

Collaboration: Propelling An Expanded Practice

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Architectural practice is risky. While new models emerge and continually reshape the practice landscape, the institutional, financial, and social pressures toward normalization as a means to mitigate risk remain substantial. This paper considers three collaborative models that, while operating within the normative constraints of practice, exhibit a measure of deviation from these constraints and, at the same time, provide outlets for project innovation and creativity. By examining these discrete forms of practice experimentation through the lens of institutional heterogeneity, we may anticipate new models for future practice.

INTRODUCTION

Architectural practice is rapidly transforming due to forces both internal and external to the design professions. Practice takes place in a globalized context that involves sophisticated tools and workflows. Clients require architects to deliver predictable results on tighter budgets and shorter schedules, while also meeting increased building performance standards. Designers are increasingly called upon to resolve not only environmentally complex problems but also socially complex ones. Emerging materials and processes, an ever-expanding set of digital tools, and new project delivery methods demand that designers keep current with both disciplinary and extra-disciplinary advances.

Although, as the ACSA Call for Papers suggests,¹ the capacity for practice innovation to respond to these transformations may be unbounded, such innovations add elements of risk to an already risky business.² And while new models may be emerging to address the changing practice landscape, the institutional, financial, and social pressures toward normalization in order to mitigate risk remain substantial. Rather than look to develop entirely new modes of practice, might we examine more subtle adaptations as experiments that may potentially yield next-generation models?

In research focusing on collaboration, there is evidence that collaborative practices provide a measure of deviation from some of the normative and systemic organizational constraints that currently

surround architectural practice, while at the same time providing outlets for project innovation and creativity. This paper considers three collaborative models that satisfy the pragmatic external drive toward organizational isomorphism, while drawing upon multiple intelligences to spur project innovation. It contends that, by operating within normative constraints of practice, these more subtle shifts may expand the design space for new models of future practice, while buying time for new tools and operational structures to develop.

ISOMORPHISM IN ORGANIZATIONAL STRUCTURES

In their oft-cited article on institutional isomorphism in organizational fields, sociologists Paul J. DiMaggio and Walter W. Powell articulate that “highly structured organizational fields provide a context in which individual efforts to deal rationally with uncertainty and constraint often lead, in the aggregate, to homogeneity in structure, culture, and output.”³ Design and construction projects are known to be dynamic environments in which diverse agents must contend with a variety of uncertainties.⁴ Therefore it is not surprising that stable, predictable organizational structures have emerged as coping mechanisms in the field. In the more than thirty years since the DiMaggio and Powell’s canonical study was published, refinements in analytical methods and engagement with other theoretical perspectives have expanded approaches to studying institutions and organizational fields.⁵ These analyses place an increasing emphasis on heterogeneity, contingency, agency, and variation in their characterization of organizational fields, particularly fields undergoing transformation.⁶ However, the pressures outlined by DiMaggio and Powell remain. By first adopting their framework, we may examine the specific pressures contributing to the standardization of architectural practice before considering some signs of heterogeneity found in collaborative practices.

The first of these, coercive isomorphism, “results from both formal and informal pressures exerted on organizations by other organizations upon which they are dependent and by cultural expectations in the society within which organizations function.”⁷ Homogenization accomplished by power or coercion can be exercised directly by imposing specific regulations on a group but can also push organizations indirectly because access to desired resources and support are made more accessible when the group is compliant.⁸

Within architecture, the regulatory environment clearly plays a coercive role. States regulate practitioners through licensing requirements in order to protect the health, safety and welfare of the public. Fifty-four jurisdictions have established their own licensing boards to regulate practice as well as the use of the title “architect.”⁹ Although each of the boards asserts their independence, they share certain elements: each articulates the boundaries of architectural practice within their jurisdiction, sets requirements for entry into the profession, defines standards of conduct and misconduct, and establishes sanctions for conduct violates.¹⁰ Within some jurisdictions, regulations even extend to corporate issues, such as firm names, firm ownership, and firm composition.¹¹

