

Recasting Labor in Architecture



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The symposium, “Building (in) the Future: Recasting Labor in Architecture” was held from October 27 to 29, 2006, to discuss all aspects of new technologies and the relationship to labor in architecture today. Supported in part by Autodesk Inc., it opened with a keynote talk from Kenneth Frampton.

In October, Peggy Deamer and Phillip Bernstein ('83) organized “Building (in) the Future: Recasting Labor in Architecture,” a weekend symposium that examined the ways in which new technologies are reconfiguring professional relationships in architecture and how, as a consequence, the structure of projects and the roles of the various participants, from designer to builder to laborer, is changing. Deamer and Bernstein’s collaboration was a provocative one—she a longtime design critic and professor of contemporary theory; he an executive at Autodesk, a former associate principal at Cesar Pelli & Associates, and for 18 years Yale’s lecturer in professional practice. Speakers came from a broad array of backgrounds, including architectural historians and theorists like Kenneth Frampton, Barry Bergdoll, and Reinhold Martin; Princeton’s sociologist of architectural culture, Robert Gutman; young practitioners like Joshua Prince-Ramus, of REX, and Coren Sharples, of SHoP, and an impressive lineup of contractors, fabricators, attorneys, and developers.

As Deamer mentioned in her opening remarks, her partnership with Bernstein is timely given recent discussions about “postcriticality,” an interest among some theorists in removing barriers between theory and building by reformulating the idea of “critical practice,” with all its related notions of resistance and negation. In part following the rise of the sorts of technology discussed in the symposium—like building information modeling (BIM), which potentially redefines the boundary between architect and builder—these theorists have found a new interest in the world of architectural production, linking the products and motives of the practitioner and the critic in new ways. That’s the optimistic reading at least; skeptics fear something more like “noncriticality,” a sort of easy retreat into anti-intellectualism. The symposium was an example of these shifting sands, with the discussion swinging between excitement over the possibilities of digital technology and a desire to gain a historical theoretical perspective.

Deamer provided a useful summary of the symposium in her introduction, as follows:

1) The architect designs something with attention to detail, imagining the process of it coming together—“Craft and Design”; 2) she figures out how to enhance and share these design decisions with others—“Information Sharing”; 3) she structures the office to process, synthesize, and manage this information inside the office—“The Organization of Labor: Architecture”; 4) she guides her firm into contractual relationships with other organizations outside the office—contractors, construction managers, subcontractors, fabricators, lawyers—to turn this information into a building—“The Organization of Labor: Construction”;

5) she wonders whether she can’t market all this intelligence so it isn’t wasted on a single product—“The Market”, and 6) then (maybe) she wonders what it all meant—“The Big Picture”.

Kenneth Frampton’s keynote address, “Intention, Craft, and Rationality,” was prophetic in its characterization of the ideological conflicts that would arise in the Saturday and Sunday sessions, both in terms of a “techno-euphoria,” which defined much of the discussion, and in potential tactics for mitigating its influence. Frampton, who has focused his attention on the history and theory of making buildings amid Columbia University’s fascination with paperless studios, opened by reviewing the symposium’s program and noting, as is the case with much discourse in this age of technological change, a heavy focus on process. While Frampton conceded that new technologies are transforming the building industry so that an interest by critics and designers on process is understandable, he asserted that this “is only apposite if we bear in mind, from beginning to end, the relationship between means and ends and so avoid the aporia in which means determines ends.” In other words, while process is important, the results of a process—its products—must not be ignored. Simply because new technologies make any form possible, not every form or space is culturally justifiable. An obsession with the representational capacity of digital technologies and the forms they can yield short-circuits the critical process, in effect severing the product from the place it inhabits—just “one more freestanding aesthetic object,” indifferent to its surroundings, both topographical and cultural.

Frampton went on to discuss Hannah Arendt’s philosophical distinction between labor and work, as well as the collaborative process of teamwork, promoting craft as a potential check on this sort of uncritical form-making. He cited the work of the Renzo Piano Building Workshop as an example of a modern practice that—whatever tools it uses, be they computational or otherwise—in Piano’s words, “does not separate the work of the mind from the work of the hand.” Earlier in the afternoon the symposium’s first session, “Craft and Design,” discussed just this, bringing together several designers who use sophisticated awareness of fabrication technologies to exert more control over the products of their designs, locating the idea of craft in new places like software scripts and high-tech milling machines.

