MONEY

PERSPECTA
47
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Fool's Gold
JT Bachman
Each image in this series features pyrite (commonly known as fool's gold) in a foreign yet mundane context. The meaning behind each image is intentionally vague, yet as a collection they are intended to evoke a discourse centered around the built environment, ambition, progress, happiness, and cost. Bachman graduated from the Yale School of Architecture in 2012.

There is an elephant in the room. It sits at every client meeting. It chooses every material, sets the length of every cantilever, and decides the height of every tower. It contextualizes every style and every urban form. It destines some projects to paper, yet lays the foundation of every built work.

From its roughest sketches to its finest details, architecture is a product of its financial environment. Can the Egyptian pyramids be disconnected from the monumental wealth of the pharaohs? Can the embellishments of the Baroque be separated from the openhanded patronage of the Catholic Church? Can the steel frames of Modernism be detached from the economic efficiencies of mass production? Formless itself, money forms architecture—but the academic community remains hesitant to broach the subject.

Students are introduced to architecture through forms, materials, masters, and styles, but rarely through economic imperatives. Architects are notorious for underpaying interns, overspending budgets, and sacrificing fees to answer a higher calling than the bottom line: to be stewards of design quality and public welfare. Many designers pursue artful building above all else, maintaining that a great project is its own reward, but establishing value in the marketplace is an art in itself.

Does architecture reach its potential when untethered from economic realities, or must it harness them to contribute meaningfully to the built environment? *Money* investigates architecture's complex relationship with a subject we cannot afford to ignore.

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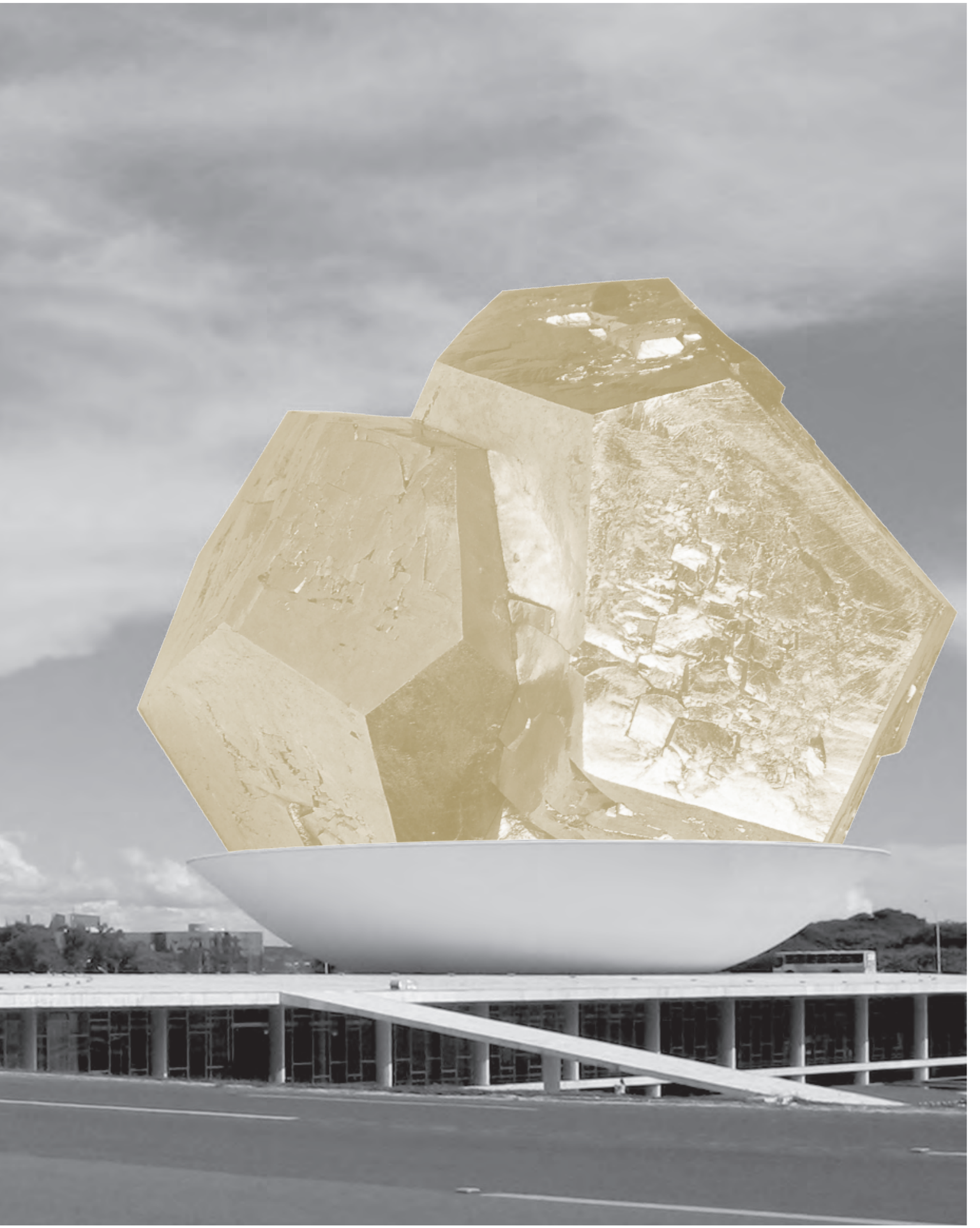


MONEY, VALUE, ARCHITECTS, BUILDING

Phil Bernstein

Along the York Street corridor running the length of Yale University's campus are what are considered three of the best professional schools in the United States. At the south end is Yale Medical School; at the north Yale Law School; in between is the School of Architecture. Each year Yale produces over four hundred graduates from these programs and expects them to follow optimal paths, leading their respective professions and garnering the resulting financial rewards. To receive a J.D. from Yale Law requires three years of postgraduate work, an M.D. takes four years (including internship), and an M.Arch. entails almost three and a half.

The marketplace immediately sets a value for the services Yale graduates provide, signaled clearly by their anticipated starting salaries. After several years of experience, each has received professional certification (license to practice) and begun to climb, in most cases, the career and financial ladder. The market value of their degrees, however, diverges widely at graduation as suggested by the chart below, which compares average starting salaries and early midcareer salaries in each of these professions. These numbers have been chosen from their respective sources at the high end of the ranges that Yale graduates might reasonably expect as the "best and brightest" of candidates:[1]

	Starting		After 6 Years	
Law[2]	$132,000	(5)	$189,000	(6)
Medicine	$145,000	(3)	$208,000	(4)
Architecture	$44,800	(1)	$91,900	(2)

Like doctors in the $2.5 trillion health-care industry, architects operate at the intellectual headwaters of an enormous enterprise, responsible (in the United States) for more than $300 billion in construction spending in 2012, and the resulting buildings will require as much as $3.0 trillion in operating and maintenance costs during their respective lifetimes. In 2012 U.S. architects earned approximately $21 billion in net fees for this work.[3]

Salaries for architects, lawyers, and doctors in the first decade of their careers are a good proxy for the relative perception, in financial terms, of their work. It's clear that their value, at least as measured by the steely-eyed glare of market capitalism, is vastly different. Of course, placing teachers or professional athletes on this scale would further skew it while introducing questions of social contribution, entertainment value, scarcity, and the financial value of "art," none of which this analysis intends to examine in the context of this volume's theme, "Money," as it relates to architectural practice. Salaries are the first indication to graduates that money is, and will continue to be, an issue throughout their careers.

Society has traditionally rewarded members of the learned professions well, acknowledging their special status accordingly, as the salary data above demonstrates for lawyers and doctors. Why are architects an exception? This raises the central question of this analysis: Does the value provided by architects—as they operate in the various financial contexts of practice, project, building industry and the overall economy—match the money they make doing so? Young architectural graduates, especially those with advanced degrees who are educated similarly to their professional peers, rightly argue that the answer is a resounding "no" and the long-term financial prospects of architects seems to prove this conclusion. According to a 2007 study, the lifetime earnings of physicians is approximately $6.1 million, lawyers and judges (the latter of whom reduce the average) $4.0 million, and architects $2.9 million—a mere $100,000 more over the course of an architectural career than "models, demonstrators, product promoters, sales engineers, sales and sales-related workers."[4]

Within the operational frame of an individual practice, normative margins—the amount of profit resulting from income less expenses before taxes and other charges like bonuses—for most building industry consultancies like architects and engineers is about ten percent. A very profitable practice may make as much as thirty percent, but this is unusual, and ten-to-thirty-percent gross margins are hardly considered exemplary in any other line of business.[5] Since that margin is a function of the total fees received (net of engineering subcontracts) minus expenses such as salaries, overhead, borrowing costs, benefits and nonbillable hours, there are very few options for making practice itself a source of greater value (measured by profit), save increasing the revenue garnered for a unit of work (a project), decreasing salaries of workers (which would drive down the average value of each architect accordingly), or making the practice more operationally efficient. The single fastest way to make a consultancy such as an architecture firm more profitable—dollar for dollar—is to increase its revenue (inputs) without increasing the cost to produce the work (outputs).

The inputs to a typical architectural practice come in the form of professional fees,

the vast majority of which are computed and contracted for clients using methods designed to tie them to specific fixed amounts. The latest statistics for architectural fees analyzed by the American Institute of Architects for U.S. firms suggest that almost seventy percent of all fees paid in that year were variations on lump-sum compensation:[6]

Fee Type	2011 Distribution
Stipulated Sum*	36.0%
Professional fee plus reimbursable expenses*	21.0%
Percentage of construction cost*	13.6%
Hourly rate not to exceed agreed sum*	12.9%
Hourly rate, no maximum	9.2%
Percentage of construction not to exceed fixed amount*	2.3%
Fee per square foot*	2.1%
Other	2.9%
TOTAL	100.0%
*Total fixed fee variants	66.9%

Once again, the contrast here with compensation strategies for attorneys and doctors is illuminating. Like architects, attorneys and physicians provide services based on judgment—the generation of ideas—rather than "products" that can be commoditized. Yet only architects are paid, in the main, by means meant to correlate those services to a fixed price, a result of several characteristics of the immediate context, the project, in which those services are provided.[7]

Most components of a building project are procured within the supply chain of clients, designers, builders, subcontractors, and material suppliers by means of lowest first cost. Inasmuch as there are very few agreed metrics by which to otherwise determine value, almost every element of a building project, beginning with the contract for architectural design services, is negotiated by price with the express intent of fixing costs. The supposed logic of lowest first cost methodologies is market-based: competitive pricing pressure is the best way to make sure that the lowest cost is the most important objective. The approach keeps prices down but also tends to commoditize the purchase of such services; when the only differentiating value of those services is price, the services themselves are considered a commodity.

Less explicit but equally important, however, is the shifting of financial risk that is implied by lowest-cost bidding. Clients procuring projects face enormous monetary risk, given that they often embark on projects of only vague objectives ("I would like to build some sort of laboratory") with fixed budgets that are often assigned at the beginning of capital planning cycles long before the specific demands and characteristics of the job itself are understood. Procuring design services by fixed fees guarantees that the architect assumes almost all of the risk for creating the design and providing all the related services, whether the client understands the nature of that process (and the desired result) or not. Since money, in a professional services context, translates directly into time, how does one calculate how long it takes to generate a series of good ideas, particularly those that must be developed in close concert with a client? Rather than risk the expense of that exploration, the client simply insists that the architect fix a price for the services required. The inherent "value" of those services is a function of the architect's ability to argue for a larger number based on the value of the services provided; in a competitive-fee market, however, pricing pressure rules, and fees decline accordingly.

Many architects reported that during the economic crisis that began in 2008, pricing competition was so fierce that many accepted projects at or below break-even cost, suggesting that clients will use negotiating leverage to its maximum when possible. The result of such pricing pressures (which extended to construction bidding as well), if previous economic downturns are valid precedents, will be a surge in negligence and construction-failure lawsuits that will result from the lack of resources and cutting of corners that such competition entails.[8] The desire to achieve lowest first cost can pay few dividends over the long haul. And since approximately thirty-five percent of all projects in the United States fail to meet either budget or schedule constraints, it's clear that lowest first-cost mentality creates as many problems as it solves.[9]

At the headwaters of the process is the architect, who provides the overall strategy for the project, the basic ideas upon which it is formulated and based, the technical approach for its assembly, and the template for its operation. Decisions made by the architect affect almost every aspect of the finished building either directly or indirectly, and the architect takes personal responsibility for the health, safety, and welfare of its occupants as well as the technical sufficiency of the design, while assuming complete financial risk for his or her portion of the work. Yet the overall cost of the architect's services to a typical project is on average 6.1 percent of its total value.[10] At ten percent profit margins, the incremental value of those services to architects comprised less than one percent of overall construction cost.

As a project moves from design to construction, it enters into the larger operational frame of the construction industry, which consists of a "loose coalition" of networked entities with short-term, unstable relationships.[11] Project teams, assembled as sets of bidders who promise to join and deliver the project at lowest cost, often work together only on a single project.[12] The combination of lowest first-cost selection and lack of repeated working relationships contributes in part to the general understanding that the construction industry itself operates at very high rates of inefficiency, where as much as thirty-five percent of the money spent to construct a typical project does not add direct value to a it.[13] So extrapolating from the AIA's data, in 2011 architects and engineers were paid about $26 billion to design buildings worth $320 billion, of which during construction as much as $112 billion was wasted. Put another way, the industry "wasted" more than four times the amount of money on construction as it spent on fees. These calculations suggest that resources in construction are perhaps misallocated at best; clearly there is more than $100 billion in yearly economic opportunity to improve both industry performance and the financial rewards of architects, who could attack that inefficiency. The money is there, but like William Gibson's prognostication about the future, it is just not very evenly distributed.[14]

Finally, architecture is practiced within the context of the larger economy. In the United States (where reliable numbers are available) the 2010 Census[15] reported the following numbers of lawyers, doctors, and architects in the country, with the coverage ratio calculated based on a U.S. population of 308 million:

Role	Census	Coverage
Attorneys	728,200	1:423
Physicians	691,000	1:446
Architects	113,700	1:2,709

While almost everyone will see a physician in his or her lifetime, most of the U.S. population will not engage an attorney, and far fewer will hire an architect. But everyone will come into regular contact with the results of our handiwork, as buildings are the basic physical infrastructure of society and every "substantial" building in the country is designed by an architect.[16] Given that architects are such a rare professional commodity—and extensively educated and certified—one would think that our compensation would be more aligned with our scarce availability and the value we deliver.

While architects have long been caught up in the commoditization of the building supply chain, there are other structural issues, historical and otherwise, that prevent architects from capturing the money that corresponds to delivered value. For purposes of this analysis we will stipulate, and then set aside, the long-held understanding that architecture is an art form, and that artists are, in the main, starving. Repeated efforts by professional associations such as the American Institute of Architects to emphasize the "value of design" through marketing campaigns have failed to change the value equation, and while the profitability of the "A-list" design architects (who, it is important to note, have a clearly articulated value proposition) is likely high, the balance of the profession needs to find a better route. Most clients understand that the path to a career in architecture is arduous, and only the talented survive. Many even believe "design quality" is the highest priority while suggesting that fees are simply too high given that architects fail to understand or responsibly manage budgets.[17] So even clients, if not the community of "critical architecture," agree that design quality counts and fees are not really a problem, at least in their eyes—and they pay the bills. If everyone were doing better design work, it is unlikely fees would increase accordingly.

Client frustration with architects' seeming inability to understand "financial issues" is an artifact of the larger existential question of the architect's relationship to construction within overall project delivery. Experiments in refactoring that canonical relationship—where the architect is responsible for articulating the "design intent of a project" and the contractor the interpretation of that intent and execution of the finished artifact—have three broad structural characteristics: increased reliance on collaborative decision-making between the parties, including early involvement of all key players; removal of informational barriers between designing and building; and sharing of risks and rewards relative to results.[18] All of these ideas are indicators that the architect's work could be more valuable—as measured by increased project success—if the architect is willing to engage the project in novel, untested, riskier, and potentially more profitable ways. A willingness to share (and leverage) design information, increase span of control through construction, and engage in the risk/reward equation of building are three key opportunities.

