

Teaching Agency and Entrepreneurship in Architecture Studio

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This investigation posits that there is a fundamental disconnect between the skills learned in normative architecture studios and the agency required to advocate for design in business contexts. A case study of a fourth-year entrepreneurship studio provides an analysis of a methodology for teaching design advocacy to architecture students. Tackling a range of small to large problems, students designed viable products in just ten weeks. Results and limitations of the methodology are discussed. Suggestions are offered for future entrepreneurship courses.

TRADITIONAL STUDIO AND THE ARCHITECTURE PROFESSION

Architecture school teaches students to tackle multiple scales of design problems using research and analysis as bases for an iterative design process. Yet there is often a disconnect in architecture schools between learning about the discipline of architecture and learning to have agency in the business of architecture. Although the normative design brief where students develop designs in response to a prompt can be productive for students' growth and skill-building, the traditional studio format needs to evolve to better teach architecture students how to advocate for the value of design.

This paper describes one model for integrating entrepreneurial thinking into a "standard" architecture design studio. The beaux-arts pedagogical model¹, still pervasive in architecture schools today, where studio professors critique compositions, is not inherently empowering in that it does not interrogate the discipline's basic assumptions of value. In the traditional (*old school*) studio model, a master-apprentice relationship established between faculty and students requires that students present their ideas to the faculty and jury. (Fig. 1) Also pervasive in the old school format, architecture (with a capital "A"), is the ultimate subject of assessment. Therefore, advocating for the value of design decisions is not intrinsic to the process.

Recognizing the limits of this approach, schools now provide a range of design experiences including collaborative learning and integration of technology and sustainability. This expanded scope of inquiry helps expose students to a variety of perspectives and helps to cultivate an awareness of the need to innovate and advocate for new applications of architectural expertise. The *new school* is therefore better attuned to the skills needed for the profession, but even in this more robust approach to teaching design, some students remain

reactive to their faculty rather than proactive learners and business acumen tends to remain elusive. In the 2015 NAAB Procedures for Accreditation, entrepreneurship is mentioned once in Realm D, Professional Practice: *D.3 Business Practices: Understanding of the basic principles of business practices within the firm including financial management and business planning, marketing, business organization, and entrepreneurialism.*² Therefore, the impetus falls on faculty to advocate for new approaches, not just in Professional Practice, to teach students about forging careers in architecture and design.

The labor-intensive, all-nighters ubiquitous in many architecture schools serve as an unfortunate preview of the working life of architects, many of whom are expected to work overtime without compensation.³ A *2017 AEC Industry Salary Report* based on 6,500 surveys sent worldwide (with 12% of respondents designers) found that designers were the lowest paid professionals in the AEC industry.⁴ Similarly, the Bureau of Labor Statistics reports that average wages for architects with a Bachelor degree were between \$6,000 and \$8,000 below civil, mechanical and environmental engineers.⁵ Although the professional path—school, internship, licensure, career—is, in some ways, fairly linear and straightforward, in other ways, the system is wrought with challenges including low initial pay, long working hours and vulnerability during market recessions. Furthermore, as Kenneth Frampton has stated, "Interprofessional competition has perhaps never been more intense, given the deregulation of the architectural profession that happened so long ago that nobody now remembers that professional fees used to be fixed by codes of practice."⁶

These concerns resonate for students, educators and practitioners alike. The Architecture Lobby, founded in 2013 by Peggy Deamer and colleagues, which is now sprouting chapters across the country, has synthesized pervasive concerns about unprofessional treatment of architects and architecture workers.⁷ Deamer also co-founded Just Design, a collaboration between the Architecture Lobby, Harvard Graduate School of Design's Women in Design initiative, and the Yale School of Architecture's Equality in Design student organization to recognize firms that provide healthy workplaces and support structures for employees.⁸ Parallel discussions about student agency and engagement have sparked conversations at recent conferences including ACSA Denver, spawned a protest at Syracuse University and a



Figure 1: An informal critique in a “traditional” architecture studio.

doctoral program at Princeton⁹, and curricular innovations at universities including MIT and Georgia Tech.¹⁰

