconscious thought processes—the intuitive. Flashes of insight, gut feelings and intuition are the products of the mind's ability to unconsciously make connections.

Finally, a clearly articulated mapping of a discipline's concepts provides a framework for the addition of new information. Each new idea is not seen as an isolated event but in relationship to a constructed cognitive schema. The juxtaposition of the new idea and the existing schema is fundamental to learning and growth. The interaction of an existing schema and a new idea develops a richer understanding of an area of knowledge at a minimum and holds the potential for insight and a new schema. Concept mapping is both the basis of knowledge and a source of creativity.

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- ³ Novak and Gowin, 24.
- ⁴ Novak and Gowin, 28.
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- ⁶ Barratt, Krome. *Logic and Design*. (New Jersey: Eastview Editions, Inc., 1980). 27.

the smells, the sounds, or the memories evoked by the landscape.

Then, they choose a piece of art that represents the feeling they have of this place. The form of the art can be any type of art, i.e., music (a rock-n-roll song, classical, whatever), dance, photo, poem, video, collage, etc. They can also create their own sounds or body movements that represents their feeling, if they are not satisfied with any existing art forms. After they pick (or create) a form of art, they have to explain why the form of art as a mode of expressing transformed their feeling of the place into a real material creation. Then, they have to name this transformation and create a three-dimension graphic scheme that represents the transformation.

Second, after they name this transformation, they enter into the process of "conceptualizing" a design idea. So, the next step, for them, is to use the newly named transformation as the starting point to create what I call, "a new metaphorical garden design." The dimensions of the "metaphorical garden" that they will construct is limited to a dimension of one cubic foot. They can use any type of landscape element in this garden, i.e., plants, topography, water features, etc. Their objective is to design this garden in a way that represents their newly named transformation.

In the process of their design work, their concept of their metaphorical garden will emerge. The concept will become a useful way for them to make design decisions, and to make the bridge between their ordinary way of talking about landscape and the professional language way of talking about the landscape.

Listening to the Heartbeats in Students' Landscape Dialogues

The projects that my students created surprised me. I learned about who they were from the stories of their favorite campus places and the art pieces that they shared with me. The relationships between them (as the beginning design students) and myself (as the instructor) were transformed through a process of mutual engagement. Within the mutual relationship, I was the listener and they were the storytellers. Based on the individual stories, we developed the various design languages that reflected the different personal and cultural identities that were brought by various student members of our studio community. Although the majority of the thirty-three students' favorite places were located within the University of Maryland's public plaza areas, I was surprised and delighted that at the uniqueness of each of their themes or styles. None of them use the same art forms, i.e., the same paintings, poems, dances, or music to represent their artistic transformations. I made it clear to them that there was no standard design principle that everybody had to follow, and that everyone's project was to be evaluated based on their personal styles that spoke for who they were. As a result of my prompting them to think for themselves - and think about the cultural roots and set of experiences that defined their identities - some of them ended up with neat, well defined landscapes that referred to a modern design language, while oth-

ers applied vernacular, or postmodern forms.

Case One: Like being wrapped in a warm blanket

The following cases are the examples that illustrate the process in which my students searched for the design language that reflected their personal path. Tom's favorite place on the University of Maryland campus was a small sitting area, which included a small water fountain, near a large public plaza. He described his overall sensation as being like "having his private room in a very large house." When he set there, he realized:

"This area gave me a very warm and cozy feeling.....The benches are surrounded by plantings, which gave me the feeling of being wrapped in a warm and colorful blanket - cozy, secure, and warm. Plants with beautiful blue blooms, or shrubs provide a buffer between you and others. The sense of enclosure is very apparent, a small isolated place among the large and spacious plaza - a place for solitude, alone with one's thoughts, a place for quiet rest. You can still feel connected to all the activity going on in the plaza, but this area provides a certain feeling of being alone."

Tom's sensation of the sitting area as being a place that was like his own room lead him to think about one of his favorite Van Gogh paintings called *Room At Arles*, because the painting gave him a similar warm and cozy feeling. Tom was a returning student in his mid forties. His "metaphorical garden" model was constructed with a shining red blanket backdrop, and cut-paste paper artworks made of various vibrant colors, i.e., yellow, green, blue, purple, etc. He posted the Van Gogh poster at the lower left corner of the red blanket. His overall style conveyed a sense of childhood fun and playful energy. It was simple, warm and joyful. However, what touches me the most about Tom's design, was the story he told about the little poster that he inserted in his red blanket. Listen to the story that Tom told; a story that began twenty years earlier:

"In the late 1970's while I was an undergraduate, I bought this poster and kept it on my wall all throughout my college years. A smaller print hangs above my bed today. What is it about this painting that drew me to it some 20 plus years ago and again for this assignment today? As with all Van Gogh, it's the warm and vibrant color. I have always had a sense of affinity to his struggle to teach himself to draw and paint while feeling unhappy and unsure about his artistic ability. In retrospect, he too was trying to find his own, unique contribution to the world."

