IN THE BEGINNING WERE BUILDINGS:
The Radical Idea of Learning Architecture by Designing It

Mark DeKay
Prof. Hansjoerg Goeritz, University of Tennessee, Knoxville
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Mark DeKay, Hansjörg Göritz | University of Tennessee, Knoxville

Curricular answers to the questions, "What is fundamental to design?" and 'What must be taught first now?' frame what students perceive as the core of their discipline and generate different student products and learning outcomes. The methods students learn in the beginning set in motion ways of working that can be more—or less—easily built on by future courses and instructors.

What follows is the story of experiments in beginning design education for 3.5-year Master of Architecture (March-3) students. We examined the aforementioned questions for these students without prior architectural education. In the fragmented post-modern theoretical landscape of architecture schools, having faculty members align on these questions allows progressional logics. In the absence of a shared framework, students attempt to construct their own knowledge systems to integrate the multiple instructors’ points of view. The essence of our work was to frame six essential lines of knowledge development in building the consciousness of an architect and to identify the fundamental level (1:) of knowledge and skills for each. By this we arrive at a low complexity, level 1 to level 1 correspondence among all six related and co-defining but irreducible knowledge lines—yielding beginnings that are in no way proto-architecture, but rather, buildings.

Fig. 1 Conventional Curriculum of Additive Content, in its Ideal Form: Complexity built by addition, no L1:L1 possible. Contrast to Fig 2.

Developing complexity stands in stark contrast to a common pedagogy found in our school and (with variations) in many others, focused on: 1) A single spatial-formal line of development; 2) Pre-architectural abstract composition; and 3) An additive process of sequentially increasing form-driving issues over long time periods (Fig 1). Instead, in starting our compressed graduate program, we found success in an integrated beginning studio curriculum, teaching students to design buildings, addressing at a beginning level: 1) site and context, 2) program and use, 3) form and space, 4) human experience and feeling, 5) architectural ideas and meaning, and 6) building technology. Beginning design becomes a curriculum of multiple relationships at 1:1, that is, among the first level of each line.

Contextual Issues

For several years our MArch program had suffered from low enrollment and student work quality. The summer program is an intensive 9-week introduction to architectural design studio, graphics and ideas in three concurrent courses. The faculty had a dim view of the graduate program, agreeing that student work quality and capabilities were far behind that accomplished in the comparable beginning level of the 5-year BArch program. Students beginning the MArch-3 program came with 4-year non-architecture bachelor’s degrees in fields such as psychology, history, theology, art and opera. These students started in the summer “boot camp,” which was also a place for other types of students: transfers to the BArch and Bachelor of Interior Design (BID) program, etc.

Some colleagues claimed the “old guard” was our problem. Their solution was simply to put the right players in place and all would be well. When different faculty did not get the desired results, the students were then to blame. “These are the worst students I have ever had. I’m not teaching graduate students anymore!” Most agreed we were in crisis.

Right Sizing

A new Graduate Program Committee began to look more deeply and we noticed that, because of low enrollment, stu-
The Curriculum as Culprit

Was a new approach at learning fundamentals really needed for older students, perhaps a way to use and build on their experiences? By contrast, a stated goal by many instructors in the BArch program was to “clean the slate” of the students’ minds of all their previous mundane and low-culture library of experiences and ideas about architecture. This was evident in the contextual abstraction of the school’s beginning design program. What if, we wondered, our summer program issue was not with the faculty or with the quality or intelligence of the graduate student? What if the issue really was our curriculum?

In principle, the three courses—design studio, representation, and introduction to architecture—were coordinated and related. Looking deeper we found that “coordination” was defined mostly as avoiding conflicting due dates. There was a single meeting in the beginning of the summer and little, if any, coordination or integration after that. Each course ran its own sequence of content, lectures, readings and projects, independently. The drawing course, for example, started with hand sketching and arrived at drafting by mid-summer. Meanwhile, in studio, plans, sections, and elevations were taught and required for numerous projects that were already completed by mid-summer. Students who had been through the program concurred that, from their perspective, the instructors were more in competition for student attention than interested in coordinated learning.

Would it not be possible to construct an integrated and thematic introduction experience for students? Should beginning students not be given a leg up by having the framework make sense to them? What if, radical idea though it seemed to some, the drawing class focused on the studio projects? Could we do collaborative field trips and have one logical master reading list? Were simple themes possible that could connect three ways of studying architecture and remove the feeling of fragmentation students felt?

Less [architecture] is more?

