Collaborative Beginnings: Developing Collaboration Skills In An Interdisciplinary Design Seminar

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Introduction

Design practice is rapidly becoming more collaborative and integrated. Emerging technologies are facilitating the development of collaboration in design, and pressing concerns such as environmental, economic, and humanitarian needs are increasingly requiring the skills associated with collaboration (Sawyer 2012). As co-designers of built environments, architects and landscape architects are historically among the closest of collaborators. However, their distinctly different disciplinary training begins early. By the time they are working together on projects, the relationships between these two sets of designers can occupy a spectrum wherein they may merely coordinate their efforts or they may participate in a truly integrated design process (Berrizbeitia and Pollack 1999, Spellman 2003).

This paper and presentation will discuss the development of an interdisciplinary design collaboration seminar at the University of Massachusetts Amherst that included both architecture and landscape architecture students. The seminar was developed concurrently with field research conducted with leading design practitioners on the topic of collaboration in their practice. Themes that were important to design projects featuring architect-landscape architect collaborative teams led to particular seminar modules and exercises. The paper analyzes data from two years of student course evaluations and from design studio faculty feedback, and considers the impact of intentional skill-building in collaborative practices on beginning designers in their first interdisciplinary design studio.

Context

The 2016 AIA Firm Survey reports that one of the most notable trends in architectural practice over the last decade is the dramatic increase in the percentage of firms offering multidisciplinary services. These firms now offer both architectural services and at least one additional specialization (AIA 2016, p.10). However, landscape architecture is offered less frequently in-house than the most prevalent specializations of interior design and code compliance. In 2015, 11% of all architecture firms, and 53% of firms larger than 100, offered landscape architecture services. (AIA 2016, p.43). However, 60% of all firms use outside landscape architecture project consultants, ranging from 40% for sole practitioners to 85% for mid-size firms and 71% for firms larger than 100 (AIA 2016, p.58). Thus, while architecture firms commonly collaborate with landscape architecture consultants, they less frequently incorporate the discipline into their own organizations. The structure of these practice relationships between architects and landscape architects is an important feature for students of both disciplines to examine as they consider their future professional lives together.

These 2016 AIA Firm Survey statistics demonstrate that the field has fundamentally moved beyond the limited vision of the architect as a solitary genius to an ever-evolving conception of architecture as the coordinated endeavors of a wide array of individuals with varied backgrounds and complementary skillsets, all working together as a team (AIA 2017, p.58). Importantly, the question remains as to how this conception impacts the structures and objectives of contemporary design education. (see Smith, Carraher, and DeLisle 2017, pp. 84-86).

While pursuing this question through a multi-year research project, the author developed and implemented a seminar intended to foster collaborative skills among graduate students in both architecture and landscape

architecture. The six-week seminar, *Interdisciplinary Design Collaboration*, occurred prior to the students' participation in a seven-week joint studio project.

Field Research Findings

The seminar's objectives and course modules were informed by fieldwork conducted over three years with leading design practitioners on the topic of collaboration in their practice (Brause 2017). The findings in this paper are primarily drawn from an initial pilot study comprising interviews with architects and landscape architects. The landscape architects interviewed worked at a variety of scales including residential and institutional, and were positioned in various roles from design-side professionals to client-side public officials. Additionally, some were actively involved in national leadership and thus could address issues in the profession beyond their own practices. None of the landscape architects interviewed were part of multidisciplinary architecture firms.

Qualitative analysis of semi-structured interviews revealed some themes as particularly important to design projects by architect-landscape architect collaborative teams. For example, designers emphasized the importance of understanding the distinct expertise of other disciplines and indicated the tremendous impact this has on project outcomes, from the structuring of contracts to the development of shared design processes. Course modules developed from this research also addressed issues common to a broad range of collaborative endeavors such as respect, communication, and conflict management, but these were inflected towards scenarios common to architect-landscape architect collaborations. For example, many designers interviewed noted that a respect for the personal and professional assets brought by other team members was critical. In some architect-landscape architect teams, this respect translated to behaviors such as deep listening, which resulted in unique design directions.