A second driver of homogeneity is normative and stems from professionalization, which the authors interpret as “the collective struggle of members of an occupation to define the conditions and methods of their work,” to limit the creation of new members or “producers,” and “to establish a cognitive base and legitimation for their occupational autonomy.”¹² Individuals are attracted to particular organizational models due to socialization processes enacted through education, credentialing bodies, and professional networks. This socialization leads to tacit routines and institutionalized practices. At the same time, personnel flows and professional networks disseminate these standards and behaviors widely across geographic boundaries, contributing to a more homogeneous set of perspectives on industry problems and solutions.¹³

The National Architectural Accrediting Board (NAAB) is the sole agency in the United States authorized to accredit professional degree programs in architecture.¹⁴ Education provides a foundational component of licensure. Additionally, all registration boards require an experience component, in which candidates for licensure work under the supervision of a licensed professional.¹⁵ This period of education and pre-licensed experience averages thirteen years¹⁶—ample time for the socialization described by DiMaggio and Powell to take place. Future practitioners acquire a shared vocabulary, a professional code of conduct, and even an awareness of expectations regarding their personal behavior and style of dress.¹⁷ Professional networks exert additional pressure to homogenize. Most notably, the American Institute of Architects (AIA) sets industry standards for contract documents, which define relationships among parties on architectural design and construction projects.¹⁸ While this serves to protect its membership by legally vetting forms of practice, it also limits experimentation by defining, in legal terms, the boundaries of acceptability. An extensive design award system at the local, regional, and national level further, if indirectly, dictates the direction of practice by setting less prescriptive, but no less real, expectations for practice.

A third driver, mimetic processes, arises when organizations model themselves after other organizations in response to uncertainty. Organizational models may be spread intentionally—by trade organizations or business consultants, for example—or unintentionally—by employees internalizing successful models and transporting practices when they change jobs.¹⁹ Sociologist Jens Beckert notes that, especially in complex institutional environments, imitating existing organizational templates—although “motivated by disorientation rather than by conviction that the model to be imitated is superior”—may compensate for a

lack of rationality in decision-making, becoming a “protective shield” for the imitator in case the model fails to produce a desired result.²⁰

The financial uncertainties and legal risks of practice are well known to architects, so mimicking established models makes good sense. Architects rarely come prepared to draft or implement new business models; as one AIA publication notes, “Like many professions, architecture and design requires rigorous training that leaves little time for learning to start and run businesses.”²¹ Most architects learn the business of architecture on the job, where they are advised to avoid risk by working for reputable clients and by gravitating toward project types that fit with their prior experience; to transfer risk through contracts and insurance products that assign risk to clients, consultants, or financial partners; and to control risk by educating staff, adopting best practices, and seeking counsel to prevent or reduce losses when claims emerge.²²

Interestingly, in their large study of organizational institutionalism, Pursey Heugens and Michel Lander linked the type of conformity we have identified here as characteristic of architectural practice to enhanced performance:

Isomorphic organizations are more likely than their deviant counterparts to attract resources of higher quality at favorable terms. Resource providers prefer socially acceptable organizations that do not threaten their reputation for good judgment, have strategies the providers recognize as “rational,” and are less likely to fail because of unanticipated risks.²³

As the majority of architectural clients are repeat clients,²⁴ choosing a normative—rather than “deviant”—practice structure may reassure clients, enabling designers to retain business while focusing their less socially acceptable, irrational, untested, unpredictable, or risky impulses on the work of architecture itself.

COLLABORATION: ADDRESSING THE PARADOX OF PRACTICE

Although anathema to organizational practice, adjectives such as “experimental,” “innovative,” “unconventional,” and “cutting-edge” are often used to describe positive developments within contemporary architectural design. One need only look to the early modernist manifestos to identify the roots of this veneration for unconformity and experimentation.²⁵ Designers, from their first day of architectural education, are taught to rethink and reframe each problem in the search for unique and innovative solutions. Later, when they enter professional practice, they are hired specifically to bring their creative abilities and transformational thinking to bear on their client’s projects. However, when this enduring quest for design innovation is confronted with the stranglehold of practice risks, architects must contend with the downsides of normative practice structures—among them, creative isolation, stagnating or unsustainable business models, inflexible workflows, and knowledge deficits in areas where the field is expanding. The dichotomy between what architects produce and how they are expected to structure that production is striking: a dichotomy that begs consideration.