Next we asked some uncomfortable questions: “What is fundamental to architecture and therefore fundamental to learning to design buildings?” The existing curriculum was comprised of a series of exercises beginning with 2-D abstract composition, leading to low relief, then 3-D abstractions and eventually to quasi-architectural ‘constructions.’ As a colleague recently wrote in describing this existing curriculum: “...[The] ‘normative’ fall courses taken by the majority of students in this college, present...
early design as rooted in abstraction, composition theory, and Modern ideals of universal space, abstracted ornamentation, and functionalism,” (1) In reality, attention to function was absent. Buildings were saved for the second year, while technology appeared in year three.

In looking at our normative curriculum, from the viewpoint of what is fundamental to architecture, the list of what was NOT traditionally taught in our summer program or in our BArch first year was shocking. There, the curriculum began with points, lines, and planes. There were no real-world materials and no means of construction, or their symbolic representations in drawings or models. The opportunity to oscillate between concrete and abstract modes, as described eloquently in Temple's Making Thinking (2) was not possible. Projects were absent a site, city, neighborhood, culture or climate or any physical or social context at all. No people inhabited these compositions, at least until the end; inhabitation was not generative. There was nothing alive—no human, animal or plant. This, for all its principles and historical merits, was a curriculum that conveyed to students that what is essential is that which is visual and that the order of space and form is independent of knowledge or external inputs. In this world, nothing that cannot be seen is valued as essential. There is no sun, wind, heat, or time, no human experience or feeling. There is no story, myth, or meaning—other than that given by its author. Many of these missing issues seemed essential not just to high architecture but to all buildings.

**Designing Buildings from the Beginning**

We imagined it was possible to learn to design buildings and include all the things that, if left out, would make the design not a building. We wanted to have beginning architecture students begin learning to design by designing buildings. This we imagined would consist of simple projects of simple composition, located on a simple accessible site, and so having an observable physical and social context, with a simple program, inhabited by people with human experiences, and conceived of in real materials but a simple construction system—all engaging a few fundamental architectural ideas. “But you can’t do that!” some colleagues cried. “All that complexity will stifle their creativity.”

Instead of beginning with pure abstraction, we chose to begin with the real. Instead of a curriculum beginning only with a singular focus on form, we envisioned multiple simultaneous content themes (Figure 2) unfolding in complexity over time. Space and Form (line A) is informed by context, use, technology, experience and ideas (lines B–F)—not additively at “advanced” future levels, but rather, throughout an education that begins in the beginning. This aligns with assessments from think-tank events such as The Penn Resolution (4), which concluded that education for urban designers of the future will require both learning formal complexity and its interactions with ecological complexity and learning to see formal patterns in relation to their performance impacts.

![Fig. 2 Complexity built by unfolding multiple lines of design awareness](image)

Fig. 2 Complexity built by unfolding multiple lines of design awareness (3), integrated at each level (1:1).

**The Very Beginning: Choto Farm/Cades Cove Community**

We chose the most basic of occupancies, a habitat, representing the most familiar use and also the most prevalent building type the world over. As the first summer studio began, the faculty complaints rained down. “Have you seen what is happening in the graduate summer program? They are designing a house! A HOUSE! That is the worst thing possible for a beginning student design...... This is going to be a disaster!” We did not expect that trying out some different ideas to attempt solving a longstanding problem would be considered so radical. But it would prove more contentious than anyone working on the graduate program ever imagined.

We introduced design as the process of generating form, space and order for a specific site in the pristine setting of Choto Farm, in Cades Cove, within the Great Smokey Mountains National Park. Students were exposed to reading landscape, experiencing climate, and reading and making a place. We had students examine the prosaic pragmatics of past solutions derived from the necessity of working the land and making things to purpose. The lesson was not rural style but rather our opportunity to design for our time, absent intellectualized willfulness.

Students were asked to take the quiet poetry of simple "background" buildings as models for composing an elementary dwelling and garden. Such simple yet refined, timeless prototypes for a specific place and material, were also universal modules and examples as described in Vast Vicinity (5):

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Fig. 3 First design project: Houses as Settlement at Choto Farm / Habitat + Hortus at Cades Cove

**Habitat**
An interior "room" of seven elements:
- Places for Fire, Oven, Eating, Sleeping, Washing, Storage, Stairway

**Hortus**
An exterior "room" of seven elements:
- Threshold, Screen, Window, Plinth, Water/Well, Resting, Tree

These elementary prototypes were explored for their essential impact on human well-being. Rather than imitating, we wanted beginners to re-investigate and therefore profoundly inform their designs. MArch and Master of Landscape Architecture (MLA) beginners teamed up for skill-building and early professional co-operation, exploring the following themes:

