

Design Build Methodology in Experimental Education

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As a pedagogical approach to formulating and executing complex spatial ideas, “design-build” describes more than the collapse of traditional industry roles, though that is a relevant basis to the point being made. The practice of “design-build” as applied to architectural studio work is also used to describe full or on-to-one scale experimentation and material research. Experimentation with effects, sensory qualities, and behaviors of materials existing fundamentally and only at full scale can be generative and active, allowing its agents to become multi-disciplinary problem solvers capable of moving through a complex and uncertain future. In line with apprentice-based learning environments like the Bauhaus and Cranbrook Academy of Art, students can be strengthened and empowered by the struggle of overcoming the physical obstacle and positioning themselves in the world through *learning by doing*.

It can be useful to explicate this idea of full-scale material research as a concept different from other approaches to architectural form making based in two-dimensional, scaled, and/or abstracted representations of space. In a traditional model of architectural education and practice, and architect or student might profess spatial aptitude through a set of abstracted, two-dimensional drawings, or three-dimensional scaled models. In doing so, there is an assumptive, historically-entrusted front loading of experience, rather than the embodied experience understood only by constructing and occupying a built environment in the round. In a design-build education, and more specifically in full-scale material and environmental research, “learning by doing is based in the belief that knowledge, to have real meaning, must be a way of dealing specifically with actual stimuli and situations.” (Dewey, 1910).

In order to understand the situations from which design-build education emerged, it is necessary to understand two primary institutions, the context in which they emerged, and why design build education was a necessary facilitator. The Bauhaus, a critical experiment in education, specifically sought to blur boundaries between architect/builder, artisan/artist, and master/apprentice. Though Gropius mightily (and perhaps incorrectly) claimed originality here, it was the first time anything of its nature had been established on such a scale and in such an internationally publicized way. Politically tumultuous and mythologically idolized, the Bauhaus’ reputation has far outlasted its short stint as an institution. The following excerpt, taken from the 1938 Museum of Modern Art Catalog surveying the outcome and pedagogical underpinnings of the Bauhaus from 1919-1928 and partially written by Gropius himself, describes the utopian aspirations of an education that relied on autonomy, awareness, skill, and self actualization through making:

“What the Bauhaus preached in practice was the common citizenship of all forms of creative work, and their logical interdependence on one another in the modern world. It wanted to help the formal artist recover the fine old sense of design and execution

being one and the same, and make him feel that the drawing-board is merely a prelude to the active joy of fashioning. Building unites both manual and mental workers in a common task. Therefore all alike, artist as well as artisan should have a common training; and since experimental and productive work are of equal practical importance, the basis of that training should be broad enough to give every kind of talent an equal chance. As varieties of talent cannot be distinguished before they manifest themselves, the individual must be able to discover his own development. Naturally the great majority will be absorbed by the building trades, industry, etc. But there will always be a small minority of outstanding ability whose legitimate ambitions it would be folly to circumscribe. As soon as this elite has finished its communal training it will be free to concentrate on individual work, contemporary problems, or that inestimably useful speculative research which humanity owes the sort of values stockbrokers call 'futures.' And since all these commanding brains will have been through the same industrial mill they will know, not only how to make industry adapt their improvements and inventions, but also how to make the machine the vehicle of their ideas. Men of this stamp are sure to be eagerly sought after.

The Bauhaus felt it had a double moral responsibility: to make its pupils fully conscious of the age they were living in; and to train them to turn their native intelligence, and the knowledge they received, to practical account in the design of type-forms which would be the direct expression of that consciousness." (Gropius, 86-89)

Embedded within this text are a few rather important, intertwined ideas. An educational system that approaches learning through systems of making and doing, rather than replicating or taking refuge in systems of the past, was revolutionary, especially in architectural schools of the time. In order to formulate a system of current making and doing, a participatory master and apprentice relationship alongside an essential and thorough understanding of materials might allow students to acquire the tools to become relevant, active participants in society. At the time of the Bauhaus, that relevancy was based in techniques of mass-production and industry, specifically as they related to craftsmanship and creative imagination. The aspiration for students to discover through the process of making is two fold: through open-ended experimental making, tools become an agent for creative discovery, but they also manifest individual talent. A creative "ambidexterity" is formed between the experimental and the productive application.