THE VALUE OF DESIGN

Value, in the context of this paper, denotes not just intrinsic worth, but also monetary compensation. The 2012 IBM CEO Survey of 1,700 chief executive officers states, “CEOs now realize that creativity trumps other leadership characteristics,” a powerful argument for hiring designers in leadership roles. Along similar lines, the Design Management Institute assessed publicly-traded companies that continually invest in design and mix designers in their leadership. The companies included Apple, IBM, Nike, and Target. Over a ten-year period from 2005 to 2015, the design-focused companies in the study achieved 211% increase in profits over the Standard & Poor 500 index.¹¹

These tangible statistics on the potential monetary rewards of design investment are clearly positive for architects. Yet these terms are not adequately harnessed, even by the American Institute of Architects. The AIA Committee on the Environment (COTE) published the *Top Ten Reasons Buildings Matter* with the goal of helping designers to advocate for sustainability in design work. Of the top ten reasons, most pertain to well-being of individuals or the planet, and only two of the top ten reasons buildings matter are based on the economic impacts of long-term energy use and disaster preparedness.¹² The AIA COTE report should provide more financial statistics to help architects advocate for sustainable design in palpable terms during client negotiations.

The fact that investment in design contributes to increased profits seems an inherent quality of and driver for design. As a result, the expectation on the part of designers is that design will be valued and adequately compensated. But in business contexts where profits can trump other concerns, designers need to know how to advocate for design and for themselves using terms that resonate with clients. Firms including ZGF, Perkins + Will, and Kieran Timberlake are among those using post-occupancy evaluations as a means to assess design

outcomes, research that enables the firms to discuss the value-added results of their designs. Post-occupancy and other entrepreneurial strategies are powerful means to gain agency as professionals.

ACKNOWLEDGING OTHER SCHOOLS’ APPROACHES

Faculty are recognizing the need to prepare students to be successful advocates for design. One means of developing a “real-world” understanding of client needs is through community engagement, and numerous architecture schools are finding ways to incorporate service learning into the studio context. Nationally-recognized programs such as Rural Studio and Tulane University’s City Center regularly engage surrounding communities through design-build services. Recognizing the benefits to students and the importance of cultivating civic leaders, the University of Utah made community engagement a curricular requirement for all students. Many other schools emphasize engagement projects including Texas A&M, Pratt, Woodbury University and the University of Maryland, often partnering with non-profits who may act as the client or managers to see projects through completion.

Another approach to teaching design value is to engage students in the field of business. Examples of schools forging robust entrepreneurial programs include Georgia Tech, where the Digital Building Lab enables students to collaborate with industry on research projects, and MIT’s DesignX, an entrepreneurship accelerator. Along these lines, Odile Decq started the Confluence Institute in Lyon based on the premise that architecture students need to learn to have agency in design and integrate humanist goals. Students have an internship requirement in which they have, “the choice of a professional immersion, the development of community-based initiative, or an entrepreneurial project.”¹³ The school also hosts office space to incubate start-ups.

ENTREPRENEURSHIP STUDIO AT CAL POLY

These community engagement and entrepreneurship examples provide inspiring new models for architectural design pedagogy. Accordingly, this paper describes a small-scale method for integrating agency and entrepreneurship into the traditional architecture studio. Taught by the author to



Figure 2: Students in a welding, learn-by-doing workshop.

fourth-year architecture students at Cal Poly San Luis Obispo, students were guided through an entrepreneurial process during the 10-week spring quarter prior to the students' fifth year in which they undertake a year-long thesis project. Positing a direct correlation between design value and design compensation, the studio sought to engender a more robust understanding of value to empower students to advocate for design *and themselves* in the professional realm.

Well-known entrepreneurs, Charles and Ray Eames, created the *Design Diagram* describing the importance of discovering the needs of the client in relation to the designer's interests, asserting that "it is in this area of overlapping interest and concern that the designer can work with conviction and enthusiasm."¹⁴ It is this same spirit in which the fourth-year students were introduced to an entrepreneurial design methodology.

DESIGN PROCESS

At the start of the entrepreneurship studio course, students were taught the difference between the *design thinking*¹⁵ imparted to business students and the design process associated with traditional architecture studios. The process of design thinking (in the business context) introduces a series of checks-and-balances to test design ideas in the context of market need and value. This process allows for the development of project goals based on client and societal needs rather than on the student designer's interests. The process of design in architecture schools is usually described

as a nonlinear process of ideation, testing, feedback and execution. This is not dissimilar from design thinking, which involves a similar methodology to empathize, define, ideate, prototype, test, and implement. The major difference is that in the traditional design studio, the empathy and definition components of the project brief are often described by the professor and understood as given. The faculty member often acts as a stand-in for the client in these pedagogical scenarios. However, the process of empathizing and defining a problem provides students with a better understanding of market need and potential, a critical basis for ascertaining the viability of a product or building.