Findings: Recognizing Disciplinary Distinctions

The field research concerning project-based collaborations by architects and landscape architects identified an essential component for project success: mutual understanding and respect for the respective disciplinary distinctions and expertise. Landscape architects interviewed indicated that their partner architects had to understand the scope of their design concerns and to appreciate the distinctive qualities of the landscape medium. The landscape architects recognized this medium is often difficult for other disciplines to appreciate, but they also emphasized that architects must understand that landscape is "not just frosting on the cake."[1]The landscape architects also indicated that design teams can adopt different approaches to the building and landscape aspects of a project. One landscape architect elaborated:

> *The architecture and the landscape don't have to be a one-to-one condition, and actually our approach is that the relationship to the landscape with architecture is actually more interesting when it has moments of contrast, or exaggeration, or tension rather than a blurring where you don't know where it starts and where it totally ends. Or that the landscape is trying to be like architecture and the architecture is trying to be like the landscape. It sometimes waters down the discipline that's trying to be like the other*.[2]

This multifaceted approach to the medium requires that the partners work cohesively on design decisions from the project's inception. Some designers described an optimal process in which the entire project team begins by discussing both building and landscape issues together so that they can deeply inform each other's concerns. Designers indicated that as long as design decisions are being made together, the design team can create a cohesive, but not necessarily consistent, project.

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[1] 1Interview with landscape architect, March 21, 2014.
[2] Interview with landscape architect, March 21, 2014.

Designers also noted that architects and landscape architects have distinct differences regarding project scope, scale, and duration which extend to such matters as client relationships and project contracts. Consequently, to develop a shared design framework, both sets of partners must have an understanding of these divergent concerns. For example, one landscape architect explained that their architect partners can tend to regard the scope of a project as "discrete" or "object-based," while the landscape architects indicated that they typically adopt a broader view of the project that transcends the individual building project. Instead, the landscape architects focus on developing "a set of principles" that can be applied across a larger campus framework. The same landscape architect indicated that when their institutional clients share this viewpoint, they find their clients return to them "again and again to make a cohesive whole."[3] Institutional landscape architects interviewed indicated that understanding this difference in outlook—to one that is relationship-based versus project-based—should, but does not always have enough impact on the structuring of project contracts to insure successful and respectful project relationships.

Project contracts and structures can determine who is "at the table" when the design process begins as well as who is maintaining the landscapes and holding onto the broader project vision once construction is complete. Beyond contracts, the relationship with maintenance professionals who care for landscapes came up in nearly every interview with landscape architects. By contrast, while architects discussed the critical importance of their relationships with clients, none of the architects interviewed discussed relationships with maintenance personnel. As one landscape architect explained:

> In general, the landscape, regardless of the design, is only as good as the maintenance gets. [W]ith a building you want the photographers to come in on day one as soon as the furniture is there, but before there are scuff marks on the walls, and in landscape you don't want your photographer to come in before your trees mature a bit, because it just takes landscapes time to get leaves on the tree—the plants are literally shocked by the transplant process. So if it's not being maintained initially, it never does what you want it to do and long term it's just going to decline. And if it's maintained in a misunderstood way, it can end up being nothing like what you've designed. Or if you design something that's unmaintainable then it'll be torn out.[4]

Thus, the interviews underscored the different approaches architects and landscape architects take with respect to disciplinary expertise, medium, scope, and duration.

Field Research: General Findings

In addition, the interviews revealed the importance of examining the personal and professional assets that individual team members bring to the project, particularly because the seminar and design studio would consist of small student teams comprising two or three peer members. In hierarchical situations, groups have assigned leaders and team members have clearly delineated roles. By contrast, in nonhierarchical settings such as collaborative academic studio teams, the members need to negotiate and develop their roles.