Klaus Bollinger, structural engineer and partner in the Frankfurt-based firm Bollinger + Grohmann, in discussing his collaborations with architectural firms such as Coop Himmelb(l)au and Dominique Perrault, emphasized the point that instead of making craft obsolete, new construction technologies tended to increase the demand for highly skilled workers because the unusual forms are one-offs, requiring them to learn and even invent new methods of assembly. The next two speakers, Branko Kolarevic, a technologist from Ball State University, and Scott Marble, of New York-based architects Marble Fairbanks and Columbia University, embraced their work’s reliance on the skills and intelligence of workers in the field. They both cited the writer David Pye, who defined craft as

“a process in which the quality of the result is in the hands of the person making it.” This implies a risk for the designer, who, as has always been the case, cedes control to the workers who assemble the product. For Marble, this is a productive risk, a form of collaboration that enriches the work by including the human hand in the digital process. Kolarevic noted that using parametric technologies, which embed the design within software scripts written by the architect, also introduces an element of risk, because they make outcomes unpredictable. James Carpenter—an artist and fabricator who specializes in glass, with which he has created large, site-specific installations—was a bit puzzled by this connection of craft and risk. To him, the highly skilled craftsperson’s sophisticated understanding of a material is, rather, the best way to avoid risk. He argued that knowing a material and how to work with it, even digitally, expresses a working knowledge lost long ago by desk-bound architects.

On Saturday the symposium trained its sights on larger-scale practices and projects, and speakers repeatedly argued that the standard process by which architecture is built today suffers from, as Bernstein characterized it, “a lingering dysfunctionality.” Fundamental changes in how buildings are designed, how the developing design is communicated, and how the finished design is executed are increasingly required to realize innovative and economically viable designs. The first session, “Information Sharing,” began with William Zahner, CEO of Zahner Architectural Metals, who spoke about how his company has fully embraced BIM technology to achieve the high level of precision required by its clients, most famously Frank Gehry and Herzog & de Meuron. Autodesk’s program Revit allows each member of its design and construction team to work on a shared 3-D model, with each party’s design information embedded in it, from plans and sections to building systems to cost and revenue information. Zahner works directly on his clients’ BIM models to create milling patterns, resulting in a precision that dramatically exceeds that of other trades, such as the relatively large margins of error allowed within the structural steel industry. Zahner even has taken over the erection of structural steel simply to ensure the performance of their core product: custom metal cladding.

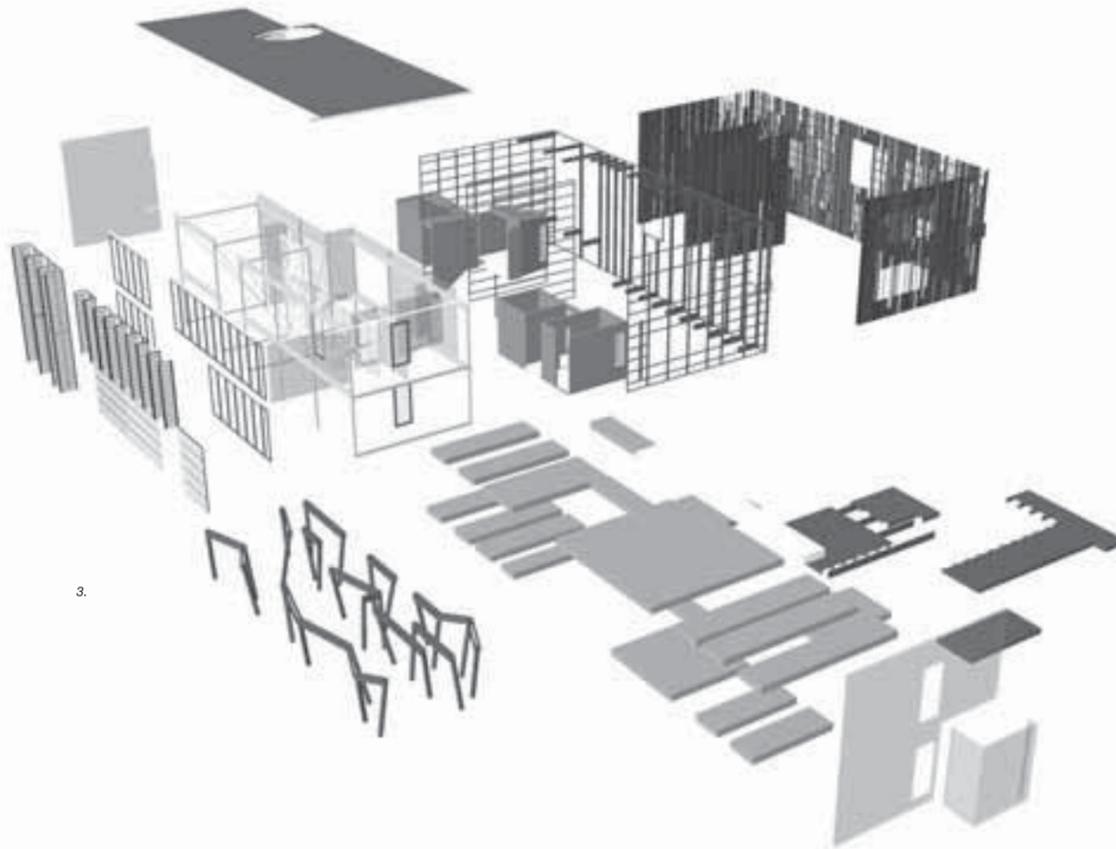
If Zahner offered a report from the trenches of current production realities, Yale’s Hilary Sample supplied a projective view of how communication between collaborators, clients, and the general public might be increased by allowing for a freer exchange of information through the use of intra- and extranets on the Web. Paralleling Sample, Kent Larson, of MIT’s Open Source Building Alliance, proposed looking to the Web to increase the architect’s involvement in residential projects in the United States by providing what he termed “design engines” to allow consumers to assemble their own designs in a manner similar to the way consumers can assemble their own computers through Dell’s Web site. Attorney Chris Noble provided a cautionary end to this session, pointing out that the profession’s standard contracts are inadequate, based as they are on risk-avoidance rather than good design, and that emerging new relationships have