When Tom revealed his interpretation regarding the struggle that Van Gogh had been through, I felt that Tom was questioning himself: his career change in his mid forties, and his uncertainty of whether he could "find his own, unique contribution to the world." Within the restless struggles along the uncertain path, Tom needed a very simple, warm, and secure spot to rest his heart and his mind. He concluded:

"Among all the thousands of young students, sometimes I need a simple, quiet place to be alone with my thoughts. The sensation of being wrapped in a warm

water created a “screen” from the activities, while the water itself was part of the activities that occurred at the plaza. In terms of the different levels of activities that created layers of energy levels, her modern-style plaza provided various spaces for public, semi-public and private activities to take place. In her design she gave options to people who were tired of the traffic and crowded main streets, by providing them with welcoming walking areas and corners in which they could stop for a peaceful moment to contemplate and relax. She also provided areas in which children could climb and play in the rock fountain area.

Case Four: Constructed Hidden Garden

Bob liked to get away from the campus crowd, and so his favorite place on the University of Maryland campus was a seldom-used garden in a wooded area close to the university's central Mall. Meandering through Bob's “hidden garden” was a worn brick paths that showed its age. Moss and lichen sprouted from low walls that surrounded the garden. This was one of the places on campus where few travelers passed by, which Bob liked because he could always count on finding refuge in this peaceful place. He felt very comfortable and relaxed whenever he visited his “hidden garden.” He escapes from the reality of being one of the campus's thirty thousand students comforted him. However, whenever he reentered reality after his short escapes he recognized:

“All sense of peace and quiet is washed away and I am swept up in this sea of people. The fantasy is gone. My hidden garden was a construct, newer than most of the buildings its trees obstruct. Its simple layout designed as a single stop on the journey across the campus. Its natural seeming curves measured and its columns carefully placed by masons and surveyors. My hidden garden is really a public construct. All is not lost however. I will be able to deceive myself for a while next time.”

Bob's “metaphorical garden,” that he titled “the Hand Plaza,” a design reflected the play between “reality” and the “escape from reality,” that defined his experience of the garden. His “Hand Plaza,” was a design in which two platforms, each constructed in the shape a hand, formed the topography of the site design. Beneath these hand-form platforms was a Zen garden. Within his design he emphasized that the designers' hands manipulate all the forms and the sensational feelings that people perceive daily. As an urban plaza between two high-rise office buildings, the two-hand platforms, that users literally walked across to get to a Zen garden, was a cross between pop-art and Zen gardening.

Case Five: Celebrating Cultural Diversity

Sandy's presentation of her design was in the form of a participatory dance that she created to celebrate cultural diversity. She prepared different styles of clothes and costumes for all the members of the studio, including me. Before her dance began, she had each of us pick out one dress and wear it. During her dance, we had to touch different things that conveyed different sensational feelings, i.e., hard, soft, icy, hot, etc. Her body movements started in a very slow, boring, and

repetitive way. Then, it went into an energetic and diverse phase that made everybody wants to dance with her. Her participatory performance convinced us that everybody is different, as were the different costume that each of us wore. However, we all felt the world surrounding us, no matter if it was a warm spring day with beautiful flowers, or a cold snow-storm with that made the streets seem desolate. Her message was that everyone was part of the world, and everyone's culture contributed to the daily culture that others experienced. She brought to us, her dance co-performers, that it was possible to celebrate each others' differences and cultural diversities together.

Therefore, in her metaphorical garden, she creates a three-stage spatial sequence. In the first spatial stage users moved through an entrance that was lonely, closed off and sad. In the second spatial stage a water plaza provided distraction, excitement, an opportunity to meet friends and enjoying differences. In the final spatial stage users entered a mountain vista where they could reflect back and enjoy their experience of many different types of spaces, and different kinds of people met along the way. The experience of bodily movement through space that Sandy used to construct her own design vocabulary can be understood as follows:

ENTRANCE- tight path means you walk alone, tall shrubs means you are closed off and slightly bored, low over head means you feel uncomfortable and restricted—BUT the sound and small sights of the water tantalize you to keep going and discover something better

WATER PLAZA- public space to allows people to interact and communicate about their shared experiences—the water distracts you from the unhappy feelings you had before

MOUNTAIN VISTA - when you come down the steps you are surprised by the loud sounds of the waterfall so close by—when you view the mountains and valley in the mural you are inspired by the possibilities of different experiences and people you can have!

Conclusion:

I end with Sandy's Celebrating Cultural Diversity, because the thirty-three students in my studio all celebrated their cultural and personal identities in their presentations. I found that this project enabled students to make the transition between process of telling their own stories and the process of defining design vocabularies that they were passionate about (Mirochnik, 2002). Besides the five cases that I analyzed above, there are many other interesting projects that I cannot elaborate in details. Some of my students chose as their favorite places areas that are beyond my imagination. Writing in 1986, W. Mike Martin reminds us that the relationship between the beginning design studio teacher and their student(s) is just as much about the human aspects of the relationship as it is about the professional-apprentice aspect of the relationship (Martin, 1986). I believe that the diverse identities that my stu-

Design As Language

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The Predicament of Beginning

THE PLACE OF ABSTRACTION



A Cumulative Studio Design Sequence - Students Learning Within the Context of their Own Work, Valerie S Goodwin, Florida A & M University - The Pedagogics of Play, Jay McClure, Savannah College of Art & Design - Setting a Baby into the Grass: A Biological Model of Interactions Between Concrete and Abstract Learning Experiences, Stephen Temple, University of Texas

A Cumulative Studio Design Sequence - Students Learning Within the Context of their Own Work

Valerie S Goodwin

Florida A & M University

ed. The Bauhaus goal was to create products such as cushions, fabrics, and carpets suited for industrial mass production.