Given the endemic pressures to conform to normative practices as well as their demonstrated value in sheltering architects from risk, what type of innovation in practice structures is possible or even desirable? How

might innovation evolve, in a sense, from *within* normative practice, to challenge—rather than accept—the dichotomy between isomorphism and agency described by Heugens and Lander, and allow for a fuller expression of what strikes us as still inherently valuable in contemporary architecture; that is, creativity and innovation?

This paper draws upon research conducted over three years with leading design practitioners on the topic of collaboration in their practice. Analysis of this series of interviews suggests the emergence of subtle innovations in practice in the form of collaborative relationships and strategic alliances. These collaborations are enabling discrete forms of project experimentation and delivery, propelling an important set of mutations that exert pressure on conventional practice structures in significant and compelling ways. It may prove useful to examine this development in light of the recent work that expands upon Powell and DiMaggio's original findings on organizational fields and isomorphism. Of particular relevance are those expanded approaches that address heterogeneity. One finding from research examining field transformation underscores that "change is constituted with materials provided by existing institutions, driven by processes of transposition, editing and translation, hybridization, and recombination."²⁶ By viewing the data from architects and allied professionals on collaborative design practices through the lens of institutional heterogeneity, we may discern some seeds of architecture's own transformation.

In interviews conducted with more than sixty design and building industry professionals, practitioners identified recent collaborators and elaborated on the transformative impact of collaboration on both their projects and practices.²⁷ Interviewees identified numerous forces shifting practice to ever-more collaborative models: these included increasingly complex project requirements; global operations requiring local firms to tap into local knowledge; client or host government mandates, and "arranged marriages" in which clients parted out contracts in separate packages. Although these client- and project-driven reasons to collaborate are largely pragmatic, the study also illuminated that design practitioners were experimenting with collaborative models in order to expand their creative process and to innovate. While retaining established firm structures (and the credibility attached to them), these practitioners have the freedom to test out various collaborative practices. A close examination of three specific case studies explores different structural models used to leverage the benefits offered by these strategic alliances.

COLLABORATION: INJECTING SPECIALIZED KNOWLEDGE TO ADVANCE THE DESIGN-PRODUCTION SPLIT

The first case study examines a firm focused solely on performing design services, which results in 100 percent of its work being produced in association with architects of record. While many firms provide design-only or production-only services on select projects, this firm's exclusive emphasis on one particular segment of "Design Services" is unique. One Design Director interviewed explained that there are both pragmatic as well as creative reasons to operate in this manner. The interviewee pointed out, "The reason we have the model we have is, as a firm, we would need to be three times the size we are to be full service. And it

would mean we couldn't concentrate on what we think we are really good at as much as we do now."²⁸ While the medium-sized firm is known for their elegantly detailed signature skyscrapers, they see their expertise as deploying these buildings to spur downtown revitalization and support their civic-minded clients in transforming their host urban environments.

Many architects believe exclusively in a full-service practice model and argue that splitting design and production services results in a loss of control of the design's development through subsequent decisions about materials and details, and their execution through construction. However, the interviewee contends, "If you do it right, you actually have more control because you are not worried about things that go beyond what you do best—you just need to make sure that you are communicating your ideas as clearly as possible and you are building the right relationships [with your associate architect]."²⁹ The firm's conviction is that this model provides each client with the most highly qualified professionals for each aspect of the design and construction process.