The architect's responsibility to define "design intent" originated in the professionalization of practice that emerged in the United States in the late nineteenth and early twentieth centuries. Once the architect was considered a distinct entity from the builder, a separation of responsibilities began to develop that was stretched to its limit by the liability crisis of the 1980s. What was once an arrangement of convenience in the early days of practice became a barrier to information exchange and a strategy for risk avoidance in recent decades. Standard industry documents—like the canonical AIA contracts—originally determined that the contractor was responsible for the means and methods of construction in order to clearly organize the work effort during building. But that allocation transformed in later years into the profession's primary mechanism for insulating itself from construction risk, and architects became wary of transmitting any information beyond what is necessary for "design intent," egged on strongly by their insurance carriers, who argued that the risk wasn't worth the minimal reward. Consequently a given component of a project may be documented numerous times—through conceptual drawings, working drawings, shop drawings, submittals—before final fabrication and installation. The inefficiencies of such an approach are obvious, as are the opportunities for translation and transcription errors. Industry productivity suffers as a result, but just as important is that this unwillingness to share information is seen by clients as a disinterest in the needs of the project. This is clearly a value proposition that could be exploited.

Technology provides the means, if not the ends, to a solution here. The emergence of digital representational tools like Building Information Modeling (BIM) with the simultaneous development of computer-numerically-controlled fabrication creates a direct digital bridge between the acts of design and execution. If architects are willing to embrace those means toward the end of making construction more efficient by moving their valuable design information directly to the place where it is most useful, they can demand to be paid for the resulting value that is created. Accelerated speed of construction, increased precision, and reduction of transcription risk are all measurable results that can be correlated to specific value and profit accordingly. Furthermore, the simulative value of model-based design processes allow architects to more confidently predict project performance prior to construction, and with it perhaps a willingness to commit to specific project outcomes for which they might be compensated.

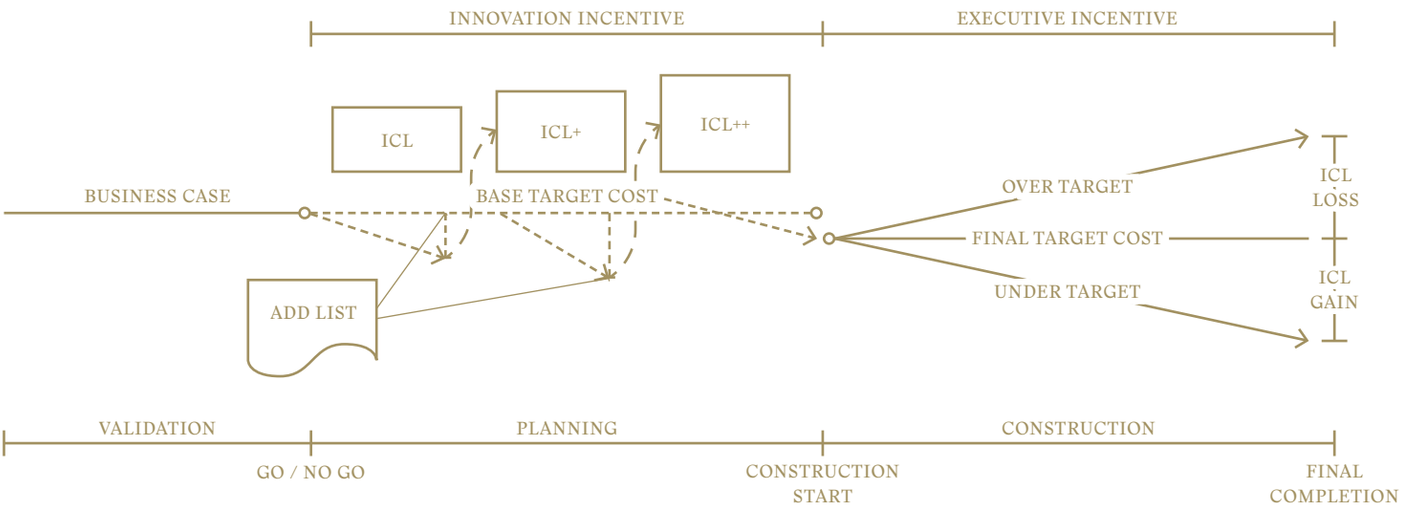
Leveraging design information into construction (and possibly building operations) is the first tentative step into a potentially more radical reimagining of the architect's responsibilities that might result in both better buildings and higher profits. Traditional delivery models, such as hard bid or construction management, limit the architect's responsibility for and control over the means of any portion of construction. If newer technologies like BIM are based on the now well understood strategy of digitally simulating a building before it is built, that could easily and logically extend not just to the finished product but to the process by which that product (building) is produced. This implies an obligation on the part of the architect to understand, invest in, and take responsibility for the overall construction strategy of a building. At minimum, this means the dissolution of the means/methods barrier and the inclusion of strategic constructional information in the digital models resulting from a close collaboration between architect and builder, where they work out together what the builder might need during construction.[19]

At best contemporary digital modeling technologies enable an integrated concept of practice where the architect takes full responsibility for construction and delivers value (and extracts profit) across the entire supply chain. This phenomenon can be seen at various scales, including the architectled design-build practice of GLUCK+ (formerly Peter Gluck and Partners), in New York, where a single firm provides both design and construction management, organizing their working drawings by trade—rather than design—discipline. GLUCK+ argues that this strategy enables them to maintain design control, reduce risk, and make more money. At the other extreme are large vertically integrated organizations like AECOM, which having recently purchased Tishman Construction[20] is now positioned to deliver end-to-end financing, design, and construction capabilities to their clients.

Finally, perhaps the greatest opportunity and danger lies in the risk/reward equation. The profession's aversion to the assumption of risk is well understood, and in the context of low profits it is well founded as a function of the correlation between risk and reward. It is generally assumed that the risks of practice are already great enough given those rewards, and the profession has in the main abandoned opportunities to assume more risk in the past several decades, explaining the emergence of a cast of project characters like client representatives, program managers, management consultancies, and

others who are willing to do so in the absence of the architect. Many of these consultants are brought on board by a client looking to reduce the perceived primary risk of construction: blown budgets and schedules, and technical failures in building performance. If the architect's design is the most sensitive variable in this risk equation, why shouldn't architects control it more robustly and embrace the resulting value that is created?

This is not to suggest that every architect embrace GLUCK+'s model or sell their firm to AECOM, but rather to recalibrate the mechanisms of design and construction delivery by repositioning practice in the act of construction itself. Today's experiments in integrated delivery described above are most indicative in their strategies for defining and managing project risk, and including the client, architect, and builder in the resulting pain and gain of projects. The premise of design/construction collaboration is exploited to create business models where performance is aligned against project objectives and everyone jointly owns the benefits of success (or the punishments of failure). Consider the following project-development diagram of such an integrated project model:[21]



A consolidated team does its work in three distinct phases: validation (How can this project work?), planning (What are we going to build and how do we build it?), and construction (Execute the design and build the job). The value extracted by this consolidated team is in the form of profit payments (indicated by the boxes tagged "ICL" or "Incentive Compensation Layer") that are paid based on measurable results that occur during the creation of the design, such as "Is the project on budget?" or "Can we meet the schedule" or "Is the quality sufficient?" But that work is based on innovation, creativity, and problem solving, thus the indication at the top of "innovation incentive." Once the project begins construction, the focus is on making it work within the budget. If the project goes under budget, then everyone shares in the rewards ("ICL Gain"); if it goes over, the profit pool for the job is reduced accordingly ("ICL Loss"). The technical details are unimportant in this context, but the implications for the role of the architect are profound.

This model correlates the financial reward of the participants with the success of the project. It contends that a team, completely dependent upon one another's performance and insight, can make commitments about how a project will unfold, and profit from the result. It is based on the idea that if there is agreement on strategy about things that can be controlled and measured—like budget, quality, schedule, or building performance—among the parties then they deserve a share in the resulting value that is generated. The important lesson of this approach is clear: take responsibility, increase span of control, assume some risk, and benefit from the returns as they are generated.

A logical extension of such a model, only now being explored on the most advanced projects,[22] would be to tie the architect's compensation to actual building performance. Since architects often assert during design that a project will operate in a given way, why not correlate that performance to payment? Energy targets, workplace attendance, operational efficiency, even design awards and brand value—each might be projected during design simulation, parameterized, and tied to an annuity payment after project completion. On many projects,

as soon as the architect's fee is exhausted during construction, his or her attention turns elsewhere. In this more integrated approach, everyone puts money on proven performance.

Here our value proposition as architects, at least as produced by our business model and measured by the market in profit, should break from rather than emulate that of our colleagues in law and medicine. Hourly rates without limit for architects comprise less than ten percent of all compensation but are the lion's share for attorneys and physicians, where the value proposition of navigating the judicial and health-care systems is only now being directly questioned. Legal services are being outsourced to cheaper English-speaking countries, and managed care in all forms has begun to bracket doctor's pay. A different route to the creation, acknowledgment, and payment for the value architects provide can be found by changing our relationship to measurement, outcomes, and risk. Much of that value is already there but unrealized, and improvements in the efficient delivery of projects can easily pay the bill. Rather than bemoan our diminished professional position, architects should embrace the clear opportunity before them.

1 Reference notes for sources cited in this table:
1—AIA Compensation Survey 2012, American Institute of Architects, self-published 2012, Washington, D.C.: Upper quartile plus bonus, Intern 1.
2—AIA Compensation Survey 2012: Upper quartile plus bonus, Project Manager.
3—Profiles Physician Compensation database for 2011: internal medicine starting compensation.
4—Profiles physician compensation database for 2011: internal medicine after six years of practice.
5—Internet Legal Research Group compensation analysis for 2011: first-year attorney, upper salary, large firm.
6—Internet Legal Research Group compensation analysis for 2011: licensed attorney with four to nine years of experience, large firm.

2 While salaries remain high for employed attorneys, the profession today faces competitive pressure not unlike architecture that is catalyzing structural changes in recruiting, staffing, and compensation. See "The Toppling of Top Tier Lawyer Jobs," http://economix.blogs.nytimes.com/2012/07/16/the-toppling-of-top-tier-lawyer-jobs/?_php=true&_type=blogs&_r=0; "A Lawyer and a Partner, Also Bankrupt," http://www.nytimes.com/2014/01/25/business/partner-in-a-prestigious-law-firm-and-bankrupt.html; and "At Well Paying Law Firms, A Low Paid Corner," http://www.nytimes.com/2011/05/24/business/24lawyers.html?pagewanted=all.

3 2012 AIA Survey of Firm Characteristics, "The Business of Architecture," American Institute of Architects, self-published, 2012.

4 A. Carnevale, S. Rose, and R. Cheah, "The College Payoff: Education, Occupations, and Lifetime Earning, Georgetown Center on Education and the Workforce," http://www9.georgetown.edu/grad/gppi/hpi/cew/pdfs/collegepayoff-complete.pdf.

5 EFCG data (from Kenet).

6 Ibid., AIA Firm Survey.

7 While some attorney fees, for example, are paid on a "contingent" basis—one-third of a civil award, for example—attorneys enter into such arrangements with high confidence that an award is likely, and their compensation is a direct function of the award demanded. Architects have little control over the underlying definition of building costs in projects, inasmuch as clients generally determine such costs prior to the beginning of design.

8 Author conversations with Scott Simpson, FAIA, principal at Jacobs/KlingStubbins, and Howard Ashcraft, of Hanson Bridgett. When a construction project goes bad, it is often difficult to separate design negligence from construction malfeasance, as the integration of design and construction is a famous source of friction and difficulty. A set of documents produced by architects that are not as detailed as necessary might be just the beginning of a bad project that continues as builders, under enormous pricing pressure, cut corners. A further issue is the destruction of long-term capacity that vicious price-cutting wreaks in the supply chain. When construction returns to normal functional levels will there be enough architects and builders to support it?

9 Construction Management Association of America, 2005 Owner's Survey, www.cmaanet.org.

10 Ibid., AIA Firm Survey 2012, which reported $26 billion in gross fees, $21.1 billion in net architectural fees (those fees paid to firms less pass-through costs of subconsultants) supporting the construction of approximately $320 billion in construction.

11 See "Project Structure, Network and Innovation in Architecture, Engineering, and Construction," by J. Taylor in P. Deamer, *Building (In) The Future: Recasting Labor in Architecture* (New York: Princeton Architectural Press, 2008).

12 During the author's career he was involved in fourteen major building projects, for none of which did he work with the same general contractor.

13 See the work of the United Kingdom's Construction Excellence program, with particular reference to Sir Egan's seminal report "Rethinking Construction: Report of the Construction Task Force" (London: HMSO, 1998).

14 Science-fiction writer William Gibson said, "The future is already here. It's just not very evenly distributed." "The Science in Science Fiction," Talk of the Nation, NPR, November 30, 1999, 11:55.

15 See http://www.bls.gov/ooh/architecture-and-engineering/architects.htm with the following proviso: a large number of architects left the profession during the recession, so this number is surely smaller at the time of this writing in the first quarter of 2013.

16 The term *substantial* is used by the National Council of Architectural Registration Boards (NCARB) in their recommended model language for state registration and certification legislation. Very generally, buildings for human habitation over 3,000 square feet or taller than three stories must be designed by a licensed architect. See http://ncarb.org/Getting-an-Initial-License/~/media/Files/PDF/Special-Paper/Legislative_Guidelines.pdf.

17 See "What Clients Want: AJ Client Survey," *Architect's Journal*, http://www.architectsjournal.co.uk/news/what-clients-want-aj-survey-results/8627455.article.

18 This evolution is most markedly expressed in the creation of new delivery models, called "Integrated Project Delivery," that are beyond the scope of this discussion. For a detailed explanation of this approach, see "The IPD Framework," by Ashcraft, Howard, http://www.hansonbridgett.com/Publications/pdf/~/media/Files/Publications/IPD_Framework.pdf.

19 American Institute of Architects, "Integrated Project Delivery: A Guide," 2007, p. 27, and http://www.aia.org/contractdocs/AIAS077630.

20 "AECOM Purchases Tishman in Global Move," *New York Times*, July 14, 2010, http://www.nytimes.com/2010/07/15/business/15build.html.

21 Courtesy of Howard Ashcraft, of Hanson Bridgett Attorneys, as presented February 4, 2013, at "BIM and IPD Symposium," by AIA/Charlotte and UNCC School of Architecture, Charlotte, North Carolina.

22 See "GSA Brainchild: Full Fees After Building Hits Energy Use Targets," *Engineering News Record*, June 5, 2012, http://greensource.construction.com/news/2012/06/120605-gsa-brainchild-full-fees-after-building-hits-energy-use-targets.asp.com/news/2012/06/120605-gsa-brainchild-full-fees-after-building-hits-energy-use-targets.asp, June 5, 2012.

ROT MUNCHING ARCHITECTS

Mark Foster Gage

> Triumphant secretions, sculpted in foul mist, dehydrated spectral birth, at war with false metal, fucked and quartered, erection of possessed flesh, rot munching architects, cadaveric cornholination, fluorescent discharge of, sloppy viviseconds, endless bleeding journey, shivering whore of light, drunk on vomit of heaven, as tongue meets ash.
> —Steven Shearer

Sandwiched between the predictably domineering presences of the British and German pavilions at the 54th Venice Biennial was Canada's clearly pissed-off decorated shed. The nearly thirty-foot tall freestanding Venturian façade featured a nastily worded poem by the artist, Steven Shearer. The National Gallery of Canada described it as "drawing from the vocabulary of Black and Death metal music, which conjures the sublime, nihilistic power of language and seeks to provoke a visceral response in viewers." Pissed can be a dangerous thing; ripping down the barriers of decorum in favor of unedited and desperate rawness, prioritizing the honesty of the loud and direct over the partial truths offered by the politic and calm. The visceral response Shearer's text provokes, while not uncommon in today's contemporary art scene, remains entirely foreign to contemporary architectural discourse, dominated by infantilizing arrow-laden colorful diagrams, energy-saving over space-producing master narratives, and worse, simplistic natural metaphors spun by weavers of words to explain even the most banal buildings. The time has come to tear down the façades of decorum and cast off the hackneyed narratives of success that thinly veil the discipline's Brobdingnagian angst. It's time to put away the thick-framed plastic glasses and professional-genius-artist ruse, give up the jargon-laden verbal masturbation, and stop trying to pass off our cheap Zara suits as Prada. Offering a delicious dose of discontent, Shearer's text highlights the unmistakably sad state of our profession, which has in recent history undergone a swift Gouldian devolution from the starchitects of magazine and television fame to the bottom feeders of the building industry. But there it was, emblazoned dead center for all to see: we are ROT MUNCHING ARCHITECTS. The sentiment seemed evident to me, but was word officially out? Did others know? Had architecture's pathetic plight been discovered? It's time to pull off the blanket of desperation and expose the architectural profession in all its rot-munching decrepitude and get pissed.