Gottfried Semper also supported the idea that there are important connections between built form and textiles. According to Semper, the roots of all built form were textile production. These connections were drawn in his *Bekleidung* theory, wherein clothing is directly related to large-scale enclosure designed for human shelter.³ According to this concept, the wall is the fundamental element of spatial delineation.

In "Studies in Tectonic Architecture" Kenneth Frampton also describes relationships between textiles and architecture. Frampton writes about attitudes of architects such as Louis Sullivan and Frank Lloyd Wright—both influenced by the writings of Semper. For Sullivan, "pressed brick, a material ... [was] regarded as a kind of textile."⁴ Similarly, Wright described his textile block system as a "mono-material..., woven into a pattern or design as was the Oriental rug."⁵

THE STUDIO EXPERIENCE

Parallels between the quilt and built form provided the framework for initial investigations in beginning design studios over the last five years. A range of exercises and design projects were assigned. To varying degrees, these studios examined issues related to tectonics, design process/inspiration, design principles, and vocabulary.

Tectonic Parallels

The process of designing and making a quilt has specific parallels with the design and construction of a building. For example, quilting requires an "insistent process-oriented step-by-step procedure... starting with A & B and building on those systematically, doing certain things in a certain order."⁶ Based on this premise, ways of working with fabric and building materials formed one important investigation in the studio. In the case of fabric, traditional quilting designs are geometric in nature and usually are designed and constructed in block format. The tendency to think in block format was probably due to the nature of the material and the history of conventional quilting. The use of repeated geometric blocks to some extent is analogous to the modular construction used by architects and builders. The traditional notion of a quilt imposes the persistent use of the grid much like a structural grid used in architecture. (Fig.2) In both cases, the need for efficiency and ease of construction can be key concerns.

Fig. 1. Quilt entitled Town Square (by author)



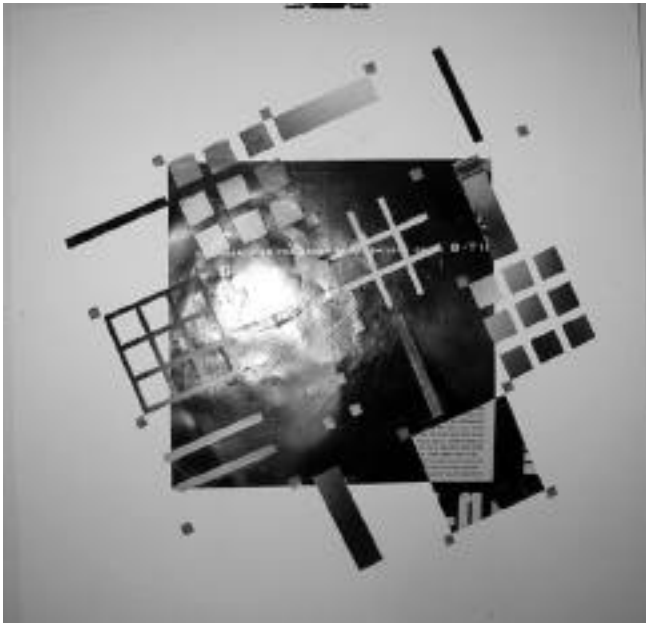


Fig. 4. Black, White and Gray "Quilt Block" by Valerie Strom a second-year Design Student

collaborated on a "sampler quilt" (Fig. 6.) In quilting, the sampler quilt is described as an assembly of different "quilt blocks" resulting in one well-composed quilt. Students worked together in assembling one group quilt much like the participants of a quilting bee. Just as the quilter makes aesthetic decisions related to the positioning of blocks, students were asked to revisit the previous lessons of color, texture, value, position, and size in composing their "quilt." Collaboration and consensus were also key learning experiences.

The second phase of the design sequence challenged the students in several ways. They were required to make the leap from two-dimensional thinking to three-dimensional thinking without making literal translations. As before, the catalyst for these design projects was derived from preceding work. They chose one of the two "quilt blocks" as the part or compositional strategy for two subsequent investigations of form and space. These projects were designed to develop an understanding of three-dimensional design, the language of three-dimensional form and space, and the design principles that can guide the three-dimensional creative process.

The first three-dimensional project required the students to design a "spatial model" (Fig. 7.) based on their previous two-dimensional composition. The earlier lessons of composition, organization, and design fundamentals were important. Issues related to defining space, circulation, and developing spatial relationships were added to the list of pedagogical goals. Students were asked to consider the previous "quilt block" to be a plan, a section, or an elevation of the "spatial model" project.