Harvard professor Roger Fisher and his coauthor Alan Sharp coined the term *lateral leadership* to describe situations in which no single person has sole decision-making authority (Fisher and Sharp 1998). When relationships are built over a long period of time, such as in professional practice, there is established trust, and the team members may grow comfortable gravitating toward their strengths and interests and negotiating their roles. However, in short-term collaborations such as design studios, students are faced with quickly negotiating

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[3] Interview with landscape architect, November 4, 2014.
[4] Interview with landscape architect, February 21, 2014.

leadership roles. Fisher and Sharp suggest that equitably sharing the workload means not just developing and using your own abilities but also helping others to develop and use theirs (Fisher and Sharp 1998, pp. 201-202). One step in this process is recognizing one's own strengths and weaknesses, and a second is recognizing the assets that others bring to the team. Many designers interviewed in the field study indicated that design outcomes benefit from partnering with others who bring different strengths, histories, sensibilities, and expertise, so long as the team members can also learn from each other and develop each other's skillsets (Brause 2017, pp. 107-137).

Interdisciplinary Design Collaboration

Drawing upon the field research, the *Interdisciplinary Design Collaboration* seminar had three primary objectives, which activities were organized to support. The first objective was for architecture and landscape architecture students to understanding each other's field and disciplinary expertise. The second objective sought for each partner to develop processes to recognize the personal and professional assets of themselves and their partners. Lastly, the third objective aimed to develop a shared language for collaboration and a set of agreements for collaborative activities.

Course Outline and Activities

During the first three sessions of the course, lectures were addressed to the entire cohort and interactive exercises were completed in rotating groups comprising equal numbers of landscape architecture and architecture students. At the end of the first three weeks, the studio faculty and the author formed the project teams that would work together in studio for the rest of the semester. For the second three weeks, the students' studio teams completed exercises that were specifically focused on team-building in advance of design work.

Activities designed to support the first objective of understanding the respective fields and the disciplinary expertise included lectures and interactive exercises. These addressed each discipline's primary roles, activities, collaborators, attitudes, values, and training through historical and contemporary examples. Course activities designed to support the second objective of building awareness of the team members' personal and professional assets included asset mapping and portfolio reviews, identification of gaps and overlaps, and the creation of a shared plan for skill sharing and individual development. To achieve the third objective of developing a shared language and parameters for their collaboration, partners developed a team contract that addressed many issues common to collaborative projects. The contract document provided prompts to develop agreements for team processes, procedures, platforms, graphic standards, communication guidelines, roles and assignments, and ways to address individual accountability. Working through the contract prompts provided a framework to discuss many of the issues that research indicated arises during collaborative projects. Additionally, the modules on asset mapping and contract development built team norms and trust, an essential ingredient for collaborative work (Duhigg 2016).

Findings

The research question for this seminar experiment asked whether intentional skill-building in collaborative practices could advance the deployment of those skills to greater design success in an interdisciplinary studio context. Several instruments were used to gauge the students' experience of translating the work from the collaborative seminar to their team-based studio work.

First and foremost, the two faculty members who had taught this studio for over a decade provided instructive feedback. The faculty reported that after the first offering of the seminar, they noticed an improvement in how their students collaborated. The faculty observed that the seminar succeeded in providing students with concrete ways of building and organizing teams.

Second, for two consecutive years, the students were surveyed after they finished their studio course. The first year, the survey questions sought to assess whether the seminar should continue to be offered. Students unanimously responded that the course should be offered again. One student wrote, "The seminar was an immense help for the project. It was like stretching before a race. I cannot imagine not doing it." Another wrote, "I think it was most helpful in that it brought up the issues that happen when working with partners and gave us tools on how to address these issues."

After the second year, the survey was revised with the input and review of a Post-Doctoral Research Associate at the University's Institute for Teaching Excellence & Faculty Development. This more fine-grained survey yielded additional data regarding both individual and team experiences.

To measure student understanding of each other's disciplines, students were asked on a five-point Likert Scale how much they knew prior to the seminar. In the seminar's first offering, 30% of students indicated that they knew nothing of the other discipline when they started the semester; the following year, 25% indicated that they were not at all familiar with the other discipline at the course's inception. Each year, between 15-20% of the students indicated they were very familiar with the other field, with the remainder indicating they possessed some limited knowledge prior to the course. In an open-ended question regarding their experience of learning about the other discipline, students indicated that the seminar helped them to understand the other discipline's roles, depth, scope, and processes.

