

# ARCHITECTURE SCHOOL THREE CENTURIES OF EDUCATING ARCHITECTS IN NORTH AMERICA

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# The Future That Is Now

Stan Allen

Figure 106

Photomontage drawing by  
Alejandro Zaera-Polo of the main  
hall of a convention center for Lille,  
France, M.Arch. thesis under the  
direction of Rem Koolhaas, Harvard  
Graduate School of Design, 1991

1  
William Gibson, "Text(v)oid," *Anyone* (New York: Rizzoli International Publications, 1991), 162–63.

2  
Gibson's recent novels are *Pattern Recognition* (2003), *Spook Country* (2007), and *Zero History* (2010).

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Tasked with writing about the period from 1990 to the present (which more or less exactly coincides with my own academic career), I am tempted to follow the example of an essay by Alejandro Zaera-Polo: "A Scientific Autobiography, 1982–2004: Madrid, Harvard, OMA, the AA, Yokohama, the Globe," originally published in *Harvard Design Magazine* in 2003; republished in William Saunders, ed., *The New Architectural Pragmatism* (Minneapolis: University of Minnesota Press, 2007), 1–21. The conceit of Zaera-Polo's essay is that his personal trajectory—from Madrid to graduate school at Harvard, to a career teaching and practicing in London, Tokyo, and the Netherlands—intersected with the key developments of the past thirty years, and that he was present, if not always as an actor, at least as an eye witness. Zaera-Polo's lively and insightful account calls attention to the fact that one key factor characterizing the period in question was the increasing globalization of architecture education. Many of the issues and experiences touched on by Zaera-Polo are very much part of the collective memory of my generation. While I will endeavor to maintain some objectivity, my account, like his more explicitly subjective one, is necessarily partial.

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The historian Tony Judt noted that he decided to write his monumental book *Postwar* in December 1989, in reaction to the series of cataclysmic events in Europe. "A political earthquake," he writes, was "shattering the frozen topography of post-World War II Europe." Tony Judt, *Postwar: A History of Europe since 1945* (New York: Penguin Books, 2005), 1.

And it's always interesting, I think, to see how the future, or rather the forward-looking form of any discipline, always carries within it the seeds of its own triteness.<sup>1</sup>

Among the participants in the first ANY (Architecture New York) conference, organized by Peter Eisenman and Cynthia Davidson in 1991, was the novelist William Gibson, author of the cyberpunk classic *Neuromancer*. Published in 1984, *Neuromancer* captured the anxieties of a dystopian world in which technology has penetrated all aspects of everyday life. In Gibson's early novels, unprecedented physical mobility and the fluidity of personal identity enabled by digital technologies reshape individual subjectivity and the physical space of the city alike—which is perhaps why the author found himself in Los Angeles at the beginning of the 1990s speaking to the group of architects, philosophers, literary critics, and architectural theorists assembled by Eisenman and Davidson. Like the film *Blade Runner* two years earlier, *Neuromancer* had become an early touchstone for imaginative speculation on the urban and architectural consequences of digital culture.

More recently, Gibson's keen cultural antennae have detected another shift. In three novels published since the beginning of the twenty-first century, Gibson has continued to explore similar themes, but now in novels set not in the future but in the present.<sup>2</sup> Fashion, underground marketing, industrial espionage, hacker culture, and the shadowy workings of international capital are the subjects of these recent novels. Locations continually shift, from global cities such as London, New York, and Vancouver to post-Soviet Russia or the high-octane capitalism of twenty-first-century Asia. It is possible to say without too much exaggeration that we now inhabit a version of the future Gibson first described twenty-five years ago. No replicants or time travel, but rather an accumulation of smaller changes, the consequences of which are subtle and all-pervasive as technology has increasingly lodged in unanticipated aspects of our lives. As Gibson has observed, the actual future is often more nuanced and unexpected than the imagined future.

The rapid technological and social changes of the past two decades present complex challenges to architectural practice and education. The 1990s in particular were characterized in part by the rejection of history and the announcement of massive, technology-driven change. These claims need to be examined and placed in context. The introduction of the computer has indeed made the design studio a very different place than it was in 1990s. A new generation of teachers and practitioners has emerged, schooled in the creative use of these advanced technologies, but also marked by the theoretical debates of the 1980s and '90s. **Figure 106** The speed of information exchange, accelerated by digital technology, has made a discipline already international in its scope fully global. The schools and the profession reacted in complex ways to the events of September 11, 2001, reigniting debates about memory, place, politics, and the agency of design. Questions provoked by global urbanization, economic instability, and increasing awareness of the environmental crisis have spurred a rethinking of design methodologies and the potential of cross-disciplinary work. Architectural historians are reexamining the utopian and speculative projects of the 1960s and '70s, and in architecture and industrial design a hands-on, activist culture has arisen, often

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working with a pragmatic mix of simple technology and global distribution networks to enact change in the developing world. The environmentalism of the 1960s has also been revived, now seen through the lens of landscape, ecology, and building performance.

In short, the field continues to adapt and change. As a way to clarify a past that is still too close for complete historical objectivity, this essay will focus on three areas: the impact of digital technologies, the theory/practice debates, and the emergence of new interdisciplinary approaches to urbanism and the environment. As one who was both a participant and observer in these developments, I bring an informed, even insider's perspective, but there are undoubtedly important developments left out of my account.<sup>3</sup> At a time of ongoing change, my aim is to identify consequential change and cut through the persistent rhetoric of "the new."

#### Snapshot: 1990

Any chronological time frame is to some extent arbitrary, but 1990 turns out to have been a significant year, or at least a logical marker for a series of changes that took place from the late 1980s through the early years of the next decade.<sup>4</sup> Although the 1990s were a period of relative prosperity, the decade began in an atmosphere of uncertainty and transition. The sobering effect of the 1987 stock market crash was still evident. Midway through the presidency of the first George Bush, American troops were fighting in Iraq. In Britain Margaret Thatcher stepped down to be replaced by John Major, and in Germany the process of reunification begun with the fall of the Berlin Wall was completed. **Figure 107** In South Africa, Nelson Mandela was released from prison after serving twenty-seven years. Thomas Pynchon published

**Figure 107**  
The fall of the Berlin Wall,  
November 9, 1989



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See Nicholas Negroponte, *Being Digital* (New York: Alfred A. Knopf, 1995).

Wikipedia (another offshoot of the digital revolution) puts Internet use in 1990 at .05% of world population and cell phone use at .025%, contrasted with 67% and 27% in 2010; [http://en.wikipedia.org/wiki/Digital\\_Revolution](http://en.wikipedia.org/wiki/Digital_Revolution).

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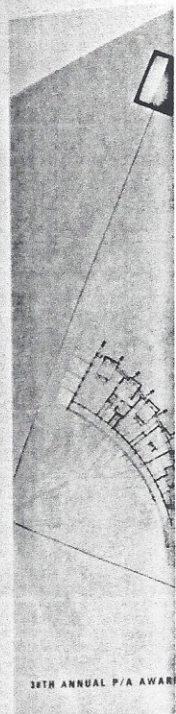
Besides Stirling (1926–92), Rossi (1931–97), and Hejduk (1929–2000), other significant figures lost to the field in this period include historians Robin Evans (1944–93) and Ignasi de Solà-Morales (1934–2001), and architects Samuel Mockbee (1944–2001) and Enric Miralles (1955–2000).

*Vineland* in 1990, his first book since *Gravity's Rainbow* in 1973, and in Cincinnati obscenity charges were filed in response to an exhibition of photographs by Robert Mapplethorpe. The Clean Air Act and the Americans with Disabilities Act were signed in 1990, both of which would have a profound impact on architecture, cities, and the environment.

The year 1990 is also significant for the development and implementation of digital technology. The underlying architecture of the World Wide Web was proposed in 1989, tested in 1990–91, and released to the public in 1992. The first digital cellular phone call was made in 1990, and the introduction of the 2G system that same year made possible the development of the small, user-friendly devices that are so ubiquitous today. However, actual Internet and cell-phone usage were minimal in those early years. Only a fraction of a percent of the population had access to these technologies, and all of the social and cultural effects of “being digital” were still in formation.<sup>5</sup> In 1990, fax machines, the Sony Walkman, and the telephone answering machine were icons of advanced technology. Kodak still made projectors, and 35-millimeter slides were the norm in architecture lectures. The Mac Classic, hailed as one of the first widely affordable, easy-to-use desktop computers, was released in October 1990. Its 40-megabyte hard drive is dwarfed by contemporary smart phones that have as much as eighty times the memory capacity and countless functions unimaginable in 1990. And Google, the search engine that allowed me to assemble all of these facts without leaving my desk (and has profoundly changed what it means for students to do “research”), was still seven years away.

In architectural practice the territory was divided between the large corporate offices still responsible for the majority of commercial work and a smaller number of high-design practices like Richard Meier & Partners working in the cultural sector. Possibilities for an office of young architects to break into commercial or institutional practice before they turned fifty were minimal. These architects and teachers looked to the small, academically prestigious, but still somewhat marginalized experimental design practices, such as those of Peter Eisenman, Steven Holl, Diller + Scofidio, and Morphosis, or internationally to the example of Daniel Libeskind or Rem Koolhaas/OMA. All this was played out against the backdrop of ongoing production of work by important figures of the later postwar generation who have since died: James Stirling, Aldo Rossi, and John Hejduk were all still active.<sup>6</sup> Rossi won the Pritzker Prize in 1990, although his influence in schools at that time was waning. Colin Rowe was actively teaching and writing, and Philip Johnson remained visible and powerful.