Architecture in the postcritical, poststarchitect, posthumanist, postparametric twenty-first century is changing, or perhaps has already changed, certainly into a scrappier discipline, if not one of actual scraps. In such times our youngest and greatest minds are encouraged to fight, to scrounge, and to root for remains that might be used to cobble together any experimental construct at even the most minuscule of scales—and for free. The simple fact is that architectural experimentation has left the building. Literally. And instead of being a discipline that innovates through the practice of designing buildings, we now innovate through the practice of assembling leftovers. From shredded blue jeans used as insulation to discarded skateboards used as walls and from cardboard tube structures (that recently received our highest award—the Pritzker), to shipping-container volumes, architecture is becoming the new casserole of the twenty-first century's industrial leftovers.

The results of most of these architectural secretions go by a limited palette of names—none nearly as glamorous as "building" but rather the more disposable and less lofty terms of pop-ups, installations, pavilions, and temporary anythings. Like Alan Ginsburg, but less optimistic (and perhaps not quite as serious), I too have "seen the best minds of my generation destroyed by madness, starving hysterical naked, dragging themselves through the negro streets at dawn looking for an angry fix."[1] The difference is that the drug dealers my generation usually seeks aren't illegal park dwellers. They go by more recognizable names, which to protect my career I am referring to here as "The Museum of Modernesque Arts." I myself have groveled at the base of that (fictional) altar: doing free work for a competition, the winner of which is guaranteed to lose money in the endeavor, hoping to please somebody, anybody, who will listen. In her painful, but only because it's entirely true, *Artforum* article "Vanishing Point," Sylvia Lavin writes: "Young Architects are often forced to spend their own money, exploit the labor of even younger student architects, and donate the models and drawings produced along the way."[2] Why is this allowable? Because architects are not only encouraged to bottom feed but are being instructed by our mightiest institutions, the very ones that should be championing youthful experimentation and design, that we are a disposable discipline unworthy of actual investment. This isn't a complaint specific to the Museum of Modernesque Arts, but as that particular (fictional) organization had a reported

2009 operating budget of $160,000,000[3] and dedicated a paltry $15,000 in fees for the winner of its Youngish Architects Program (or .0012 percent of its budget for the fees for the largest item in its collection in any given year), it stands as a clear front runner in a posse of too many high-end criminals for this particular sheriff to tackle.

An even more terrifying hole that we seem to be rooting around in is entirely a territory of the twenty-first century: pure online architectural prostitution. Whereas late in life Philip Johnson famously stated, "I'm a whore," the profession today has managed to far exceed even his sluttiest dreams by willfully participating in digital abuse through sites such as "arcbazar.com."[4] Whereas the Museum of Modernesque Arts may exploit a mere ten architectural designers a year, Arcbazar exploits thousands. The premise of this Web site is simple: 1. A client uploads a design problem; 2. Architects and designers accept these client problems as "challenges" and develop solutions that they then submit for free; and 3. After all submissions are received (for which not a single one has been paid for in any capacity), the top three winners split the "prize money" as set by the so-called "client." According to Arcbazar's statistics, the projects receive an average of nine actual design submissions. Meaning, of course, that for every architect who is paid something (and by something I mean hardly anything) there are six who have designed, drawn, rendered, and submitted designs and been paid absolutely nothing. The Web site notes: "As a client you will benefit in two key ways: First, you will get more than one single design solution; and second, you can get these design solutions at a dramatically lower price range compared to traditional design acquisition channels."[5] The "dramatically lower price," is, of course, code for "You can take advantage of young architect's industry-confirmed lack of self-worth." Here are two testimonials of projects that "clients" received designs for via Arcbazar, adjacent to what they paid—in total—for said designs:

> $1,200: "We ran a competition for 4 weeks. We offered $1,200 in prize money. We had a total of 8 submissions after 16 designers signed up. Overall experience was great, they were very responsive to questions that we had, and the designs submitted were overall very good. ... If I had hired an architect first, and then asked him/her to draw eight different designs with conceptual and dimensions, they would have been happy, and I would have spent every last dime I have for the renovation on architect fees. This worked exactly as we had hoped, if not better."
>
> $1,100: "We ran a contest for ideas and plans for a mid-century modern whole house renovation plus an addition to our garage, all on a limited budget. ... We ran the contest for 3 weeks and had many designers submit questions. ... In the end we had several excellent designs to choose from and were very impressed with the results. All of the designers provided 3D renderings making it easier to envision the finished product and make good decisions. ... We had an excellent experience! We feel like we got an excellent product for a steal!"

Yet another project submitted on Arcbazar called for the redesign of an existing building in New Mexico, including "the façade, parking lot, signage, and planting." The award money offered was $1,100, to be split between the top three "winners." I do not know the alchemy through which an architect who is paid, in this case, an average of $366 to redesign an entire building is considered a "winner," but this one had three. It also had, according to Arcbazar statistics, six nonwinners, who were paid nothing. One has to ask, in what other industry is prostitution so unregulated? Could you get a massage for ninety minutes and pay only for the five in which you actually grunted? Or extending Johnson's analogy to its logical conclusion, could you in fact have a ménage à neuf with your favorite prostitutes and only pay for a ménage à trois? Such scenarios are unfathomable except in architecture, for which

prostitution is actually too lofty a term: prostitutes are paid for their work. Five thousand architects and designers are currently signed up to participate in Arcbazar.

The humiliation of these small scraps, however, is nothing compared to the political rooting of the high-stakes corporate architectural world. Let's consider, in even greater detail, recent history's greatest global architectural feast: the new World Trade Center project. After Beyer Blinder Belle Architects presented a design misfire to the public in July 2002, a new competition was organized and received more than two thousand entries, none of them paid for. If one were to do the math on the calculator of architectural desperation, it would reveal the following equation: assume each firm spent a minimum of a month working on its entry (a very conservative estimate), with three people working full-time, then the total man-hours donated without pay to this competition was 480 hours per firm, or 960,000 total. This is almost eleven years of free work the architecture community has donated to these competition

proposals. If those hours were billed at a very, very low rate of $75 per hour, it would be equal to $72 million worth of unpaid work. In other words, nose willingly forced deep into the soil, architecture as a discipline made a $72 million dollar donation to Larry Silverstein, whose net worth is currently estimated at $3.5 billion.

There will be those who say, and perhaps rightly so, that this is a small price to pay for what was ultimately supposed to be one of the greatest architectural prizes in history—certainly among the most visible. The thing about foul odors, however, is that they rise from even the deepest of depths to the greatest of heights. And so from the rotten landscape of discarded skateboards and dot-com prostitution, such an odor wafted at least as high as 1,776 feet—just high enough to turn all of the contributors, and even the competition winners, into willing swine. Given the expenditure of $72 million, architects could at least rest assured that some lucky architect was going to come out on top—if only.

Our moment came in December 2002, when from the original list of more than two thousand entrants a short list emerged that included Lord Norman Foster; the "more established" super-group of Richard Meier, Peter Eisenman, Charles Gwathmey, and Steven Holl; the "up-and-coming" super-group of Foreign Office Architects, Greg Lynn FORM, Imaginary Forces, Kevin Kennon, Reiser + Umemoto, and UN Studio; Studio Daniel Liebeskind; Skidmore, Owings and Merrill; and the "THINK" group of Shigeru Ban, Frederic Schwartz, Ken Smith, and Rafael Viñoly. From a massive effort on the part of architects globally, our champions had emerged and represented, like shimmering white knights, multiple generations and varied design sensibilities. It was architecture's shining moment, our discipline was front-page news, and architects globally basked in the newfound glamour of their deserving profession.

After comprehensive deliberation by the Lower Manhattan Development Corporation (LMDC)—the organization charged with selecting the winner—the proposal by THINK was chosen. But all things foul are not limited to the state of Denmark. The following morning the naïve aspirations of any architects who actually believed that by voluntarily entering a competition they stood a chance of winning by fair means were fecund with decay. George Pataki, then governor of New York State, reminisces: "I remember waking up in the morning and seeing on the front page of the *Times* that the LMDC was going to choose the Viñoly plan, and going, No, this can't be because I thought the Viñoly plan: 1. was unbuildable, 2. was economically unsound, and 3. where the footprints were had these skeletons, really, rising into the sky. Which to me symbolized the destruction of the past instead of the hope of the future—and I just thought it was a terrible idea."[6]

Roland Betts, who from 2001 to 2005 was one of Pataki's appointees to the board of the Lower Manhattan Development Corporation, recalls: "So now we were in a pretty awful position here because the LMDC had voted, not just as the site committee but as the full LMDC, and expressed a clear preference for Viñoly—and basically Pataki came in and pulled the rug out from under the LMDC. And you know he just, he reversed the decision."[7] And so THINK, the rightful winner of the massive competition (at least $72 million worth), had been officially snuffed because of a single person's fear of an infantilizing skeletal metaphor.

Next up for some rot-munching of his own was the new "winner," Daniel Libeskind, who was selected "officially" by Governor Pataki, whom we already know to be susceptible to metaphors and was smitten by the fact that the scheme was 1,776 feet tall, thereby mystically reflecting the very roots of freedom and democracy in America. (We shall forget the irony of Pataki overturning the LMDC's *democratic vote* in a single-handed dictatorial gesture.) Libeskind, also an immigrant and a frequent spinner of expansive metaphorical tales, was Pataki's man. Architectural writer Philip Nobel notes, "For three months, Libeskind gave Pataki everything he needed. He got in front of any camera, and told a gripping story, and there was imagery to attach to it. And it was ringing the right political bells, and everyone was happy. Except for [the developer] Larry Silverstein."[8]

Other than "rot-munching architects," artist Steven Shearer had a few other choice phrases in his biennial totem, among them "sculpted in foul mist," which seems an apt way to describe the machinations of the World Trade Center selection process. It seems the only thing resistant to the rotting and decay-producing properties of this foul mist was money—and that was exactly what developer Silverstein controlled. Where democracy and design had failed for THINK, and metaphor and personal history eventually failed for Libeskind—who was, for lack of a better term, demoted—it was ultimately money that succeeded in Silverstein's selection of architect David Childs, from the titanic corporate firm Skidmore, Owings and Merrill. Silverstein insider and project facilitator Janno Lieber best sums up the ultimate dismissal of Libeskind when he says, "Larry announced the truth, which is he's going to do the building with the architect *he* chose, which

is David Childs of Skidmore, Owings and Merrill."[9] Briefly celebrated and now world-famous, Libeskind was forced into some metaphorical mud of his own when Childs essentially cut him completely out of the design process. Regarding this, Childs says, "I think that in fact Daniel Libeskind thought that he would have more of a role, and that I was somehow going to be changed and execute his role in the design. … Frankly Larry would not permit that."[10] Libeskind was not only cut out of the design process completely but was dragged along as a metaphorical apologist stepchild and forced to acquiesce, and even praise, the unfathomably bland design by Childs. An aide to Governor Pataki recalls, "I can remember shuttling back and forth between Daniel [Libeskind] and David [Childs] trying to get Daniel to say that this is a beautiful building, and he [Daniel Libeskind] kept looking and said finally, 'Yeah, I think I like it, I think I like it.' So I called up the governor's office and said, 'Danny's gonna say nice things; I think we're not going to have an issue there.'"[11] At the end of everything—the $72 million competition, THINK winning and losing, Daniel Libeskind winning and losing—the ultimate winner, money, a.k.a. David Childs, noted poetically: "It was a functioning, operating office building in a capitalistic society. It was not just a piece of sculpture there in the air."[12] Munch.

Architects, both stars and start-ups, who walk these desolate terrains, are forced to languish, like the zombies of television's *The Walking Dead*, on Shearer's "endless bleeding journey" to continual disappointment. Architecture, subsumed nearly completely into the financial workings of late capitalism, has been forced into the meekness of near total economic and cultural devaluation. The landscape of unpaid competitions, cheap, trashy installations, online whoring, and powerlessness in the face of corporate spreadsheets is bleak. To make matters worse, as a discipline we have been among the most active accomplices in the construction of this vacuous landscape. Through willingly, even desperately, rooting for the aforementioned food scraps and clawing pathways over our littermates, we each contribute, in Visine-size droplets, to the rising ocean of architectural disempowerment.

Instead of munching on detritus, architecture needs a new diet. A better diet. Such a diet—nutritionally fortified, organic, free range and Brooklyn hipster-approved, can no longer include the desperate donation of work to corporate deities, or the groveling at the feet of wealthy cultural institutions. And our new diet can certainly no longer include a mentality where the accumulation of industrial leftovers is mistaken for architectural innovation or empowerment. We not only deserve more, but can offer more. Much more. One definition of "rot" is to become unsound or weak. There can be no other possible description of a discipline in such a state as ours. And perhaps this rot should be encouraged, even accelerated, as it is only when the process of rot is complete that the ground underneath is fortified and nourished for a new generation of unpredictable growth.

Howling as an act of desperation was, of course, never limited to the beatniks. Much earlier, immediately following his own *Scream*, Norwegian painter Edvard Munch articulated quite accurately our current architectural discontent in his sulfurous sentiment "From my rotting body, flowers shall grow." The ground of architecture will someday soon become fertile from decomposition; it awaits a new generation of seed-planters equipped with the self-worth, confidence, and ambition to resist the temptation of easily reachable, decaying ground fruit. All it takes to reach the more nourishing and sweet growth higher on the tree is to learn to stand erect, stretch, and reach straight upward using the piece of anatomy most often neglected by architects today—the spine.

1 Allen Ginsberg and Lewis Hyde, *On the Poetry of Allen Ginsberg* (Ann Arbor, MI: University of Michigan, 1984).
2 Sylvia Lavin, "Vanishing Point," *Artforum*, October 2012, 219.
3 Philip Boroff, "Museum of Modern Art's Lowry Earned $1.32 Million in 2008–2009," Bloomberg.com, August 10, 2009, accessed March 18, 2014.
4 All information regarding Arcbazar comes from "Arcbazar.com—Architectural Competitions | Home Designs | Remodeling | Interior Designs | Landscape Designs | Residential Designs | Commercial Designs," October 30, 2013.
5 "Frequently Asked Questions: Clients," FAQ, Arcbazar.com, November 6, 2013.
6 *16 Acres*, Film, directed by Richard Hankin (Tanexis Productions, 2013), 36:29.
7 Ibid., 37:13.
8 Ibid.
9 Ibid.,
10 Ibid., 42:25.
11 Ibid., 59:49.
12 Ibid., 40:55.

WORK

Peggy Deamer

At a recent symposium a young audience member asked the distinguished panelists what she could expect from a career in architecture. One of them answered fervently, "Architecture is not a career. It is a calling!"

PROLOGUE
HOW DID WE GET HERE?

In a profession that seems to have it all, our creativity, unlike artists, is professionally sanctioned: we make things that matter to the world, so how could we be victim of the same capitalist ideology that, in the form of Christianity, asks the poor to feel righteous about their poverty?

My first answer is the following: We don't believe we do work.[1] We go to the office and we get a paycheck, but architecture produces designs, not mere products or services. We know we are producing an object (indeed, a big one), but we don't like to think that we produce a "commodity." We compare ourselves to doctors and lawyers but believe our work is too creative and culturally significant to be filed under "service sector." Consequently we fail to conceptualize our work as *work*.