- **Cultural context and meaning** by comparing examples from film, photography, painting, and literature to real but idealized places [Cades Cove, Pleasant Hill Shaker Village]
- **Places, structures, materials and methods** via excursions to Cades Cove, Appalachian cantilever barns, Kentucky Shaker Village
- **Climate, weather and purpose** to understand placement, orientation, materialization, and detailing solutions
- **Documentation** of a prototypical building and landscape setting with sketches, drawings, photographs, and structural model
- **Criteria and work ethics** for enduring design
- **Collaboration** by architect + landscape architect to design site and cluster scale + individual design of single units

- **Scalar reciprocity** of private and community Habitat + Hortus patterns
- **Structural logics** of timber structures
- **Site responses** to vistas, rural nature, wind forces, natural ventilation, solar orientation, and outdoor microclimates
- **Physical ‘sketch models’** as design tools
- **Hand sketching and drawing**

Hardly anything is as challenging and rewarding as a simple well-designed dwelling and garden. Through exercises in 'omitting,' students were challenged to concentrate on the essential. They internalized good practice by oscillating between research, design, and implementation, in accordance with the precept "to design is to construct is to design." In contrast to the tradition of complicating abstraction into ornament, we sought to teach the fundamentals of beginning design by focusing students on doing ordinary things extraordinarily well, which sounds simple. However, to be simple can also be hard, and simplicity became a challenge, a means to establish principles universal yet personal.

**Second Lap:**
Urban Writing Place, Market Garden, Visitors Space

In the first project, precedent analysis provided a palimpsest for solidly designing domestic artifacts in the landscape. The second iteration was an exploration of a landscaped experience within an urban fabric. This project builds on the skills and concepts of the first while introducing additional depth and increasing complexity. It began to develop additional representation skills using measured perspective, shade and shadow, and computer based text and graphics applications. As students became more familiar with the conventions and aims of the architect, additional depth in concepts of context, experience, and metaphor were introduced. The canvas shifted from rural to an urban site and pedestrian scale.

The notion of meaning and experience in architecture was introduced by an imaginative character study. The final outcome was a window into a better understanding of what is authentic and specific about city while remaining open to multiple readings. Each composition was to reveal something about the character’s poetic qualities and their unique interaction with space. Each student photographically explored three of these characters: athlete, clergy, veteran, child, astronomer, shadow, philosopher, detective, etc. Students were asked to take on the persona of one of their characters and develop a mapping of the city based on the unique spatial understanding embodied by the character.
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Fig. 4 Second design projects: Urban Writing Place, Market Garden, Visitor Orientation Space

In the third and final project, students proposed the design of an urban Writing Place, Market Garden, or Visitor Orientation Space, containing individual pavilions dedicated to the experience of the city derived from the characters. The vacant site in the center city was ringed by its institutions. Again, MLA and MArch students collaborated to determine an arrangement of landforms and architecture meaningful for each pavilion while contributing to a cohesive whole. Individual pavilions included: 1) a gallery, image display space for artifacts and texts portraying the character’s understanding of the city; 2) a cell, crafted as an architectural experience embodying the spatial understanding of the character, and; 3) the core, an area containing functions in support of the visitor. The MLAs helped determine the best location for the Pavilions and designed the site around them as extensions of the characters’ concepts. *Principles of composition, then, were taught in the context of multiple architectural issues.* 'Contrast,' for example, was studied in the composition of forms, spaces, construction materials, plantings, and paving to clearly convey concepts, rather than merely non-objective abstraction. Drawings and perspectives were hand drawn with *poche*.

**Second Game: Same Themes, More Complexity**

Following the 9-week summer was a regular 14-week semester. We again emphasized the same six overarching themes in the students’ second studio course. To recapitulate, the logic of our approach was to teach design by having students design buildings early on with all of the major classes of themes present in all buildings—and, over time, to increase their capacity in each of the six aptitudes by increasing the complexity of their design challenges.

**Game Two, Lap One: Addition to Sea Ranch**

The first project was to design an addition to Sea Ranch Condo One by MLTW. Since the required CAD class had been eliminated from the curriculum based on student input, digital representation was introduced in the studio with the assistance of a graduate assistant.