The thirty-eighth annual *Progressive Architecture* awards, judged in the fall of 1990 and published in the January 1991 issue of the magazine, offer a telling cross-section of design practice. Juried by a group that included Rem Koolhaas and Samuel Mockbee, awards were given to Peter Eisenman, Richard Meier, and Steven Holl. Although winning awards and recognition, neither Holl nor Eisenman was building much. Corporate heavyweights Kohn Pedersen Fox, Hillier (now RMJM), and Ellerbe Becket (now AECOM) were also represented, but the project featured on the cover was by Liz Diller and Ricardo Scofidio, a partnership not widely known outside of New York. **Figure 108** At this time their practice consisted almost exclusively of gallery installations and theater works. They defined themselves as much as artists as



architects and had a role to teaching, beginnings of art and architecture. Both partners helped to extend the concept of a freestanding

Urban design was the success of Battery Park City, principles, was he the existing city for its epicenter around in suburb and town would begin to see ers looked for new centers. It was still a public building out the Guggenheim to be called the “T” economic effects internationally known city officials. In order to realize the Dis in 1987) in 2003.

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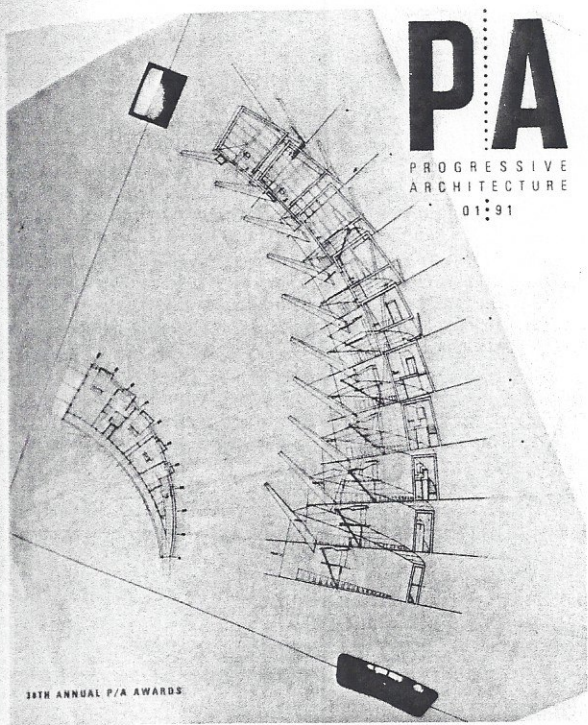


Figure 108  
Cover of *Progressive Architecture* magazine, January 1991, issue featuring the 38th Annual P/A Design Awards, with drawing by Diller + Scofidio of the Slow House

architects and had developed a model of alternative practice that gave a prominent role to teaching, exhibitions, and publications.<sup>7</sup> In 1990, they still worked at the margins of art and architecture, supported primarily by cultural institutions and schools. Both partners held full-time academic positions and saw their teaching work as an extension of the design research conducted in their practice. They would not complete a freestanding building for another ten years.

Urban design was still viewed as a somewhat specialized area of practice. The success of Battery Park City, designed by Cooper Eckstut loosely on New Urbanist principles, was held up as a model for the integration of new neighborhoods into the existing city fabric. The Congress for New Urbanism was founded in 1993, with its epicenter around Andres Duany and Elizabeth Plater-Zyberk's graduate program in suburb and town design at the University of Miami. Over the next decade they would begin to see their principles partly implemented as city officials and developers looked for new models to counter suburban sprawl and the depopulation of city centers. It was still rare for an ambitious, high-design architect to complete a major public building outside of the campus context. Frank Gehry began design work on the Guggenheim Bilbao in 1991 and the building was completed in 1997. What came to be called the "Bilbao effect"—the marketing, branding, touristic, and consequent economic effects of a spectacular and highly recognizable building designed by an internationally known architect—had not yet entered the lexicon of planners and city officials. Indeed, it was only the success of Bilbao that made it possible for Gehry to realize the Disney Concert Hall in Los Angeles (which had initially been designed in 1987) in 2003.

Rem Koolhaas's Seattle Public Library, for example, completed in 2004, no doubt benefited from this new consciousness among city planning officials. But in 1990 he too had built relatively little, and maintained a profile that was more academic and cultural than professional. His first major buildings—the Rotterdam Kunstshal and the Grand Palais in Lille—were completed in 1992 and 1994. Perhaps more than

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When they received the first MacArthur Fellowship ever given to an architect in 1999, it was in large part in recognition of their role in redefining the limits of architectural practice and the example they set for younger architects.

Figure 109

"Ring Roads of the World," poster for Rice University School of Architecture, 2009. Graphics by Thumb Design (Jessica Young and Luke Bulman). The designers graduated from Rice's M.Arch. program and began doing posters for the school in 1999.

## RING ROADS OF THE WORLD



any other figure in this period, Koolhaas defined the model for a practice focused on competitions and a parallel body of exhibitions, publications, and speculative urban research, leading over time to major institutional commissions. The present-day fascination with large-scale interdisciplinary urban design work—inspired in part by OMA's projects of the late 1980s, and certainly jumpstarted by the publication in 1995 of his book *S M L X L*—could also be traced back to the publication in 1987 of the inaugural double issue of the journal *Zone*, entitled "The Contemporary City," edited by Michael Feher and Sanford Kwinter. Drawing from art, architecture, politics, and literary theory, the editors saw the city as the privileged site for interdisciplinary study. The *Zone* issue gave ambitious young architects a model for working on the city that was far from the pieties of the New Urbanism, but also distinct from the formal approaches of mainstream practitioners such as Meier or Stirling. The effect of these two books would be visible later in the decade with the emergence of the interdisciplinary practices of landscape urbanism and the data-driven studio work of the Harvard Project on the City, directed by Koolhaas.

There were a number of important transitions in schools of architecture around this time. Bernard Tschumi began his deanship at Columbia in 1988. Having won the Parc de la Villette competition in 1983, Tschumi had spent much of the next five years in France, overseeing that project. In the United States, he was still considered something of an outsider, known primarily for his theoretical writings and an



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Figure 110  
Cover of catalog for the exhibition "Architexturally Speaking: An Exhibition/Installation Featuring TEN unTENured FACULTY," curated by Stanley Tigerman, director of the School of Architecture at the University of Illinois at Chicago, 1992



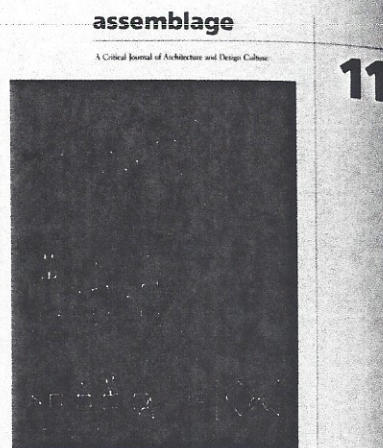
Figure 111  
"Fields," *The Berlage Cahiers 5* (1997), edited by Wiel Arets, containing student work done at the Berlage Institute, Rotterdam, during the 1995–96 academic year in studios taught by international instructors. On the cover is a photograph of a first-year thesis installation.

early polemical project, "Advertisements for Architecture." Modeled loosely on the Architectural Association, where Tschumi had taught in the 1970s, Columbia became known for its early embrace of the computer in the 1990s. At Harvard's Graduate School of Design, Rafael Moneo had completed his term as chair, which had been characterized by a return to disciplinary concerns and an opening of the school to visiting faculty from Europe. His successor, the Atlanta architect Mack Scogin, would be more pluralistic in his outlook. Computer specialist William Mitchell assumed the deanship at Massachusetts Institute of Technology in 1992, building on M.I.T.'s technological legacy and the presence there of the Media Lab. Lars Lerup, who had been teaching at the University of California at Berkeley and was known for his drawings and urban speculations, became dean at Rice University in Houston in 1993. Lerup invited intellectuals such as Kwinter, a theorist who was not professionally trained in architecture, to the school, and focused the curriculum on the American city and emergent forms of urbanism. **Figure 109** Stanley Tigerman at the University of Illinois at Chicago would also cultivate a younger generation of architects and theorists, including R. E. Somol, Catherine Ingraham, and Greg Lynn. **Figure 110**

Another important benchmark in 1990 was the formation of the Berlage Institute in Amsterdam. The Berlage was founded by the Dutch architect Herman Hertzberger as an educational workshop. Wiel Arets became dean in 1994 and rebranded the school as a "laboratory," emphasizing speculative design research and global urbanism. Throughout the 1990s the Berlage played a double role. On the one hand, under the entrepreneurial guidance of Arets, it became an important node in the international network, a place for visiting architects and students from the United States, Asia, and Europe to meet and exchange ideas. Like the Architectural Association in earlier decades, the Berlage emerged as a preferred international destination for North American architects and teachers. **Figure 111** It was emblematic of a growing internationalism in design education, both giving younger faculty from the U.S. important international exposure and anticipating the global educational initiatives that were to emerge in North American schools after the beginning of the new century. The Berlage was also an active promoter of a generation of younger architects. Taking advantage of

Figure 112  
"Fetish," monographic issue  
of the *Princeton Architectural  
Journal*, 1992, edited by Sarah  
Whiting, Edward Mitchell, and  
Greg Lynn

Figure 113  
*Assemblage* 11 (April 1991),  
with Jeffrey Kipnis's "Three  
Masterpieces of Late-Twentieth-  
Century Design" on the cover



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This was the period, for example, of the emergence of practices such as MVRDV, UNStudio, and Foreign Office Architects, which have since become models for the synthesis of research, teaching, and practice in both the United States and Europe.

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Although convenient as a jumping-off point, it is also possible to overstate the opposition between a practice-driven scene in Europe and a theory-driven culture in the United States. In many ways, the two were complementary phenomena. The innovations in practice associated with younger European architects were made possible both by the example of members of the preceding generation like Koolhaas, who spent considerable, and formative, time in the United States, and by their own exposure, through international exchanges, to American theoretical work. With the interesting exception of Winy Maas, all of these figures—Arets, Zaera-Polo and Moussavi, van Berkel and Bos—either taught or were educated in the United States in the 1990s, or both.