To begin the studio, the students were asked to work in pairs on two short design exercises to help jump-start the problem-solving process and develop comradery. The first short charrette asked pairs of students to take a standard architectural component and intersect it with a living or digital system (such as BIG's Friday Door Lock). Another prompt asked teams to take a standard architectural component and add a new performance (such as Odile Decq's acoustical pendant lights). Since only a few hours were devoted to these prompts, the results varied widely, but the discussions proved helpful for students to brainstorm about possible futures and products.

Additionally, on the first day, the students were introduced to the concept of design thinking. Students were asked to select a problem from a list ranging in scale from small to wicked large. They were then asked to research, through traditional means as well as phone and in-person interviews, the concerns, values and needs of the client, thereby shaping project parameters and goals. Students were provided with an overview of the design process for the entrepreneurship studio, which involves problem definition (i.e. no design brief), empathy and interviews, market research, material studies and prototyping, cost estimating, feedback, redesign, more prototyping, and a final pitch.

Since this studio is taught in the quarter before students begin thesis, this first project was framed in a manner intended to cultivate avenues of inquiry that could lead to future thesis investigations. The list of suggested problems was therefore purposefully long and ranged widely in scope and scale. The umbrella question asked at the start was, *how can architecture make life better?* (Fig. 3) Students were then asked to narrow their focus to two problems by the next class period and present basic research on the two topics. Surprisingly given the timeframe, students were enthusiastic to tackle the wicked problems, and there were several overlapping interests amongst the students. Despite this, students were eager to work alone rather than in pairs and only three teams formed (out of 14 students).

The schedule and pedagogical methodology for the entire quarter attempted to adhere to the design thinking process

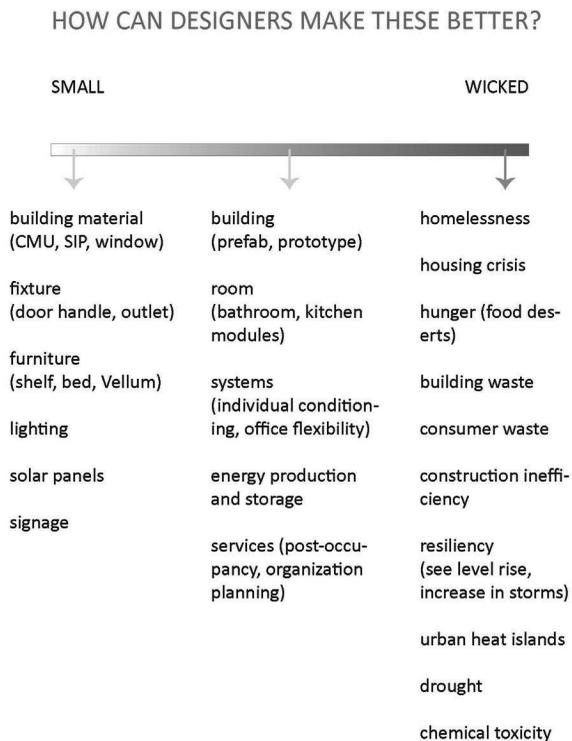


Figure 3: Design challenge presented to students, created by author.

outlined on the first day. Periodic workshops and short lectures were given to introduce students to professional topics. Subjects included value propositions, emotional intelligence, interviewing strategies (to decipher client needs), intellectual property, negotiation (to ask for money and salary). Additionally, to help with possible prototyping, a colleague offered a welding workshop. (Fig. 2) These lectures and workshops helped to maintain the energy of the studio and regular introduction to new concepts bolstered skills and confidence. Like a traditional studio, the other days were spent in charrette mode, desk critiques, small group critiques or pitch presentations.

DISCUSSION OF RESULTS AND LIMITATIONS

The process of working from a broad question (how architecture can make life better), to a prototype for a solution, was challenging and clearly defining the problem took a considerable amount of time. This was especially true since the majority of students were more interested in the wicked problems, making narrowing the scope of work challenging. Students were very eager to select their own problem and work individually in preparation for thesis. Yet, out of all the issues presented as possibilities, the students ended up working on problems in three categories: the housing crisis, energy and air quality, and acoustics. Aside from a couple of

strong exceptions, the three teams of two were naturally able to produce more than students working individually, and in future iterations, students will be required to work in teams.