Referred to as a "Scandinavian Bauhaus," by Harry Weese (Sisson, 1), Cranbrook Academy of Art's trajectory was much less overtly politicized but equally influential as a model for experimental creative education. Loosely modeled after the American Academy in Rome, when Cranbrook opened in 1932 it's unconventional model for curriculum operated as an atelier system. Following much less of a singular aesthetic manifesto than the Bauhaus, students worked directly with masters of their practice, acting as apprentice while also simultaneously pursuing individual expression and formulating practice in whatever way suited them. Students used a design-build methodology, as in the case of the Bauhaus, as a way of experimenting, crossing disciplinary boundaries, and discovering individual strengths. Aside from its place as a tailored educational institution, Eliel Saarinen's intention was that the strength of the

diverse and intertwined collective would influence and shape the outside world. Saarinen's vision, expressed both architecturally on the Academy's campus and through its educational formulation, was stated as follows, and even in its expression seems more idyllic and individualistic than that of its Bauhaus predecessors:

"The Cranbrook Academy of Art is not an art school in the ordinary sense. It is a working place for creative people. The leading idea is to have artists of the highest ability live at Cranbrook and execute their work there... No doubt this rich and creative atmosphere will bring to Cranbrook young artists and art students who are eager to develop their talents. They will have their private studios, where they do their own work; and in being continuously in close contact with the master-artists, they can learn from them how to develop their own individualities... Creative art cannot be taught by others. Each one has to be his own teacher. But connection with the other artists and discussions with them provide sources for inspiration." (Fehrman, 51)

That both of these schools existed at a time of great technological advancement and mechanization seems to be no coincidence, and a number of hybrid, cross-disciplinary educational experiments might easily be connected to the important milestones in human advancement and psychological tumult. As we push further into easily the most rapid and shifting advancements in technology, design, and augmented experience to date, our educational methods might benefit in a lesson from these dexterous programs who's attempts to empower students through open-ended and adaptable maker-based curriculum produced many of the most influential designers of the past century. Demonstrated throughout the history of the Bauhaus and especially within the Academy, "bottom up" micro-movements organically emerged as students established themselves within the broader framework of the educational system. The self-directed, multi-disciplinary curricula gave freedom to not only distinguish individual talent, but equally to collaborative and cultural connections indicative of the time period, social structures, generational duress, or aesthetic compatibility they operated in relation to.

If we break down this hybridization, it comes multi-faceted: through experimentation and productivity, through technology and the analog, through craft and production, academia and practice, and throughout a number of disciplines that while clearly defined at the Bauhaus and the Academy, might shift and change as the modern day progression of both technology and advancement in niche career placement or specialized design knowledge continues to emerge.

"A monocultural education, like a monoculture in ecology, would be a highly risky strategy, a single bet on a particular future that, if it fails to pay off, leaves us stranded with little to draw upon. A monocultural curriculum would also overlook the significant strength of our emerging collective intelligence, namely, that all knowledge has the potential to find its use somewhere, the challenge lies in finding the right community or context. Rather than a list of prescribed content knowledge or learning outcomes, this collective, embodied, intuitive, human-machine collaborating and potentially dangerous knowledge landscape suggests that we will need to ensure, at the very least, that our students develop three attributes: discernment, multiliteracy and responsibility." (Facer 2011: 69-70)

With a new generation of designers coming into leadership roles, and an increasingly complex world ecology to address, there is a fundamental shift in values taking place. The term “precarity” has been used to describe the situation thrust upon both Millennials and iGen, alluding to the fact that job security is a thing of the past, economic competition is at an all time high, and so is the accompanying psychosis. (Harris). Rather than formulating an educational system around students ability to compete in an adult job market (labor productivity and capitalization) (Harris), the systems that allow for time and space to discover, to learn how to be curious, and how to generate a specific skill set have proven productive in times of rapid change.

The agency of this multi-disciplinary deep dive into creative thought is supported by a full scale design-build practice. As new generations develop less traditional, more complex career paths, this prioritization of problem-solving and real world consequence sets individuals up for success by allowing them to become multi-disciplinary problem solvers who can take ownership over their own agency in the world. With material and tool-driven research, one-to-one scale building, and cross-disciplinary experimentation comes a specific way of thinking, doing, and evaluating that isn’t afraid of failure. In fact, failure is a key instrument of valuation, as it allows one to see very specifically when something isn’t working, to fine tune it, re-examine, and re-build. Whether the product is a fully realized building, or a process of open-ended one-to-one scale material experiment, the significance comes through the unique practice of making and evaluating. In a full-scale design-build exercise, as an instructor, you have to be alright with not knowing the answer to something, and being willing to stand up in front of a group of students and say “ok, we’ll figure this out together.” Structuring a baseline design-build curricula in architectural education has the capacity to empower and energize a new generation of designers to develop an intentional way of practicing, and to remain relevant and adaptable in the face of an uncertain future.

Note:

Images (the four images provided are in support of the entire body of text – they are not associated with specific text segments and can be inserted wherever appropriate):



Figure 1 Into the Air, SUBSTUDIO, Lawrence Technological University (2016)



Figure 2 Into the Air, SUBSTUDIO, Lawrence Technological University (2016)



Figure 3 Bowling Green State University

(2017)



Figure 4 Practice by Hannah Dewhirst (2017)

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