Reflective Building: Feedback from Living and Working within Design/Build Pedagogy

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Introduction: Design/Build

More than one hundred architecture programs in North America now provide studio courses that combine design work with some degree of hands-on, full-scale construction. In the classes, students actually build what they design. Much has been written about the role of craft, one-to-one scale, pedagogical goals, curricular placement, and community involvement in design/build coursework. But relatively uninvestigated is the role of feedback between design and build. Feedback is the return of output as input. Put another way, process—rather than product—transforms the process itself. In both cases, feedback frames a loop that links phases, procedures, even forms.

How do the two traditionally distinct phases and realms relate to each other? Is their connection temporally, methodologically, or formally defined? How does design transform build and how does the impetus to build inform the design process? More specifically, how does a particular project's context—its program and its situation (environmental, social, and political forces)—inform this feedback process? The latter question is this paper's focus, and its treatment begins a process of addressing the larger questions of feedback between design and build.

Design-slash-build. In an interview, I asked the designer/builders Jersey Devil why they use the slash—rather than another diacritical mark—between design and build. For them, this insistent bind builds a word that embraces a way of living and working. The slash between design and build signals feedback. To frame and track this feedback is to understand how hands-on, on-site architecture studios define what I have called reflective building. This process entails constant communication between maker and context, while it also inspires consensus and responds to materials.

In the Spring 2014 semester at the University of Florida, I taught a design/build studio, which enrolled sixteen fourth-year students. Our client was a migrant family who lived and worked on a farm twenty minutes from campus (fig. 1). The family lived in a mobile home and hosted another family who stayed in a nearby travel trailer. After

Fig. 1. Measuring, planning, and repairing before project start: (top) discussing renovation of kitchen and dining area in mobile home, (bottom) repairing travel trailer's entry threshold, (photographs by author)

Meeting with the family, we determined that the studio's overall objective was to renovate and, where possible, to expand the family's living spaces in three areas: mobile home interior, travel trailer interior, and travel trailer exterior.

In the mobile home, we reconfigured the kitchen, added a room for a home office, and removed a wall to link the main living space with the kitchen and dining area (fig. 2). For the travel trailer, students installed fold-out murphy beds, added storage, and created a small dining area. Along one side of the trailer, we constructed a wooden deck that allowed the interior living space to flow to the exterior. This project's objective was to allow for multiple uses and to make room for the activities that the family requested and that we observed during our time on the site (fig. 3).

Fig. 2. Renovation of mobile home interior: (top) temporary framing between living spaces, (bottom) installation of central beam to open the living area (photograph by Alex Sanchez)

Fig. 3. Outdoor wooden deck attached to travel trailer in design/build project for migrant family near Gainesville, Florida, Spring 2014 (photograph by author)

This paper focuses on the deck project. Reading the deck closely—its phases of design as well as the outcomes of each part of its construction—allows for a critical look at how feedback works in each of three frameworks: Donald Schön's reflection/action, Maurice Merleau-Ponty's physical/vital, and William James' experience/milieu. Each part of the deck links to a particular feedback model and helps answer the question how a reflective process that acknowledges methodological, physical, and social levels of feedback can anchor design/build pedagogy. Overall, the deck also demonstrates how a fourth framework—the live/work model—augments and intensifies the learning experience.

Reflection/Action: The Floating Cantilever

After determining the overall dimensions of the project, students decided to begin with the western side of the deck. The group discussed how this part of the deck might be used. Was it merely a circulation zone? Could it serve as a place to pause, even sit? Students combined functions of step and seat but then sought a driving concept. The term "float" became the guiding principle at the same moment as concerns about how this part of the deck would actually be built entered into the discussion. After a few study models and mock-ups, a simple cantilever served as the vehicle for this main idea of floating.

In this sequence, reflection on the problem (how to allow for stepping) and a definition of the concept (floating) led the process of design into the building phase. At the project's early stage, with their inchoate construction skills, students reverted to what they knew, based on their experiences in studio where idea leads to design and physical construct. The line of feedback moved from contextual problem back to studio background and on to building with cantilever construction, something they could also readily draw from earlier coursework in structures.

This first part of the deck initiated a dialogue between learning and practicing. What they knew or thought they knew came into contact with a situated problem. "Thinking on their feet," as Donald Schön would say, students privileged the lessons of their previous learning experiences in the process of Schön's "reflection-in-action."[1] Although, as inchoate reflective practitioners, students were doing more than simply applying knowledge from previous studios, their thinking (or knowing) was not yet embedded *within* their doing. The cantilever floated, just as the concept hovered around what had been made.

Physical/Vital: The Folded Bench

In the following week, students completed the beam and joist framing and, halfway through the decking, began work on a threshold for the trailer doorway and a small bench along the side of the trailer. In this phase, students were much more comfortable with their emergent skill set of cutting, fitting, and fastening boards; and they began the design process with a series of mock-ups for the bench. Another commonly deployed studio term "fold" influenced their work; but this time the operative device was one of a set of tools that came from the materials and constraints at the site. The concept of "fold" was now cast within the context's physicality—what the students felt and saw through their contact with materials (wood) and objects (tools and the presence of the trailer) and what they considered possible with their new set of hands-on experiences (fig. 4).