In contrast to manufacturing jobs, we lack security structures—unions, guilds, institutionally sanctioned labor laws—that prevent architectural staff from being fired without cause, working for no pay, and enduring oppressive hours. Considering that the majority of architectural staff are asked to work seventy-hour weeks at an average of $55,000 per year, we earn $15 an hour, roughly the same rate my daughter earns babysitting, and are no better off than factory workers. The starting salary for architects with a comparable education at a top school like Yale, is less than one-third that of lawyers and doctors; six years out that percentage rises but lingers just above forty-five percent.[2]

My second premise is that we have a pathetic notion of design that isolates it from work. Architects design and builders construct: in other words, we do art and they do work. This division, which is both conceptual and contractual, keeps architects not only from achieving the commensurate financial and monetary rewards but also attaining social relevance and personal satisfaction.[3] It precludes social relevance precisely because we do not see ourselves in the class of workers. While discussing minimum wage, reading about the strikes of non-union food-service providers, or producing designs that are built by indentured labor in Asia and the Middle East, we don't relate. More than this, Marx has made clear that labor is a social issue, not merely because it relates worker to worker but because it permeates every aspect of our home and psychic life.[4]

The first two parts of this chapter outline architecture's "work-aphasia" from the following two observations: Part I exposes polemics about art and creativity that refuse to be divorced from issues of work/labor,[5] value, and money. Art practices are instructive because if architects think we do art, not work, it's surprising to show that artists *do* think they do work. Part II attacks positions claiming that work in general is inherently not fun, creative, or aesthetic. Theorists, both utopian and practical, who espouse the creative nature of work offer liberating perspectives on reconstituted and remanaged formulations of work. After this, the implications for architecture are explored.

PART I
ART AS WORK/LABOR

> "I've always held the belief that art is labor that deserves proper compensation. It is often difficult to assert this, in all levels of the art system. I'm sure that all involved would agree that art has 'value,' but where the work lies and who is paying for it becomes a very clouded issue. I have issues with the premise that art is its own reward."[6]
> —Christine Hill

While aesthetics tends to hold itself apart from issues of labor, the two are historically intertwined. The appearance of labor as a concept distinct from feudal obligations in the late 1400s depended on artisans who supplied goods for export trade; the fact that goods came from "free" work allowed it to be conceptualized as exchange value.[7] Even if artisanal work was not transmitted from workers to employers or exchanged among independent traders, it was central to the mercantile system foreshadowing capitalism.[8] When industrialization broke the hold guilds had on "free" artisans, they became autonomous workers; at the same time their work, like all work, became exchangeable as labor-power. With this shift, the distinction between artists and artisans took hold, as artisans were subsumed by assembly production. Yet even within this distinction there are shades; writers, for example, like assembly workers, were paid by the piece, the delivery of manuscripts being analogous to the weaver's delivery of a bolt of cloth.[9]

Marx suggested that mental production such as art had the potential to escape capitalist

ownership of labor. Indeed we are all potentially artists, the term *artist* existing only in societies framed/defined by the division of labor.

> The exclusive concentration of artistic talent in particular individuals ... is a consequence of division of labour. Even if in certain social conditions, everyone were an excellent painter, that would by no means exclude the possibility of each of them being also an original painter, so that here too the difference between "human" and "unique" labour amounts to sheer nonsense. In any case, with a communist organisation of society, there disappears the subordination of the artist to local and national narrowness which arises entirely from division of labour.[10]

But art work is *not* free, Marx says, when it plays into the hands of capitalism. "A writer is a productive laborer in so far as he produces ideas, but in so far as he enriches the publisher who publishes his works, he is a wage laborer for the capitalist."[11] While Marx clearly doesn't enjoy this capitalist bracketing of occupations, he nevertheless points to its inevitability.

In the early twentieth century, Russian Constructivists added another spin, pressing to prove that art *was* labor. Given the political atmosphere, they had to prove that art was proletarian, not bourgeois, and did so by emphasizing its kinship to manufacturing. Vladimir Mayakovsky, in the journal *Contemporary Architecture* (1928), lists the necessary requirements for poetry:

1 Poetry is manufacture. A difficult, very complex kind, but a manufacture.
2 Instruction in poetical work doesn't consist in the study of already fixed and delimited types of poetical objects, but a study of the means for executing all kinds of poetical work, a study of productive procedures that help us make new things.
3 Innovation in material and devices is the basis of every poetical product...
9 Only by approaching art as manufacture can you eliminate chance, arbitrariness of taste and individual judgment...instead of mystically pondering a poetic theme you will have the power to tackle any pressing problem accurately with full poetic qualifications.[12]

Likewise, Alexander Malinovsky, a.k.a. Bogdanov, wrote:

> Creation, whether technological, socio-economic, political, domestic, scientific, or artistic, represents a kind of labour, and like labour, is composed of organizational (or disorganizational) endeavours. It is exactly the same as labour, whose product is not the repetition of a ready-made stereotype but is something "new." There is not and cannot be a strict demarcation between creation and ordinary labour; not only are there all the points of interchange, but it is even impossible often to say which of the two designations is more applicable.[13]

These inspiring pronouncements, while forced by Communist conformism, demonstrate a commitment not only to art as labor, but also to coexistence within a work-defined social fabric.

This attitude was shared by German Marxists of the same period, although they, unlike Russian artists, were looking at socialism from the outside. Certain members of the Frankfurt School, Walter Benjamin principally among them, picked up on the idea that work could be the model for art; others, including Herbert Marcuse, found that art was the model for work. As is well known, Benjamin, in his "Work of Art in the Age of Mechanical Reproduction," links mental artistic production to material technical production. In this he followed Bertolt Brecht's instructions for "Epic Theatre," which negated the divisions between author and actors, actors and stagehands, and actors/stagehands and audience; all were seen as creative workers. On the other hand, Marcuse, while incorporating Theodor Adorno's belief in the autonomy of art, nevertheless espoused that the aesthetic dimension, in which freedom is imagined, prefigures material labor.[14]

Like the Constructivists, certain art practices in the late 1960s and '70s explored the infiltration of work into art practice. To escape any effete notions of art, the Artist Placement Group (APG)[15] staged events that were equally performance and financial negotiation. Making sure that art was not held apart from systems of value, labor, and social change, they put union representatives on their "board," placed artists in industry, and sought and attained government positions.

More recently in this same tradition, Relational Aesthetics, the name given to a particular trend in art of the 1990s by French art critic Nicholas Bourriaud, has promoted artists who present "models of action" in the real world and respond to "contemporary precariousness" with a "regime of aesthetics" ... "based on speed, intermittence, blurring and fragility."[16]

> [Contemporary] art presents itself as an editing console that manipulates social forms, reorganizes them and incorporates them in original scenarios, deconstructing the script on which their illusory legitimacy was grounded. The artist deprogrammes in order to re-programme, suggesting that there are other possible usages for the techniques, tools and spaces at our disposition.[17]

In her 1996-7 *Volksboutique* in Berlin, Christine Hill—who "always held the belief that art is labor that deserves proper compensation"[18] and is associated with Relational Aesthetics—managed a thrift shop/sculpture where tea was served, inexpensive clothes were available, and discussions were encouraged. When she franchised her boutique in 1997 for Documenta X, in Kassel, she ascribed the role of thrift shop salesgirl to stand-ins. In another piece, she made an audio guide "tour" for which she charged $12. In yet another, she included a vending machine that yielded a profit, to the outrage of the gallery owner.[19] Another artist associated with Relational Aesthetics, Andrea Fraser, in her 1989 *Museum Highlights*, took the role of docent at the Philadelphia Museum of Art and described not the artifacts but the history of social difficulties experienced by the museum.[20] In 2001, as part of *No Ghost Just a Shell*, Pierre Huyghe and Philippe Parreno directed other artists to make videos of a Japanese manga figure called "Annlee" for which they had purchased the copyright, then transferred the copyrights of those videos to the figure's private "association."[21] Artist Rirkrit Tiravanija cooked and served food to the visitors in his exhibition *Untitled" 2002*, a work that was bought by the Guggenheim Museum with the aid of American Express, who handled the programming in its PR department and created subsequent programs and events.[22]

Practitioners of Bourriaud's brand of Relational Aesthetics have been criticized, by artists operating outside of the museum/gallery system, for their pseudo-social engagement with a rarefied audience. Nevertheless, these artists[23] operate with complete confidence that their work functions within a system of value that can be toyed with. An alternate view of that value-cum-art relationship is offered by Jacques Rancière, who stresses that work is shaped by the logic of art, not the other way around.[24] In *The Politics of Aesthetics: The Distribution of the Sensible*, he notes that the "aesthetic regime" of art (in contrast to the more trivial "ethical regime" or "poetic regime"), being "formal" and "sensuous,"[25] shapes our political identities and with it our attitude about work. Democracy, for example, is not simply a form of government; it is a specific mode of symbolic structuring only performed by art, whose forms "life uses to shape itself."[26] He suggests that Benjamin was wrong in saying that mechanical reproduction/art made available a new visibility of art to the masses; rather the aesthetic regime was in place before the mechanical/reproductive mode of thinking could begin. In *The Nights of Labour*, Rancière contends that workers in the French revolution of 1830 were not fighting against the hardships they experienced but against the constricted nature of their lives. At night, instead of recuperating for the next day's work, they read the works of poets and writers who spent their nights producing a language of liberation. After appropriating this other language and performing these other lives, the workers had the strategies needed for rebellion. Art practice "anticipates work because it carries out its principle: the transformation of sensible matter into the community's self-representation."[27]

Whether art precedes its connection to labor (Marcuse, Rancière) or succeeds it (Constructivism, Benjamin, APG, Relational Aesthetics), artists and aestheticians have historically probed the thin line between the two. Why has architecture not listened or noticed?

PART II
WORK AS ART/PLAY

> "A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality."[28]
> —Karl Marx

Just as the tradition of art-as-labor suggests that the profession of architecture should consider "labor value," the tradition that sees human work as inherently imaginative, creative, and self-realizing should equally be embraced by architects. Creativity in architecture rests not on an ever-expanding categorical inclusion of form making but rather on an imaginative approach to problem solving.

Essential reading for nearly all who explore the liberating, play-structured aspects of work is Friedrich Schiller's *Letters Upon the Aesthetic Education of Man* (1794). The author does not address "work"

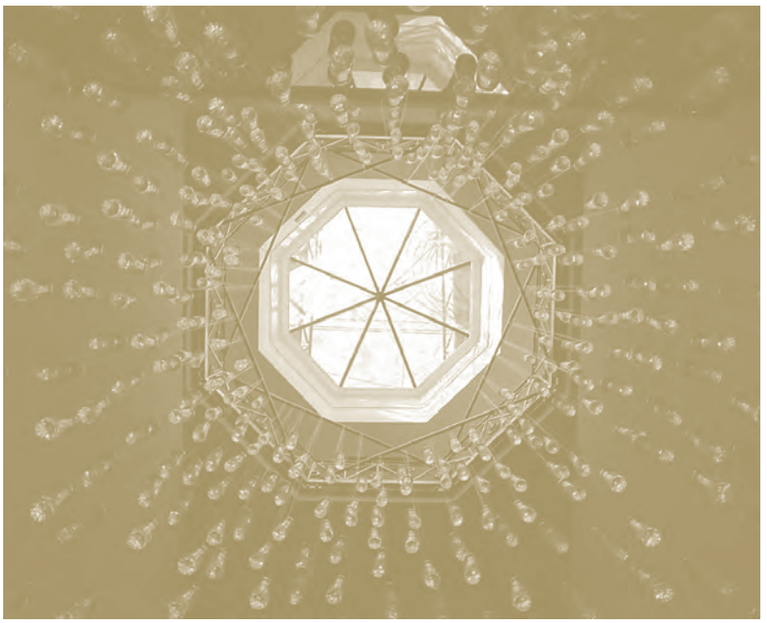
but examines play/art's essential role in civil society. Civilization, Schiller posits, has suppressed the "sensuous impulse" to serve the "form impulse," such that when the sensuous emerges out of its repressed state, it is destructive. Art and play, he argues, overcome this negative eruption by transcending the false dichotomy between sense and form. Art, as the "reasonable" realm of the sensual, brings together the sensuous and the formal.[29] Play, allowing art to be deployed, makes both the sensuous and the formal "contingent," and hence capable of synthesis.[30] In a defense against the possible attack that art, in being aligned with "mere" play, is degraded, Schiller writes, "But what is meant by a mere play, when we know ... that it is play which makes man complete and develops simultaneously his twofold nature? What you style limitation... I name enlargement."[31]

Working from Schiller, Gottfried Semper justified his aesthetic position in the "Prolegomena" to *Style in the Technical and Tectonic Arts; or, Practical Aesthetics* (1860) by appealing to pleasure and play: "On a more exalted plane, what we mean by terms like 'sense of beauty,' 'delight in beauty,' 'enjoyment of art,' and 'artistic instinct' is analogous to those instincts, pleasures, and gratifications that govern the way in which we maintain our telluric existence. ... Surrounded by a world full of wonder and forces whose laws we may divine ... we conjure up in play the perfection that is lacking. ... In such play we satisfy our cosmogonic instinct."[32]

As has been described, Marx's ideal socialist society, shaped by his readings of Schiller and other German Romantic philosophers,[33] envisions all workers as creative and everyone as an artist. "In a communist society there are no painters but only people who engage in painting among other activities."[34] But when work serves capital, "freedom" is found only *outside* of work. Marx, in other words, sets out the negative image of labor imposed by capitalism that subsequent, more optimistic, theorists have sought to revise.

Utopians go back and forth between espousing Marx's negative view of industrial production and envisioning a society where all work is imaginative. For example, where Welsh social reformer Robert Owen, in his "Report to the County of Lanark" (1820), structured his New Lanark mill town to limit work to eight hours—leaving time for reading, gardening, and exercise—French socialist and phalanx theorizer Charles Fourier, in his *Theory of the Four Movements and the General Destinies* (1808), insists that if "industry is the fate assigned to us by the Creator, how can one believe that he wishes to force us into it—that he does not know how to bring to bear some nobler means, some enticement capable of transforming work with pleasure."[35] American socialist Edward Bellamy, in his utopian novel *Looking Backward: 2000-1887* (1888), describes a regime dictating strict division between work tasks and between work and leisure,[36] to which English textile designer and socialist William Morris provides a rebuttal in his *News from Nowhere* (1890), where he describes how people in an ideal community live out Marx's vision to "hunt in the morning, fish in the afternoon, rear cattle in the evening, criticize after dinner,"[37] changing jobs for the pleasure of edification. Ebenezer Howard's precise division of private work and public pleasure in his *Garden City* was countered by Frank Lloyd Wright's insistence, in "Broadacre City," that "our leisure, our culture and our work will be our own and as nearly as possible, One."[38] Le Corbusier did not necessarily disagree with any particular architect/utopian but insisted on the essential value of (real) play: "Only those who play are serious types. ... The mountain climbers, the rugby players and the card players, and the gamblers, are frauds, for they do not play."[39]

If these utopians, in giving a picture of *ideal* work, only underscore its actual unpleasantness, twentieth-century philosophers of work,



Personnel 3, 2003 Tàpies Foundation (Fundació Antoni Tàpies), Barcelona, Spain.
Artist's Statement: For the Tàpies Foundation, where office storage was found to be one of the most pressing problems afflicting an overworked and understaffed institution, I used part of the architecture as a reservoir for drinking water titled *Well*. I also made wearable shelving units, *Portable Workspaces*. For *Well*, bottles of water were hung from an octagonal balcony on the top floor of the museum (also the location of the offices), with each suspended from its own line. This way, individual bottles could be pulled up easily by staff members, as needed.