10  
John Whiteman, Jeffrey Kipnis, and Richard Burdett, eds., *Strategies in Architectural Thinking* (Cambridge, Mass.: MIT Press, 1992).

11  
*Ibid.*, 7.

this institutional support, these young practitioners were able to turn their academic visibility into professional credibility.<sup>8</sup> Throughout the early and middle 1990s, the programs of the Berlage Institute brought into sharp focus the divide between North America and Europe. In Spain, Germany, and the Netherlands there was an emerging culture of pragmatic young architects, supported by powerful professional and governmental institutions, who built up successful design practices by serving the emerging cultural and management elites of late twentieth-century Europe. In the American schools, by contrast, there was high-level theoretical speculation and cultural production.<sup>9</sup>

### The consequences of theory

A pair of conferences, both later published as books, may stand for the state of American architectural theory and discourse in 1990. In 1988, John Whiteman and Jeffrey Kipnis convened a conference at the Chicago Institute for Architecture and Urbanism, a newly formed entity supported by the SOM Foundation. The proceedings were published in 1992 as *Strategies in Architectural Thinking*.<sup>10</sup> Whiteman, the Institute's director, described the ambition of the publication as follows:

Each paper included here has the virtue, perhaps the burden, of tracing a line of thought between issues primarily regarded as architectural ... and issues thought to be more cultural and therefore extrinsic and somehow irrelevant to architecture, such as gender, the structure of philosophical thought, or the textual strategy of a piece of literature.<sup>11</sup>

Not only the subject matter but the academic profile of the contributors represented this questioning of the limits of architectural thinking. Alongside the familiar contributors to theory debates such as K. Michael Hays, Jennifer Bloomer, and Mark Wigley

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were authors like Ann Bergren, trained as a classicist, and Catherine Ingraham, who had a background in comparative literature.

The tendency for architecture theory at the end of 1980s to open itself to other disciplines was also evident in a second example, the “Fetish” conference that took place at Princeton University, also in 1988. Organized by Greg Lynn, Ed Mitchell, and Sarah Whiting, all of whom were students at the time, the conference proceedings were published in 1992 as an issue of *The Princeton Architectural Journal*.<sup>12</sup> **Figure 112** In this case, the explicit appeal to a concept from Freudian psychoanalysis—or, alternatively, a reference to Karl Marx’s idea of commodity fetishism—was a marker of the intellectual ambitions of architectural theory at the end of the 1980s. It would be easy to cite other examples. In issues of *Assemblage* published in 1990, philosopher and literary theorist Jacques Derrida and religion scholar Mark Taylor appeared alongside Daniel Libeskind, Eisenman, and Kipnis. **Figure 113** And at the first ANY conference, besides novelist William Gibson, participants included the philosophers John Rajchman and Kojin Karatani, the literary critic Fredric Jameson, and the legal scholar Roberto Mangabeira Unger, as well as Derrida.

What is significant about all this is not simply the appeal to other disciplines per se, but the general scope and direction of the references. Architecture was not alone in looking to cultural studies and literary criticism for its theoretical models; many other humanities disciplines had earlier embraced a cultural studies outlook, to the point that in 1979 the philosopher Richard Rorty would remark that “In England and America philosophy has already been displaced by literary criticism in its principal cultural function.”<sup>13</sup> But in order for architecture to take its place among the other humanities disciplines, it had to be reconceived as a kind of discursive, text-based practice itself.

Important work in the 1970s by architects and historians such as Peter Eisenman, Aldo Rossi, Rafael Moneo, Manfredo Tafuri, Anthony Vidler, and Mario Gandelsonas and Diana Agrest, all of whom were associated with the journal *Oppositions*, had helped to disengage architecture from its late-modernist basis in systems theory and functionalism. In different ways, these thinkers argued that architecture needed to reexamine its internal structure as a discipline and rethink its relationship to society. This provoked a healthy self-criticism, and helped to redefine the discipline of architecture as a serious intellectual pursuit. In particular, the linguistic theories promoted by Eisenman and Agrest/Gandelsonas, along with Charles Jencks and George Baird, helped lay the groundwork for the idea of architecture as language. These efforts, in effect, opened up architectural discourse to the broadest possible range of references. Conceived as a form of language, architecture could variously affiliate itself with discursive practices from literary criticism to narrative fiction, film, critical art practices, or new media. A later cohort of architectural theorists and historians primarily associated with the journal *Assemblage* radicalized the insights of that earlier generation. Drawing from cultural studies and media theory, and embracing the emergent digital realm, they redefined architecture as “built discourse,” arguing that architecture was simply one medium among many other media, its material presence dissolved in the flux of ubiquitous electronic networks.

Throughout the 1980s and early ’90s the divide between theory and practice grew.

12

“Fetish,” *The Princeton Architectural Journal* 4, ed. Sarah Whiting, Edward Mitchell, and Greg Lynn (New York: Princeton Architectural Press, 1992).

13

Richard Rorty, *Philosophy and the Mirror of Nature* (Princeton: Princeton University Press, 1979), 168 note 6.

To meet the demand of these new classes, several anthologies appeared during the decade of the 1990s, including Kate Nesbitt, ed., *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965–1995* (New York: Princeton Architectural Press, 1996); and a two-volume series under the imprint of Columbia Books of Architecture: Joan Ockman with Edward Eigen, ed., *Architecture Culture 1943–1968: A Documentary Anthology* (New York: Rizzoli, 1993), and K. Michael Hays, ed., *Architecture Theory since 1968* (Cambridge, Mass.: MIT Press, 1998). Apparently this demand still exists, on the evidence of the series launched by Routledge in 2007 entitled “Thinkers for Architects.” Titles include *Derrida for Architects*, *Bourdieu for Architects*, *Irigaray for Architects*; see [http://www.routledge.com/articles/thinkers\\_for\\_architects/](http://www.routledge.com/articles/thinkers_for_architects/).

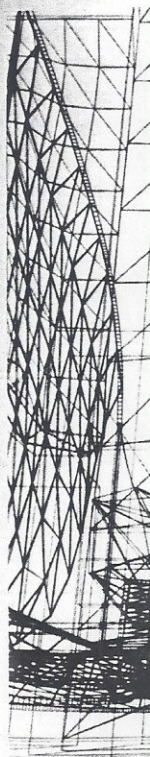
Contrast Whiteman's 1992 description quoted above with a statement by Kipnis published the next year in an *Architectural Design Profile* edited by Greg Lynn, “Folding in Architecture”: “However provocative and invaluable as resources these studies in philosophy or science are [Kipnis writes], it must be said that neither provide[s] the impetus for a New Architecture, nor the particulars of its terms and conditions. Rather these have grown entirely out of architectural projects and developments within the discipline of architecture itself.” Jeffrey Kipnis, “Towards a New Architecture,” in Greg Lynn, ed., “Folding in Architecture,” *Architectural Design Profile* 102 (1993): 42.

Critical practice aligned itself with film, new media, and installation art. In turning to literary criticism, philosophy, and cultural studies for its theoretical models, architecture minimized its operative, technical capacity. Architecture was instead understood as a cultural practice that could find appropriate expression in journals, gallery installations, or hypothetical projects as much as in buildings. The 1988 “Deconstructivist Architecture” exhibition at the Museum of Modern Art, while exhibiting for the most part buildable projects by practicing architects, promoted an interpretation of architecture that, in addition to commenting on the utopia of Russian Constructivism, was based on metaphors of instability and concepts borrowed from literary theory. The effect on schools of architecture was a proliferation of theory courses, and a widely accepted view that knowledge of structural linguistics and poststructuralist philosophy was fundamental to an architecture education.<sup>14</sup> By 1990 the schools could claim to be highly expert in questions of meaning, discourse, and interpretation, while questions of technique and practice were ceded to the working professionals.

In retrospect, the proliferation of cross-disciplinary theoretical exchange around 1990 may be seen as representing the conclusion of a phenomenon that began in the 1970s. While it had proven to be productive for theorists and historians, for architects it increasingly presented an impasse and, as such, could only provoke a reassessment. The latter had at its basis two critiques of the received theoretical account. The first was a growing awareness of the limits of language and metaphor. Eisenman, Libeskind, and the other architects in the Deconstructivist show did not make buildings that were actually collapsing; they only looked that way. To younger architects at the time this dependence on metaphors of instability seemed increasingly ineffective, even trivial. The other critique stemmed from a suspicion of the Deconstructivist “politics” of disjunction. At a time when the contemporary city, popular culture, and society itself seemed to be producing ever more violent disjunctions, architects apparently had to propose ever more extreme and violent discontinuities in their work for it to function as an effective critical instrument. Yet if the production of an alienated architecture as the mirror of an alienated society could be seen as a means of increasing critical awareness, it was unlikely actually to change the underlying conditions that led to the alienation in the first place. By the early 1990s, there was an emerging sense among younger architects and educators that architecture's own history as a discipline, and its own agency as a material practice at work in the world, might provide a more effective model for transformation than literary metaphors or philosophical references.<sup>15</sup>

### The computer in the design studio

The atmosphere of doubt and uncertainty that characterized the early 1990s was not really surprising; one of the stated aims of the theoretical work of the previous decade had been to destabilize the certainties of received architectural knowledge. In that regard, the theory of the '80s served its purpose, preparing the ground for new inquiries and new directions. Yet the greater momentum for change came in response to technological developments. Once young practitioner-teachers got access to computers and started thinking creatively about the new possibilities of



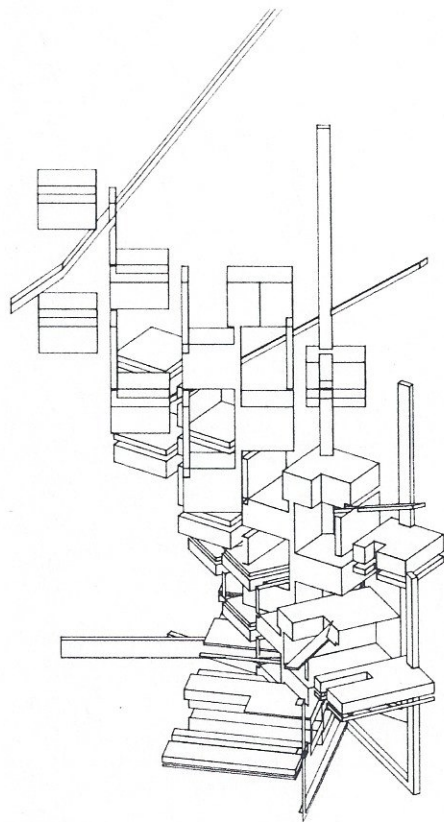


Figure 114  
Pen-and-ink plotter drawing  
by David Biagi, a student in  
the graduate studio of visiting  
critic Peter Eisenman at Ohio  
State University School of  
Architecture, 1986. Students in  
the studio used an early version  
of Form•Z, a software program  
being developed at the time by  
another faculty member in the  
school, Christos I. Yessios.