This form of collaboration is not a new phenomenon. Dana Cuff chronicled the design-production split in her 1992 article "Divisive Tactics: Design-Production Practices in Architecture."³⁰ It is difficult to determine what percentage of firms in the United States currently operate in this manner: the 2016 AIA Firm Report does not separate design and production services but rather bundles them together in the category of "Basic Design Services."³¹ Cuff cautions against such flexible production indicating that this split between design and production assumes the design process must be conceived as linear rather than cyclical or iterative. Outlining the drawbacks of this method for the design architects, Cuff maintains, "architectural practice is a dynamic context in which all who participate are constantly gaining experience that will benefit their later work. Perhaps the most often cited disadvantage to compartmentalizing design from production is the limited opportunities to learn from and about architecture as a whole." architecture as a whole."³²

The firm interviewed addresses the design-production split with very specific firm practices. By way of example, the firm explains, "We like to have curtain wall manufacturers onboard early in the process... [I]t's not the traditional model—the ivory tower architect sketching out details and then [saying] 'Make this work.'"³³ Rather, the firm engages industry participants by drawing on their specialized knowledge: "This is what we're envisioning for the building skin—how do we best achieve this and also how do we achieve this within the realistic realm of the budget?' We advocate from the beginning that the process be as informed as possible so that costs are controlled from the beginning, so that you don't have to...redesign everything after the drawings are submitted because you are 50 percent over budget."³⁴ This early and critical strategic alliance with industry provides an efficient means of accessing specific trade knowledge and is an effective medium of technical knowledge transfer and integration.³⁵

Positioning curtain wall consultants and manufacturers as primary collaborators, engaged early in the design process, enables the design architects to innovate on their highly crafted facades while pursuing advanced performance goals. Moreover, the team is then able to

develop a detailed skin design that will surmount the technical and budgetary hurdles posed during the design development and construction documentation phases of the project. This first example operates as a conventional firm but, with its exclusive focus on the design phase, it advances the design-production split to one of its possible conclusions. At the same time, by injecting the process with specialized industry knowledge and building strong relationships with their associate architect collaborators, this model bridges the gap between design and production while delivering an advanced building for their client.

COLLABORATION: LEVERAGING EXPANDED INTELLIGENCES

The second example considers a related shift in the traditional firm model, emerging in response to an increasing need for specialized technical knowledge in the field. In order to keep pace with technological advances, many large firms have created in-house tech studios. Smaller operations that lack the in-house resources or capital of large firms are increasingly turning to out-of-house collaborators in order to fill gaps in their technical knowledge. This has engendered support for the creation of highly specialized internal groups and external practices that firms can assign to projects on as needed to address specific technological issues. This flexible approach brings teams together on both per-project or a systemic basis to solve challenges beyond the scope of the project partners alone. Beyond technical competencies, these interactions leverage expanded intelligences that have the potential to bring forth new lines of inquiry and to frame project parameters and directions in new ways.

In an interview with one consultancy providing specialized services to traditionally structured firms, the founder described the origins of his firm. It started, with a small suite of traditional machines and digital tools, as an effort to augment the design process by prototyping and fabricating design elements and other products. “Architecture firms aren’t set up [to do this], and probably shouldn’t be,” the owner explains, not only because the costs are usually prohibitive but also because “it distracts from the process of making buildings.” He soon discovered that, “if you had an office environment where you could make things very readily but also ... generate ideas very quickly, then prototyping becomes ... reasonable.”³⁶ This led a slight modification in his business model: “Many architecture firms have found it helpful to work with us,” not only to “actually build things” but also “to just advise them.”³⁷

Clients seek out the consultancy for a variety of reasons: from designing a single element to organizing an entire fabrication or parametric workflow. One large, established firm came to the consultancy for help designing a focal element for a large, highly visible public project. Public bidding constraints would not permit the consultancy to directly fabricate the element, so the designers explained, “We really just want to sit down with you for a day and charrette on this idea.” Architects from the firm came to the consultant’s office, and they “spent a day just talking through ideas, talking about fabrication, trying to ground [the design] in terms of what’s possible and not possible,” in the end moving beyond the particular design element to consider larger building considerations, spatial implications, and budgetary concerns. “Because it’s not part of the standard architecture firm DNA at this point to have people ... trained to think that way,” the interviewee contends, his staff provides their

clients with “a pedestal from which to talk about design that is based on real possibilities within computational and algorithmic design thinking.”³⁸

Whereas in the first example, specialized knowledge is drawn from a design-neutral position (that is, from the curtain wall manufacturer), in this second case, the hired collaborator adds another designer to the team, albeit one with a highly developed technical skill-set. This computational and material intelligence not only tests design questions differently but also frames them differently. Unencumbered by the totality of larger project concerns and operating from a viewpoint slightly outside normative practice, the consultancy can broaden design explorations in order to arrive at more innovative solutions—something difficult to achieve within standard operating practices.

