White Space: Taking Beginning Students from the Abstract to the Architectural

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ABSTRACT
This paper discusses the development and outcomes of a design studio course in the Department of Architecture at California Polytechnic State University. First establishing the basis for the emphasis on abstraction in first-year design, the author positions this course, taught in the first quarter of second-year, as a sequence of exercises designed to reinforce the use of abstraction, yet also transition student focus to architectural issues such as site, program, space and technology. By framing the seven related projects with themes such as white space, everyday objects, Le Corbusier’s Five Points, and the alternation between 2D and 3D explorations, the course enables students to transform their projects from the literal to the abstract and back again to the literal. The project sequence culminates in the design of a Poet’s Retreat and tectonic approaches to its building envelope. The author briefly discusses each of the seven projects in terms of their methodology and their overlap. Examples of outcomes are illustrated.

INTRODUCTION
Although the Bauhaus was in existence for only fourteen years, its influence on architectural education was immense. As many of the Bauhaus teachers immigrated from Germany, so did its curriculum developed for Basic Design and it became the inspiration for curricula implemented by Ludwig Mies van der Rohe at the Illinois Institute of Technology, Josef Albers at Yale University, and Walter Gropius at Harvard. The resulting influence of these individuals and their respective institutions on the rest of architectural education was lasting although not immediate. Take Harvard for instance: Gropius joined the GSD faculty in 1939, but it took eleven years and a protracted battle with then Dean Joseph Hudnut, to implement a first year course based on Bauhaus principles. Hudnut, who had a Beaux Arts orientation, opposed the “complete separation of design from the execution of buildings” in the Bauhaus approach due to its undue emphasis on abstract exercises and the allied arts at the expense of architectural issues such as space, community, construction and civic form (Pearlman 2007: 207).

Nevertheless, Gropius prevailed with a course he called Design Fundamentals in which “the students worked in both two and three dimensions, preparing themselves for the drafting boards and for designing buildings. In order to develop a sense of form, they studied the inherent qualities of materials—wood, paper, plaster, wire, sheet metal—by cutting, bending, scoring or expanding. Using power tools on these same materi-
als, they looked for structural, aesthetic, and volume changes in them, and created moving sculptures that defined space. The students’ two-dimensional exercises focused on the tactile, structural, and spatial properties of various surfaces” (Pearlman 2007: 220). Since Gropius believed that all modern arts should share the same common language, photography, theater production, sculpture and painting figured prominently in the exercises.

Although the curricula of today’s architecture programs have certainly evolved, the imprint of the Bauhaus method, particularly its emphasis on abstract exercises, may still be seen in many fundamental design courses. Many programs continue to find that this approach develops in students the powers of observation and perception, comprehension of proportion, abstraction of form, mastery of techniques and means of expression in both two- and three-dimensions, controlled development of the creative process, and critical evaluation of the results. Evidence of this can be seen in the current description for Cal Poly’s first design course which shows a striking similarity to Gropius’s courses at the GSD. The description reads, “An introduction to the issues, concepts, processes and skills pertaining to two- and three-dimensional design and the freehand and constructed representation and visual communication of ideas, objects and environments” (Catalog; 298).

If one accepts the value of this approach to first-year design, as we have at Cal Poly, then the focus may shift to subsequent courses, and the questions that arise about the transition from abstract to architectural: How can architectural issues be introduced in such a way so as not to eclipse the abstract lessons from basic design which often reside at the margins of architecture? How can student awareness of materiality and craft be developed further and applied to projects that shift in scale from the sculptural to the architectural? How can the lessons learned through abstract exercises be reinforced rather than lost as architectural issues are brought to the foreground?

The course outlined in this paper addresses these questions by taking students through a carefully sequenced series of seven projects that build on one another, hence the reference to “white space” or the often overlooked but eminently important context within which elements relate. Beginning with the selection of three everyday objects, students transform the objects’ literal qualities using strategies developed in basic design, that is by moving them into abstraction. Unbeknownst to the students, they will again transform the abstracted elements into something literal: a site for their first architectural project. Along with the lessons learned from these transformations from literal to abstract and back again, the seven projects confront students with the consequences of their decisions: each decision further defines project parameters, so that even the projects are hypothetical, their history and trajectory are well understood by students if not fully appreciated.

I. THEMES AND SEQUENCE

The ten week course discussed here is sequenced into seven related projects which are grouped into four themes. The themes—everyday objects, site, space and program, and technology—are explored in exercises that oscillate on several levels: between abstract and formal, between simple and complex, between two-dimensional and three-dimensional, and between manual and digital. This alternating strategy is a deliberate means of encouraging students to stay creatively nimble and consider a range of possibilities as their projects evolve.

Although students aren’t aware of it, each project is directly linked to its predecessor so that all decisions made at earlier stages of the quarter become embedded in the later stages. Consequently, students must continually and critically respond to their own work as the platform for subsequent projects. As complexity builds with each project, so does the amount of time students have for exploration. Projects 1–4 are one week in length, increasing to 1.5 weeks for Project 5 and 3.5 weeks for Project 6. The quarter concludes with a one-week project which looks at a portion of Project 6 in detail. The seven projects may alternately be viewed as a single, ten-week long project that is sequentially taken through six transformations.