The act of abstraction, manipulating, and transforming compositional ideas from their previous work was a critical part of the learning process. The students were asked to think about this project on two different levels: as an abstract object and as an architectural space. At this point, human scale was not

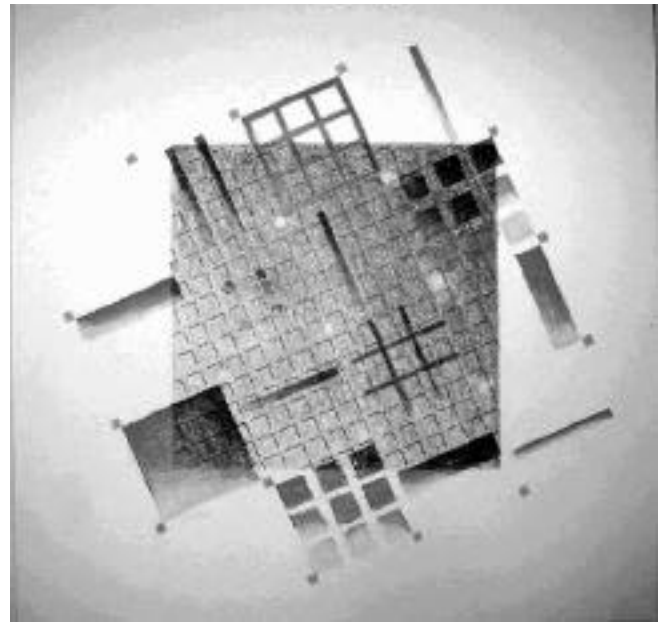
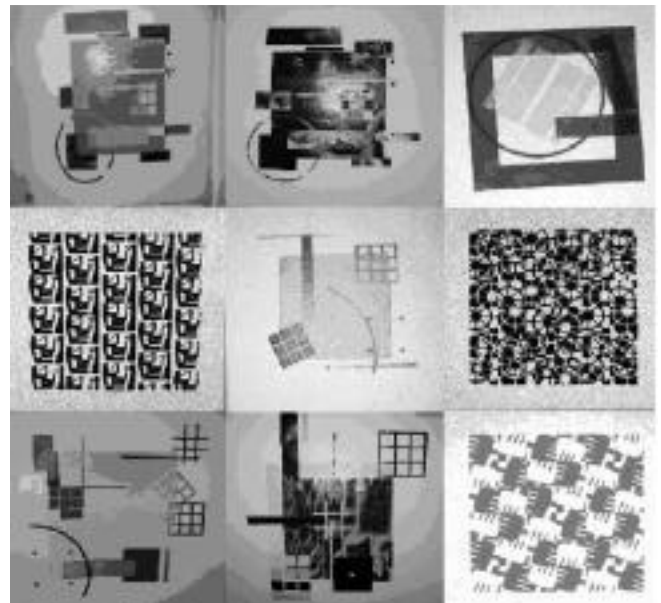


Fig. 5. Color "Quilt Block" by Valerie Strom a second-year Design Student

important, but other tangible concepts such as entry, arrival, passage, dissension, ascension, and departure were part of the agenda. In other words, the design had to work as a sculptural form or object and as an engaging series of spaces to move through and experience. Meditation between two-dimensional thinking and three-dimensional issues in terms of going from the abstract to the concrete formed a pivotal part of the design problem.

The last project in the design sequence required that the student design an exhibit space (fig. 8) for the "quilt." The premise of the project was that each student was an architect selected to participate in a significant exhibit. Each architect was to design an installation that examined relationships

Fig. 6. "Sampler Quilt" a second-year Design Students



- ⁸ Marie B. Salazar, *Quilt*, (Barnes & Noble Publishing Group, Incorporated), 10.

the essence that an idea cannot bring into being the substance itself. In all matters of play, discovery and invention are contained in the imagination. One is continually reminded of this notion in the story of Moby Dick. Invention in play consists in the capacity of seizing on the capabilities of a story, and tailoring ideas that make suggestions back towards the idea. What I like to hear from the students is "I found it!" the haunting on my midnight pillow no longer is wet with anguish but tears of joy. The author said, "today I have really labored I have written a sentence". Finally a story is fashioned, play's tapestry weaves its beauty, beginning with thoughts, developing into words and images, a culture changes, a new order emerges, a new ism, unique brush strokes found. Mary Shelley wrote; "And now, once again, I bid my hideous progeny go forth and prosper."

To see a World in a Grain of Sand
And a Heaven in a Wild Flower
Hold Infinity in the palm of your hand
And Eternity in an hour.
William Blake, "Auguries of Innocence"

Play's Language:

Imagination, freedom, seeking, curiosity, creativity, paradigm shifts, observation, perception, pattern recognition, alternatives, manipulation, challenge, discover, choice, classifications, experimentation, faith in individuality, problem solving, randomness, ambiguity, combinations, expression, innovation, joy, risk-taking, reason, exploration, invention, delight, wonder, unique, question, new, intuitive, and make-believe.

Play's Framework:

" Definition of play. It is an activity, which proceeds within certain limits of time and space, in a visible order, according to rules freely accepted, and outside the sphere of necessity or material utility. The play-mood is one of rapture and enthusiasm, and is sacred or festive in accordance with the occasion. A feeling of exaltation and tension accompanies the action".

Johna Huizinga, *Homo Ludens*

How to begin? Play should be introduced in the connection of this arduous task for finding meaning, wrestling with form, aesthetics, continually questioning heart and re-examining nature's plethora of beauty.

Agree on terminology and a framework for discussion within each design problem. Recognize the student's needs to bring their empirical and rational beginnings to the table. Recognize these experiences judgments and values all differ from culture, demographics, time, and within each unique individual. A major difficulty in beginning design is asking the right questions for students to ponder, exposing them to various terms, unveiling design precedents, defining the nature of a concept (meaning in the idea) and a methodology to search this out. We ask students to examine concepts of architecture when possibly they do not even know what constitutes conceptual thought. A method of inquiry into bringing the unknown to the known is this idea of play. Another dilemma for understanding architecture is to provide a carefully chosen frame-

work of terminology, which constitutes an architectural language.