Personnel 4, 2004, Wyspa Institute of Art, Gdansk, Poland.
Artist's Statement: Once the site of the most important industry in the region, the Gdansk Shipyard is now in a transitional period, in which its economic and political history and legacy will coexist with its new identity as an art center and eventually a development of high end residences. As I began this project the staff had no plan for their offices and only the most provisional of furniture, a situation that made this scheme quite unique. My approach was to represent the past by printing curtains with a large photographic image of a window taken during its former identity as a factory while designing mobile furniture and office storage that could be adapted to a variety of future needs as well as making seats using multiple casts of a toilet—a Soviet issue porcelain model—scavenged from another abandoned building in the shipyard. Although the toilet has been transformed it is still recognizable enough to raise questions about how seriously anyone can take themselves, each other, and their activities when they are all sitting on the toilet together.

who fall into one of two camps—neo-Marxists and pragmatists—look at creative aspects of work within capitalism. Marcuse picks up Marx's philosophic probing of Schiller's emphasis on the role of play in a civil society, contesting the labor/leisure divide dominating the discourse of German sociologists such as Max Weber. Equating Schiller's dichotomy of the sensuous versus formal instincts with Freud's pleasure versus reality principles, work is elevated by Marcuse to the pleasure principle. *In Eros and Civilization: A Philosophic Inquiry* (1955), he writes:

> [T]he abolition of toil, the amelioration of the environment ... flow directly from the pleasure principle, and, at the same time, they constitute *work* [his emphasis] which associates individuals to "greater unities"; no longer confined within the mutilating domination of the performance principle, they modify the impulse without deflecting it from its aim. There is sublimation and, consequently, culture; but this sublimation proceeds in a system of expanding and enduring libidinal relations, which are in themselves work relations."[40]

This condition is not pervasive, but individuals are capable of tapping into their libidinal energy to transform production. "The biological drive becomes a cultural drive."[41]

Recent neo-Marxists emphasize the communal, cooperative, and collaborative nature of contemporary work. Antonio Negri and Michael Hardt's *The Labor of Dionysus* (Italian, 1977; English, 1994) and Maurizio Lazzarato's "Immaterial Labor" (1996) analyze "labor that produces the informational and cultural content of the commodity." In the transition from a service to an information economy, Negri and Hardt say, "cooperation is completely immanent in the labouring process itself."[42] As Lazzarato puts it, work is now the domain of "mass intellectuality" and "can be defined as the capacity to activate and manage productive cooperation. In this phase, workers are expected to become 'active subjects' in the coordination of the various functions of production, instead of being subjected to it as simple command. We arrive at a point where a collective learning process becomes the heart of productivity, because it is no longer a matter of finding different ways of composing or organizing already existing job functions, but of looking for new ones."[43]

Because the old model for describing production and consumption is no longer useful, one should turn to the aesthetic model, involving "author, reproduction, and reception"; if "author" loses its individuality, "reproduction" becomes organization, and "reception" is also communication.[44]

Alexander Galloway, speculating about postcapitalism, sees play—the ultimate goal—as already embedded in our capitalist production structures:

> After trying to understand how to imagine a life after capitalism, and seeing how this is both done and undone in everything from *World of Warcraft* to the stratagems of Donald Rumsfeld, what one sees is how two of the hitherto most useful tropes for communicating a life after or outside capitalism—networks and play—are slowly shifting from what Rumsfeld calls the unknown unknowns ... to the known unknowns, and perhaps simply to the known. ... What is clear is that the possibility of life after capitalism is often articulated today through a utilization of the very essence of capitalism. Play is work and networks are sovereigns.[45]

Like Lazzarato, Galloway insists that the play-oriented side of work can wreak havoc on the existing system.

The pragmatist trajectory of work-play-art centers on the writings of John Dewey, who in his analysis of education valorized play as essential to development. In holding a view of education that was playful and childlike while also encouraging a Protestant work ethic, he redefined work to mean something like play—spontaneous, voluntary, fulfilling. Dewey writes:

> What has been termed active occupation includes both play and work. In their intrinsic meaning, play and industry are by no means so antithetical to one another as is often assumed, any sharp contrast being due to undesirable social conditions. Both involve ends consciously entertained and the selection and adaptations of materials and processes designed to effect the desired ends. The difference between them is largely one of time-span, influencing the directness of the connection of means and ends. In play, the interest is more direct."[46]

Play passes into work when "the demand for continuous attention is greater, and more intelligence must be shown in selecting and shaping means."[47]

Donald Schön, whose doctoral thesis in philosophy at Harvard considered

Dewey's theory of inquiry, applied the reformer's pragmatist philosophy to theories of organization. Arguing that "change" was a fundamental feature of modern life and recognizing that companies, social movement, and governments were essentially systems of change, he explored them as learning systems of "groping and inductive process(es)." Schön's interest in jazz linked work to improvisation and "thinking on one's feet"; through a feedback loop of experience, work, like art and music, is "practiced." He also said that to stimulate change an organization must create conditions in which the individual practitioner is committed to an action because it is intrinsically satisfying, not because it provides external rewards.[48]

Like Schön, Peter Drucker—"the man who invented the corporate society"[49] and was the guru of corporate management from the 1950's through the '80's—forecasts capitalism's decentralization, privatization, and marketing. But in *Post-Capitalist Society*, Drucker goes farther in describing the nature of work in late capitalism. In the eighteenth century, he says, the worker's knowledge was applied to tools; in the nineteenth and early twentieth centuries, it was applied to productivity (Taylorization); today it is being applied to knowledge itself. Contemporary "knowledge workers" *own* the means of production: that is, knowledge. Because the skills held by these workers—research, product design, fabrication, marketing, advertising, customer consulting, financing, contracting—allow technical insights to be linked to marketing strategy and financial acumen, the traditional distinction between goods and services breaks down. Moreover, the traditional factors of production—land, labor, and capital—are restraints rather than drivers; indeed no class, Drucker points out, has risen or fallen as quickly as the blue-collar worker. Emphasizing here and in earlier writings that organizations have been "too thing focused" and produced too *many* things, he advocates "planned abandonment," non-infatuation with yesterday's successes, streamlining, and embracing destabilization. In addition, the goal of organizational management is to recognize that the most valuable resource is the worker, the most flexible and intelligent component of the system; to construct alternative specialist-based models of organizations; and to acknowledge that the real business of business is not how to do things right but how to find the right thing to do. Work of this sort—which architecture epitomizes not because it makes form but because it organizes itself so fluidly—sounds pretty fun.

PART III
ARCHITECTURE

The two trajectories followed here yield remarkably similar projections for post-Fordist work: creativity applied not to object making but to process, destabilization, organizational flexibility, planned obsolescence, and empowering the autonomy of the worker. Architecture increasingly operates this way even if its overt structures do not yet reflect it. Design today is not merely the conjuring of an object but a problem-defining, problem-solving, information-structuring activity that, on the basis of understood conditions and rules, defines a specific course of action.[50] Instead of it being done by "an architect," architectural work is the creative manipulation of specialized design developed by a socially diverse panoply of contributors. Increasingly architectural work is distributed and dispersed, collaborative and entrepreneurial, knowledge-based and open-sourced, specialized and flexible. The benefit for architects—if we endorse the idea that our knowledge/service is spatial, material, and organizational innovation—is a reconception of our compensation and our place in the social fabric.

A reconception of compensation begins with the elimination of percentage-of-construction fees that reinforces the disastrous idea that our value resides in the object we produce and not in the knowledge that produced it. It not only wrongly places value on the one-off nature of the object but also, conceived as piecework, aligns us with the most degrading form of compensation. Marx is clear on this: "Piece-wages therefore lay

Casual Fridays, 2002,
Three images from PowerPoint presentation.
Artist's Statement: Although adherence to workplace dress codes has long been an aspect of "performance evaluation," Casual Friday has brought about a transformation of identity and self image within the corporate structure. Fearful of what appeared to be the breakdown of the implicit rules of dress that helped define social and economic boundaries, institutions suddenly needed to find new ways to represent their internal hierarchies and power structures by actively controlling employees' appearance. This included the publication of official dress codes that were then interpreted by self-appointed image consultants, seminars and self help publications. Bringing together found materials from all sides of the Casual Friday negotiations, this installation used PowerPoint presentation, the technology of corporate communication, to continue my ongoing study and analysis of the aesthetics of power and the power of aesthetics in the contemporary workplace.

the foundation of … the hierarchically organized system of exploitation and oppression."

> The quality of the labour is here (in piecework) controlled by the work itself, which must be of the average perfection if the piece-price is to be paid in full. Piece-wages become, from this point of view, the most fruitful source of reduction of wages and capitalistic cheating. … Given piece-wage, it is naturally the personal interest of the labourer to strain his labour-power as intensely as possible; this enables the capitalist to raise more easily the normal degree of intensity of labour. It is moreover now the personal interest of the labourer to lengthen the working day, since with it his daily or weekly wages rise.[51]

If you are an architect, this certainly sounds familiar.

Alternatives to this resist not only the piecework model of compensation but also its architect-as-subordinate-to-owner framework. The most obvious option is to *be* the developer-owner. However, more crafty and less financially demanding approaches exist. In the Integrated Project Delivery use of the Special Purpose Entity, a type of limited-liability company, the owner puts aside an agreed-upon amount of money determined to be the project's worth; the architect and the contractors (and others) provide services at cost so they, in any case, do not lose money. It is agreed that there can be no lawsuits. If and when the work costs are lower than the target cost, there is a three-way split of the savings. Likewise pay by percentage of profit, a calculation used to pay independent project managers, would identify the value added by architectural intervention, a figure that would not be difficult to identify if records were sought. Another fee alternative is the formation of a publicly traded company that, like tech start-ups, relies on investors banking on the intelligence architectural firms can bring to the beauty, procurement, performance, and maintenance of the built environment. Skepticism regarding the ability of an architectural corporation to produce consistent shareholder profits is alleviated when one considers the expertise—environmental, material, economic, structural, procedural—available to the architect via parametrics and BIM.[52] The spread of expertise and the invasion of architectural intelligence into areas once divorced from the discipline—for example, BIM management, facilities management, or construction management[53]—are potential architectural domains.

Models of compensation other than the existing hourly or yearly salary present themselves for architectural staff as well. Knowledge-based organizations compete for the best and the brightest, and hence consistently refine their modes of compensation to balance the appeal to and retention of top prospects with firm profitability. That architecture firms sadly do not yet approach their hiring and compensation in this manner is surely related to the fact that architecture school graduates, despite seven years of expensive education, present themselves as cheap labor. Be that as it may, in lieu of flat compensation rates, incentive-driven wages should be considered. Co-ownership, performance-based compensation, "pay-at-risk," employee stock options, or other firm owner-employee contracts sharing value creation and profit are common in new-economy work compensation models. In *Capital*, Marx adds this footnote in his discussion about piecework: "Even Watts, the apologetic, remarks: 'It would be a great improvement to the system of piece-work, if all the men employed on a job were partners in the contract, each according to his abilities, instead of one man being interested in overworking his fellows for his own benefit."[54]

If we never again want to hear a potential architectural employee say that they understand why they will get paid next to nothing since they know the firm they hope to work for earns next to nothing, we also need to look to unions. Unions—the modern incarnation of the guild system so admired by architecture for its designer/maker integration but totally overlooked as a human-resource apparatus for the profession—have traditionally served creative organizations. The Screen Actors Guild (SAG, now combined with the American Federation of Television and Radio Artists (AFTRA) to create SAG-AFTRA) was founded in 1933 to stop exploitation of Hollywood actors signed by major studios to multiyear contracts that had no restrictions on work hours or any required breaks. Actors Equity, founded in 1913 to represent American actors and stage managers, negotiates wages and working conditions and provides health and pension plans for its members. In the same vain, the Freelance Workers Union, formed in 1995, offers health, disability, and life insurance and has recently opened a Brooklyn walk-in health clinic for its members. Their resources include corporate discounts, job postings, and contract deliberation tutorials.

These unions, historically militant organizations whose members have been willing to strike, are today less antagonistic to management and operate more as communities of support and promotion. As Lowell Peterson, director of the Writers Guild of America, East writes,

> I do not have the wisdom to proclaim whether a national economy can be sustained on the basis of moving around pieces of paper representing capital, or on the basis of creating and selling innovative ideas without actually making physical products. But I do think the economy will be based on services for quite some time. The Writers Guild of America, East knows how to represent knowledge workers ... (who) build ... stories for television, radio, movie screens, and the internet (and for whom employment is contingent, job-to-job, script-to-script, show-to-show.[55]

These alternate forms of compensation and security operating in the heart of capitalism should not be held as perfect solutions for humanist aesthetic production. But the discomfort we surely feel when trying on these new models of organization indicates the inexcusable conceptual distance between architectural work and other labor structures. The scary thing is not the unfamiliarity of these structures but our righteous ignorance of them.

The social benefit of labor lessons for architecture is actually being socially identified. Workers identify with workers. While many of the artists associated with Relational Aesthetics refused to have their work exhibited at the Guggenheim Museum in Abu Dhabi—a building constructed by indentured labor—architects remain unmoved. Pleas by Human Rights Watch for architects designing structures in the Emirates and China to pressure their clients to reform bad construction practices have fallen on deaf ears. Architects rightly claim that they are not at the negotiating table but weakly refuse to reflect on how their disengagement impacts this tragedy. Architecture, either in the form of the AIA or the office structure, needs to shed its work-aphasia and identify as an organization of workers. Only then will its cultural cachet have real social value.

At this transitional moment in the profession, when design responsibility and financial savvy are shared among various players, the constitution of a new model for architectural practice is entirely open. Now is the time to think expansively about what we want this new practice to look like and how its organization might be linked to larger social, political, and economic formations. As newly enlightened players in the labor game, architects are free to move directly toward an imagined ideal.

1 Some might object to my use of *we*, but as Jodi Dean indicates in *The Communist Horizon*, the second person plural invokes a needed sense of collectivity. This is not an academic issue; it is a political one.

2 See Phil Bernstein's article in this same *Perspecta*. I am indebted to him for sharing and expanding on the indignation expressed here about the profession of architecture.

3 While the division between design and construction has existed since the Renaissance, "work-aphasia" and the unhappiness it causes have not. Between the Renaissance and the Industrial Revolution, drawings produced by the architect were intentionally incomplete to allow for the input of the constructor's craft. Drawings described the effect to be achieved and were considered objects of beauty in their own right. During the Industrial Revolution, when craft in construction was at risk of being spread over a number of trades, architects and craftspeople together fought the effects of the division of labor by turning to the interior as the provenance of synthesized design and industrially produced craft. In the twentieth century, in keeping with the (popular?) turn in economic concern from production to consumption, architects saw themselves as producing not just the modern, clean, unsentimental building but the modern, healthy, unsentimental citizen. While this concern for the client as opposed to the constructor/laborer was initially ethical and public in nature, it quickly became practical and private, as architects aimed to please their clients, not educate them. The architect's social concern, having shifted from builder to owner/user, disappeared all together.

4 In the August 12, 2013, *New Yorker*, James Surowiecki's "Why Do So Many Jobs Pay So Little?" describes how low-margin enterprises like McDonald's, depending on cheap labor for its six-cents-on-the-dollar profit, need to be reconceived. It is not merely that McDonald's needs to pay more, "and it isn't enough to make bad jobs better. We need to create better jobs." One can't dismiss the similarity between architecture and McDonald's as low-margin industries. How many times have we heard the excuse of the underpaid staff member: "How can I ask for more money when I know the boss isn't paid properly either?"

5 If the term *labor* has a negative connotation—work indicates use-value, labor indicates exchange value; work is distinctly human while labor is bestial and punishing—

it also correctly insists that production is organized by a system of value that is socially constructed.

6 "Interview with Christine Hill: We Make Money Not Art," by Regin, July 4, 2007, http://we-make-money-not-art.com/archives/2007/07/interview-with-20.php#.UgRUaxbq2Do; see also Lucy Lippard et al., *Inventory: The Work of Christine Hill and Volksboutique*, (Ostfildern, Germany: Hatje Cantz, 2004).

7 Richard Biernacki, *The Fabrication of Labor: Germany and Britain 1640-1914* (Berkeley: University of California Press, 1997), 215. Biernacki notes: "As early as the 1470s, Italian administrators who wrote on government policy identified labor as the primary source of a state's wealth. A century later, the noted economist Giovanni Botero reaffirmed the centrality of labor when he said that neither the gold mines of the New World nor the landed estates of the Old produced so much wealth as 'the industrie of men and the multitude of Artes'" (p. 216).

8 Ibid., 235. Biernacki continues: "During the first century of liberal commercialism in Britain, the belief persisted that workers delivered their labor only under the compulsions of law and hunger. Many enterprises in pottery, mining, and textiles bound their laborers by servile terms of indenture that held them to the same employer for terms of one to twenty years. After the middle of the eighteenth century, employers began to rely upon cash rather than coercive stipulations to secure labor. The opinion slowly and tentatively took hold that workers could be stimulated to work harder by the promise of higher earnings."