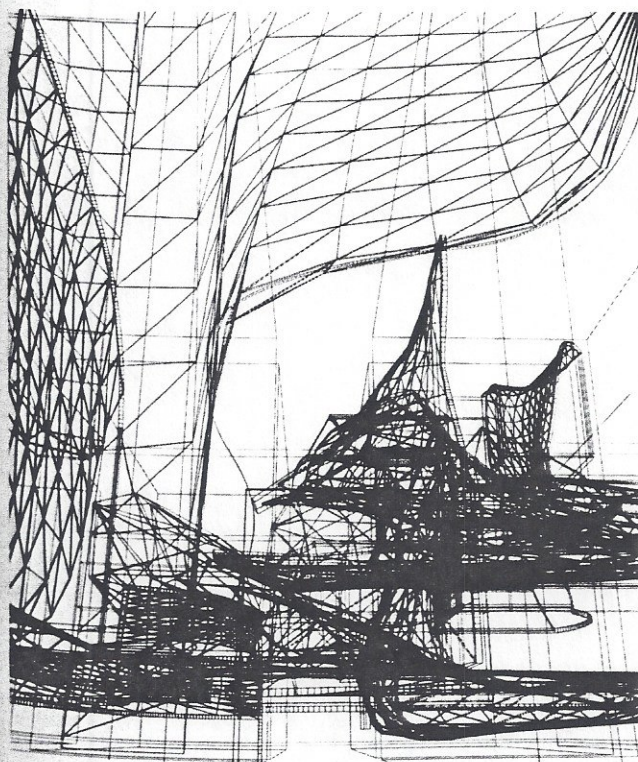
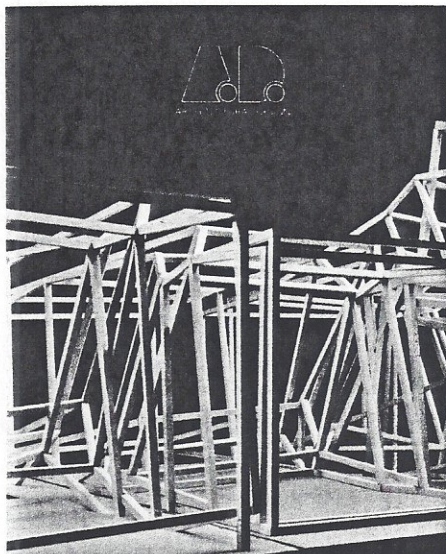


Figure 115  
Wire-frame drawing for an infor-  
mation technology center in New  
York City by Amar Sen, a student  
in Greg Lynn's advanced design  
studio at Columbia Graduate  
School of Architecture, Planning  
and Preservation, 1994

Figure 116  
Cover of "Folding in  
Architecture," *Architectural  
Design Profile 102* (1993),  
edited by Greg Lynn



digital design work in the 1990s, advanced design culture coalesced around a specific project. The new design work and associated theory benefited from, and actively incorporated, aspects of the theoretical discourse of the previous decades while at the same time reacting against the linguistic basis and literary metaphors of that same intellectual framework.

In 1990 computers were largely unknown in the design studio in most schools of architecture, relegated instead to basement computer labs. Computer-aided design programs were widely used in offices by this time and there was an awareness in the educational community that computer skills needed to be taught. But machines were slow and cumbersome, output was unreliable, and there was little consensus about the computer's viability as a design tool as opposed to an aid to efficient production of working drawings in the professional setting. Drawing in schools was still almost exclusively by hand. The earliest impetus for the creative integration of the computer as a design tool came from practitioners and theorists like Frank Gehry, Greg Lynn, and Bernard Cache. Schools of architecture such as Columbia, M.I.T., SCI-Arc, U.C.L.A., Ohio State, and others were among the first to retool their technological infrastructure and teaching methods. **Figure 114** Young designers followed closely behind, and by the middle of the 1990s, a new virtuosity emerged as architects borrowed software and digital techniques from the film and aviation industries. The computer made the generation of complex form easy, and designers were fascinated by the new plasticity enabled by fluid modeling. **Figure 115** In these early stages, the effect of digital technology was primarily formal, and characterized by an interest in continuous surfaces and complex biomorphic forms.

These new design techniques spread quickly through the schools, which were the primary laboratory for this early speculative work. What was at one time a radical experiment became mainstream as other schools followed the lead of the early adopters. Young faculty who could teach computer skills found themselves in demand, and

training in the use of computers in education. Without a doubt, in the twenty years ago. This paradigm shift has occurred, and design are no longer necessarily done in a design studio. At a time when digital design protocols were being developed.

It is important to be aware that in the 1990s was prepared a new paradigm was still out of reach for many architects' engagement. Inspired by cyberpunk, by the potential of new technologies and the fluid personal nature of some of this new architecture. Although they sometimes met, in most part, realized with a new language.

It is equally important to note that Greg Lynn, who later became a leading figure, engaged in explorations that had access to the computer. The work of *Architectural Design Profile 102* was computer-based, for a long time, a strong conceptual basis for digital design work came from geometric primitives and formal operations that were a mix of form and formal composition. In these design techniques. It seems that had already been a smoothness and continuity, and metaphors of insides and outsides.

The early formal experiments were it possible actually to create? **Figure 117** In the broader access to equipment, conventional working methods. But while these formal language of the first phase of digital design, the second phase in the evolution of form-making, a third phase in its realization.

In the schools today, digital work. First, as the

training in the use of digital technology soon became an integral part of architecture education. Without a doubt, the design studio looks very different from the way it did twenty years ago. This has created a sense of self-satisfaction and claims that a new paradigm shift has occurred. But the formal expressions and work routines of digital design are no longer novel today. The computer has become a familiar fixture in the design studio. At a time when all buildings are designed on the computer, making digital design protocols explicit no longer seems an urgent task.

It is important to bear in mind that the ground for the innovative work of the 1990s was prepared a decade earlier, at a time when access to computer technology was still out of reach for most experimental designers. As a result, in the first stage, architecture's engagement with digital technology was primarily metaphorical. Inspired by cyberpunk fiction and movies such as *Blade Runner*, architects, fascinated by the potential of networked interconnectivity, the rapid circulation of images, and the fluid personal identities promised by the emergent technology, tried to capture some of this new sensibility through experimental projects and installations. Although they sometimes incorporated digital imagery, their projects were, for the most part, realized with conventional means.

It is equally important to recall that architects like Preston Scott Cohen and Greg Lynn, who later became identified with innovative computer-based design work, were engaged in explorations of formal complexity and descriptive geometry before they had access to the computer. Very little of the work published in the 1993 special issue of *Architectural Design* titled "Folding in Architecture," edited by Lynn, was actually computer-based, for example. **Figure 116** This prior research gave Lynn and Cohen a strong conceptual basis from which to theorize new digital design techniques. Hence digital design work came to be characterized by deformations and transformations of geometric primitives, and the design process was understood as a series of iterative formal operations that the computer made increasingly easy. An aesthetics of intricacy and formal complexity found its perfect counterpart in the new computer-driven design techniques. In this sense, computer technology responded to a series of problems that had already been defined from within the discipline, and a new genealogy of smoothness and continuity was mapped out in answer to the formal discontinuities and metaphors of instability that had characterized Deconstructivism.

The early formal experimentation soon gave way to a new set of questions. Was it possible actually to build the complex forms that the computer could so readily generate? **Figure 117** Innovative work by industry partners such as Gehry Technologies, broader access to equipment in schools, and the seductive possibility of bypassing conventional working drawings gave an impetus to new questions of digital fabrication. But while these questions represented an important shift of emphasis, the formal language of the early digital experiments did not change substantially. If the first phase of digital design work in the 1980s was primarily metaphorical, and if the second phase in the 1990s was largely experimental, establishing the current protocols of form-making and fabrication, architecture in the 2000s has arguably entered a third phase in its relationship to digital technology.

In the schools today there are two complementary directions with regard to digital work. First, as the widespread availability of inexpensive, easy-to-learn digital

Figure 117  
Interior of Frank Gehry's studio,  
Santa Monica, California, 1996



technology has made the computer's impact more tangible and immediate, digital design's cultlike status—which had divided architecture into believers and nonbelievers and, like all cults, had its secret language and private rituals—has become largely a thing of the past. A new generation of architects who have been educated entirely within the digital regime no longer need to think about how to use an unfamiliar tool; they can now focus on what to do with that tool. As schools have increasingly dismantled their basement computer labs and distributed equipment throughout the studios, the computer has ceased to be a technology to be either celebrated or resisted; it is simply a fact of life. Its logic has been fully absorbed into contemporary work routines and habits of thought. As a result, designers working today have turned their attention to the computer's strategic and operative potential. The forms of practice that digital technology enables are as important as the formal languages it makes possible. Current strategies of implementation go beyond the architect's traditional relationships with clients and builders, making possible newly pragmatic, inventive, and hands-on approaches. Other strategies have less to do with the logics of design process or visualization than with the incorporation of digital technologies directly into buildings, for example as interactive skins or sensing devices.