The products developed by students ranged from buildings to wearables. Two students developed small, prefabricated cross-laminated timber homes in response to the housing crisis in San Luis Obispo, one geared towards students and the other towards the homeless. Another student developed a flat-packable, easily constructed emergency shelter for disaster relief. On a smaller scale, one pair designed a convertible bench to temporarily shelter homeless on the streets. Another pair designed a performative street light that integrates photovoltaic panels to generate energy for electric cars. The interior projects included two different proposals for acoustical ceiling tiles and clouds, the latter of which also filters air using charcoal. All these projects were derived from evidence provided from research and client interviews, thereby strengthening their viability. The final pitch presentations, critiqued by design and business faculty, were well-received, although all projects needed more time for prototyping and client feedback.

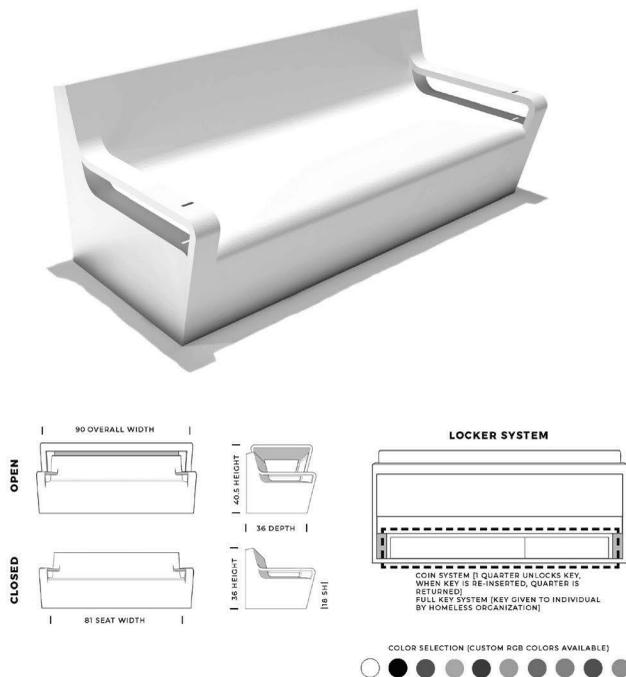
The following quarter, after students had begun their thesis year, a one-question survey was emailed to students asking, *Are you using any of your research from the entrepreneurship class in your thesis project?* Only one student responded that the work had not influenced his thesis work at all, but the other seven respondents felt that if not directly linked, the studio helped them to understand work strategies. One student replied, "Overall, the methodology of relating to the user/guest/customer coupled with product design and marketing has been and will be useful throughout...abstract development and final design." Another student said, "It has helped in the way I frame and present information," and another said, "It has helped me identify and easier categorize areas of research needed to delve further into a design problem." These responses support the argument that the entrepreneurship studio should continue to be taught in the fourth year.

SUGGESTIONS FOR FUTURE ENTREPRENEURSHIP STUDIOS

Requiring students to work in teams of two or more and narrowing the possibilities for problem selection will greatly facilitate production and learning outcomes. The range of problems should also be narrowed so that students have the possibility of sharing research and the angst of problem definition is diminished. A more focused, topical studio will help to bring the students together around a theme and encourage shared research and collaborative design work. Suggestions for future topics of focus include housing, construction waste, net-zero energy, and artificial intelligence. These are broad enough that students can research, empathize and define their own niche problem, but basic research can be shared among the teams. Alternatively, the problem

street[sleep]

[a pop-up shelter for those in need]



transforming furniture [and cities!]

street[sleep] is public, transformable furniture designed to provide a comfortable alternative to sleeping on the streets. [title] offers an easily operable shelter system and also includes personal, lockable storage to allow peace of mind while getting rest. The product is durable, and color-customizable and will create a comfortable public amenity for streets and parks.



incentive program

Many homeless have an inherent distrust of shelters. This sparked an idea—how can we offer shelter to homeless and also create better relationships between those in need and the services available. To utilize these pop-up, transformable shelters, individuals will agree to meet certain conditions through a local organization. This contact will begin to bring more trust between shelters and homeless individuals while providing dignity to those living on the streets.