9 In *The Fabrication of Labor*, Biernacki shows that in Britain and Germany weavers were paid by the quantity of production, but what was quantified was different in the two countries. In Britain, the piecework rates were based on the number of weft threads per inch. German rates were calculated by the number of shuttle moves across the warp (i.e., by the time required to produce a given length of cloth). In other words, in Britain the commodification of labor was understood as "the appropriation of workers' materialized labor via its products," while in Germany it was understood as the timed appropriation of workers' labor activity. Both here and in his lecture "Contradictory Schemas of Action: Manufacturing Intellectual Property," recorded at the Havens Center at the University of Wisconsin-Madison in 2004, Biernacki outlines how these differences in piecework compensation for weavers led Germany and Britain to have radically different ideas about what constituted a copyrightable literary "work." With a tradition of paying by the manuscript (labor materialized in a product), Britain determined that copyright protection was based on possession of the physical document produced by the author, implying that there was nothing to distinguish an "author" from any other person—a critic, a commentator, an accountant—who could deliver a document. With a tradition of paying by the page (labor materialized by the movement of the pen), Germany, on the other hand, struggled to determine what ultimately held together the pages as a "work," deciding it was the originality of the authors' ideas. Originality, in other words, was granted privileged copyright condition in Germany, and not in England.

10 Karl Marx and Friedrich Engels, *The German Ideology*, II Rebellion, www.marxists.org/archive/marx/works/1845/german-ideology/ch03l.htm.

11 Karl Marx, "Productivity of Capital/ Productive and Unproductive Labor," in *Theories of Surplus Value*, pt. 1 (London: Lawrence and Wishart, 1969), 401.

12 Quoted in Catherine Cooke, *Russian Avant-Garde* (London: Academy Editions, 1995), 100; translated by the author from *Sovremennaia Arkhitektura: SA or Contemporary Architecture*, no. 6 (1928): 160-66.

13 Cooke, Ibid. From A. Bogdanov, "Puti proletarskogo tvorchestva (Paths of proletarian creative work)," in *Proletarskaia kui'tura*, no. 15/16 (1920): 50-52, translated in J. Bowlt, ed., *Russian Art of the Avant-Garde: Theory and Criticism 1902-1934* (London/New York: Thames and Hudson, 1976), 178-82

14 See Marcuse's *An Essay on Liberation* (Boston: Beacon Press, 1969); Counterrevolution and *Revolt* (Boston: Beacon Press, 1972);Larry Hartwick, "On the Aesthetic Dimension: A Conversation with Herbert Marcuse," *Contemporary Literature 22* (Madison: University of Wisconsin, 1981), 417-24, http://www.marcuse.org/herbert/pubs/70spubs/78InterviewAesthDim.htm.

15 Founded in 1966, this artist-run organization in London redirected art away from galleries toward business and government.

16 Nicholas Bourriaud, "Precarous Constructions: Answers to Jacques Rancière on Art and Politics," *Open* no 17A (2009): 23, http://www.skor.nl/_files/Files/OPEN17_P20-37(3).pdf.

17 Ibid., 35.

18 See footnote 6.

19 Lippard et al., *Inventory*.

20 Andrea Fraser, *Museum Highlights* (Boston: MIT Press, 2005).

21 Huyghe's own film, *One Million Kingdoms*, was one of the first to feature Annlee. http://themodern.org/exhibition/past/pierre-huyghe-one-million--kingdoms/1012.

22 See Walead Beshty, "Neo-Avantgarde and Service Industry: Notes on the Brave New World of Relational Aesthetics, http://www.textezurkunst.de/59/neo-avantgarde-and-service-industry.

23 The artists who Bourriaud enumerates under the Relational Aesthetics designation do not themselves so identify. It is a descriptive category he uses to describe a contemporary zeitgeist.

24 The territorial disagreement between Rancière and Bourriaud goes like this: The emphasis that Bourriaud puts on empirical acts of art making is seen by Rancière as keeping intact, despite Bourriaud's espousal of a participatory audience, a traditional and passive view of art consumption. The emphasis Rancière puts on historical examples, in Bourriaud's view, misses the changing nature of both aesthetic consumption and production in today's open-source, transitory society.

25 These are Friedrich Schiller's terms. In the second part of this essay, his view of art is elaborated. Rancière should be seen in the long lineage of aestheticians reworking Schiller's view of art in civil society.

26 Jacques Rancière, *The Politics of Aesthetics: The Distribution of the Sensible*, trans. Gabriel Rockhill (London: Continuum, 2004), 23.

27 The quote goes on: "The texts written by the young Marx that confer upon work the status of the generic essence of mankind were only possible on the basis of German Idealism's aesthetic programme, i.e., art as the transformation of thought into the sensory experience of the community" (Rancière, *Politics*, 44). Further on, he continues: "(T)he cult of art presupposes a revalorization of the abilities attached to the very idea of work. ... What ever might be the specific types of economic circuits that lie within, artistic practices are not exceptions to other practices. They represent and reconfigure the distribution of these activities (p. 45).

28 Karl Marx, *Capital*, vol. I (New York: New World Paperbacks, 1967), 178; quoted in David Graeber, *Toward an Anthropological Theory of Value* (New York: Palgrave, 2001), 58.

29 J. C. Friedrich Schiller, Letter 25, *The Harvard Classics, vol. 32: Literary and Philosophical Essays* (New York: P.F. Collier & Son, 1909–14; Bartleby.com, 2001), 54.

30 Schiller says explicitly: "The instinct of play ... in which both (the formal and the sensuous) act in concert, will render both our formal and our material constitution contingent, accordingly, our perfection and our happiness in like manner. ... (I)t will place (feeling and passion) in harmony with rational ideas, and by taking from the laws of reason their moral constraints, it will reconcile them with the interest of the senses." Ibid., Letter 14, 27-28.

31 Ibid., Letter 15, 30.

32 Gottfied Semper, *Style in the Technical and Tectonic Arts; or, Practical Aesthetics*, trans. Harry Francis Mallgrave and Michael Robinson (Santa Monica, CA: Getty Research Publication, 2004), 81-82.

33 For a description of Marx's faith in the classical imaginary, see George E. McCarthy, *Classical Horizons: The Origins of Sociology in Ancient Greece* (Albany: SUNY Press, 2003).

34 Karl Marx and Friedrich Engels, *The German Ideology*, chap. 3: "Saint Max II: Rebellion." See www.marxists.org/archive/marx/works/1845/german-ideology/ch03l.htm. In the ideal society, as the above quote continues, "nobody has one exclusive sphere of activity but each can become accomplished in any branch he wishes, society makes it possible for me to do one thing today and another tomorrow, to hunt in the morning, fish in the afternoon, rear cattle in the evening, criticize after dinner, just as I have a mind, without ever becoming hunter, fisherman, herdsman or critic."

35 Quoted from Herbert Marcuse, *Eros and Civilization: A Philosophic Inquiry into Freud* (Boston: Beacon Press, 1966), 217, fn 31.

36 In *Looking Backwards*, Bellamy's work model is the following: the nation has become the sole capitalist; work is an obligation for every citizen; we work from age twenty-four to forty-five ("industrial army"); people choose their own career based on talents; before the age of twenty-four everyone is educated about all the trades; the appeal of popular and unpopular work is adjusted by shortening the length of the unpopular and lengthening that of the popular; there are also some second choices; healthy conditions for all; a class of unskilled common laborers in the first three years of work; each individual chooses whether to be white or blue collar, there is no prestige to one over the other, and schools of both are

nationalized; since the government owns and distributes all, there is no need for trade, and with no need for trade there is no need for money; a credit card is issued corresponding to an individual's share of the of the annual product of the nation, with which one procures from the public storehouse.

37 See footnote 21.

38 Frank Lloyd Wright, *When Democracy Builds* (Chicago: PUB TK, 1945). Quoted in Robert Fishman, *Urban Utopias in the Twentieth Century* (Cambridge, MA: MIT Press, 1982), 129. Wright imagines a life in Broadacre City that is remarkably similar to Marx's postrevolutionary one. "Everyone would have the skills to be a part-time farmer, a part-time mechanic, and a part-time intellectual. Only drudgery would be absent from work" (Fishman, p. 128).

39 Le Corbusier, *Last Works*, ed. Willy Boesiger (London: Thames and Hudson, 1970), 174. Quoted in Vikramaditya Prakash, *Chandigarh's Le Corbusier* (Seattle: University of Washington Press, 2002), 20.

40 Marcuse, *Eros and Civilization*, 212.

41 Ibid.: "The pleasure principle reveals its own dialectic. The erotic aim of sustaining the entire body as subject-object of pleasure calls on the continual refinement of the organism, the intensification of its receptivity, the growth of its sensuousness. The aim generates its own project of realization." 212.

42 Michael Hardt and Antonio Negri, *Empire* (Cambridge, MA: Harvard University Press, 2000), 294.

43 Maurizio Lazzarato, "Immaterial Labor," accessed August 20, 2012, http://www.e-flux.com/wp-content/uploads/2013/05/2.-Maurizio-Lazzarato-Immaterial-Labor.pdf.

44 Lazzarato insists that this is not "utopian" because this form of work still describes capitalism's operations, as the subjects need still to conform to the demands of "production for production's sake." Critics of immaterial labor point out that labor always had an immaterial side—Marx's argument was never to stress the physical nature of work but rather the social and subjective construct in which work operates—and immaterial labor always will have a material side—sweating through our time in front of the computer, the kitchen sink, or the shopping counter.

45 Alexander Galloway, "*Warcraft* and Utopia," *1000 Days of Theory, ctheory.net*, accessed July 15, 2011, http://www.ctheory.net/articles.aspx?id=507. The quote continues, "And finally that virtual worlds are always in some basic way the expression of utopian desire, and in doing so they present the very impossibility of imagining utopia. ... [T]he very act of creating an immaterial utopian space at the same time inscribes a whole vocabulary of algorithmic coding into the plane of imagination that thereby undoes the play of utopia in the first place. The key is not to mourn this transformation, but to examine cultural and media forms themselves and through them (borrowing a line from Jameson) to pierce through the representation of social life both how it is lived now and how we feel in our bones it ought rather to be lived."

46 John Dewey, *Democracy and Education* (1916), section 3, accessed May 21, 2011, http://www.ilt.columbia.edu/publications/Projects/digitexts/dewey/d_e/chapter15.html.

47 Ibid.

48 See Donald Schön's *The Reflexive Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983); http://smeduquedecaxias.rj.gov.br/nead/Biblioteca/Forma%C3%A7%C3%A3o%20Continuada/Artigos%20Diversos/reflective%20practitioner%20-%20schon.pdf

49 See John Tarrant, *Drucker: The Man Who Invented the Corporate Society* (New York: Warner Books, 1976).

50 See Paulo Tombesi in *Take 5: Looking Ahead: Defining the Terms of a Sustainable Architectural Profession*, eds. Paolo Tombesi, Blair Gardiner, Tony Mussen (Manuka, Australia: Royal Australian Institute of Architects, 2009), for an excellent discussion on architecture's confusion over its labor practices.

51 Karl Marx, *Capital: A Critique of Political Economy*, vol.1, pt. 2, ed. Friedrich Engels, trans. Samuel Moore and Edward Aveling, 1887 (Reprint, New York: Cosimo Classics, 2007), 605-6. If this scenario only seems to speak to the architectural firm partner in relationship to the client/owner, and not to the salaried worker that makes up the bulk of the profession, Marx covers that too:

> [The hierarchical organized system of exploitation and oppression] has two fundamental forms. On the one hand piece-wages facilitates the "sub-letting of labor."... On the other, hand piece-wages allows the capitalist to make a contract for so much per piece with the head labourer ... at a price for which the head labourer himself undertakes the enlisting and payment of his assistant workpeople. The exploitation of the labourer by the capitalist is here effected through the exploitation of the labourer by the labourer (606).

The initial problem swims downstream.

52 Caudill, Rowlett, Scott (CRS), once the largest architectural firm in the country, was the first architectural corporation to appear, in 1971, on the New York Stock Exchange. While its move to public ownership has been criticized as the beginning of the firm's decline as it changed from "one ambitious but still service-oriented (and) imbued with humanistic ethos" to one that was merely profit oriented (see Paolo Tombesi, "Capital Gains and Architectural Losses: The Transformative Journey of Caudill Rowlett Scott [1948-1994]," *Journal of Architecture* 11:2, 145-68), the structure of public ownership itself is not to blame, as many tech companies today demonstrate. Equally noteworthy for contemporary practice is CRS's "marketing through research," which preceded the public offering and is linked to it by the desire to escape a merely client-driven reputation. As Avigail Sachs describes in her "Marketing through Research: William Caudill and Caudill, Rowlett, Scott (CRS)," (*Journal of Architecture* 13:6, 737-52), "Presenting the work of the firm as research, and not only as design, created a link between architects as professionals and scientists," a valuable asset in the tech-dominated Cold War economy of the 1950s and '60s. It also solved, Sachs says, the paradox of needing to impress both clients (marketing) and peers (research). Current firms that are publicly held corporations are AECOM and URS (formerly United Research Services).

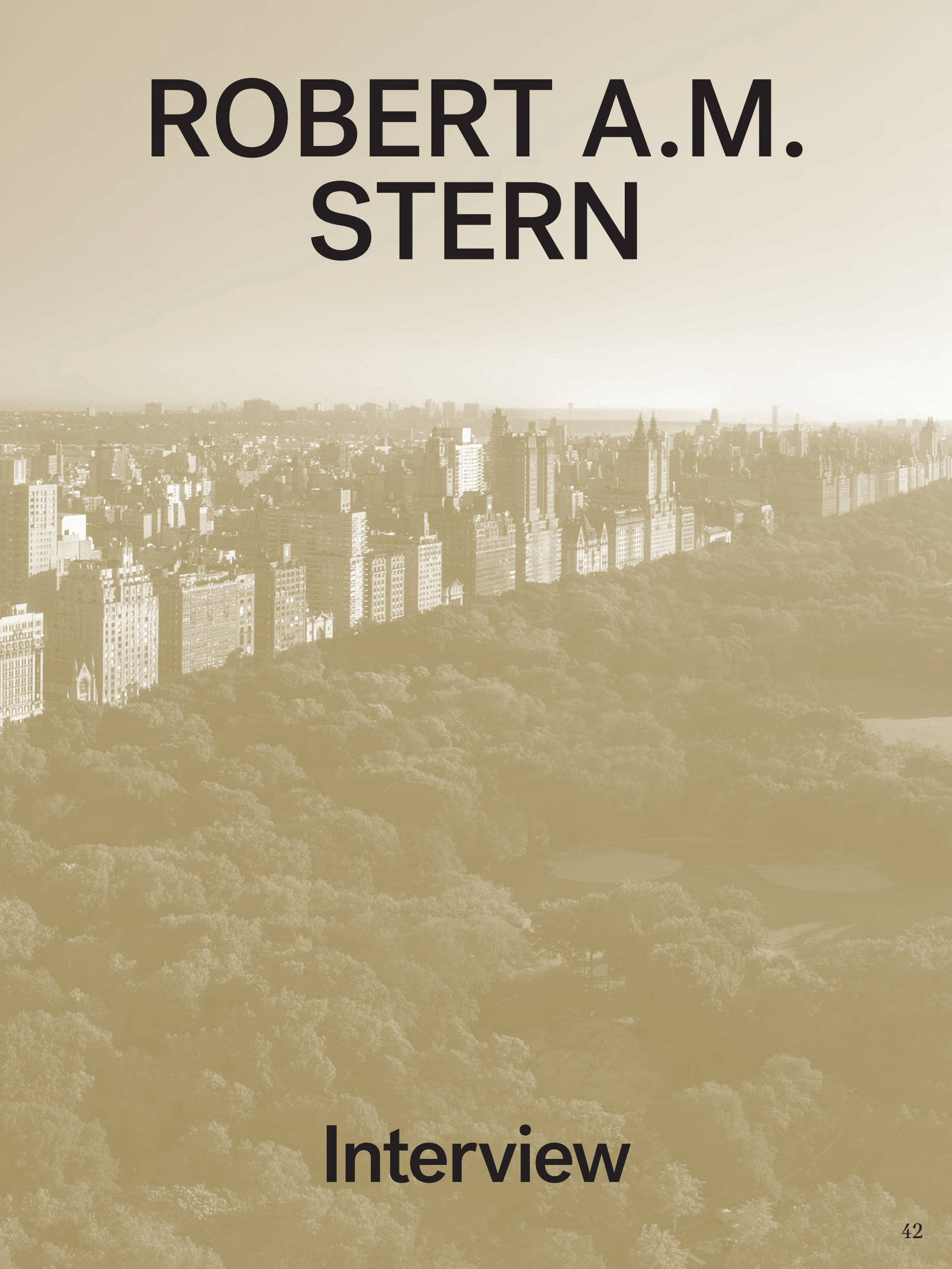
53 SHoP's three organizations (SHoP Architecture, SHoP Construction, HeliOptix) are examples of this type of organizational entity, as is SOM, which has similar divisions, including one for research.