First: Agree on terminology to be used to have intellectual discussions (language/meaning)

Second: Establish a framework of questions and facts (design precedents/culture/history)

Third: Discuss uniqueness within each student (philosophy/psychology/faith in individual)

Fourth: Understand basic structural components and its beauty in making (nature/science/art)

Fifth: Introduce the joy of searching through the notion of play (methodology/making)

Teachers should emphasize the importance of play to a student's development, noting their individual talents they need to explore, tryout, take apart and investigate which is fundamental to learning. Design fundamental programs should develop pedagogies that guide student's play into progressive learning experiences in the essentials of form, mathematics, geometry, and creativity.

Encourage play as a means for making; various systems of building blocks can be introduced. Block systems are specifically designed to develop three general capabilities:

1. An ability to represent objects
2. Understanding of mathematics
3. Awareness of design symmetry, balance and proportion

It is imperative in teaching a theory of play in architecture that you look at the causes of things. Towards this ontological search I have developed a tool called "Blocks." Before making the blocks, we make a series of grids or fields. These fields are used to locate each element in space, unify the structure, "fit," order all the spaces and parts to the whole, unity of proportion, and an indissoluble part of the site. We make the blocks based on various commensurable ratios, dissonances and other attributes of harmonic, arithmetic and geometric principles. Students should craft the blocks out of various species of wood such as Tyrol maple, bubinga, Indian ebony, Honduras rosewood, pear wood, and koa; all are used to make fine wooden musical instruments. Teachers can make relationships between music and architecture by allowing students to play wooden recorders and see how the blocks have voices. Some exercises are: forms of beauty, forms of measure, forms of movement, forms of memory, forms of nature, forms of order, forms of wonder, forms of representation, forms of puzzles, forms of silence, forms of music-dissonance-harmony-melody, forms of function, forms of value, forms of geometry and forms of arithmetic. Other materials besides wood can be introduced yet easily manipulated.

In addition, use of blocks involves physical skills, care in manipulation, craft in making, manipulation of alternatives, exploration, curiosity, resourcefulness, thinking skills, (synthesis and analysis) by comparing and contrasting, categorizing and imagining.

Within these three activities you can use two components of play

Guided Play	vs.	Free Play
Direction		Imagine
Reading stimulus		Intuitive

Play experiences within various activities are as following;

Possibility finding,
 Characteristics of solids
 Compare and contrast
 Explore- see and touch, texture, form, scale material and number
 Examine the issues
 Imagining the what if's
 Describe, write, and verbalize ideas
 Abstract themes
 3D/2D comparison
 Constructive links between component parts
 Consistency in combinations of various elements
 Meaning in combinations
 Logical progressions
 Resourcefulness and inventiveness
 Combinations
 Connections-ways to touch, constructiveness
 Knocking down a creation is half the fun. Don't get too attached with ideas
 Ideas are endless; they are of little value until developed.
 Change and rearrange
 Differentiate (different ways)
 Classify findings
 Ask, seek, and knock
 Additive, subtractive, multiply and divide concepts, structures
 Symmetrical vs. asymmetrical

Geometric Shapes to work within plays activities:

Solid	Plane
Sphere	Circle
Cube	Square
Cylinder	Circle/square
Triangular prism	Triangle
Rectangular prism	Rectangle

There is always more to learn, to imagine, and to understand! You will never complete play, but you have to finish play (deadline). Guide the student; give direction and stimulus, not to do for the student. Let students ask questions if they need assistance in starting, then give at least three options or suggestions and let them choose the direction. Play is the student's natural medium of self-expression and an opportunity given to "play out" feelings. Play gives the student the permission to be oneself; it accepts the self-completely, without evaluation or pressure to change. It recognizes and clarifies emotionalized attitudes by reflecting on what was expressed. Play offers an assumption that the student has within, an ability to solve problems satisfactorily. Growth will happen with the student when he or she recognizes play as a vehicle to engage one's experiences, readings, attitudes, thoughts, and feelings that bring an awareness ("to see") or insight, which is

a prerequisite for successful design. Play brings the student to a profound awareness of feelings that can come to the surface, gets them out in the open, to face them, learn to control fears, tension, frustration, insecurity, bewilderment, confusion as well as confidence, joy, and security. A studio that fosters an environment of care and concern not apathy and intimidation is a good garden of growth. In the security of the place (play room) students feel important, significant, belonging, and personal. Let them feel in command of the situation (uninhibited), a private world to unfold the wings. A place to look directly at oneself, play offers the student to accept, express, not judge, test and feel free to find solutions to a problem, similar to the notion of brainstorming by deferring judgment. No wonder the students contact with the first design problem, and environment expresses bewilderment. What is this? Suspicion, doubt and confusion set in. We grow up in an environment that asks the student to regurgitate answers (approval finding) parents, church, and school, a culture of control determines, directs and inhibits student responses. By nature play in design challenges control and offers autonomous freedom to have faith in one's own individuality. Moreover play necessitates studio critiques, allow students to personalize their space, form a non-controlling methodology to search, discover and share their findings.

Play's Taxonomy:

"The more awkward (children's drawings) are, the more instructive an example they offer us."