Figure 4: Bench for temporary homeless shelter by Brianna Tramontano and Cory Peterman

scope could be narrowed by selecting a portion of a city or a client, which is a more traditional approach, but could foster different learning outcomes if taught with an entrepreneurial methodology.

One of the biggest hurdles for students were the client interviews. The majority of students were very resistant to this step, despite that strategies were offered to students and time during class was devoted to interviews. However, those students that included interview quotes in their presentations relied on that information during their design process and provided justification for their decisions, thereby helping them to defend the market potential of their products. In future studios, an interview and empathy training workshop should be held in the first week and students should be required to conduct client research prior to development of design concepts.

Given the expansive research required, the timeline for a 10-week studio is suggested to be three weeks for client interviews and problem definition, three weeks for design development culminating in a pitch presentation, four weeks for redesign and then a final pitch. Access to prototyping equipment on campus or even in studio proves crucial for

quickly advancing designs and making the critical translation from ideation to tangible product.

The entrepreneurial framework works well as pre-thesis, but could also work in the thesis context and outcomes would improve given the year-long timeline. Timothy Hyde used Reyner Banham's *The Great Gizmo* as a model for critiquing the traditional means of evaluation within the thesis studio stating, "Techniques of assessment used in industrial design, such as affordance, performance, or economy of means would be vital for the evaluation of a technological thesis, but would not be found inside the black box."¹⁶ Emphasizing *affordance, performance, or economy of means* would springboard students' professional preparedness and ability to advocate for the value of their designs. Hyde goes on to say, "The gizmo thesis could incorporate equally as many criteria and factors [to the traditional black box thesis], but its inclination will be to distill them, to find and overcome limits through rigorous processes of simplification."¹⁷ This process of simplifying rather than complexifying also parallels the entrepreneurial studio methodology—the more accessible a design idea is, the greater the potential for market success.

PEDAGOGICAL VALUE OF INTEGRATING ENTREPRENEURSHIP IN SCHOOLS

Studios that teach methodologies for engaging students in

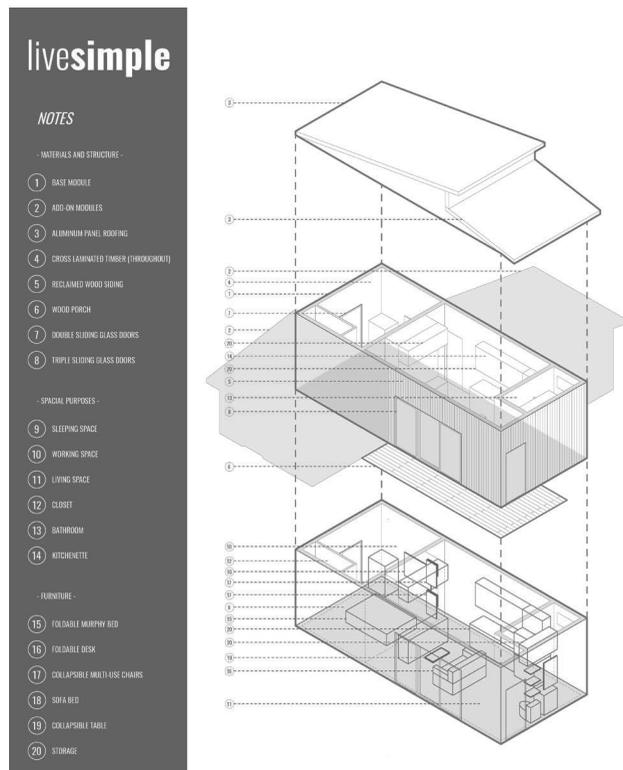


Figure 5: Prefabricated student housing module by Victoria Herz.

real-world problem solving enables students to learn the value of design in application. Further, defining and defending their product or solution teaches students design advocacy, a critical professional skill. Entrepreneurial skill-building, however basic, provides an opportunity to discuss market viability and the potential of starting a business—empowering for architecture students. Learning entrepreneurship creates a means of developing agency and widens the path after graduation.

Architecture schools must teach students how to advocate for design in broad contexts, not just architecture offices. Plainly put, architecture students should be taught to describe their designs in monetary terms. Similarly, and perhaps even more controversially, schools should teach workflow strategies that maximize production through creative and rigorous working methods, while promoting efficient work and efforts to minimize time spent. By teaching architecture students agency and entrepreneurship, graduates learn how to make life better for society and themselves.

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