54 Marx, *Capital*, 606, chap. 12, fn 2.; http://www.marxists.org/archive/marx/works/1867-c1/ch21.htm.

55 "Representing Knowledge Workers in the New Era," April 11, 2011, accessed April 6, 2013, http://www.aflcio.org/Blog/Economy/Representing-Knowledge-Workers-in-the-New-Era.

YMCA

ROBERT A.M. STERN



Interview

P47 Philip Johnson once said, "Architects should be born rich or marry rich." Is it true that one needs an outside source of money in order to practice architecture?

RS I was a student here in the early 1960s when I heard Philip Johnson make that remark. Philip was of course a famously flip fellow, very witty, but he was telling it as he knew it. It was made in the context of setting up a practice, which was different then. The profession was, up to the Second World War, always called a "gentleman's profession," with few women, and dominated by graduates of the Ivy League. These graduates were mostly upper middle-class kids to begin with. Johnson, of course, was exceptional, in that he was really rich as a result of a gift of stock from his father in a start-up called the Aluminum Company of America. After the Second World War, as a result of the G.I. Bill, things began to change dramatically. The G.I. Bill enabled young veterans to attend college, and some could come to a place like Yale.

I think the deeper meaning of Philip's quip is that to establish your presence as an architect it helps to have a stable source of income outside of architecture, because it's still dicey even if you have one or two small projects to work on. Maybe you have a dream of getting bigger projects, but what are you going to do in the meantime? Other things come along in life, and you still have to run your office, you still have to feed yourself, you still have to have fun.

P47 Were any other well-known architects in a similarly favorable position?

RS Architectural talent and the ability to keep food on the table are not the same. Take, for example, the case of Frank Lloyd Wright. Wright never had much money—coming from a middle-class family—and he owed money every day of his life until he died. Mies van der Rohe came from an even more modest background. His father was a stone carver. Mies invented his name, as you know. He was born Ludwig Mies, and he cobbled his mother's maiden name to his surname and added a "van der" to make himself sound upper class. Marcel Breuer was not rich. John Johansen was the son of a very prominent portraitist. In those days in the Beaux Arts system, you had status if you were part of such a socially accepted group, but I don't think there was a lot of cash sluicing about in the Johansen bank. Paul Rudolph was the son of a Methodist minister; there was no money there. Louis Kahn's wife was a medical technician. I believe she supported him during the entire period of the 1930s, when the Depression put most architects out of work. The 1930s was totally devastating to architects. If you were graduating from the Yale School of Architecture in 1929 or '30, you were looking forward to an amazing career. But by the time you got to New York or wherever you were settling professionally, the bottom had fallen out of the economy, and architects were perhaps the most hard hit of any professional discipline in that period. So Kahn was supported by his wife.

P47 What about Robert A. M. Stern?

RS Not a rich kid. Had a rich wife.

P47 Did that enable your first firm with John Hagmann?

RS The day John and I opened our little office, which was as modest as you could possibly imagine, above a bar on West 72nd Street, it was the day the market crashed in 1969. That was the beginning of "the '70s," with the oil embargo and runaway inflation, that taken together made it the absolute worst time to be an architect. Being married to someone with money was a nice cushion, no question. But I was also subsidizing the practice by teaching. Teaching is a wonderful way to grow as a young architect, but it takes a lot of time and energy, so you have to work doubly hard to keep your own practice, not to mention one's family. But I love to teach, I love to hang around schools, and so I never really took the downside into serious consideration.

P47 How does money figure into Yale's curriculum?

RS We talk about it here a little; I think at Harvard they do a little now as well. They more or less are following our lead in that. But in general it isn't discussed much in schools. Once you get out in the world, you'll meet architects who came from other places and think to yourself, *These people are completely naïve, they are clueless!*

P47 Since money is a primary concern in practice, what do you suggest young architects do to learn more about it?

RS I think that if a student is wise these days, he or she will work in an established practice and learn as much as possible before launching into independent practice. In other words, turn off the earbuds and listen to what's being said around you, try to be at every meeting, and keep pushing your superiors to take you with them—do whatever it takes to see what's going on, to learn, and to be aware. If you're going to sit and listen to music or the endless chatter of talking heads, you're not going to learn anything. You will say, "Oh, I'm sick of this job, I'm not getting anywhere." Well, you're not getting anywhere because the podcast is not where you should be going!

P47 Can you speak about getting commissions? To what extent is it important to be connected with people who have money?

RS The worst thing—the very worst thing—is to work for family. But sometimes, it's the only thing. If your family's not going to support you, who is? But not every family has the capacity to provide that kind of support.

Sometimes when you work for a university, you will get small commissions. Some universities will let you work

on campus, some won't. At Columbia, when Jim Polshek was the dean, he encouraged the facilities people to toss small commissions to the faculty. At Princeton, on the other hand, Michael Graves—who taught there for thirty-five years—was denied work because nobody on the faculty was allowed to have work at the university.

But then you also make connections! Wallace Harrison was an extremely interesting architect who was unfortunately not given his just due by the profession, except by Philip Johnson and Rem Koolhaas. He was very competent. He was not from a rich family, but his wife's sibling was married to a Rockefeller. He also got to know Nelson Rockefeller because he was Raymond Hood's second-in-command when Hood died in 1934, in the middle of constructing the Rockefeller Center. From then on, because of the personal relationship he developed with Rockefeller and his family, even after he and his wife divorced, he remained the Rockefellers' architect.

Previous spread and this page 15 Central Park West, New York City.

David Whitney, Andy Warhol, Philip Johnson, Dr. John Dalton, Robert A.M. Stern at the Glass House in New Canaan, Connecticut, 1964.

P47 Offices like SHoP have come under a lot of criticism for the close relationships they have with clients, taking an equity stake in lieu of fees for a development project, for instance. Is this a conflict of interest?

RS For a long time the profession frowned on so-called "commercial architects." The American Institute of Architects did not permit its members to have an investment in their projects until the 1960s. Design-build was not recognized until around this time either. John Portman made the architect-investor respectable again, shall we say. This model connects with the historical examples of the Adam Brothers' Adelphi Terrace, in London; Nash's houses at Regent's Park, in London; and Bulfinch's Tontine Crescent, in Boston. To understand the prejudice against architects as part of development schemes, you have to look back to the cliché of the "gentleman's profession."

P47 Do clients tend to look at the "image" of an architect's work when deciding whom to hire?

RS Not always. Some clients look for an architect who will basically crank out a certain type of building economically, efficiently, and with minimum hassle, someone who can get it through building departments and things like that. Sometimes developers will want a "signature designer" and also someone with certain technical expertise, so joint ventures will be created in service of the client's wishes. This has worked for me.

P47 How does money figure into the relationship with a client?

RS Do you know what "OPM" stands for? Other People's Money. As an architect, you need to know how to spend it. It's all very well and good to wave your arm and argue that this or that part of your design is essential, but the client has the money. So you have to negotiate that part of architectural practice—not money per se, but how to develop a realistic strategy for persuading other people how to spend their money and to make them feel you care about their goals.

P47 How do you convince them that what you're doing is worth paying for?

RS You have to believe in what you're doing to begin with. You have to make the client feel part of the process of developing whatever it is that's being designed, so that they are invested in it. That word, *invested*, is very useful. And investment in the project can also result in disinvestment. It may be that the client thinks it's no longer working, and you get fired. You have to face that. It's a traumatic experience, especially if you have just started your practice. You have to be good at sorting out your client's expectations in terms of his financial capacity. Too many clients have champagne tastes and beer budgets.

P47 What's the best way for an architect to work through this?

RS Be charming. You don't have to be born rich, or marry rich, but you have to have a little bit of charm, and there is no architect whose success we could discuss who lacked charm.

P47 What do you mean by "charm"?

RS Charm can't be defined. You know it when you see it. People regard architects in a certain way: they're more accessible to more people than artists are, because artists are so used to working by themselves that they're often not much fun to be around in social situations. Renzo Piano is far and away the world's most charming architect. I've watched him in action. Frank Gehry has a slightly grumpy charm. You can sit and talk to him forever about art, politics, architecture, movies, family. He's an interesting person. So the sly line between being an interesting person and charm, it's how you convey your personality—that is, if you *have* an interesting personality. And it's true with very, very many architects.

P47 What is good design? What is your design agenda?

RS Good design is one that takes what the client asks for and then goes a little further. Clients often have great ideas and want the building itself to convey a story. I'm working now on the Center for the American Revolution, near Independence Hall in Philadelphia. We did one scheme about six or seven years ago for a very different site at Valley Forge, Pennsylvania, and there, in the park, I persuaded the client to bury the building in the hill, to make a minimum intrusion on the site, and to say very little about the cultural or architectural heritage of the American Revolution. The new site, which we've been working on for about a year, is a stone's throw from Independence Hall. The client has been quite clear about its desires, pushing me more toward a more traditional design than I originally proposed.

As you establish your reputation, you begin to stand for some things. Sometimes you are stereotyped. I. M. Pei came from a rich family in China—his father was the president of the Bank of China—but all his sources of wealth were cut off by the revolution in 1949. So when Pei left Harvard, he did something that no highly educated, highly respected young architect had ever done: he went to work for a developer, William Zeckendorf. As a result he was ostracized from the profession because he supposedly compromised his artistic integrity. It took Pei years to get a break from the stereotype of being a "developer's architect." To do this, he went after the Kennedy Library with a particular vengeance, and he got the commission. I'm certain he was prepared to lose money on that job. So architects do have to make those decisions.

P47 To function in the red?

RS You have to invest in your own career. If you're going to run an architectural practice as a strictly bottom-line affair, you're probably doomed to mediocrity. That's not to say you should ignore the bottom line, but to do good work you have to factor into your business plan money that will be spent in developing your practice. That includes everything from overhead for support staff to "mad money" that allows you to go after potential jobs or enter into competitions.

So you need to look at money in relationship to what you're doing. Are you doing good work? Are you doing the kind of work you dreamed you were going to be doing? As you go along, you have to keep reassessing your progress. Someone once said to me that nobody with any brains goes along without a five-year plan that is revised every year. I'm not that obsessive myself, but you have to have some sense of your destiny.

P47 Your project at 15 Central Park West has been incredibly successful. Apartments there have sold for some of the highest prices in New York.

RS *The* highest price and the price per square foot.

P47 Why? Where does the value come from?

RS The success of 15 Central Park West was amazing to everybody, and gratifying. I think everyone involved thought it would be a success, but nobody realized just how successful it would be. There are many things that have nothing to do with me or with the developer—timing is one of them—but there are lots to do with the building. I believe the building's aesthetics caught people's imaginations. The perception of quality coming from the invocation of a long tradition of large masonry buildings in New York—the use of stone, the layout of the apartments, which are like those of the "prewar" era, as well as the amenities in the building and a host of other things, all come together to a make a desirable building. Maybe our design doesn't satisfy architecture students, or even architects who say, "Oh, it's so retro." But let's be honest, we live in a retro era. Some architects are nostalgic for an idea of the future that was popular generations ago; others of us are rooted in tradition.

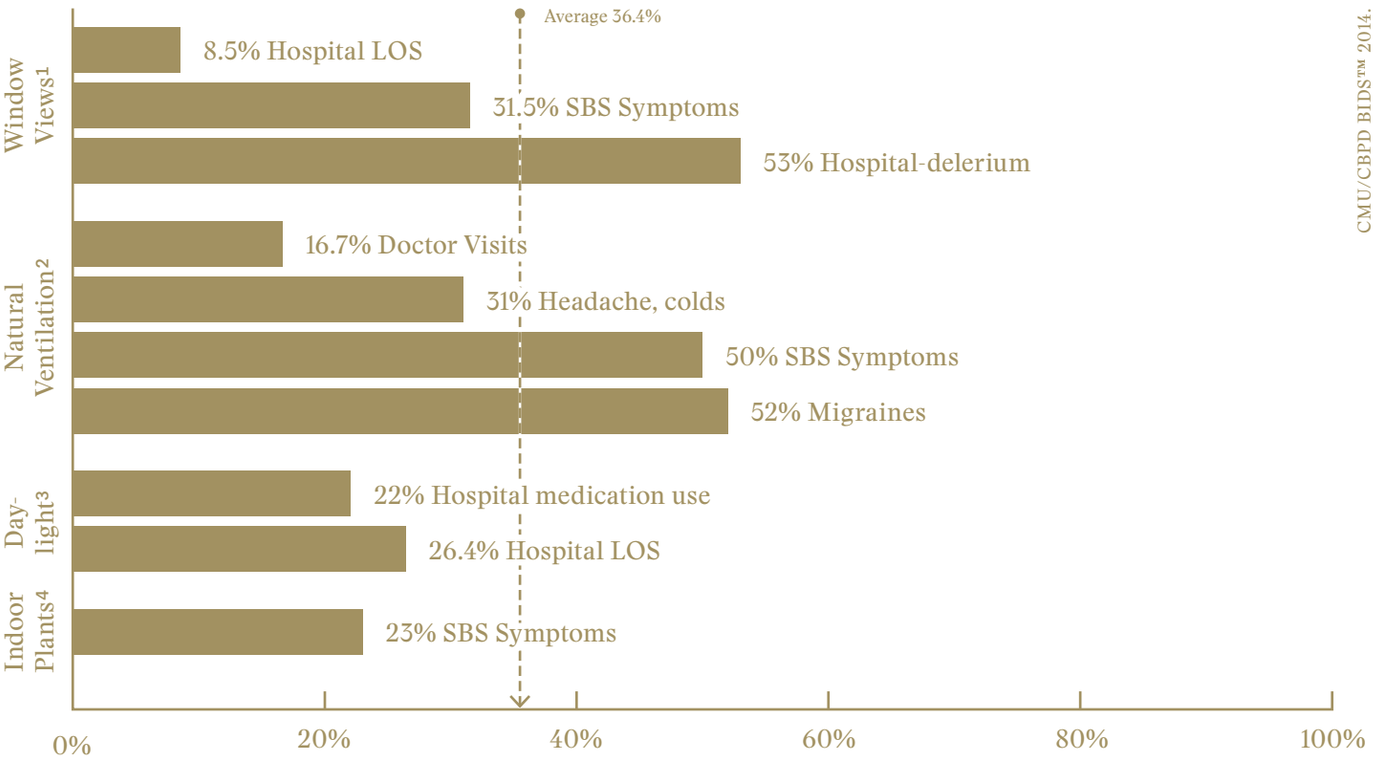
THE COST OF BUILDING TRASH

Vivian Loftness

Kieran Timberlake's solar shading façade, a part of the LEED Platinum renovation of the Sidwell Friends Middle School, Washington, DC.

For both schools (above) and hospitals (below), health and performance is directly tied to the quality of the built environment.

HEALTH GAINS FROM ACCESS TO THE NATURAL ENVIRONMENT



CMU/CBPD BIDS™ 2014.

1 Ulrich 1984, DOE HQ / CBPD 1994, CA Healthy Building Study / Mendell 1991, Keep et al 1980, Wilson 1972
2 Preziosi et al 2004, Kroeling et al 1988, Hedge et al 1989, Kelland 1992, Skov et al 1990, CA Healthy Building Study / Mendell 1991, Robertson et al 1990, Finnegan et al 1984, Graudenz et al 2005
3 Walch et al 2005, Beauchemin & Hays 1996, Benedetti et al 2001, Beauchemin & Hays 1998, Choi 2005
4 Fjeld et al 1998, Fjeld 2002

P47 What is the bottom line employed in building today?

VL We let least-first-cost decision-making drive new and renovated building design today. For some reason smart minds feel that dollar per square foot in construction cost adequately determines the value of the building and ensures its ability to meet purpose over time.