The second direction emerging today is an emphasis on sophisticated applied research in computation. Scripting, robotics, and parametric design are the focus of this new research and are beginning to find a place in schools of architecture, especially at the doctoral level. Whereas the first generation of digital designers repurposed available software to generate novel formal effects, contemporary designers are going beyond the interface. Writing code is now mandatory for advanced academic work. While this appears to counter the trend to democratization and naturalization described above, it is, in fact, a complementary phenomenon. The thrust of this research is practical and result-oriented. Much of it is widely available, distributed on the internet as open-source material. Intimately engaged with construction logistics and material performance, it draws as much from engineering culture as from



architecture. Its challenges that are formed in 2001 among them Foster institutions like **Figure 118** In this and a source of sp

#### The projective

If the state of arc by publications s lished issue of th concerns of a you tant markers of a of the shift away summer of 2010, architects born b within the time debates and tech the issue have ac none identify th realm, and work They are as likely ings and texts. A are located all ov reflecting the gl a number of com ers: four of them

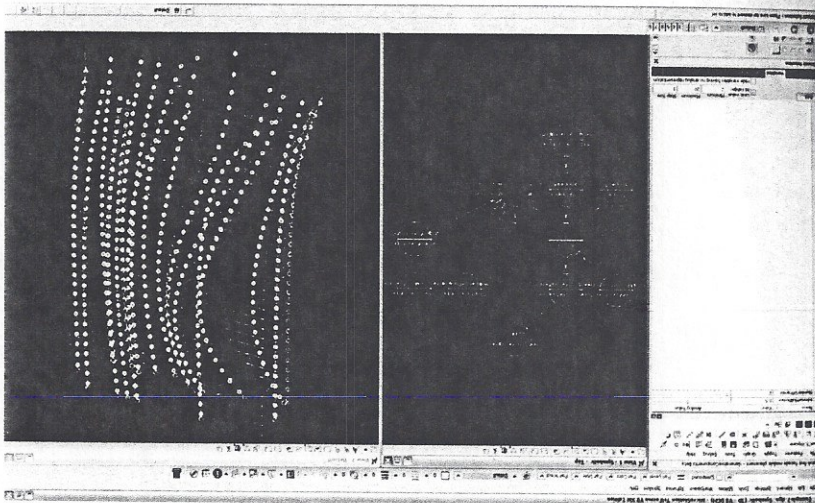


Figure 118

A typical work session within Bentley GenerativeComponents' software program for parametric design in architecture and engineering released in November 2007

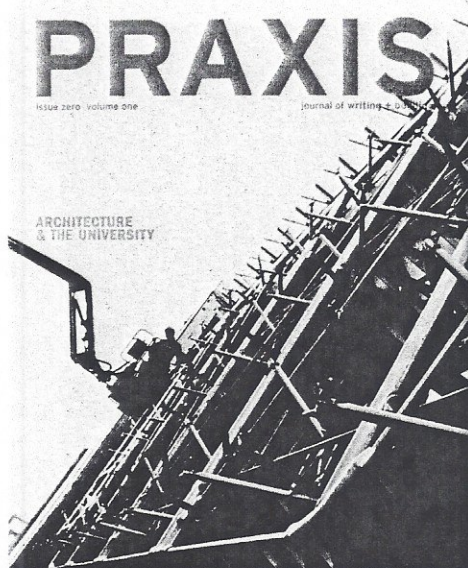
architecture. Its geometric and computational complexity mirrors the technical challenges that are faced in practice today. Bentley's SmartGeometry Group, which was formed in 2001 as a partnership between architectural and engineering practices—among them Foster + Partners, Grimshaw, Arup, and Buro Happold—and educational institutions like M.I.T., exemplifies this new collaborative, practice-based research. Figure 118 In this context, the partner schools function as a reservoir of knowledge and a source of specialized technical expertise.

### The projective turn

If the state of architectural discourse in the late 1980s and early 1990s was defined by publications such as *Fetish and Strategies in Architectural Thinking*, a recently published issue of the journal *Praxis*, number 11/12, may serve as a cross-section of the concerns of a younger generation of educators and practitioners.<sup>16</sup> Journals are important markers of a discipline's priorities, and the editorial focus of *Praxis* is emblematic of the shift away from critical theory to building culture. Figure 119 Published in the summer of 2010, *Praxis* 11/12, presents design work by and conversations with eleven architects born between 1967 and 1974—that is to say, educated almost entirely within the time frame of this essay, in an atmosphere marked by the theoretical debates and technological changes discussed above. All the architects represented in the issue have active practices dedicated to built work. Almost all also teach, although none identify themselves primarily as academics. All are comfortable in the digital realm, and work with interactive technologies, parametric design, or fabrication. They are as likely to explain their ideas through video or installation as through drawings and texts. Although most teach and practice in the United States, their buildings are located all over the world, and they are themselves a broadly international group, reflecting the global character of contemporary architectural practice. They share a number of common reference points that have also become generational markers: four of them are designing villas as part of the Ordos 100 project in China, and

<sup>16</sup> "11 Architects / 12 Conversations," *Praxis* 11/12 (Summer 2010). Launched in 1999, *Praxis* defined itself as a journal of "writing and building." While the emergence of a journal like *Praxis* may be taken as an index of shifting sensibilities, the changes in the field were not absolute. *Assemblage*, which had identified itself as "A Critical Journal of Architecture and Design Culture," closed in 2000 after forty-one issues. Its territory was taken over to some extent by *Grey Room*, a journal edited by students of the editorial board members of *Assemblage* and October, the latter journal founded in the mid-1970s. *Grey Room*, which started publication in 2000, has a smaller, more specialized academic readership than *Assemblage* had. Perhaps it would be more accurate to describe the splintering of the field as a polarization of noncommunicating realms—practicing architect-teachers on the one hand and specialized academics on the other. See, for example, a remark made by Eric Howeler in *Praxis* 11/12: "Who is going to read *Grey Room*?" (120).

Figure 119  
Cover of *Praxis* 0, no. 1 (1999),  
"Architecture & the University"



17  
Ibid., 5.

three have completed courtyard installations within MoMA PS1's Young Architects Program. **Figure 120**

In the opening interview, Michael Meredith, who originally proposed the issue's concept, states, "The way I frame our generation is around the idea of practice and an engagement in the real world, usually through fabrication, construction, performance or program."<sup>17</sup> This statement clearly seems to signal a move away from academic theory and an emphasis on architecture's instrumentality and ability to confront actual problems. It would be an oversimplification, however, to conclude that such an idea of practice has entirely displaced theoretical reflection. On the one hand, the models of practice visible in the work presented in the journal owe a great deal to the previous generation, from the installation art practices of the 1980s to the Dutch model of pragmatic practice, which includes research, exhibition, and publication as practice-building strategies. (Four of the architects represented worked for Koolhaas's firm OMA.) On the other hand, the vision of architectural practice that the issue presents is more open-ended and less medium-specific than its predecessors. It is true that the current generation wants to construct, but for these young architects, construction includes installations, exhibition pavilions, and interactive environments as well as buildings. It would therefore be more accurate to say that in their search for a viable model of practice they have committed themselves to an active engagement with new technology and creative means of implementation while also absorbing and internalizing the academic lessons of the past two decades.

To be sure, though, the emphasis has changed, and significant realignments have occurred. Interactive installations by Höweler+Yoon, Aranda/Lasch, and the Brooklyn-based partnership The Living create ambient, experiential architectures; they are prototypes for larger structures or urban interventions. **Figure 121** In earlier work, technology was a means to a critical end. These young architects are working experimentally with technology itself; they consider themselves "postmedium." Like

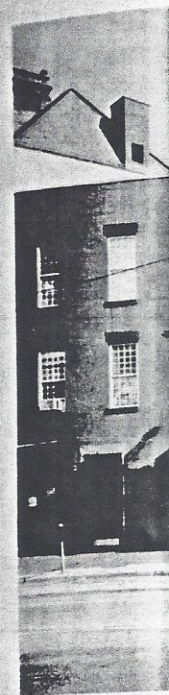




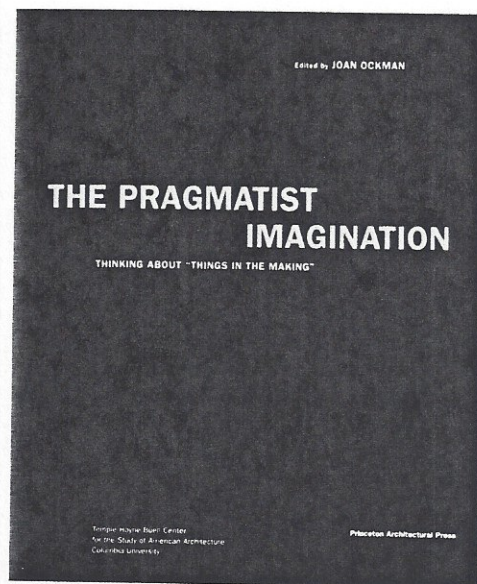
Figure 120  
MOS (Michael Meredith and Hilary Sample), "Afterparty," temporary installation at PS1, Long Island City, New York, 2009. Winning project in the tenth MoMA/PS1 Young Architects Program competition



Figure 121  
Höweler + Yoon Architecture/ MY Studio, "White Noise White Light," sound and light installation in Athens, Greece, 2004

Figure 122

Cover of *The Pragmatist Imagination: Thinking about "Things in the Making,"* edited by Joan Ockman for the Temple Hoyne Buell Center for the Study of American Architecture, Columbia University, 2000



18  
Ibid., 111.

19  
Michael Speaks, "Design Intelligence: Introduction," *A+U*, December 2002, 11–18. To be sure, Speaks's articles were highly polemical. An earlier version of his argument was titled "Theory was interesting ... but now we have work," *Arq: Architectural Research Quarterly* 6, no. 3 (2002): 209–12.