the potential to make them even less so. Building on this, Cristiano Ceccato, director of research and consulting at Gehry Technologies, responded that to embrace these new forms of information sharing, it is increasingly necessary to establish and encourage these nonstandard relationships.

The next session, “The Organization of Labor: Architecture,” brought a series of young professionals to the lectern, each of whom is critically engaged in defining the building industry’s changing structure. Joshua Prince-Ramus, who established the office REX after having worked for Rem Koolhaas’s Office for Metropolitan Architecture (OMA), provided a compelling portrait of a practice that is leveraging new technologies and emerging professional structures to reclaim authority for architects. Drawing on his experience running OMA’s Seattle Public Library project, he described the current state of the profession as one in which designers consciously avoid liability and thus contribute to an ever-widening schism between design and execution. Over the past twenty-five years, the role of project manager has grown more important, nearly becoming the central player in the architect/owner/contractor relationship. Prince-Ramus called for the architectural profession to take this role back from the contractor in exchange for increased liability, managing the risk acquired with the specialized knowledge base that comes from new collaborative relationships, often the result of new technologies. He noted that OMA integrates the roles of “design architect” and “executive architect,” so that the executive architect has a role throughout the initial design stages of a project, just as the design architect remains involved through the construction phase of a project. The result hoped for is the creation of what was once standard: a single integrated architectural team developing a project from beginning to end.

According to Prince-Ramus, the Seattle Public Library was a demonstration of this concept, its realization possible only after the design team had a clear understanding of the regulatory, professional, and budgetary contexts of the project, then finding opportunities for design within them. The project’s iconic diamond-grid skin system resulted not from an aesthetic desire but as the only viable response to a complex set of performance and economic requirements. One of OMA’s collaborators on the “diagrid” was the next speaker, Marc Simmons, who worked on the project as part of Dewhurst MacFarlane and subsequently started the consulting firm Front Inc. Although his company is ostensibly a façade consultant, Front employs a range of professionals, from engineers and managers to specialists in digital media, as a new type of “chameleonlike” consultant/collaborator who can fully embrace the mind-set and agenda of the lead designer, morphing his broad skill set to fit changing circumstances and “inhabit the entire process” through inventive use of technology.