**Fig. 5 2nd semester project 1: addition to Sea Ranch condos**

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This project reiterated summer themes with new situations:
- Working in teams to design site and cluster scale + individual design of units
- Private housing and community use patterns
- Design for continuity across scales
- Response to rural nature and strong wind forces
- Daylight provision to each room
- Creating outdoor microclimates

It also deepened and expanded some of the summer themes:
- Developing spatial ordering logics from modern precedent and landscape context
- Moving from light frame to the logics of heavy timber construction
- Expanding designing for natural ventilation to include stack effect

Additional issues:
- Handicapped accessibility
- Designing experiences of prospect and refuge
- Conceptual design for lateral forces
- Designing for passive solar heating
- Hand drawing in ink
- 2-D CAD for plans, coordinating among collaborators

Race Two, Lap Two: Downtown masonry mixed use

The second project of this term was to design a commercial ground floor space of the student's choice plus upper living space set on a narrow urban site using primarily masonry construction and a facade for three repeated units. This project continued to develop the six themes. In addition to the issues from project one, the second students engaged in:
- Discovering relationships between spatial order and masonry in precedents
- Designing within the logics of masonry construction and vertical structural loads by masonry
- Facade composition
- Programming for residential and non-residential uses
- Public and private relationships
- Response to actual urban architectural context
- 3-D visualization

Curriculum Evolution

That first summer and fall, three experiments were done within existing course descriptions: 1) Segregating the older beginning graduate students, 2) Relating the content among three courses, and 3) Designing buildings from the beginning. The curricular "boxes" all stayed the same while graduate and undergraduate sections took different paths. This depended on a fragile alliance among instructors and was possible inside generic course descriptions that allowed wide latitude.

The curricular change process that followed resulted in faculty approval for these and other changes. A summer curricular task force developed a short preamble to course description changes: "The summer curriculum is designed as an integrated experience introducing design as a discipline of significant ideas expressed in formal order and implemented in materials. Design is introduced as the process of generating form, space and order, along with interpreting its meaning, through interaction with contexts, human inhabitation, construction, human experience, and theories."

The new curriculum of "beginning with designing buildings" was a radical shift from the former 2-D abstractions of paintings transformed into a sequence of self-referential, increasingly 3-D compositions. Learning to draw buildings was radically different than beginning by drawing vegetables, old shoes, and tools. This way of beginning generated categorically different results, the quality of which took even the critics by surprise.

But would it work with beginning undergrads?

We experimented with an evolution and adaptation of the same principles in a new situation in collaboration with a colleague at Auburn University, which admitted undergraduates without portfolios, their potentials unknown. This was an intense all-day-all-week studio structured as two sessions of four weeks each to develop:
1) A craft of drafting / painting / modeling of key architectural components
2) A studio as an introduction to architectural design
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A simple rigorous and developmental learning methodology provided orientation, guidance, and experience of the meaningful application of isolated skills learned previously. This methodology, originally developed to address more mature novices at graduate level, became the palimpsest for freshmen, sophomores, transfer, and foreign students, all of whom were undergraduate architecture novices. Strong results and high praise from faculty peers offered evidence that the pedagogy is effective at this level as well, and more importantly, appears suitable as a method for accelerating student accomplishment in education for architecture as an applied art in general.

Conclusions

Rooted in these fundamental experiences, we observe that many contemporary approaches to beginning architectural design suffer from dilemmas of competing, ungrounded, fragmented theoretical positions. It is as if each instructor or school stakes a personal territory for design’s beginnings—one of many integral design components, privileging formal composition or phenomenology, concrete making or 1:1 scale, context, or whatever, while ignoring or marginalizing the rest.

The models instigated in the studio or classroom become the frameworks to later build in the world. Abstraction without referent, fragmentation, and isolation appear to yield just such progeny. The same authors of this paper also teach in upper level vertical studios, where we can keenly observe the result of this phenomenon in the designs of students educated without the challenge to grasp the fundamentals of formal composition informed by the simultaneous range of design issues. Therefore, sadly, we begin again to “teach first year in fifth year.”

The reciprocal of this causality is that contextual, integral, developmental and holistic experiences at the beginning hold the promise for a built environment that is also integral and comprehensive. In our school, and in others we observe, it typically takes several more semesters before students are designing simple buildings with the range of form-making considerations that our students engaged in the first two semesters. Indeed, some may never do so in an entire professional degree program. It is not only in the beginning levels that design education has come to a culminating irony where "learning architecture by designing it" is now a most radical revolution.

Thirty students, who learned the basic craft and theory during the first phase, progressed to a real design experience. Again, working in a real context, with a real site, a real building (a modernist icon), beginners were asked to design an exhibition space addition and a garden room. The solution could be on, off, or in the site. A substantial context with majestic trees and a water feature provided inspiring experiential grounds. The integrative work spanned across all scales:

0) Precedent studies
1) Drawing site and topography in plan and section, with features and vegetation, including adjacent structures
2) Parti sketching at business card size, then 3” x 5” index card concepts
3) 3” x 5” physical sketch models, then 1” = 64’ physical sketch models
4) 1” = 32’ study models
5) Physical presentation models and plans at the same scale, complemented by diagrams and a model photo, montaged into a key photograph of the site at eye-level.

Fig. 7 Beginner undergraduates at Auburn University: 
Building + garden additions
Notes