COLLABORATION: NETWORKED ALLIANCE STRUCTURES

If the first study describes a model in which project responsibilities are divided between two firms working in partnership, each focused on aspects of the job at which they excel (two medium-sized firms, dividing design tasks from production tasks), and the second study considers larger firm structures that expand their knowledge base through the use of small, focused teams of consultants (both internal and external), then the third study examines a model of practice at the scale of the small independent firms. In 2015, sixty-two percent of all AIA-member-owned architecture firms had fewer than five employees.³⁹ Small emerging firms often need to team with another firm to prove they can handle larger projects, while small established firms may choose to partner in order to go after projects they couldn’t tackle on their own; however many of the designers interviewed for this study did not collaborate solely for pragmatic reasons. They approached collaboration as an opportunity to expand their available skillset, inject their design process with creative energy, and basically have more fun.

Small firms form partnerships for a variety of reasons. Forming partnerships enables a firm to stay small and avoid up- or downsizing as projects come and go. Collaboration takes on different structures: at times, new companies are formed, complete with logo and bank account; at other times, firms operate as a more informal network— partners may share employees or even shelter other firms under their umbrella. This flexibility allows each firm to grow and change. Serial partnerships often evolve: new collaborators join the network or firms split to form new independent firms that further expand the network.

These firms’ ongoing collaborations feature many of the beneficial characteristics of strategic alliance networks in terms of providing new capabilities that can lead to innovation. For example, ties to partners with dissimilar knowledge stocks provide network members with access to diverse information. The long-term duration and repeated ties of the alliance inculcates greater inter-firm trust, which increases inter-firm learning.⁴⁰ In the wake of the last recession, the architectural profession became more fragmented; as larger firms downsized, practitioners who could not find other positions, or who saw new opportunities, established sole proprietorships or formed smaller partnerships.⁴¹ Networked alliance structures provide one hedge against the profession’s repeated economic cycles of fragmentation and consolidation. Moreover, because projects are getting increasingly complicated and because working alone

is isolating, positioning the small firm or sole practitioner as a node in a larger network simultaneously addresses both the pragmatic and creative challenges that face this widespread form of architectural practice. One interviewee relates, “We’ve had great success at it. I love doing it—it makes things interesting. And then, when the project’s done, you think about the next one that you can do together—it might not come along for a few years, but in the meantime, you don’t have to worry about filling in all that in-between time with other projects that may not be the best fit for the team. So that’s why it’s been something that we’ve done forever.”⁴²

CONCLUSION

These examples are promising in that they suggest future directions for a discipline limited by normative practice models. The organizational structures discussed above respond to a landscape of practice that is ever-changing in light of project economics, technological developments, shifting workflows, and the drive for quality, performance, and originality. At the same time, emerging practices that subtly influence the normative framework of architectural design and production bring expanded project resources, knowledge, and energy to bear on designs and service. We can discern in these models a field in transition: drawn from existing practices which are then edited, translated, hybridized, and recombined albeit in an uneven, lumpy fashion.⁴³ However, might the same adaptations also expand the possibility for pleasure in our daily labor?

In an industry currently recognized as having the fifth highest suicide rate in the United States, this is no idle question.⁴⁴ As a high pressure, male-dominated industry with perfectionist tendencies, the AEC field is particularly at risk for mental health issues.⁴⁵ Moreover, recent surveys that explore the experience of women in architecture point to widespread discontent among female practitioners, who are leaving the profession in statistically significant numbers.⁴⁶ The survey responses highlight that while women have made substantial gains in educational attainment in the last thirty years, these have outpaced gains in professional advancement and achievement. The data points to common issues leading to attrition, such as disparities in salary, fewer opportunities for career advancement, a lack of mentoring and role models, and unprofessional behavior and bullying in the workplace. When institutions fail to deal with underlying problems that generate grievances, those who are aggrieved form an important source of pressure for institutional change.⁴⁷ Within architecture, this growing recognition of the importance of equitable recruitment, retention, and promotion of industry talent has spurred efforts to identify best practices to support and advance more equitable and sustainable careers.