II. EVERYDAY OBJECTS

Students, even those in their second year of college, are adept at finding and following the flash points of design and culture. A greater challenge is to encourage students to observe the world beyond the fantastic surface that fascinates the world-at-large and take lessons from everyday life that are less obvious but often more poignant. The first three projects explore
the theme of everyday objects and were designed to heighten students’ powers of observation and an appreciation of design impulses that may be found in unlikely places. These projects take students through a series of steps that move from literal depictions of actual objects in Project 1 to abstract marks made by castings of the same objects in Project 3. In doing so, the projects reinforced principles of abstract design students learned in their first year, but also connected the abstract to the actual through the vehicle of the everyday.

A. Project 1: The Poetry of Everyday Objects

Project 1 asked students to look closely at everyday objects that populate their daily existence and choose three that, in their minds, were connected by a thematic thread. Criteria established for the objects were that objects could be no larger than one’s hand and that they have hollow interiors which could not be completely understood from its exterior. (see fig. 1)

This project focused on capturing the three objects’ exterior character using two-dimensional representation. Using medical and botanical illustrations as inspiration, students composed 4-6 orthographic drawings capturing each aspect of the object in graphite at full scale (see fig. 2). Drawing each object in a careful and precise manner and organizing the views to enhance their three-dimensionality helped students understand that there is often value in the banal world around us, but acute powers of observation are required to recognize it.

B. Project 2: Casting Everyday Objects

Whereas Project 1 focused on the exterior of everyday objects and used two-dimensional means of exploring surface and form, Project 2 shifted students’ explorations in two distinct ways. First, the area of study became the hidden interior volume rather than the exterior form of the objects. Second, plaster casting in 3D was used to capture and expose the interior volume rather than 2D graphite representation.

In terms of technique, this project was an appropriate starting point for students to learn the basics of casting since the objects themselves were dissected and prepared to act as molds. Without the need for complex discussions about moldmaking, time was devoted to closely examining the interiors of the objects, making any necessary simplifications, and selecting the best release agent. Although a variety of casting materials could have been used, plaster was chosen for its low cost and low tolerance. These qualities challenged students to prepare their “molds” carefully to accommodate plaster’s tendency to crack easily, but also allowed for multiple iterations as their familiarity with casting grew (see fig. 3). On a conceptual level, this project helped students understand the notion of figure-ground relationships as they transformed the void of each object’s interior into a solid plaster casting, effectively moving in 3D from a void/ground to a solid/figure.

C. Project 3: Composing and Casting the Everyday Void

Since Projects 1 and 2 focused mainly on observation and representation, it was important that Project 3 gave students an opportunity to creatively “design” something, in this case a plaster relief measuring 40cm x 60cm x 4cm.

Extending student understanding of plaster casting learned in Project 2, this project focused less on casting as an analytical tactic applied to an existing object and more on intuition and design principles to generate a new object. Students used the cast “objects” from their previous project to mark the surface of wet plaster cast in form work of plywood and masonite. Casting in plaster, with its quick setting time, required students to think carefully about what they were making, how it would be made, and the time involved in its production (introducing the dimension of time into the design process). To help with this, students were asked to create a drawing that would capture the design and map the casting process. Since students were composing voids made by the cast objects from Project 2, these were digitally scanned, made into inverse images in Photoshop, then composed in the white space of the field representing the plaster. Drawings were annotated as to which mark would be made first, which aspect of the object would be used, and how deep the mark would be (see fig. 4).

The emphasis in this stage was the successful composition of the markings in light of the surrounding white space, as well as an understanding of how to compose negative space without being able to see it in advance (see fig. 5).

III. SITE

One of the joys and challenges of teaching second year design is introducing students to their first experience of de-
signing with a specific site in mind. Sharing with students the realization that in a world defined by change, the stable and palpable nature of site provides a fitting conceptual and actual foundation on which to ground a project, is a lesson that may potentially inform all of their future projects. With this in mind, before students design a building in this course, they first design and fully confront a site.

A. Project 4: Creating a Spatial Field

Project 4 asked students to look at their plaster reliefs from Project 3 in a new way: not as a full-scale composition of marks made by everyday objects, but rather as an 1/8 scale representation of a plot of land measuring 40m x 58m in San Luis Obispo County (50 km northeast of the campus). In these new landscapes, which the students unwittingly designed in the previous project, the smallest marks become amplified eight times into landforms of sizeable proportion.

Along with imagining themselves occupying their landscape and assessing the topographic character they created, students were also asked to locate a 8m wide road and add walls on the site totalling 60m in length with guidelines for their height and width. Without a specific program, students relied on their reading of the site and light studies approximating the shade and shadow of various wall configurations. As with Project 3 students began by creating a drawing using Photoshop that mapped their intentions regarding wall placement, height, and rate of slope. After refinement of these drawings, students added walls built of masonite (previously been used as formwork in Project 3) to their new landscapes.

