

Harvest-Design-Build as a Sustainable Design Pedagogy

“The degrading thing is in the idea that only the product matters. Whereas we know that in healthy cultures, the materials that are being used are loved all the way along; The real craftsman loves the tree, the board and the table. The industrial craftsman, in some sense, sacrifices the material to the product.”

— Wendell Berry

TRAVIS BELL

Portland State University

The theme of this conference is the notion that thinking while building is not only possible, but that it offers a special kind of imaginative process, one that cannot be replicated in pure representational design pedagogy. This relationship is most clearly demonstrated in the phenomenon of the Design-Build course which offers students a lasting and visceral experience in the art of design and the craft of building that is mutually inspiring to each. This paper explores how issues surrounding sustainable design can gain a special significance through the act of making. An adapted pedagogy, Harvest-Design-Build, proposes an even deeper level of engagement with questions of sustainability. This paper concludes with a modest example of one such Harvest-Design-Build project undertaken with students at Portland State University during the summer of 2013.

The role of imagination and the possibility of human sustainability are two themes deeply explored in the work of the author/farmer Wendell Berry. My thinking owes much to his work and I have attempted to make the similarities in the elemental work of farming and building as direct as possible with the inclusion of a series of quotes to lead each section.

ARCHITECTURE AND SUSTAINABLE DESIGN

The perception that sustainable design should become the overarching purpose of architectural education, of all education, continues to grow, fueled by the reality that our predicament within the ecosphere is not improving at anything like the rate necessary to avoid ruination. As we continue to refine our own approach to this larger pedagogical effort we would do well to ask ourselves if we are advancing sustainable design thinking in architectural terms, i.e. taking care of our side of the street. We should ask ourselves to consider whether the full depth of architectural discourse is being focused on issues of sustainability? For instance, we might ask whether the content and result of architectural thought on issues of sustainability is uniquely different from that of engineering? This is a pointed question, for in many



2



1

places sustainable design is essentially a euphemism for high-performance design, which is strongly weighted towards engineering solutions. While high performance design has been and continues to be a very important aspect of contemporary architectural thinking, it seems to limit the role of the architectural imagination on the broader theme of sustainability. More critically, we might ask: Are there aspects of sustainability that can only be addressed through architectural thought, aspects that will not be addressed through any other discipline? A fairly cursory glance through any course syllabi containing the words “sustainable design” will immediately verify that the we do indeed believe that there are aspects of sustainability that are engaged most thoughtfully through architectural discourse. We might now ponder how Design-Build pedagogy, a form of architectural education so rich in potential and adept at synthesis, might have something crucial to offer our students, specifically in regards to the health and resilience of local communities. Indeed the literature surrounding Design-Build pedagogy, on display at this conference, certainly suggests that there are special forms of imagination at work in making human shelter; that these forms of imagination might be critical to sustainable design education is perhaps underappreciated. Specifically, this paper seeks to describe what a good education in sustainable design (architecture) might look like and the role that Design-Build methods of education could play. In order to make sense of this proposal however, the reader is first asked to contextualize the position within a broader, more eternal human dilemma: How should we build?

HOW SHOULD WE BUILD?

“All our problems tend to gather under two questions about knowledge: One; having the ability and desire to know, how and what shall we learn? And the other; having learned, how and for what should we use what we know?”

— Wendell Berry

Students of architecture are a remarkably curious lot. They enter into this education with an astounding number of questions and opinions all centered on the basic hope that they will soon participate in the making of human shelter. Forming this array of questions and opinions is the foundational question, common to all architecture students: How and what must we learn in order to make good human shelter?

Figure 1: The construction document/model

Figure 2: The completed project

Questions of propriety in human work are always vexing, and the questions surrounding the making of decent, responsible, human shelter are particularly so. Like agriculture, architecture is an absolute human necessity; we cannot survive, in the vast majority of circumstances, without it. To do it abusively and neglectfully has been the course, but students of architecture (and hopefully their teachers) have always aimed for a more respectable form of work. When students ask us to teach them how to make good architecture we are likely to suggest a number of hopeful possibilities:



3

1. That the architecture is based on the human body
2. That the architecture alleviates human poverty
3. That the architecture celebrates human spiritual and mental health
4. That the architecture seeks to dissipate abstract power in society
5. That the architecture is rich in human experience
6. That the architecture is aligned with natural patterns

This last possibility is purposely more broadly defined than its more common conception: sustainable design. Designing for alignment with natural patterns suggests a far more complex and interrelated project than the notion of high performance design. However, the design of energy performance in buildings, and thus sustainable design as so construed, is well suited to studio pedagogy as well as modern notions of what constitutes academic research. Predictive models of design make good sense and can be represented in discreet digital and physical models and drawings all of which play nicely in the studio setting. Furthermore, this kind of design and research focus is essentially a technological design focus. Architecture as technology is a robust and seductive conception that has never been out of fashion. There is, however, ample reason to be concerned by this focus on technology as it masks

Figure 3: Students harvesting our materials

an assumption that issues of conservation and carrying capacity will be picked up elsewhere by our students. Worse, as a species, we generally occupy places where systems of ecology are not even present to demonstrate their processes to us (i.e. the city). The allure of the technological solution is that it needn't address this lack of understanding; it needs only to offer a way around it.