To evaluate student understanding of each other's contributions, students were asked to assess the personal and professional assets of their teammates. The answers demonstrated the students' keen awareness of their partners' contributions and reflected praise for their general design ability and disciplinary knowledge, such as technical skills relating to building or site sustainability. However, the survey also revealed substantial differences between the two annual cohorts. The first year's cohort was more enthusiastic in their comments about their partners. Comments included: "My partner was a keen 'idea generator,' and very well prepared for understanding how to integrate inside ideas with outside ideas!" and "My partner is really a highly efficient person. She can get alot information that helps our design. And her attitude is active. No matter how tired she was, she was always finishing her part on time." By contrast, the second year's group tended to focus on graphic output – whether their partner was or was not skilled in digital production, particularly rendering. While some members of this group praised their partners for being "skilled negotiators," others indicated that their partners "lacked time management skills."

To assess whether teams were able to develop a shared language for collaboration and a set of agreements for collaborative activities, the survey asked students a series of questions regarding how their team worked together, communicated, and made decisions. Students from both years appreciated that the seminar featured a scheduling assessment so that students who wanted to work at particular times (weeknights/ weekends) were paired together, thus facilitating weekly meetings for students to work in-person. Both cohorts of students reported that their teams also communicated virtually outside of class every week and that their teams were able to move easily between working together and working separately. Most students felt quite comfortable sharing their views with their partner(s) and reported they received constructive criticism about their work. However, a few individuals from the second cohort did not feel comfortable sharing their views and, notably, 25% of this cohort felt that they rarely received constructive feedback. Significantly, due to limited English-language ability, verbal communication was a barrier for more than 25% of the class. However, when asked about project decision-making, most students believed their groups ensured that consensus was reached on all decisions.

The detailed survey for the second year's group of students revealed a significant imbalance in workload between the architecture and the landscape architecture students. This was most keenly reflected in their responsibility for graphic output, with the architects reporting that they carried a much heavier share of the workload. It remains to be seen whether this cohort was uniquely imbalanced with respect to this skillset. However, the data indicates

that the faculty may need to be sensitive to the potential for imbalance and should plan to work with individual teams to craft agreements that are tailored to the team's composition. This data also highlighted structural differences between the two academic programs that needs to be addressed by aligning curriculum.

Conclusion

Research findings from the field study and literature review on collaborative practice indicate that collaborative skills are an increasingly important component of a designer's professional skillset. The *Interdisciplinary Design Collaboration* seminar provided an opportunity to test the research findings in an academic format. The seminar was created to enhance the experience and design outcomes in an existing collaborative studio of architect and landscape architecture students. Course modules, derived from field research, focused on understanding the collaborative nature of the two professions in order to provide context and skills for team-based studio work.

Two years of faculty feedback and student surveys demonstrate that some course objectives were achieved, but further refinement of the seminar is warranted to address curricular differences between the two academic programs and to improve the instruments of data collection. The surveys from both years' cohorts indicated that students gained an understanding of the other field and were more aware of the expertise and assets brought to the endeavor by their partners. While students appreciated that the seminar highlighted issues particular to team-based design work, there were some structural differences between the two academic programs that could not be addressed by a seminar alone. This finding will continue to guide shared curricular development.

This seminar is part of a broader academic effort to advance collaboration in the industry by preparing students with an understanding of collaborative process and an appreciation of the central role that collaborative behaviors play in twenty-first century design. Thorough evaluation of the overall success of these broader pedagogical endeavors will involve a longer time frame and other formats than this two-year study of a six-week seminar. Lastly, to assess this particular seminar's effectiveness, the study should develop in three important ways. First, this study should involve a multi-year, longitudinal comparison of two sets of studios: those conducted after the collaboration seminar and those conducted without the seminar. Second, the study should measure the outcomes of the study by considering both the students' subjective experiences as well as faculty's evaluations of the students' work quality. Third, the study should focus on which tiers of students actually benefited from the seminar. This additional data collection and analysis will support the broader academic effort to provide the next generation of designers with the critical collaborative skills necessary for them to succeed in the increasingly interconnected workplace.

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