With the rising sophistication of digital fabrication, architects are taking increased control of the means and methods of construction, which has typically been the realm of the contractor. Few firms have explored this territory more than the New York firm SHoP, represented at the symposium by one of its founding



partners, Coren Sharples, who described how in-house research becomes essential at a practice like SHoP, which actively colonizes parts of the building process not traditionally reserved for architects and thus increases its exposure to risk in order to gain more creative control to create places of meaning and sensitive design—something which Frampton implied firms like hers ignore. Often small projects are used to test new design and fabrication strategies that get refined for use on large projects. One such project—“small in scale but large in scope”—is the Camera Obscura at Mitchell Park, in Greenport, New York, which tested the feasibility of executing a project entirely from a computer model. The model was translated directly into shop drawings and instructions for assembly on the site. The only traditional architectural drawings produced were those required by the city for review.

The final speaker of the session was attorney Howard Ashcroft, a litigator who specializes in construction industry law. Echoing Noble, he acknowledged that the current legal structures regulating architecture and construction are woefully inadequate and that the growing presence of digital technology is making the problem worse. The best hope, in lieu of new precedents or statutes, is the creation of mutually beneficial risk-management strategies and profit sharing among the stakeholders of a project, from which more formal, universally applicable relationships might arise. As moderator, Phil Bernstein summed up the session by characterizing the speakers—young and cutting-edge—as surprisingly pragmatic because they have adopted emerging technologies and embraced new forms of practice not for their novelty but because they are the best tools for realizing their work.

The third and final session of the day, “The Organization of Labor: Construction,” sought to discuss the same topics as the previous one but from the perspective of construction as opposed to design. However, the speakers were an odd bunch—a historian, a practitioner, an academic, and a contractor—and the session ended up lacking coherence (it turned out that this was the result of last-minute schedule changes). Contractor Rodd Merchant, of J. E. Dunn Construction, in Colorado, an executive in charge of integrating BIM technology into his firm’s business, described how BIM can be used by contractors to lower costs and increase profits. Fleshing this out quantitatively was John Taylor, a civil engineer from the University of Texas at Austin, who presented research on the penetration of BIM technology into the construction industry and evidence of its capacity to increase productivity. Merchant’s talk, along with comments he made later betraying his belief that architecture is largely irrelevant to the success of his business, provided a stark illustration that despite the collaborative promise of new technologies, the pri-

orities of builders and architects can remain stubbornly at odds. In closing remarks to the symposium and elsewhere, Gutman expressed a similar skepticism, wondering aloud whether the new technologies are just a new way for architects to arrive at the same old culturally and economically determined dilemmas.

Barry Bergdoll, art history professor at Columbia University and soon to be director of the Architecture and Design Department at the Museum of Modern Art, reviewed the history of labor in architecture beginning with Viollet-le-Duc and ending with the well-known prefabricated housing experiments of Breuer and Gropius. Sheila Kennedy, of Kennedy Violich Architecture, in Boston, talked about the development of MatX, a new interdisciplinary arm of her firm dedicated to research in material technology. While most speakers Saturday focused on new technologies in building construction, Kennedy was an example of a practitioner who is using similar tools and strategies to expand an architecture practice into allied fields such as industrial and textile design.

Saturday evening’s featured speaker was Italian historian Paolo Tombesi, whose lecture “On the Cultural Separation of Design Labor” analyzed the history of the division of labor within architecture firms, especially with regard to the collaborative demands of building production and how the structure of the office will need to be altered to take advantage of emerging technologies that are breaking down traditional hierarchies. The top-down Fordist production model is reinforced in architecture by standard contractual relationships that emphasize individual authorship over decentralized collaborative structures. Developing themes introduced by Frampton, Tombesi described how the disproportionate emphasis placed on the “designer” of a project undermines the true collaborative nature of architecture, inevitably leading to a culture in which architects focus on celebrity and style at the expense of substantive teamwork.

Sunday morning brought the fifth session, “The Market,” moderated by James Timberlake, of Philadelphia-based Kieran Timberlake Architects, with a series of firsthand reports by professionals trying to take advantage of communication and fabrication technology to find new opportunities in the building industry. Each presenter addressed the tension between standardization and customization in trying to mass-produce homes, and each arrived at different solutions to the problem. (These examples could be seen on display concurrently at the Architecture Gallery exhibition *Some Assembly Required*.) The first was Ewa Magnusson, a retailer at BoKlok, a joint venture in manufactured housing by the retailer IKEA and the construction company Skanska. The company has produced about 3,000 units of housing in northern Europe since 1997, both as apartments and detached houses. Its strategy is to focus

on the low end of the market, producing a limited set of house types with a modest number of customer options. Costs are kept low by prefabricating about 80 percent of each unit, as well as working with standardized manufacturing and shipping. The lack of customizability is offset by large quantities of market research and customer satisfaction surveys so that the limited designs hit their targets effectively. BoKlok is gaining momentum, but Magnusson said profitability is impeded by an entrenched building industry and regulatory context. That said, the modest modern homes are attractive and inexpensive, and it’s hard to imagine that the company won’t be as successful as its parents.