However, If we examine the previous list of possibilities for good architecture, we must admit that technology is only marginally implicated as a design solution. Far more represented are issues of economy, health and ethics – returning us to the question of propriety. How do you make good architecture? How might architecture support healthy local communities while at the same time supporting healthy local ecosystems? There is mounting evidence (in fact, it has been there since Jevons Paradox) that technology will not resolve our contentious relationship with the natural world nor to one another. The root of our problem looks more and more to be related to our human economy and the culture that enables and supports such an economy. There is mounting literature supporting this perspective, which could be rephrased as a dictum: the appropriate human response to maintaining healthy, diversified local ecosystems is developing healthy, diversified local economies.* If part of the role of good architecture is to align the making of human shelter with natural patterns, then part of the role of architectural education is to develop an understanding of diversified local economies. The development of this sort of knowledge is not especially aided by technology but instead depends upon personal contact with local people and materials. Structuring pedagogy to increase contact with these community 'gifts' is likely the most authentic way to develop sustainable design solutions. Design-Build pedagogy is particularly well suited to this kind of community engagement and a further stipulation on local material harvesting can add a nuanced understanding of local ecosystems.

THE VIRTUE OF MAKING WITHIN THE PROCESS OF IMAGINATION

“I will say, from my own belief and experience, that imagination thrives on contact, on tangible connection. For humans to have a responsible relationship to the world, they must imagine their places in it. To have a place, to live and belong in a place, to live from a place without destroying it, we must imagine it. By imagination we see it illuminated by its own unique character and by our love for it. By imagination we recognize with sympathy the fellow members, human and nonhuman, with whom we share our place. By that local experience we see the need to grant a sort of preemptive sympathy to all the fellow members, the neighbors, with whom we share the world. As imagination enables sympathy, sympathy enables affection. And it is in affection that we find the possibility of a neighborly, kind, and conserving economy.”

— Wendell Berry

The critique of high performance design, and of industrialized sustainable design in general, is that each tends to turn a blind eye to issues of local ecology and cultural health, instead making merry use of the industrial and financial methods and tools that have been at the heart of so many of our human problems – climate change being the most recent and enveloping. The vast majority of the architecture designed within the era of “sustainability”, where the proclamation: “though shalt sustain”, can be heard from every mountaintop, might fairly be considered a direct affront to the mission itself. When Wal-Mart's inclusion of skylights can be heralded as an achievement in sustainable design, we have reached a point where the extent of our powers of imagination have become feeble.



4

Figure 4: The Entry

Architecture works as a form of collective imagination of our engagement with the material world, of our way of living bodily on the earth. Architecture provides a means to relate our human experience to the world outside of us, and shared by all of us. In this way, architecture provides the grounds for a relationship with the world – culturally, ecologically, and spiritually. The architect is not unlike a farmer in this way – they work with the objects of the world (it’s materials) and alter these ‘gifts’ to provide the means of a good life. The goal of sustainable design has been to place the work of architecture in better alignment with given realities of the world, but it appears that our imaginations are not up to the task. Architecture has remained preoccupied with appearances and shock – a “stunt architecture” to use the turn of phrase from EF Schumacher. We appear to have limited our imagination to pure, sensual spectacle, devoid of a creative engagement with our cultural and ecological circumstances. Studio pedagogy, in it’s focus on purely visual, at best sensual, workings of the imagination is deeply implicated in this situation.

The Design-Build pedagogy offers a different set of questions upon which to unleash the imagination. In Design-Build projects, students must imagine a far more comprehensive notion of architecture. Initially this begins through imagining materials at their true scale. Connections, joints and spans; all the constraints and opportunities of material properties must be considered as more than passing interests, they must be understood as steadfast rules. These rules then act as the guidelines for imagination, preventing broad, shallow responses and encouraging narrow, deep responses.

While simply focusing the architectural imagination on material realities would itself be an improvement over traditional studio projects, the Design-Build project generally imposes a few more guidelines that further deepen the role of imagination in the student. Rarely, if ever, do Design-Build projects for architecture students remain unlimited in terms of tectonic methods and economic considerations. The students must imagine their own bodies at work in the making of the proposal and thus they must imagine human bodies in general as the means of building. The constraints of our bodily realities have a remarkable effect on the design imagination.