20  
See R. E. Somol and Sarah Whiting, "Notes around the Doppler Effect and Other Moods of Modernism" *Perspecta* 33 (2002): 77.

21  
Many of these essays were subsequently reprinted in William S. Saunders, ed., *The New Architectural Pragmatism* (Minneapolis: University of Minnesota Press, 2007). See in particular the article by George Baird, "'Criticality' and Its Discontents," 136–50.

the coolhunting protagonist of Gibson's novel *Pattern Recognition*, they move fluidly through multiple urban landscapes, reshaping contemporary global technologies and consumer cultures as needed. Instead of being subject to critical scrutiny, these architects take technology as a resource to be used and repurposed. As David Benjamin of *The Living* remarked, "We share the idea that the architect is, most generally, a problem solver. We approach a situation by asking 'What if ...' That's consistent across the firms in this issue and for our generation."<sup>18</sup>

Another convenient (and earlier) marker of this repositioning was the conference devoted to "Architecture and Pragmatism" held at the Museum of Modern Art in November 2000, organized by Joan Ockman, John Rajchman, and Terence Riley. The conference followed a preliminary workshop at Columbia University's Buell Center for the Study of American Architecture six months earlier, the proceedings of which were published as *The Pragmatist Imagination: Thinking about "Things in the Making,"* edited by Ockman. Figure 122 A close reading of that book would suggest that in evoking Pragmatist philosopher William James's "rich thicket of reality," the conference organizers were not so much attacking the theoretical work of the time (as was suggested in some accounts in the architectural press) as looking to provide a more robust intellectual basis for an architecture engaged in and with the world. Like any good conference, the conference at MoMA captured a tendency in formation, capitalizing on earlier work at the same time as it anticipated new developments in the field.

There were other architects, educators, and writers around this time who recognized the need to confront urgent real-world issues—from the ecological crisis to the globalization of practice, from architecture's place in the contemporary city to the impact of digital technologies on design—and argued that the academic emphasis on theory and discursive practice had simply proven inadequate to address these new challenges. Michael Speaks, for example, made the case for a creative use of broad-based design expertise in a looser, more entrepreneurial relationship to the market.<sup>19</sup>

Robert Somol and Sarah Whiting, who invested in critical thinking outside of contemporary academic circles, were in a unique fashion between two worlds and deserve to be mentioned in the change in architectural thought probably remained. Sarah Whiting and Somol, practicing architects, offered nuance to the debate. It can be argued that their work is more relevant to the field than is capable of adding.

#### Landscape, e

One of the questions in architectural history is the relationship between architecture and the landscape. In 1985 Walter D. Meehan, Jr., a department chair at the University of California, Berkeley, wrote about the cultures of architecture and the landscape.

[O]n the one hand, architecture from the 19th century while on the other hand, the landscape

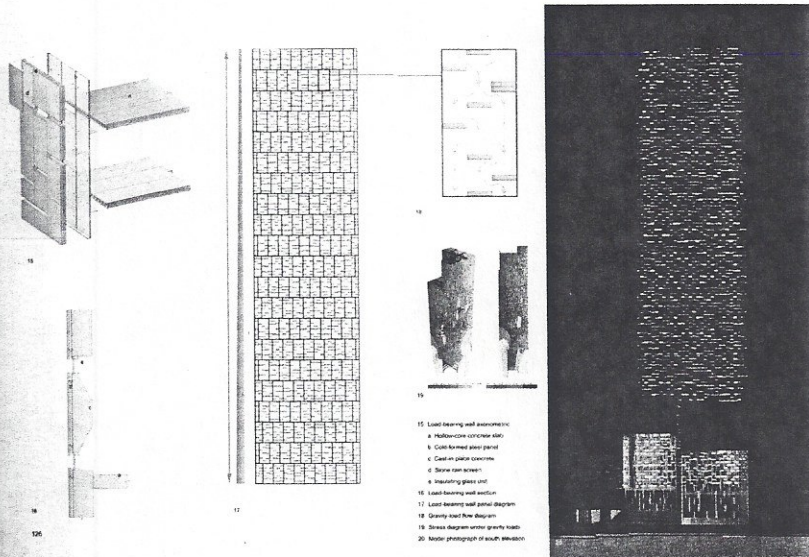


Figure 123  
 Spread from *SOM Journal 3*  
 (2004), showing research  
 developed by Skidmore,  
 Owings & Merrill for the  
 concrete perimeter wall of  
 the Bank of Kuwait tower

22

A project like the Princeton Envelope Group, a three-year-long research studio directed by Alejandro Zaera-Polo at Princeton's School of Architecture, exactly responded to this mandate. See his presentation of it in *Log 13/14* (fall 2008): "The Politics of the Envelope." Zaera-Polo has stated in conversation that his research and articles were an explicit response to those who were claiming that his practice-driven work was either anti-theory or insufficiently engaged with the political realities of contemporary architecture.

Robert Somol and Sarah Whiting called for new practice strategies that were less invested in critique or resistance, and instead worked with the speed and intensity of contemporary urban life.<sup>20</sup> These approaches provoked a reaction in certain academic circles, and the debate was subsequently played out in a rather confused fashion between "critical" and "projective" positions.<sup>21</sup> In retrospect, two points deserve to be made. First, neither position was new; rather than heralding a sea-change in architectural thinking, they represented competing research projects that probably remain unreconcilable. Thus, while many theorists and practitioners continued to make the case for critical practice, unswayed by the arguments of Speaks or Whiting and Somol (all three of whom happen to be trained academics and not practicing architects), it would be incorrect to see the "projective" position as a rejection of theory or as fundamentally anti-intellectual. Quite the contrary, these theorists offered nuanced arguments in support of their new models of practice. It might even be argued that their project was aimed at the revitalization of theory by making it more relevant to contemporary problems, more closely linked to a research agenda capable of addressing the complexity of contemporary practice in a global context.<sup>22</sup>

#### Landscape, ecology, and global urbanism

One of the questions distributed to the participants in *Praxis 11/12* read: "Does architectural 'research' constitute a new form of practice? What is the relationship between your research, writing (if applicable) and your design work?" In his 1985 Walter Gropius Lecture at Harvard, Henry Cobb, then chair of the architecture department at Harvard's Graduate School of Design, described the incompatible cultures of academic research and creative practice as follows:

[O]n the one hand, the academic setting would seem to separate architecture from its vital sources of nourishment in the "real world" of practice, while on the other hand its entrepreneurial, practice-oriented character

Henry N. Cobb, "Architecture and the University," Walter Gropius Lecture (Cambridge, Mass.: Harvard University Graduate School of Design, 1986), unpaginated.

It is worth noting that what is conventionally referred to as "research" in schools of architecture consists more often of information-gathering (facilitated by the Internet) and graphic analysis. The latter has its place but should not be confused with either archival research as carried out in the humanities disciplines or experimental research in the sciences.

would seem to devalue architecture as a discipline, crippling its capacity to establish a fruitful discourse with other less "contaminated" disciplines within the university.<sup>23</sup>

Cobb pinpointed a real dilemma, one that has been further exemplified by the recent expansion of Ph.D. programs in schools of architecture. It appeared, at the time, that the closer academics have approached the protocols of university research, the more they have distanced themselves from the real concerns of active, creative practitioners. Until recently, the dominant model for research in most schools of architecture was the humanities: that is to say, theoretical and art-historical research, sometimes openly critical of normative practice, carried out by individual scholars and leading to publications, conferences, or exhibitions.

The past two decades have seen a shift, however, toward collaborative, practice-based research. The impetus for this change has come in part from clients in both the public and private sectors, who have asked architects to participate more fully in programming and development decisions that require a broad understanding of social, economic, and cultural variables. Buildings today are expected to perform to higher environmental and energy standards. Materials and technologies change quickly, and architectural expertise has had to keep up. Among the practices embracing research are large firms such as SOM, which recently inaugurated a technology research arm, and Arup's Advanced Geometry Unit in London, to name only two of the many initiatives that, like the Bentley SmartGeometry Group, blur the boundaries between academic knowledge production and professional expertise. **Figure 123** An active research presence has also given smaller firms the capability of leveraging their limited resources to become more entrepreneurial.

Within academia, Ph.D. programs have increasingly followed suit. In 1990, doctoral studies in architecture for the most part either conformed to the art-historical model or retained close connections to planning departments. Over the past two decades new programs have been initiated at Harvard, Columbia, and Yale, and existing programs retooled to emphasize collaborative, project-based research, exhibitions, and publications. The increase in enrollment in Ph.D. programs has also coincided with a change in the credentials expected in the university at large for advancement and tenure. At the M.Arch. level too there has been an enhanced focus on research. Harvard's Graduate School of Design now offers an "Option B" thesis: independent research leading to a written document in place of the customary design thesis in the professional Master's program. Research in architecture today connotes a broad field of endeavor, from traditional archival research to robotics experiments and specialized research on environmental performance. The primary focus of most schools remains teaching, but collaborative research will likely play an increasingly prominent role in the future.<sup>24</sup>

In particular, a growing sense of urgency has arisen around questions of global urbanism. In this context, a consensus has emerged in the architecture schools that the contemporary city is an ideal object of study and research subject. At the beginning of the twentieth century, approximately ten percent of the world's population lived in cities; today, more than half of the world's population lives in urbanized

areas. It is in cities that the impact of technology on architects are unique, adequate description policy, sociology, art, each of these disciplines positioned to offer su

One prototype for the Yale studio of Robert late 1960s that led to few years later by "L and academic resour maps and diagrams, themselves to being tions. At the end of t reclaimed this mode tion of the Pearl Riv a third site, the Afric

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areas. It is in cities that questions of environment, social justice, infrastructure, and the impact of technology come into sharp focus, embedded in a spatial matrix that architects are uniquely qualified to understand and map. It is impossible to give an adequate description of the city today without taking into account economics, public policy, sociology, art, civil engineering, history, literature, politics, and religion; yet each of these disciplines by itself only tells part of the story. Architecture is well positioned to offer such a synthetic overview.