Thus, one of the avenues where innovation is essential is in the search for practice models that offer the promise of continual and sustaining pleasure in the work. Without question, the practice strategies identified in the field study offer opportunities for greater professional competence, building performance, and service to the client, but might they in addition offer less tangible or strictly “business” oriented potential for the profession? And moreover, might not some of the vehicles for greater enjoyment be, in fact, the same vehicles that deliver greater performance?⁴⁸

As architects grapple with evolving challenges both internal and external to the boundaries of professional practice, future innovations in practice may be born out of modest, nimble practice mutations. Engaging in these subtle deviations exerts pressure on normative practices by bumping up against some of the organizational barriers currently in place. Such experiments will continue to demand transformations in normative structures: new contract mechanisms *will* be written, new insurance tools *will* be developed, new business models *will* be activated, and new modes of production *will* emerge. And in these experiments, we might find the seeds of a future practice that is innovative, meaningful, pleasurable, and sustainable.

ENDNOTES

1. David J. Goodman, “The Design of Practice: Between Authorial Agency and Institutional Pressures,” ACSA Conference Call for Papers, 2016.
2. For example, even with profitability very strong in 2015, 10% of firms reported that they were not profitable that year. American Institute of Architects, “The Business of Architecture 2016: AIA Firm Report” (Washington, DC, 2016), p. 7.
3. Paul J. DiMaggio and Walter W. Powell, “The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields,” *American Sociological Review* 48, no. 2 (April 1983): 147.
4. See, for example, “Managing Uncertainty and Expectations in Building Design and Construction,” *SmartMarket Report* (Bedford, MA: McGraw Hill Construction, 2014), <http://www.bim.construction.com/research/>.
5. For an overview of tools and methodologies, see Marc Schneiberg and Elisabeth S. Clemens, “The Typical Tools for the Job: Research Strategies in Institutional Analysis,” *Sociological Theory* 24, no. 3 (2006): 195–227. For a discussion of how the mechanisms identified by DiMaggio and Powell as sources of isomorphism can also support processes of divergence, see Jens Beckert, “Institutional Isomorphism Revisited: Convergence and Divergence in Institutional Change,” *Sociological Theory* 28, no. 2 (June 2010): 150–66.
6. See, for example, Jeannette A. Colyvas, “From Divergent Meanings to Common Practices: The Early Institutionalization of Technology Transfer in the Life Sciences at Stanford University,” *Biotechnology: Its Origins, Organization, and Outputs* 36, no. 4 (May 2007): 456–76.
7. DiMaggio and Powell, p. 150.
8. *Ibid.*, p. 151.
9. See Cornelius R. DuBois, “Regulation of Professional Practice,” in *The Architect’s Handbook of Professional Practice*, ed. American Institute of Architects, 15th ed. (Hoboken, NJ: Wiley, 2014), pp. 52–63.
10. *Ibid.*, p. 54.
11. For example, some corporate licensing laws govern the composition of firms, requiring a certain number of firm owners or a minimum percentage of the firm’s ownership to be held by architects who are licensed in that jurisdiction. Firm names may also be regulated. Some jurisdictions require the use of a name that describes the firm structure: these laws may limit the use of names of deceased partners or restrict the use of the plural “Architects” to the name of firms comprised of more than a single licensed architect. See DuBois, p. 60.
12. DiMaggio and Powell, p. 152.
13. DiMaggio and Powell, pp. 152–53.
14. While in some jurisdictions, one may become a licensed architect without pursuing a NAAB accredited degree, the pathway is easier, quicker, and more accepted for those with accredited professional degrees.
15. This component was formerly termed an internship; for more, see Harry Falconer, “Intern Development,” in *The Architect’s Handbook of Professional Practice*, pp. 68–78.
16. “NCARB by the Numbers” (Washington, DC: National Council of Architectural Registration Boards, 2016), www.ncarb.org/NBNTN.