Paul Klee

Put-together play- putting the object together (additive)
 2D assembly play (tangram, drawing, blackboard play)
 3D assembly play (blocks, Soma cubes)
 In between 2D and 3D play (bas-relief, parquetry, cutouts, mosaic, sewing, knitting)
 Take-apart play- opening or taking the object apart (subtractive)
 Sticks and stones, interlacing, jointed slats, rings
 Interlocking play- disassembly and assembly of object (additive/subtractive)
 Figurative objects
 Geometric objects
 3D jigsaw
 Burr play (wood or plastic)
 Peas work
 Disentanglement play- to disentangle and re-entangle the parts
 Iron and sheet metal
 Wire
 String
 Sequential movement play –move parts to a particular position in space
 Solitaire play
 Counter play
 Sliding block play
 Rotational play
 Maze and circulation play
 Dexterity play –manual dexterity is required to solve this play

Yet when Einstein allowed play to guide him into the knowledge of this order, he accepted a pre-suppositional absolute thus enabling him to write, invent and discover the beautiful formula of relativity.

Play allows us to look into the spiritual question of faith, another pre-suppositional absolute, a spiritual possibility of play. Then faith can be defined as the substance of things hoped for, for the evidence of things not seen, a suppositional belief. We often associate play with childish behavior, selfish ambition, immaturity, only for the child, "stop playing around". Yet we can become very serious and dedicated within the notion of play, such as playing a violin, playing an NFL football game. Do not underestimate play's potential or influence in man seeking political office; money, one-upmanship, litigation, competitions, games or gamesmanship are part of our existence. Play can have its own intoxicating forms; play can feel satisfaction, be absorbing, one cannot put it down like an author writing a fiction novel. Play can be a world-view, how to perfect our tennis stroke, a painting stroke, our penmanship etc. Much of what I see in the human condition, play becomes the energy to keep the heart alive, vital, and continually seeking, because as you discover the language of play, its tools, its questions, its media, its insatiable appetite for more and more; fundamentally you discover it is inexhaustible and indefinable. You feed it ideas it expands, manipulates, alters redefines looks for contrast within and soon you are in an endless cycle of more questions. This is where I tell the student you never finish an idea you simply complete it you have a dead line. The cloud stops changing as soon as you photograph it, you capture its temporary image but thereafter it continues to slowly change, drift, and disappear into other images.

Ovid wrote "In our play we reveal what kind of people we are." This is true when we examine the depth of our play, it's meaning in our religion, politics, social gatherings, aesthetics and creations. One can immerse oneself in a profound play, which becomes a way of life, a vision of sorts, a drug of dependent diplomacy, rewarding and health to the soul. In the pragmatic day-to-day existence it is good to let the laughter of play become the medicine to refrain depression and mediocrity. For the spirit of depression and heaviness try putting on the garment of praise, which is an act of play that various religions practice. Routine can kill or atrophy the creative mind. When we learn to cherish the moment of play, we fully engage or saturate our heart and mind in the carefree and obligatory world of joy. This is when we see how anhedonic in living we have become. Walter Kerr writes in the decline of pleasure, "Because we are leading half-lives, half-heartedly, and with only one-half of our mind's activity engaged in making contact with the universe about us we are vaguely wretched." We must allow this child likeness to ignore the care and worry and fling ourselves into the wonder, joy and experience to which play can free, humble and exalt the mind and soul.

The broadest role of a studio critique will be to help guide the student toward the natural order of play, to freely expand the problem solving process within carefully thought out sequen-

tial problems. These problems build self-confidence, self-awareness, and motivation finding which becomes the self-portrait within is. This activity and process ultimately builds a design language of play and various frameworks, which aid the discourse of architectural concepts.

Play's Thoughts:

Critical, dialectical, reflective, sequential, strategic and analytical thinking
 Positive outcomes within the enhancement of self-expression
 Understanding various design methodologies
 Social interaction, using role-playing to overcome inhibitions
 Exploration of alternatives, defer judgment
 Reflective skepticism and managing contradictions
 Rapid visualization techniques in drawing, imagination and making
 Logical reasoning, deductions vs. emotive feelings (rational/intuitive)
 Judgment and justifications of ideas and actions
 Assumption hunting, recognizing ambiguity in reasoning
 Bias from facts, opinions and pre-determined conceptions
 Staying flexible while identifying contradictions in polemics
 Ambidextrous thinking (left brain-right brain)
 Task, content and integration
 Random discoveries, strategies and perceptions
 Experimentation in emancipatory, technical, and communicative learning
 Let your mind go naked and run through the forest (freedom)
 Change 1000: ideas are a dime a dozen until implemented and developed
 Evolution of an idea: questions, saturation, anxiety, incubation, realization, and verification
 A genuine conversation with problem solving
 Fantasizing, day dreaming, brainstorming
 Clarification of ideas within evolving variations
 Recognizing pattern languages in the creative act of invention
 Design dialog: fear and confidence treat those two imposters the same
 Input, organization and output
 Clever simplicity within infinite possibilities
 Conveyance of a tactile, material progression
 Understanding of plutonic geometries
 Relation of whole to parts
 Experimentation of various elements
 Liberate students' thinking, return to childhood
 Origins and primitive impulses
 Visual language learned through occupations and gifts (Froebel)
 Formal compositional elements with technical constructions
 Risk taking
 Self-discovery
 Plays tapestry
 Elementary explorations of forms and materials
 Story telling, play acting, overcoming inhibitions
 Blind, gesture and rhythmic drawing
 Child psychology
 Plays need for: Observation, reasons behind objects, expression, creativity and curiosity