Certainly a wide array of methods and tools that augment our corporeal selves are employed in Design-Build projects, but even here there is a further imposed guideline – economy. Not all options available to the unrestrained industrial mind will in fact be available in a student Design-Build project. Some options are too expensive. This is of course also true of any human effort inside or outside of the university setting, as this is a feature of human culture. Thus, students are asked to imagine an actual human culture, complete with various methods and tools of trade, traditions, and values. This culture forms the basis of what is available, beyond the local material realities, in the making of human shelter. Perhaps the most valuable aspect of Design-Build pedagogy is that it offers our students a chance to set their imagination upon the guidelines of local cultural. How might this culture, fitted to it’s place, make human shelter?

These imposed guidelines to the imagination that seem to accompany Design-Build projects are often noted as a disadvantage in architectural education. The point is taken, as it seems reasonable to assume that the unrestrained imagination is ripe with potential. But in this thought lies the heart of the problems we are finding ourselves up against in our relationship to the ecosystem. Wendell Berry has eloquently argued that our ecological predicament constitutes a glaring failure of imagination, one in which we cannot imagine ourselves at home within the steadfast guidelines prescribed by nature. Instead of releasing our imagination upon the possibility of

being at home in our chosen places, we proclaim humans incapable of simpler, less consumptive, pleasures and focus our considerable effort towards making our ever growing quantities of stuff energy efficient.

By this description, the Design-Build pedagogy is already far more profoundly engaged with questions of sustainability than traditional studio pedagogy. This engagement is enabled, perhaps demanded, by the act of making.

HARVEST-DESIGN-BUILD

I have been exploring the possibilities of formulating Design-Build pedagogy to take full advantage of the already demonstrated benefits of the format, while adding a stage of natural resource education that is fundamental to any authentic understanding of issues surrounding sustainability in the built environment. This adapted pedagogy might be called Harvest-Design-Build, in reference to that almost ideal relationship of natural gifts and human use; the utilization of what can be grown along appropriate human time scales. When we harvest, we acknowledge the life cycle, cannot help but grasp the cyclical nature of birth and decay. We see ourselves as part of web of material interactions that has relevance to our building of long standing communities. Communities, in their true sense, are not transitory or temporary but are in fact founded on the possibility that collections of people might endure for longer than one pass around the sun, one season of growing, one parent/child cycle. Communities are nurtured by their members who possess the hope that loved ones will find support beyond the fleeting reality of our individual bodies. Life cycles, communities endure. The harvest reminds us of this situation.

I attempted an initial experiment of a Harvest-Design-Build pedagogy in the summer of 2013. The project was a temporary entry gate for local music festival in Happy Valley, Oregon. The temporary nature of the project pushed the students to seek materials that could be classified as rapidly renewable or salvaged. Young “weed trees” or Bamboo were the ideal candidates for the project not only because of their rapid growth cycles but also because it spoke to the already established design language of the festival; a vocabulary of sinuous, organic forms and fabric installations that wove themselves through the fields and woodlands of the site. This language was something the students felt strongly about retaining in their own design. Due to the small budget and short time frame it was determined, prior to the start of class, that it would be necessary to harvest our own material, as this would be the only way to get the material in hand and at a (presumably) reduced cost – our labor acting as a discount. Our material search returned very few options in the “weed” tree category. This category of tree is held for certain very fast growing trees that are considered a nuisance within the Portland metropolitan area. These trees are abundant and often removed from homes in the area, but teaming with local arborists proved too difficult under our time constraints. Prior planning would have made this feasible. Instead we settled on Bamboo.

The Willamette Valley is less than 100 miles inland of the Pacific Ocean on the Northwest coast of the US. This climate zone is quite good for bamboo cultivation, though it is not native to the region. We began our search by trolling want ads, digital bulletin boards and driving through local neighborhoods looking for overgrown bamboo patches that might benefit from a cleanup effort. Our plan was to offer our considerably unskilled labor and knowledge towards the removal of bamboo front yard by front yard until we had gleaned enough material to build something, something we had not yet designed. Eventually we stumbled upon a local bamboo nursery, The Bamboo Garden, located on the outskirts of the Portland metro area.

We described our project to them and we eventually worked out an interesting arrangement that brought us to the nursery for a day-long seminar on the cultivation, harvest, and working of bamboo. Following this seminar, armed with a reasonably astute eye for unhealthy bamboo canes and the knowledge of how to extract them safely from the grooves, we spent three days selectively harvesting bamboo from the nursery.