17. DiMaggio and Powell, p. 153. Similarly, the design studio, the charrette, the critique or jury, and their associated rituals transmit disciplinary culture and vocabulary: for an overview, see Kathryn H. Anthony, "Studio Culture and Student Life," in *Architecture School: Three Centuries of Educating Architects in North America* (Cambridge, MA: MIT Press, 2012), pp. 396–401. For an examination of the enculturation of architects in the academy, see Dana Cuff, *Architecture: The Story of Practice* (Cambridge, MA: MIT Press, 1992), 118–29. For a discussion of archi-speak, see Robert Campbell, "Having Trouble Understanding What the Architectural Cognoscenti Are Saying? You're Not Alone." *Architectural Record* 189, no. 10 (October 2001): 79.
18. Shannon Kraus and Amanda Labrador, "Participating in Professional Organizations," in *The Architect's Handbook of Professional Practice*, pp. 99–111.
19. *Ibid.*, p. 151.
20. However, Beckert further argues that "mimesis caused by uncertainty does not unequivocally point toward institutional homogenization. Institutional divergence will prevail if institutional templates observed elsewhere are not considered legitimate institutional solutions." The template must both be perceived as successful and also be consistent with the "espoused value orientations" of the imitating organization. Jens Beckert, "Institutional Isomorphism Revisited: Convergence and Divergence in Institutional Change," *Sociological Theory* 28, no. 2 (June 2010): 157–9.
21. "Consequently, practitioners at all levels are left to learn the business of architecture and design once they enter the marketplace." American Institute of Architects, "AIA Foresight Report" (Washington, DC, 2014), p. 19.
22. Using standard AIA agreement forms further mitigates risks. However, contracts are selected by owner and currently more than 60% of projects are being delivered through a Design-Bid-Build contract. Meanwhile, "claims histories show that there are more claims by percentage of type of project delivery method on DBB projects than any of the other project delivery types." Peter Gifford Longley, "Risk Management Strategies," in *The Architect's Handbook of Professional Practice*, pp. 989–1005.
23. Pursey Heugens and Michel Lander, "Structure! Agency! (And Other Quarrels): A Meta-Analysis of Institutional Theories of Organization," *Academy of Management Journal* 52, no. 1 (2009): p. 64.
24. Architecture firms derive 72% of their billings from repeat clients with 46% of these billings derived from a non-competitive selection process. This share is highest (75%) for firms focusing on commercial, industrial and institutional projects. American Institute of Architects, "The Business of Architecture, 2016: AIA Firm Report" (Washington, DC, 2016), pp. 20, 63.
25. For a discussion of the profession's conception of itself as creative and the paradox of this ideal when measured against their daily work, see Judith R. Blau, *Architects and Firms, A Sociological Perspective on Architectural Practice* (Cambridge, MA: MIT Press, 1984), 46–60.
26. Schneiberg and Clemens, pp. 218–19. For an example that discusses the translation of models brought about by interactions between academic institutions and industry, see Daniel Lee Kleinman and Steven P. Vallas, "Science, Capitalism, and the Rise of the 'Knowledge Worker': The Changing Structure of Knowledge Production in the United States," *Theory and Society* 30, no. 4 (2001): 451–92.
27. These include architects; design consultants, such as engineers and landscape architects; constructors, including contractors, construction managers, and fabrication specialists; project owners and client representatives; and allied professionals such as artists, community-engagement specialists, and business consultants. Among the thirty-five architects interviewed, participants came from a wide variety of architectural firms, from sole practitioners to multinational corporations working in diverse markets, both geographically and sector-based, and on projects ranging broadly in size, complexity, and type.
28. Throughout this paper, "designers interviewed" refers to interviews conducted by the author as part of research on the role of collaboration in contemporary design practice. The names of interviewees are withheld by agreement. Interview with Architect, July 15, 2015.