B. Project 5: Topography of the Field

Whereas the previous two projects incorporated 2D drawings as a preliminary stage of a 3D design, Project 5 makes 2D orthographic drawings the central effort. The project objective was to develop in students the ability to draw or read 2D views of 3D objects with an understanding of implied dimension.

Operating on the premise that drawing is a means of exposition and understanding, students were asked to generate a site plans and site sections of their landscapes (see fig. 7). Since students were not familiar with these types of drawings, the convention of topographic projection and contour lines was discussed. While students learned the basics of site plans and sections, they “occupied” the landscapes they had created yet hadn’t considered in terms of an environment until they transformed the scale of the project. Site plans helped students grasp horizontal dimensions of the site, while site sections helped make them aware it’s vertical relief.

III. SPACE AND PROGRAM

Along with site, program and space are two architectural considerations introduced to students at the beginning of their second year. Of course, space is something students are aware of and is often the reason they chose architecture as a field of pursuit, whereas program is something less obvious. Project 6 introduced students to a simple program consisting of 75 square meters of interior space and a variety of outdoor spaces. Rather than a prescriptive list of spaces, however, students were given simple notions requiring interpretation on their part: they would have to define the qualities befitting spaces for writing, relaxing, sleeping, cooking, hygiene and storage before translating them into architectural terms. Not a permanent residence, the project was described as a retreat for a writer to work on their poetry and sometimes stay overnight. Occasionally poetry readings would be arranged for the poet’s friends in one of the outdoor spaces.

A. Project 6: Inhabiting the Field: Retreat for a Poet

Faced with their first building design, students are often prone to exuberance: awaiting this moment for so long, they tend to incorporate every idea they have about architecture into their first project. To counter this tendency, Project 6 required students to work within volumetric constraints of a 3.5m x 6m x 12m rectangle. At the same time, Le Corbusier’s Five Points of Architecture and his works guided by these principles were introduced as evidence that simple volumes can lend poetic results. With this in mind, students chose four of the Five Points and interpreted them in the design of a poet’s retreat with a specific construction system: heavy timber structure clad with metal on structural insulated panels (see fig. 8).

This project presented a watershed in the students’ development. With the overall volume somewhat constrained, students focused more on the interior and exterior articulation of the volume, resulting in richer designs. Prior to this project, stu-
A group of students worked intuitively with the principles of design to guide them (balance, proportion, contrast, etc.), but with this project they were confronted with their own questions about program (what constitutes a space for writing, relaxing, hygiene, etc?) as well as the world of ideas regarding space (what are the implications of the free facade? how can the free plan expand one’s sense of space, etc?). Their conscious response to these questions and issues added layers of meaning to their work made them more aware of the complexities of architectural design which could be at the same time informed by abstract ideas but ultimately had to reside in the physical world.

IV. TECHNOLOGY

At Cal Poly second year students are introduced to structural engineering as well as materials and methods of construction in lecture courses. Although there is no formal integration of these topics into design studio, every effort is made to synthesize the technical aspects of architecture with the design aspects. In this course, technology is integrated into Project 2 (exploration of plaster materials, basic casting processes), Project 3 (exploration of formwork, advanced casting processes) and Project 6 (exploration of heavy timber and structural insulated panels). In Project 7, however, the focus on technology becomes much more overt. The final project in the sequence increases the scale of the exploration and focuses students on the tectonics appropriate to the realization of their design ideas.

A. Project 7: Constructing the Field: A Retreat in Detail

Having explored their ideas at a relatively small scale in both model and drawings in Project 6, the scale was tripled for Project 7 to allow a more in-depth look at material assemblies. The challenge as an instructor was to find a scale that could allow a sufficient indications of the issues without demanding more technical knowledge than students at this level possess.

Students were asked to select a portion of their Poet’s Retreat which gave the greatest sense of space and circulation in their design and build a sectional model of the chosen area (see fig. 9). Sectional models proved to be valuable tools for their ability to reveal not only simultaneous interior and exterior views of the design, but also a 3D wall section of the building envelope and its construction. Within the context of this project, the models confronted students with not only how things look but also the constructional implications of their decisions, all of which could be considered simultaneously.

V. CONCLUSION

Following first-year design with its emphasis on abstraction and fundamentals, this course used a series of seven exercises to move student awareness towards the architectural issues of site, program, space and tectonics. The shift was made in such a way so as to connect the exercises to earlier abstract studies and link the first and second years of our students’ development. The shift was underpinned by several themes. First, that the space between objects is just as important as the objects themselves, and that objects must be reconciled to their context or white space. Second, that simple everyday objects hold many lessons for designers, but only if they take the time and develop the tools for understanding them. Lastly, that the ability to move nimbly between 2D and 3D explorations is a key skill for a young designer.

The sequential nature of the projects was a key aspect in establishing an understanding of architectural production as a transformative process, a practice of perpetual mutations. Each project introduced both a single key idea as well as a broader conceptual framework allowing multi-layered approaches by students. Although the choreographed nature of the course was an artificial construct that won’t exist as students move forward to other design courses, it was instrumental in helping students make a key transition from abstract exercises first-year exercises to second-year architectural projects.

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