This turned out to be an exciting and mutually beneficial partnership that brought needed labor to the nursery and gave needed material to our project. The nursery owner and workers checked in on us often, giving tips and adding new information with each visit. The students enjoyed working together in the bamboo grooves. Conversations about the inherent qualities of the bamboo and the potential uses went on constantly. Design ideas based on the specific details of this cane or that cane were able to simmer for days and these ideas were constantly generating further ideas. In essence, we had the opportunity to commune with our building materials prior to any preconceived ideas about what they might be used for; the materials could play an active role in the design process. We gained knowledge of our materials as living things giving us an understanding and respect for them prior to our receiving them as building materials. And finally, we had the opportunity, extremely rare in our modern industrialized world, to earn our use of the material by offering a careful stewardship to the health of the entire grove, a special relationship between ourselves and the “gifts” of nature so praised by Thoreau:

“Before I had done I was more the friend than the foe of the pine tree, though I had cut down some of them, having become better acquainted with it.”

— Henry David Thoreau, from *Walden*

This harvesting stage was a rich and intriguing process that every student pinpointed as especially engaging and thought provoking.

Following the ‘harvest’ stage of the project we began a series of full-scale material/joint experiments that the students called the ‘play’ stage of design. This stage was equally material sensitive, likely owing much to the familiarity gathered during the harvesting. In this stage students experimented at full scale, within the open park blocks that run down the center of the university, all the potential joints and connections that might work with the specific material. Allowable spans of composite, built-up bamboo sections were tested and noted. Allowable flex in the individual canes was tested to failure. At the end of the ‘play’ stage of the project students had generated a remarkably intuitive understanding of what could be accomplished with the bamboo.

With the intimate and nuanced understanding of the building material in mind, the students assembled themselves around a large worktable and began a consensus based design process, the ‘design’ stage, that was surprising smooth and efficient. The chosen construction document was to be a large scale model that many hands could work on and that would be used like any construction drawing set to pull measurements and locate places in space. I left in the morning and came back in the evening to a completed design proposal in three dimensions. Upon later reflection, I now understand that the design process had been underway for quite some time and that official ‘design’ stage was really just the final contract document needed for the students to codify what they already knew. As the students worked together with hands and tools in the ‘harvest’ and ‘play’ stages, they had talked about the project. They discussed using this unique piece of bamboo here and this particular

type of joint there. It is not they had a definitive picture of the project in mind, but they had a familiarity and a similar mind set about where they were going.

The 'build' stage of the project proceeded as a fairly seamless continuation of the already established pattern of "thinking while building". Students now had a definitive understanding of what was being built and a keen knowledge of how the work with the material. There was little need to divide the students along particular building tasks as they had already picked particular aspects of the construction that they were most interested in. Some choose to work assembling composite beams, others to work on lashing joinery, and still others on finishes and details. The entire project was a exploration of material possibilities in the creation of a new spatial experience and each day ended with excitement at the new reality that was taking shape on site. On the final day of construction the entire group of students gathered on a large tarp and spent the remaining hours separating the individual bamboo leaves from the discarded leafy branches that had been trimmed away from the canes. There was a palpable urgency in the effort to use every piece of the harvested material to some thoughtful effect. Moments before the opening of the music festival, when thousands of festivalgoers would excitedly stream onto this new landscape through our humble construction, the silvery leaves were spread out as a subtle path weaving its way across the landscape and through our twisting bamboo frame. The sound of whispering leaves sliding past under foot was a sensuous reminder that human intention and affection for the entirety of this particular material 'gift' had come to exist in this place.

CONCLUSION

Perhaps the simple, persistent reminder that we must gather what we need - again and again - is critical to the development of an authentic land ethic. For the development of our future architects, adding the 'harvest' stage to Design-Build pedagogy offers a tactile reminder of the process of material growth and use. The Harvest-Design-Build pedagogy proposes that material extraction/acquisition is a reasonable concern for those who work diligently on the building of human shelter. That architects do not feel a deep connection to this critical reality that grounds our work is another of the long list of lost knowledge that has come from specialization of labor. The consequences of specialization loom large as an issue in all human work that attempts to align human efforts with the natural orders. Sufficed to say, specialization of architects as disembodied designers of human shelter, does not give us access to the knowledge necessary to create sustainable architecture; like so many aspects of our work, we are most likely to learn the lesson with our bodies.

We have continued to pursue the possibilities of the Harvest-Design-Build pedagogy in an expanded, two-term project, for 2014.

ENDNOTES

1. Berry, Wendell, *It All Turns on Affection: The Jefferson Lecture and Other Essays*. Counterpoint. 2012. Print.
2. Berry, Wendell. "Natural Gifts"; recorded interview. *New Dimensions Media*. Audio.
3. Berry Wendell. "People, land and Community"; recorded lecture. *Peace Love Unity*. Web.
4. Schumacher, E.F. "On Appropriate Technology"; recorded lecture. *New Economy Coalition*. Web.
5. Thoreau, Henry, David. "Walden; or, Life in the Woods." from *American Earth; Environmental Writing Since Thoreau*. New York, New York. *Literary Classics*. 2008. Print.