29. *Ibid.*
30. Dana Cuff, "Divisive Tactics: Design-Production Practices in Architecture," *Journal of Architectural Education* 45, no. 4 (July 1, 1992): p. 205.
31. The firm report documents that respondent firms received 83 percent of their gross billings from projects in which the office was the architect of record, whereas firms reported that only 6 percent of their gross billings came from projects in which their office was a subcontractor/design architect to another office or firm. American Institute of Architects, "The Business of Architecture, 2016: AIA Firm Report" (Washington, DC, 2016), p. 63.
32. Cuff, pp. 208–09.
33. Interview with Architect, July 17, 2015.
34. *Ibid.*
35. For a discussion of alliance networks and firm innovation, see Corey C. Phelps, "A Longitudinal Study of the Influence of Alliance Network Structure and Composition on Firm Exploratory Innovation," *Academy of Management Journal* 53, no. 4 (2010): pp. 890–913.
36. Interview with Consultancy, March 21, 2014.
37. *Ibid.*
38. *Ibid.*
39. While the number of small firms has risen since 2010, their share of revenue has declined. In 2013, firms with 1–9 employees represented 17.3% of architecture billings; whereas in 2015, their share was 15.4%. By contrast, firms with 50 or more employees, which comprise 5.1% of all firms, saw their share of revenue rise from 44.9% in 2013 to 51.3% in 2015. American Institute of Architects, "The Business of Architecture, 2016," pp. 6, 40.
40. See Phelps, pp. 890–913.
41. Many architects set up independent practices between 2010 and 2014: 29% of firms with one employee and 18% of firms with 2–5 employees were started during this period. American Institute of Architects, "The Business of Architecture, 2016," p. 44.
42. Interview with Architect, February 26, 2015.
43. For a discussion of research which examines the pace of diffusion and the distribution of institutional diversity and change, see Schneiberg and Clemens, p. 205.
44. Leah Sottile, "The AEC Industry's Deadly Problem," *Architect*, August 31, 2016, http://www.architectmagazine.com/practice/the-aec-industrys-deadly-problem_o. Note that architecture and engineering were grouped together for the purposes of the CDC study: W. L. McIntosh et al., "Suicide Rates by Occupational Group — 17 States, 2012," *Morbidity and Mortality Weekly Report (MMWR)* (Center for Disease Control, July 1, 2016), <http://www.cdc.gov/mmwr/volumes/65/wr/mm6525a1.htm>.
45. Drawing on data from seventeen states in 2012, the Centers for Disease Control and Prevention (CDC) report identifies that 96% of the AE suicides were men (compared with 77.2% for the overall study). Statistics for suicides by women working in AEC were too low to draw reliable conclusions. However, the CDC also indicates that males are four times as likely to commit suicide as women, while women are more likely to experience suicidal thoughts. For CDC source data, see <http://www.cdc.gov/violenceprevention/pdf/suicide-datasheet-a>. PDF For a discussion of the relationship of perfectionism and suicide, particularly in occupations which promote socially prescribed perfectionism. Gordon L. Flett, Paul L. Hewitt, and Marnin J. Heisel, "The Destructiveness of Perfectionism Revisited: Implications for the Assessment of Suicide Risk and the Prevention of Suicide," *Review of General Psychology* 18, no. 3 (September 2014): 156–72.
46. Annelise Pitts et al., "Equity by Design: Knowledge, Discussion, Action! 2014 Equity in Architecture Survey Report and Key Outcomes" (San Francisco, CA: AIA San Francisco, 2015), https://issuu.com/rsheng2/docs/equityinarch2014_finalreport. See also, Royal Institute of British Architects, *Why do Women Leave Architecture?* by Ann de Graft-Johnson, Sandra Manley, and Clara Greed, Bristol, England, 2003.
47. Schneiberg and Clemens, p. 218.
48. In the author's field research, participants on IPD projects—including architects, construction management team members, and owner's representatives—reported reduced stress and antagonism on the jobsite. They repeatedly commented on how much they were enjoying the project and noted that they enjoyed construction administration meetings, something they had not experienced in the past.