Fig.4. Students assembling the deck's folded bench (photograph by author)

At this stage, the project came alive with contradictions and improvisation, and this 'liveness' avoided oppositions as it also promoted feedback. Design decisions were more closely linked to acts of making. And the body itself—with its dynamic movements (gestures and actions) as well as limitations (imbalance and reach)—became the locus for many of these decisions. When Maurice Merleau-Ponty treats physical and vital as two different levels in the same process of integrating form, he resists a dualism of matter and craft. For many students, craft can be a mystery either in terms of their disconnect from full-scale making in studio or their perceived lack of expertise on site, but the bench provided a site where actual material conditions—dimensions as well as the weight of wood—linked matter with new-found skills of making.

Students discovered that the nature of form might be embedded—"inlaid" as Guiseppe Zambonini noted—in the process of making.[2] The students were working with form, guided by the term "fold," that was inextricably linked to their bodies and the physical conditions of the materials and the partially built deck. Consequently, students came to an understanding that their engagement with the project might sometimes be "lived rather than known."[3] With their body as both active agent and test case, students developed greater intentionality with this second phase of the project.

Experience/Milieu: The Communal Work Bench

> The world experienced comes at all times with our body as its center, center of vision, center of action, center of interest.[103]

William James echoes Merleau-Ponty's ideas of embodiment in which human perception falls within a figure-ground context where edges between the two are blurred. James called these zones "fringes," where the interplay of experience and milieu provides a background for living. Here, memories and expectations mix with immediate perceptions as operative agents in the feedback process. When they began their last part of the deck, students were fully engaged in the process of


Fig.5. Students framing the communal work bench (photograph by author)

building, an engagement that allowed them to make deeper connections with the family and how they might use the construction (fig. 5). What they had already built and what they understood as a constantly changing context—a site of necessity filled with everyday domestic activities—fed back into their final construction piece.

For James, consciousness—and by extension design's engagement with the world—is a continuous flow of experiences, rather than a sequence of ideas. And, according to his radical empiricism, we experience relations, fringes, even inclinations directly. Students saw this part of the deck as an opportunity to engage the daily activity of washing and rinsing. A segment of framed deck reaches out to serve as table and auxiliary bench for the existing water source. The rest of this part of the deck forms a multi-levelled "L" shape that completes the edge for communal gatherings (fig. 6).

Fig. 6. Completed communal work bench area (top) and final review of design/build studio (bottom) (photographs by author)

Fringes are also anticipatory and speculative, and sometimes the relational gap is not always filled. The father of the family living in the mobile home is not only a farmworker but also a local pastor, and when students completed this part of deck he discovered that it would serve as a gathering space for small groups of his congregation during prayer services. With this phase of construction, students' increased confidence with building techniques, the materials at hand, and the vocabulary that could result allowed them to experiment with the systems, ultimately yielding this anticipatory, open-ended architecture that would allow for multi-faceted use. Cantilevers returned but with the purpose of leg-room, storage for washing implements, and separation from damp areas—along with the aesthetics of "floating" and "folding."

Conclusion: Live/Work

> Every nail driven should be as another rivet in the machine of the universe, you carrying on the work.[4]

In the design/build project, we engaged this additional level of feedback as we became a part of the family's daily life. Renovating their home, we were quite literally living in the work. Feedback occurred within a social milieu—the dynamic relation of students and client, underscored by a stability made fragile by migrancy and tangible need. As the project progressed, students gained an increasing level of intentionality, and by degrees my influence as instructor diminished.

Each phase of the deck project brought the students closer to the context in which they worked. And living in the work became working in the lives of those around us. It is difficult to parse such work into discrete data, so we are left to evaluate this design/build project based on feedback, the relations between things, which—as it turns out—is the critical foundation of design/build itself.

The deck project, in particular, linked experiences of construction and the family's domestic life in a similar way that James' radical empiricism suggests a "continuous stream" in which "conjunctive relations" (including reflection/action, physical/vital, experience/milieu, live/work) become part of direct experience (fig. 7).[5] And ultimately, students might understand how each "nail driven" has significance for even broader contexts of living.

Fig. 7. Children helping with clean-up and construction of the travel trailer deck (photograph by author)

References

[1] Donald Schön, *The Reflective Practitioner* (New York: Basic Books, 1983), 54

[2] Giuseppe Zambonini, "Notes for a Theory of Making in a Time of Necessity," *Perspecta*, vol. 24. (1988): 2-23.

[3] Maurice Merleau-Ponty, *The Structure of Behavior*, trans. Alden L. Fisher (Boston: Beacon Press, 1963), 170-3.

[4] William James, *Essays in Radical Empiricism* (Lincoln: University of Nebraska Press, 1912/1996), 170. For James, the fringe is "part of the object cognized—substantive qualities and things appearing to the mind in a fringe of relations." (*The Principles of Psychology* (New York: Henry Holt, 1918), 259)

[5] James, *Essays in Radical Empiricism*, 107