One prototype for this kind of academic design research in architecture was the Yale studio of Robert Venturi and Denise Scott Brown (with Steven Izenour) in the late 1960s that led to their book *Learning from Las Vegas*; this studio was followed a few years later by “Learning from Levittown.” The Venturis directed their expertise and academic resources toward an unfamiliar urban environment to gather data, draw maps and diagrams, and investigate new analytical frameworks; their findings lent themselves to being published in book form and became a resource for future generations. At the end of the 1990s, the Project on the City at Harvard, led by Koolhaas, reclaimed this model, resulting first in a book on shopping, then one on the urbanization of the Pearl River Delta in China. **Figure 124** Koolhaas’s studio also investigated a third site, the African city. As he explained, the Project on the City was

founded upon the realization of a double crisis. The first is the academic and professional bewilderment with urban conditions that seem to defy traditional description. ... The second crisis is the failure of the design professions to adequately cope with these changes.<sup>25</sup>

Columbia’s Graduate School of Architecture, Planning and Preservation set out to address similar issues, creating Studio-X, a “global network of advanced research laboratories for exploring the future of cities.” These initiatives constituted an acknowledgment that exposure to global urbanism was, by the turn of the twenty-first century, an essential part of a complete architecture education. Students today come from all over the world to study in North America, and they will likely practice in diverse and perhaps unanticipated locations. Who would have predicted twenty years ago that American architects would be building in Kazakhstan?

If these research-based initiatives have maintained an academic focus, landscape urbanism, which emerged in the schools in the late 1990s, has had as its goal the revitalization of urban design practice. It has also provided an interesting test case of the potential of interdisciplinary work. The term *landscape urbanism* first appeared in 1996 and its development has been well documented.<sup>26</sup> Today there exist degree programs in landscape urbanism at the University of Illinois at Chicago, the University of Toronto, and the Architectural Association in London. In a relatively short period of time, this fully fledged subdiscipline has emerged with a well-articulated theory, an extensive published literature, and a developing set of practices.

In its earliest form landscape urbanism was a reaction to the marginalization of landscape architecture. Landscape architects were (and often still are) called in after the major design decisions have been made and asked to make an existing design more attractive by adding planting. James Corner, then teaching at the University of Pennsylvania, was among those landscape architects who refused to accept this

25

Online at <http://internal.gsd.harvard.edu/people/faculty/koolhaas/courses.html>.

26

Charles Waldheim has written, “I coined the term ‘landscape urbanism’ in 1996 based on conversations with James Corner on the notion of ‘landscape as urbanism.’ The neologism formed the basis of a conference at the Graham Foundation in Chicago (1997) and new academic programs in schools of architecture at the University of Illinois, University of Toronto and the Architectural Association, London.” See Waldheim, “Precedents for a North American Landscape Urbanism,” *Center 14* (2007): 303. See also the following: Grahame Shane, “The Emergence of ‘Landscape Urbanism,’” *Harvard Design Magazine* 19 (fall 2003/winter 2004); “Landscape Urbanism: A Genealogy,” *Praxis* 4 (2002); and two readers: James Corner, ed., *Recovering Landscape* (New York: Princeton Architectural Press, 1999); and Charles Waldheim, ed., *The Landscape Urbanism Reader* (New York: Princeton Architectural Press, 2006).

Figure 124

Back cover of *Great Leap Forward: Harvard Design School Project on the City*, edited by Rem Koolhaas and Harvard M.Arch. graduates Chuihua Judy Chung, Jeffrey Inaba, and Sze Tsung Leong, 2001

Figure 125

Cover of *Downsview Park Toronto*, edited by Julia Czerniak, 2002. Published in Harvard Graduate School of Design's CASE book series



secondary role. Capitalizing on the discipline's traditional connection to ecology and environment, and focusing on the decay and abandonment of the postindustrial city (which had opened up large swaths of land for potential development), he proposed to reposition landscape architecture to synthesize the expertise from all the various fields whose inputs were needed to work effectively on these large-scale, distressed sites: architecture, infrastructure, urbanism, ecology, hydrology, horticulture, and civil engineering. From Ian McHarg, his predecessor at Penn, Corner learned to think of landscapes as living entities; from Koolhaas, he borrowed the notion of "irrigating the site with potential" as a strategy to manage large-scale sites where it was necessary for the designer to negotiate the complexities of regulation, political and economic interests, and competing agencies. He recognized that the growth of the city can never be precisely controlled: "urban infrastructure sows the seeds of future possibility, staging the ground for both uncertainty and promise. ... It is more strategic, emphasizing means over ends, and operational logic over compositional design."<sup>27</sup>

Landscape urbanism thus proposed a new set of tools with which to address the void spaces between buildings, roadways, and infrastructures. Over the course of the last decade its adherents have put forward an extended notion of landscape that goes well beyond gardens and parks. Particularly well suited to the dispersed, horizontal condition of the American city, its ambitions are large-scale and synthetic, often directed at marginal zones. It is time-based and process-oriented, operating of necessity on a long-term horizon of implementation. Finally, it is highly collaborative and directed almost exclusively to the public realm. Schools of architecture have increasingly affirmed these landscape-urbanist objectives. Today collaborative work, while still resisted, is becoming more common, and issues of landscape, ecology, and large-scale urbanism are addressed in interdisciplinary design studios. Finally, it is interesting to note in this context that landscape urbanism had its origin in the schools. First formulated by architects and landscape architects who were teaching at the time,

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Architecture s in 2007–8 and th for young practi tion and the seco reassessment fol Spring in 2011. B curtailed by the have been looki co-organized by entitled "Forec

The landscap only younger, b Pritzker Prize c Sejima and Ry that were sma organizations and office stru emblematic o professional v mainstream p Today they m commissions positively re awards. Yet t scale work o practice hav tive studio t are qualit advantages

it was debated and discussed in academic conferences and formulated in published essays long before there were any built examples to point to as references. **Figure 125** In this case, theory preceded practice, and a productive interplay was established between real-world concerns and academic debates.

### 2010 and beyond

A twenty-year interval encompasses a generational change, and a generation of architects educated in the 1980s—and marked by many of the debates described here—have now assumed leadership positions at schools of architecture across North America. But the shift is not only generational. Women, although still underrepresented in the profession, have made some gains in the academy, and a number of schools are now led by female deans. Architecture's ongoing engagement with interdisciplinary theoretical work, and the increased emphasis on doctoral programs, is visible in the number of scholars and historians heading up schools and departments. Finally, the global outlook of architecture education in North American schools today is confirmed by the appointment of foreign architects to leading positions.<sup>28</sup>

Architecture schools reacted in various ways to the economic recession that began in 2007–8 and the changing political climate. The rapid expansion of opportunities for young practitioners that coincided with the prosperity of the Clinton administration and the second Bush presidency has been followed by a period of reflection and reassessment following a global financial crisis and the political unrest of the Arab Spring in 2011. Barack Obama's renewed focus on cities and infrastructure has been curtailed by the financial crisis, and, lacking public support, architects and schools have been looking for other ways to contribute; an example is the 2012 exhibition, co-organized by the Museum of Modern Art and Columbia University's Buell Center, entitled "Foreclosed: Re-housing the American Dream."

The landscape of practice has changed too; its primary points of reference are not only younger, but more intellectually agile, international, and diverse. Rossi's 1990 Pritzker Prize could be bracketed by the 2010 winners, Japanese architects Kazuyo Sejima and Ryue Nishizawa. Firms like Steven Holl, Morphosis, and Diller + Scofidio that were small, experimental design studios in 1990 are now large professional organizations with realized projects all over the globe. The changes in the practice and office structure of Diller + Scofidio (now Diller Scofidio + Renfro, or DS+R) are emblematic of larger shifts in the field and of the repositioning of academic and professional work. In 1990 the two principals relished their status as outsiders to the mainstream profession, insisting on their alternative identity as artist-architects. Today they manage a large professional office and compete regularly for institutional commissions in the United States and abroad. Their realized projects have been positively received in the mainstream media and recognized with professional awards. Yet they continue to maintain a strong academic presence and to do smaller-scale work on exhibitions and installations. At the same time, the changes in their practice have not simply been a matter of making the transition from a small alternative studio to a large professional office, exchanging one identity for another. They are qualitative as well as quantitative. DS+R has strategically translated many of the advantages and qualities of a small, academically engaged practice to a larger firm. The

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As of 2011, deans and chairs of this generation or younger include, among others, Preston Scott Cohen at Harvard, Nader Tehrani at M.I.T., Richard Sommer in Toronto, Kent Kleinman at Cornell, and John McMorrough at the University of Michigan. Women are well represented in this sector: Ann Pendleton-Jullian at Ohio State, Ila Berman at California College of the Arts, Donna Robertson at Illinois Institute of Technology, Marilyn Taylor at Penn, Monica Ponce de Leon at the University of Michigan, Adele Santos at M.I.T., and Sarah Whiting at Rice. Mark Wigley at Columbia and Anthony Vidler at Cooper Union are scholars who were originally trained as architects; others, including Somol at U.I.C., Speaks at the University of Kentucky, and Sylvia Lavin, chair at U.C.L.A. from 1996 to 2006, came to architecture from other fields. Asian architects in prominent roles in American schools include Japanese architect Hitoshi Abe, the current chair at U.C.L.A., and Chinese architects Qingyun Ma, dean of the school of architecture at the University of Southern California, and Yung Ho Cheng, until recently chair of the architecture department at M.I.T.