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Extra ideas concerning play

Play's Methods:

Alphabet soup, Train Track Metaphor, Brainy Blocks, Brain dump, Magnify, Post-A-Tecture, Critical Cartman, Dr. Spock, Seven Dwarfs, Nursery rhymes, Toy box, Comic strip, Elephant/Mouse, Labyrinth layers, Imaginary friends, Sand box, Think tank, Walkie-talkie, Surf the net, Dollhouse, Dentist, Candy land, Wizard of oz, Scenario, Explorations, Scattergories, Mr. Potato head, Tinker toy, Etch a sketch, Connections, Sherlock Holmes, Incubation, Analogy finding, Time machine, Grocery list, Hollywood, Improvise, Question, Gather, Synectics

Plays psychology:

I Origins growth and development

A. Heredity and environment

1. The DNA of play, 2. Mutation, 3. Egg, sperm, atrophy

B. The human organism, growth and development of play

1. Maturation-learning principle, 2. Readiness, 3. Sensor motor development

II Thinking and language of play

Development thinking of play, Accommodation, Adaptation, Assimilation, Conservation, Equilibration, Organization, Schemata, Development and structure of the language of play, Developmental Psycholinguistics, Redundancy in language, Speech spectrum, "Syllabic babbling" stage, Syntax, Verbal conditioning, Verbal – context effect

III Intelligence

Intelligence and its Measurement of play, Abilities, aptitudes and interests, Spatial – Perceptual, motor and talent test, Development and Structure of intelligence of play, Age,

Stability and predictability of play, Factor analysis, Group – factor theory, Sampling theory, Two – factor theory, Variations in Intelligence of play, Genetic influence, Parent – Child, Environmental influence, Gender influence, Ethnic, national and social difference, "Culture – Fair"

Note: Whose standards?

IV Perception of play

Sensory Stimuli and Psychophysics of play, Stimulus and stimulus object, Measuring the psychophysical relationship of play, Absolute and differential threshold, Weber's law, Perceptual differentiation and grouping of play, Differentiation of the perceptual field, Assimilation, contrast, figure/ground, contour, Perceptual grouping: Proximity, similarity, form, Whole to parts, Framework, Transposition, Changes in perceptual organization of play, Changes with constant stimulus pattern, Satiation of organization, Changes with changes in stimulus pattern, Perceptual set and organization, Span of apprehension, Perceptual constancies, Size constancy, Shape constancy, Object constancy

V Learning and memory associations with play

Conditioned – Response learning, Conditioning, Temporal patterning, generalization, discrimination, Inhibition, Reinforcement, Instrumental learning, Instrumental conditioning, Trial – Error play, Maze play, Exercise and effect, Verbal learning, Acquisition, Anticipation, recall and recognition method, Free recall, Clustering, Incidental, incremental and intentional learning, Meaningfulness, Nonsense syllable, Paired associates, Spontaneous recovery, Unlearning

VI Problem solving

Processes of creative problem solving, Changing perceptions of the problem, "Aha!" Experience, Productive thinking, Directed thinking, Functional solution, Illumination, Incubation, Invention, Prediction, Preparation, Reproductive problem solving, Specific solution, Verification, Determinants of creative problem solving, Personal factors, Knowledge of play, Einstellung, Situational factors, VII Emotion and motivation of play, Developments and determinants of emotions in play, Development of emotional play, Differentiation of emotions, Age changes in emotional expression, Determinants of emotions, Theories of emotional play, Emotion as a representational process, Emotion as arousal, Emotion as disruptive, Emotions as primary motives, Attributes of motives in play, Biological, Environmental, Abundancy motivation, Conscious need, Deficiency motivation, Instinct play, Self – actualization, Motivational arousal and interaction, Motivational arousal, Orienting reactions and uncertainty, Optimal uncertainty, Adaptive reactionary play, Defensive reactionary play, Motivational interaction, Patterns of conflict

VIII Conflict and adjustment in play

Frustration, conflict and defense in play, Constructive effects, Substitution play, Redefining situational play, Disruptive effects, Aggressive play, Escape in play, Indirect effects, Repression, Reaction – formation, Rationalization, Insulation and projection play, Displacement, Play therapy, Free association, Transference

IX Personality play

Personality: Definition and description, Comprehensive play,

Setting a Baby into the Grass: A Biological Model of Interactions Between Concrete and Abstract Learning Experiences