Next up was Rob Kelle, chief information officer for Standard Pacific Homes, America’s eleventh-largest custom house builder. His title is indicative of the changes taking place in the building industry since as a specialist in information technology (and an education in urban studies), he has been tasked with applying new technologies to achieve a competitive advantage in a cooling market. Kelle’s interest is the high-end American market, where customizability and a highly mutable construction technology in place (stick framing), his industry has been able to satisfy demand. But with the market forecast to be slow, Kelle’s company is experimenting with mass production and prefabrication as ways to lower costs, even in the “custom home” market.

The last presenter was Charlie Lazor (’93) of Lazor Office, whose prefab FlatPak House (on exhibit in the gallery) is an attempt to do at the scale of architecture what his company Blu Dot has done so successfully with furniture: inexpensive, well-designed, mass-distributed, assemble-it-yourself modern products. Relative to the first two speakers, Lazor works at a small scale and has produced only a few houses to date, although he has recently partnered with the company Emyprean, which markets house designs nationally. Again the challenge has been to perfect the mix of standardization and customization and to find a profitable price point. In ordering a FlatPak House, customers can adjust a series of parameters to customize their house, resulting in multiple outcomes and locating the authorship of the house in a collaborative zone between designer and client.

It is trite to say that the more things change, the more they stay the same, but as the final session of the weekend, “The Big Picture,” arrived, there was a growing sense that despite a true recasting of labor in architecture, the profession’s various cliques and subcultures remain intact—still jockeying for territory or simply ignoring one another—and that perhaps the “lingering dysfunctionality” that Bernstein referred to might not be erased simply by making changes to the AIA documents. MIT’s Mark Goulthorpe opened the session, showing images and animations of parametrically

generated forms made from software written by students and fabricated from programs that can automatically translate the complex forms into machinable elements. Goulthorpe exuded a matter-of-fact faith in the triumph of digitally derived form, and he spoke about his parametrically generated twists as if their cultural relevance was obvious and uncontroversial. This was in contrast to the dry PowerPoint presentation of Véronique Blau, an earnest French academic who studies the organization of labor in the building industry of the European Union. It’s architecture’s unique glory that personalities like these can inhabit the same discussion, but it seems like dysfunctionality will be a given and even a productive one.

Enter John Nastasi, founder of the Product Architecture Lab at the Stevens Institute of Technology, in Hoboken, New Jersey. Started in 2004, the program brings together architects, engineers, and information technologists to study and develop new forms of digital collaboration and fabrication. Like Prince-Ramus and the founders of SHoP Architects, a sense of mission emanates from Nastasi, the sense that he’s onto something big. The program at Stevens is growing rapidly, and a two-way stream of professionals and students are learning and working together on real projects, injecting the logics of parametric design, digital collaboration, and rapid prototyping into building projects around the world.

Despite the excited talk of progress, it would be wrong not to acknowledge something suspect, as Frampton did, about all this techno-euphoria, something soft at the core. After all, we’ve been told every day for the last eighty years or so that technology will deliver us to the promised land, whether it be with the help of dishwashers, wireless phones, or precision-guided missiles, and it’s clear that the reality has been mixed. As the final speaker, Reinhold Martin, of Columbia, concluded, “Perhaps the most relevant question here—in response to which histories have yet to be written—has to do with the assumptions about historical progress and historical change that are made by the techno-deterministic, if not techno-triumphalist, version of history. ... In other words, what specifically is the historicity of our supposedly ‘new’ machines, ‘new’ materials, and ‘new’ forms of organization? Where have they come from and, more importantly, where are they going? On these and so many other questions, there is work to be done.”

—Ted Whitten (’00) and J. Brantley Hightower.

Whitten works at Gray Organschi in New Haven and Hightower works at Lake/Flato Architects in San Antonio, Texas.

1, 2. Conference organizers, Peggy Deamer and Phillip Bernstein.

3. Kiernen Timberlake project for Loblolly House, using Autodesk’s Revit software.