This statement appears on the Web site of the Cooper-Hewitt exhibition "Design for the Other 90%," <http://other90.cooperhewitt.org/about/>. See also the exhibition catalog: Cynthia E. Smith, ed., *Design for the Other 90%* (New York: Editions Assouline, 2007), as well as several publications with related concerns: Bryan Bell, *Expanding Architecture: Design as Activism* (New York: Metropolis Books, 2008); Bryan Bell, *Good Deeds, Good Design: Community Service through Architecture* (New York: Princeton Architectural Press, 2003); Emily Pilloton, *Design Revolution: 100 Products That Empower People* (New York: Metropolis Books, 2009); and Architecture for Humanity, *Design Like You Give a Damn* (New York: Metropolis Books, 2006).

prestige of the MacArthur Fellowship and of exhibiting at major museums has been converted into cultural capital that they can now make use of in the current practice climate. The new client base they have built is aware of the branding and marketing potential of the neo-avant-garde atmosphere that still clings to them (as it also does to OMA, Morphosis, Zaha Hadid, Coop Himmelb(l)au, and others). What was previously associated with an academic career—an international profile of teaching, exhibitions, and publications—has now become an essential part of a niche design practice and a model for other architects to emulate.

To write about practice in 1990 was to write about SOM, KPF, Richard Meier, and Edward Larrabee Barnes, a largely male establishment with connections back to the legacy of high modernism and little interest in teaching. Today it is impossible to talk about practice without taking into account firms like OMA, MVRDV, FOA, Zaha Hadid, SANAA, Morphosis, Steven Holl, and DS+R. The success of a younger firm like SHoP would have been impossible twenty years ago. These firms are design-driven, technologically adept, and agile, capable of making rapid adjustments as the project or the market requires it. They use new technologies and strategic collaborations to leverage their expertise to respond effectively to larger and more complex commissions. In other words, the habits of mind and ways of working previously associated with experimental practice or the academy have been recontextualized in this new climate of practice. Moreover, as a new generation of clients and patrons gain power, the 1990s "Dutch" model of practice, whereby academic visibility is translated into professional credibility, is now increasingly a fact of life in North America as well. The consequence of this is that the lines that separated the schools and the profession in the 1980s and '90s have blurred somewhat. The profession has embraced the research orientation and the intellectual profile associated with the academy, while the schools, for their part, have a broader, more engaged focus outside the academy.

A new model of alternative practice has also emerged and is being reinforced in the schools. Based not so much on critical commentary as on activism, it involves highly pragmatic, hands-on architectural and product designs that can be quickly implemented in places like developing countries and disaster areas. Deployable shelters, solar water purifiers, adjustable eyeglasses, safer baby bottles, Braille-based building blocks for blind children, sugarcane charcoal, do-it-yourself soccer balls, cargo-carrying bicycles, and low-cost prosthetics for land-mine victims are some of the many projects and products directed at addressing "the basic challenges of survival and progress faced by the world's poor and marginalized."<sup>29</sup> These designers no longer accept the assumption that activist design means bad design; for them, the stakes are high and design expertise means close attention to the pragmatics of use, manufacturing, and distribution as well as creativity and design innovation on its own terms. In many cases, new technologies are employed, and in others, the design principles are basic and straightforward while the innovation is located in the means of manufacturing or distribution, taking advantage of global interconnectivity. The idea of designing "for the other 90%" has gained momentum through exhibitions at the Cooper-Hewitt museum, including the 2010 National Design Triennial, "Why Design Now?" and the exhibition "Small Scale, Big Change: New Architectures of Social Engagement" at the Museum of Modern Art. Other initiatives have been more bottom-up, such as



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Figure 126  
“Learning Landscape” for the  
Kutamba School by Project  
H Design (Emily Pilloton and  
Matthew Miller, principals)  
Uganda, 2009

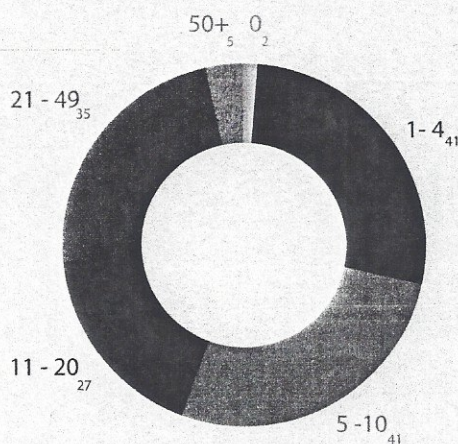
Emily Pilloton’s Project H, which is a design collective and educational initiative with a mission to use “the power of the design process to catalyze communities and public education from within.”<sup>30</sup> Figure 126 The most effective of these current efforts work with product design and community activism more than architecture, suggesting yet another realignment of architectural expertise. Many of these initiatives may be traced back to the Rural Studio, founded in 1993 by Dennis K. Ruth and Samuel Mockbee at Auburn University. Rural Studio had as its objective both improving the living conditions of the rural poor in western Alabama and imparting practical experience to architecture students. Following this example, in the aftermath of Hurricane Katrina in 2005 (and subsequently the 2010 earthquake in Haiti), many schools of architecture devoted studios to the study of low-cost disaster-relief housing or to landscape and urban design studios, often with the participation of students from New Orleans who had been displaced by the storm and temporarily relocated to other schools. This activist design work has drawn freely on both low and high technologies and, in the best instances, has undertaken to redesign not only the products themselves but the networks and institutions that distribute them. Much of this work has also had a strong environmental emphasis, suggesting that local initiatives are more effective in dealing with questions of water, waste recycling, and energy use in developing countries. Further strategic repositioning of architecture and design will be required as these activist designers look to empower individuals and local authorities rather than governments or international bureaucracies.

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On Project H, see <http://www.projecth-design.org/>.

Figures 127a, b  
Charts from a research project  
on architectural publishing that  
surveyed reading practices  
among architects, developed  
by Michael Kubo and and Chris  
Grimley at Pinkcomma Gallery  
in Boston, 2009. Numbers are  
based on a questionnaire  
circulated to 500 practitioners.

## How many architecture-related books do you buy in an average year?



### Conclusions

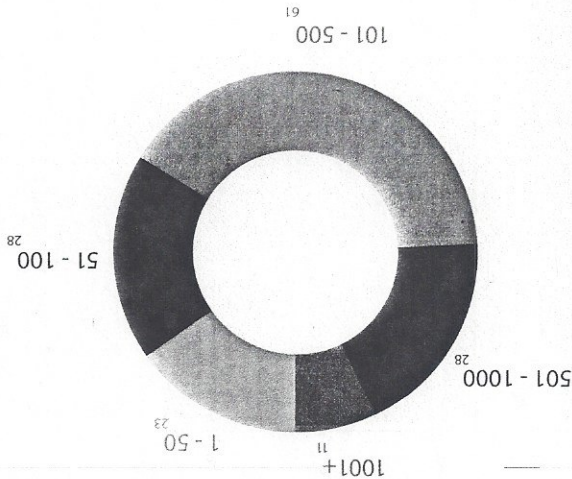
When we look back over the past twenty years of architecture education, three overriding tendencies stand out. The first is the shifting relationship between the profession and the schools. In many cases, passionate academic debates have brought to light a deeper anxiety about the changing role of the architect in society. Architects, as Rem Koolhaas has pointed out, are at once immensely arrogant and massively powerless. That is to say, they are no longer effective in many areas traditionally seen as the domain of the architect, but potentially powerful in other, perhaps unanticipated arenas. One task of schools today is to identify these new arenas and capacities.

This is a task made more difficult by a climate of increasing pluralism. Clearly no single design direction dominates schools today, and while it is possible to map shifting intellectual agendas, the situation is not so much that one agenda supplants another as it is that one is layered over another, multiplying the possibilities and points of view. This can be confusing to a student, who is often thrown back on his or her own resources. Young architects need to cultivate intellectual independence, but students need stable landmarks as well.

Complicating the climate of pluralism is the leveling effect of new technologies and the tensions between the global and the local. Not only are there an increasing number of choices out there; the differences among them are ever smaller. As

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information proliferates and the speed of access accelerates, it is more difficult to identify specific local design cultures. Architects today work in distant locations, and students are highly mobile. The student enrolling in a school in Tokyo, Los Angeles, Chicago, or London is drawn to that city less for its local design culture than by a desire to plug into the global network. Students today look at the same books and journals, work with the same software, and listen to the same architects who travel the international lecture circuit. **Figures 127a, b** What is required to comprehend globalism today is not tired generalizations, but close study of specific places, cities, and cultures. It is worth remembering that architecture remains rooted to place, even in an age celebrated for its global culture; what circulate are images, ideas, expertise, and architects themselves. Political philosopher Kwame Anthony Appiah has written about the need to cultivate a cosmopolitan attitude in the face of global culture today, neither artificially preserving "authentic" local traditions, nor giving in mindlessly to the forces of globalism.<sup>31</sup> Instead, he advocates paying close attention to the necessary hybridity of a contemporary culture that works with elements of history and tradition at the same time as it takes full advantage of new technologies and the opportunities of global exchange. Something similar will be required in architectural practice and education to take account of the issues discussed here as well as others impossible to anticipate.

31 Kwame Anthony Appiah, *Cosmopolitanism* (New York: Norton, 2006).