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University of Texas

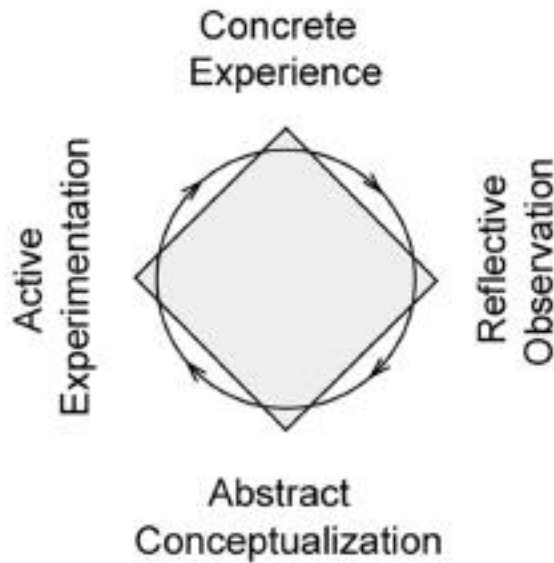


Fig. 2. David Kolb's Experiential Learning Model

conceptualization (comprehension, representations of experience, mental imagery). Conceptualization involves interpreting the events that have been noticed and understanding the relationships among them. It is at this stage that theory may be particularly helpful for framing and explaining events. For processing, there is reflective observation (intention, reflecting upon past experiences and many views) and active experimentation (extension, testing and utilizing ideas raised by an experience). Reflection involves stepping back from task involvement and critically reviewing what has been done and experienced. Skills involved include attending, noticing differences, and communicating analytic judgments. Experimentation involves taking the new understanding and translates it into predictions about what is likely to happen next or what actions should be taken to refine the way the task is handled. Each of the activities identified make up the four steps in the learning cycle.

Holistic learning occurs when learning experiences cycle through all four of Kolb's dimensions. That is, first experience, then reflect on it, then analyze it, then act on it. In this approach the learner will recognize that some modes in the cycle are easier and/or more productive than others and will be able to identify types of learning that may be more beneficial. This cycling fosters a metacognitive awareness of the learner's own learning processes and helps the student to engage in self-initiated learning.

Application to Beginning Design Pedagogy A Model for a Way of Working

A recharacterization of Kolb's experiential learning cycle in terms of typical design studio experiences yields some striking similarities to activities that already and routinely take place in studio education. Design students readily engage in concrete learning experiences in the form of making things and engage-

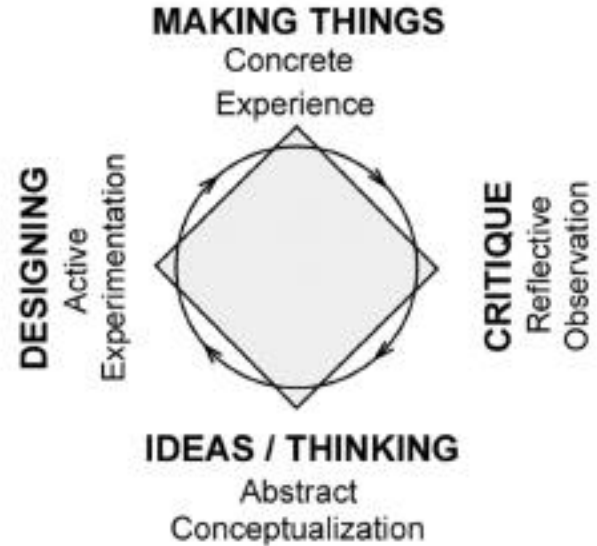


Fig. 3. Proposal for Pedagogical Structure

ment in first-hand material explorations. It could be said that concrete experience is in large part the actual content of design, in that buildings are the environmental surroundings and circumstances of an occupant's everyday life and ordinary state of consciousness of the things around them. Design is also a highly reflective activity, with formal and informal design critique at the center of studio efforts. Reflective activity or design inquiry also takes form as search for sound measures of design. Abstract conceptualization in design occurs within the development of meaningful ideational structure for a design project and typically occurs in the form of discursive thought and conceptual development, and visualization. Representational structures, such as diagrams, drawings, verbal descriptions, material models, and virtual models seek to connect the abstraction of concepts and ideas to the realities of human sentient experience and physical materiality. Active experimentation defines design activity, as concepts and ideas take form as the raw materials of architecture (i.e., configurations of walls, floors, openings, spaces, forms, materials, structure, and construction).

Making and thinking are dialectically paired as complimentary operations. Key to actualizing this structure in the design studio is that each student self-initiates their own operational conditions and build new mental structures. Some will conceptualize and be informed by making; others experiment with making and discover/develop conceptualized thought; still others "receive" conceptualizations primarily through reflective activity (such as critique). Designing always occurs with respect to a varied set of conditions that necessitate varied modes of learning activity. In light of these distinctions, a supportive and integrative pedagogy will allow, fertilize, and propagate methodological interacting in the context of design studio to facilitate a "community of design" in the spirit of challenging design inquiry.

trial-making, self-critique, material exploration, and process selection). The teacher's role becomes responsive rather than formulaic - partners in design rather than omnipotent masters. This alleviates the teacher from having to deflect students from looking for "what the teacher wants" toward looking for what they can discover, critique, think about, and take action upon. If first educational experiences establish conditions for the reception of learning, then helping students to make their own inquiries sets a pattern that can only reinforce studio education.

Modes of learning analogous to those in Kolb's experiential learning model are already embedded in design studio methods. However, to be optimally effective studio pedagogy must elaborate a structure of learning that allows experiential learning as a basis for abstract learning. Pedagogies of basic design courses that seek to introduce design processes as a universal foundation for success in architectural education must recognize that synthesizing physical reality with abstract content necessitates the integration of concrete (making) and abstract (thinking) learning experiences. Specifically structuring design activities as an intentional cycle gives the beginning design student a foundation of learning in which design experiences are dynamically inter-relational. More explicit engagement in concrete experience as self-initiated learning experiences can ground the complex situation of learning in which students act, observe, challenge, and reflect, allowing them to self-initialize and construct for themselves a dynamic process of learning and doing in which the holistic human experience of buildings can emerge.

Notes

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