P47 What is the problem with lowest first cost?

VL This first cost per square foot approach totally ignores the long-term facilities, energy, churn, and human cost benefits of buildings. While the design team strives to keep these in mind, the client pushes for more square feet and amenities until the budget is fully shot. Value Engineering (VE) becomes necessary for reconciling the first-cost budget available with the building design and engineering choices, typically by diminishing both value and engineering.

P47 What do you say to the hardline developer who argues the time value of money and assures you that more money is available once the ship starts sailing but upfront money is tight?

VL I have a revealing exercise for the first-cost champions: I ask, "If you could buy a $10,000 car that gets you to work, why would you buy a $30,000 car?" What follows are volumes on the performance characteristics, material qualities, design advances, and Blue Book values that differentiate a $10,000 from a $30,000 car, and even a $60,000 car.

Then I ask, "If you could buy a $1,000 laptop that gets you on the Internet, why would you buy a $3,000 laptop?" This too yields pages of entries on the values of high performance, speed, design, and functional features on a superior laptop.

Then I ask, "If you could buy an office building for $100 per square foot, why would you buy one for $300 per square foot?" What follows is a remarkable silence. In the end, the three responses I hear are: location, big-name architect, and gold-plated finishes. None of the terms from the previous lists—ergonomics, environmental quality, Blue Book value—ever come up.

"How long do you keep a car?" Five to seven years, executives agree.

"How long does a laptop last?" Three to four years is the consensus.

"How long does a building last?" Thirty to fifty years, they answer.

Why do we differentiate and pay for quality in commodities we discard in three to seven years yet bottom-line the commodity that is supposed to last for fifty years? Instead we should let sustainability and longevity be the drivers, designing for change and avoiding redundancy. That way we can keep first costs in line while allowing ongoing investments to enrich the building. For example, a "value engineered" mechanical system will often go from fifty zones on a floor to as few as five—a bad solution for air quality, thermal comfort, and energy efficiency. Designing for change would establish a grid of thermal and air-quality service and allow the occupants to buy nodes of service over time with plug-and-play connections (just like your stereo system) to create a "rich" system. Your properties will no longer be least-cost or tight fit but value-added and flexible.

P47 Do you think the government should incentivize or subsidize good buildings? Do you think banks should give "life-cycle building" loans instead of "first-cost building" loans? What other considerations might there be in a "good-quality building" loan or a tax incentive?

VL The government's primary responsibility is to construct and maintain societal standards for health, safety, and welfare. They set the rules to ensure the quality of buildings through codes and standards, financial loan criteria, and disclosure laws. For example, dual fire stairs are a building cost that we mandate to ensure human safety. Indoor air quality, human health, and energy efficiency are all shared goals that government has a responsibility to define and where necessary to mandate.

The financial community and insurance industry also play critical roles in shifting our understanding of value, from first cost and cost per square foot to life-cycle cost and cost per occupant activity. If thirty-year residential loans were made based on mortgage plus energy, investments would increase for energy efficiency.

Today we are also highly influenced by peer pressure and branding. It is time to differentiate quality in buildings just as we do quality in cars, phones, and laptops. Disclosure laws could mandate that buildings have labels that reveal their energy use, just as cars have labels that reveal their mpg (and many other important quality differences). An attribute and quality label with comparable facts in every elevator would very quickly change our attitudes.

P47 What are the three bottom lines in "triple bottom line" calculations? Why should we move in this direction?

VL One way for us to capture value beyond first cost is to evaluate three bottom lines in our decisions: economic, environmental, and human. Even the first, the "economic" bottom line, goes beyond first costs to capture all of the known annual expenses for the duration of the "loan" in a net present value calculation. This would be a mortgage-plus-energy calculation but would also include all long-term economic costs for the building: taxes, insurance, maintenance, utilities, costs for spatial change, and so on. The insurance industry is beginning to provide preferential rates for more sustainable buildings—those with greater attention to indoor air quality related to human health, for instance—so these insurance "carrying cost" savings could go back into the quality of the building itself.

The second bottom line reflects our willingness to quantify the environmental costs of our design choices. Every kWh of energy, every gallon of water, every acre of green field or forest we use has an environmental cost that will come back as a real cost for future generations. The second bottom line puts a price on carbon, on power plant and traffic pollution, on stormwater runoff, and on new land (and the loss of agriculture and forests) to allow us to include these in an economic decision about our built environment. The calculation is kept as a separate bottom line so you can choose to weigh the costs differently, or governments can choose to tax the externalities for long-term sustainability and health.

The third bottom line is a calculation of the human costs and benefits of designing for quality. It calculates, for example, the productivity and health gains, such as reduced glare or better visual acuity, of investing in better lighting. If we invest in better air through improved mechanical systems or healthier materials and finishes, it calculates the reduction in asthma and allergies. If we invest in ergonomic furniture and desktop computing, it calculates the resulting improved speed and accuracy and the reductions in musculoskeletal disorders. These calculations rely on laboratory and field studies that have linked the quality of the physical environment to health and performance outcomes, supporting a net present value calculation that includes human factors. This calculation is also kept separate (three bottom lines to look at) so you can weigh the "believability" of the underlying studies and impacts on your business bottom line. Imagine, for example, the difference in the costs of attracting and retaining staff for a call center in a low-budget basement cubicle office as compared to a high-ceilinged shared workspace with exterior views.

P47 What needs to happen for architectural projects to be designed for all three bottom lines and for developers, owners, and architects to internalize this wider perspective?

VL The key is to actually complete a triple bottom-line calculation on a building. Even completing the first bottom line with the carrying costs of energy, water, maintenance, and churn (moves and changes), integrated with mortgage cost per square foot for the life of that mortgage, would be transformative.

P47 Can you give us a sense of how much money we waste on maintaining substandard buildings, or the cost of "throwaway buildings"?

VL The "true cost of ownership" should be inclusive of all economic and human costs (but not environmental costs). While one might have a mortgage of $20–30 per square foot for an office, the maintenance and change costs for that building will be at least $5–10 per square foot minus twenty-five percent of the mortgage. Moreover, the human costs for productivity and health are more than $200–300 per square foot, year after year. If we compromise the true purpose of the building—to deliver productivity—then by saving a dollar in first cost we have committed a tenfold mistake in the cost of doing business.

P47 Why do you think we invest more relative to the quality of our disposable devices, for example, than we do in our built environment?

VL Why do we buy expensive cars, laptops, and even smart phones when least-first-cost solutions will do the job? Perhaps it's because these industries have made it their job to clearly quantify the differences. Marketing campaigns in other industries trade on making hidden qualities obvious: "Intel Inside" or "2004 Audi A4 2.0 T Avant Quattro" embeds in the name the aspirated engine, the cylinder size, the all-wheel drive feature, the body type and age. The building industry has done comparatively little to differentiate quality beyond what is visible to the eye.

As the leaders in the building industry, we must quantify the measurable differences. Do we have a clue whether our building has an energy-efficient mechanical system with excellent filtration and an economizer cycle for air quality, separate ventilation, and heating/cooling with a high number of control zones for thermal quality? We should. In fact, we should know at least sixty important measures about the quality of our buildings the way we do about our cars.

P47 Can you give me a sense of the societal benefit of building to a higher standard? Is a building that lasts longer better? Or is it exclusively about how efficiently a building functions? What kinds of decisions do you see people making about buildings when they have internalized a triple bottom line?

VL The results are a vastly improved quality in buildings and communities with lower carrying costs, smaller environmental footprints, and superior human outcomes. Imagine a school building—new or newly retrofitted—built for thirty years of performance with mortgage plus utilities and maintenance costs per year that are cumulatively less than the mortgage alone for the least-first-cost alternative. The triple-bottom-line (TBL) high-performance school not only has reduced its electricity, gas, water, transportation, and even food demands—its ecological footprint—it has made this an integral part of the learning experience for kids in science, math, art, and social science. The regional gains from this school are tangible: fewer idling cars and buses, quieter mechanical systems, on-site stormwater management without flooding, and more. The triple-bottom-line high-performance school also has healthier, more productive kids and teachers—lower rates of asthma and allergies, fewer colds and flus, less noise for clearer communication, more physical activity, and an environment more conducive to learning.

Barclays Center, under construction. Brooklyn, New York.

GREGG PASQUARELLI

Interview

P47 What led you to start SHoP?

GP SHoP was founded entirely on the premise that there was a problem in the profession. We did not study architecture as undergrads, and we came into the profession a bit later in our careers. So we had a certain—I almost don't want to say it because we had a complete love for what architecture is and does as an art and science—amount of skepticism since we did not come up through the ranks. We were very surprised as we learned more about architecture, particularly at the way architects actually handle themselves. We found it a little bit… strange.

P47 What surprised you?

GP The cycle of stylistic consumption—the idea that a theory is taken from somewhere else, then translated into architectural and spatial ideas, then an aesthetic is attached to it, then it gets shown at MoMA, then three buildings are built, and finally it is discredited… then the next theory comes out. If you want to do that, then you should be a fucking fashion designer—it is more fun, and there are better looking girls. We just did not believe in that cycle. We saw architecture as a longer-term thing; we didn't think it should be hung up on style or aesthetics. So we came together not out of a similar stylistic conception but out of a conception of what practice should be and that the profession is broken. We are part of the profession, we respect the profession, and we love the profession, but we believe it could be so much better.

Architects are great generalist thinkers. We love theory and academia and thinking, but not as an end in and of itself. We love building and making stuff and using technology, but not as an end in and of itself. Bringing those two things together makes architecture really interesting for us. You should study a combination of philosophy and script writing and programming or Russian literature and finance to become an architect. That kind of broad thinking is inherent to the skills of an architect; it is what we are good at.

There are a whole series of issues that led architects toward trying to become specialists, which was the beginning of the end; we specialize in making the images that wrap buildings. Previously we were the master builders who knew everything; we knew history, theory, ideas, space, program, materials, aesthetics, art, construction, finance, and politics, but we gave away all of the risk so we have been relegated to just making images.

P47 Why were we giving away the risk?

GP In architecture schools they never taught you about money. They never told you, "Quite frankly, in the United States of America if you don't have equity, then you have nothing. Quite frankly, if you don't take risk you don't deserve reward. You have to take the risk or you don't get paid, that's it!" That's what it's about. That's capitalism.

Architects became more like lawyers, but even good lawyers take positions in the companies they work for. Investment bankers take positions on the things they work on. We started to pull away from that. We are the arbiters of style and culture and whatever—and that is important—but what makes us badasses is that we can do more. Yet we've made ourselves into wimps by making only images. Architects complain about low compensation, but we don't really argue against the status quo.

P47 Does SHoP hold equity positions on projects?

GP We have at many times, sometimes to great success, and sometimes to great failure. In the end we have probably broken even with our wins and losses. That's okay; it's not about making money. Making money is great, but it is not the goal. The goal is to recapture the territories we gave away. The goal is to have a place at the table where the decisions are really made. The goal is to be engaged, to take risk, to earn the respect of the businesspeople across the table, and to understand what they are dealing with as you advise them on how to run their company. That is what helped us get from a firm of fifteen to one hundred people—from a firm that does 50,000 square feet to one that does one million square feet—because we understand that side of the business.

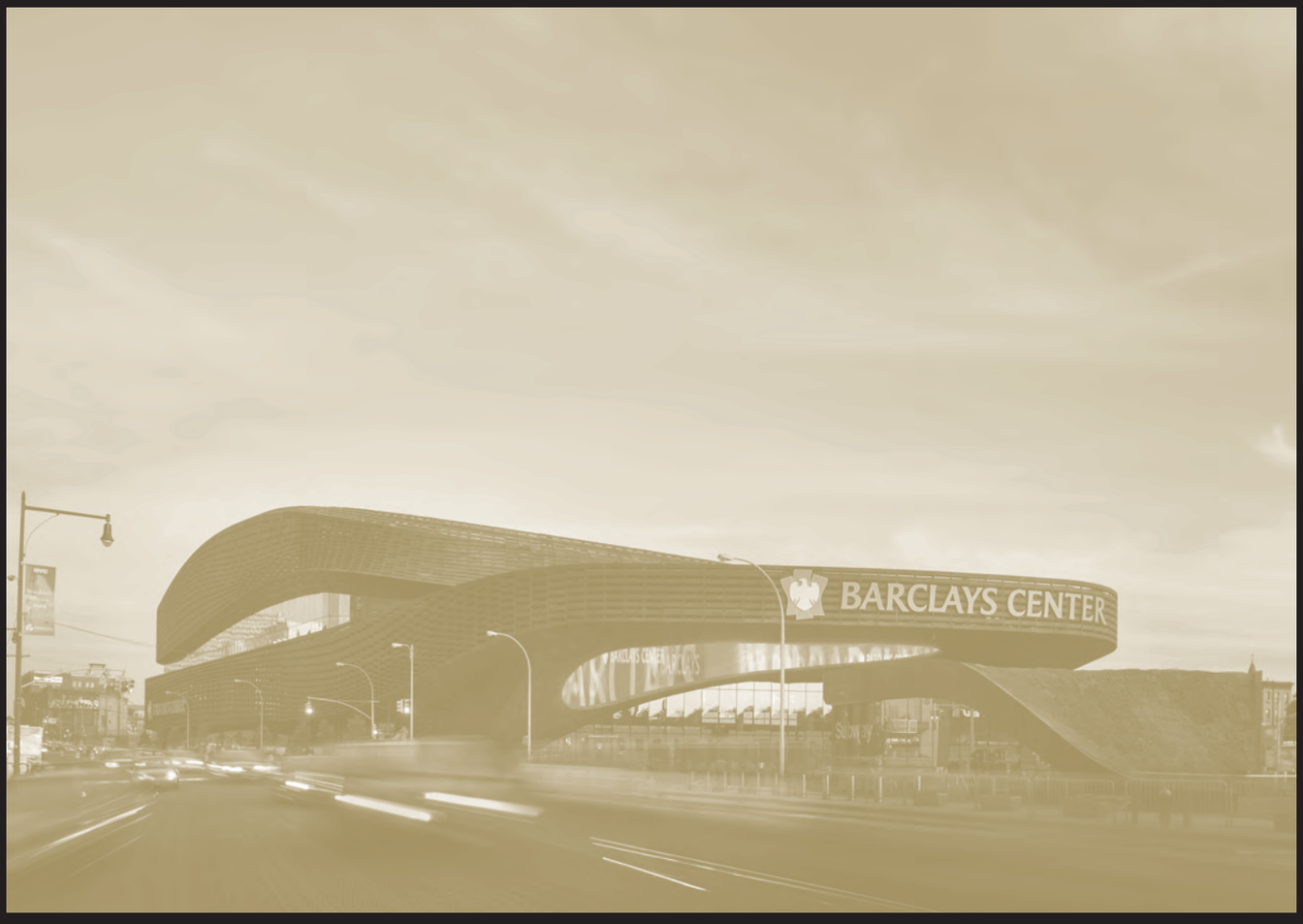
P47 How have you tried to "recapture the territories" architects have given away? Do you hire people who are generalists or bring more specialties under one roof?

GP Both. For the partners there is definitely the goal to be as generalist as possible. We ask that of our staff as well. We have also brought in and developed certain levels of expertise.

SHoP Construction, for example, employs twenty-five people with amazing construction experience and incredible digital expertise. SHoP Applications is another company that is starting to launch its own products for the next generation of what architects, builders, and developers are going to want. SHoP Architects designs buildings. We also have Helioptics, a company that is developing sustainable technology, including a dynamic solar curtain wall that you can see through. We have connections with universities and inventors; we have purchased intellectual property that we are turning into building products. We have architects in all of these different companies.

P47 Are these administrative divisions or independent entities?

GP They are actually separate companies, so there is no mixing up between them. Although everything was self-funded between the partners of SHoP Architects, they are independent entities.



Barclays Center, Brooklyn, New York.

P47 Do they work independently of one another? For example, does SHoP Construction take on jobs from other architects?

GP Yes. As another architect you can come to SHoP Construction and we will share all of the knowledge we've learned from the past fifteen years. The firm is also hired by other construction companies. For example, Turner Construction might hire them to help with the super-technical things. Other architects hire them. SHoP Architects hire them. The façade manufacturer on the Barclays Center even hired us to figure out the façade!

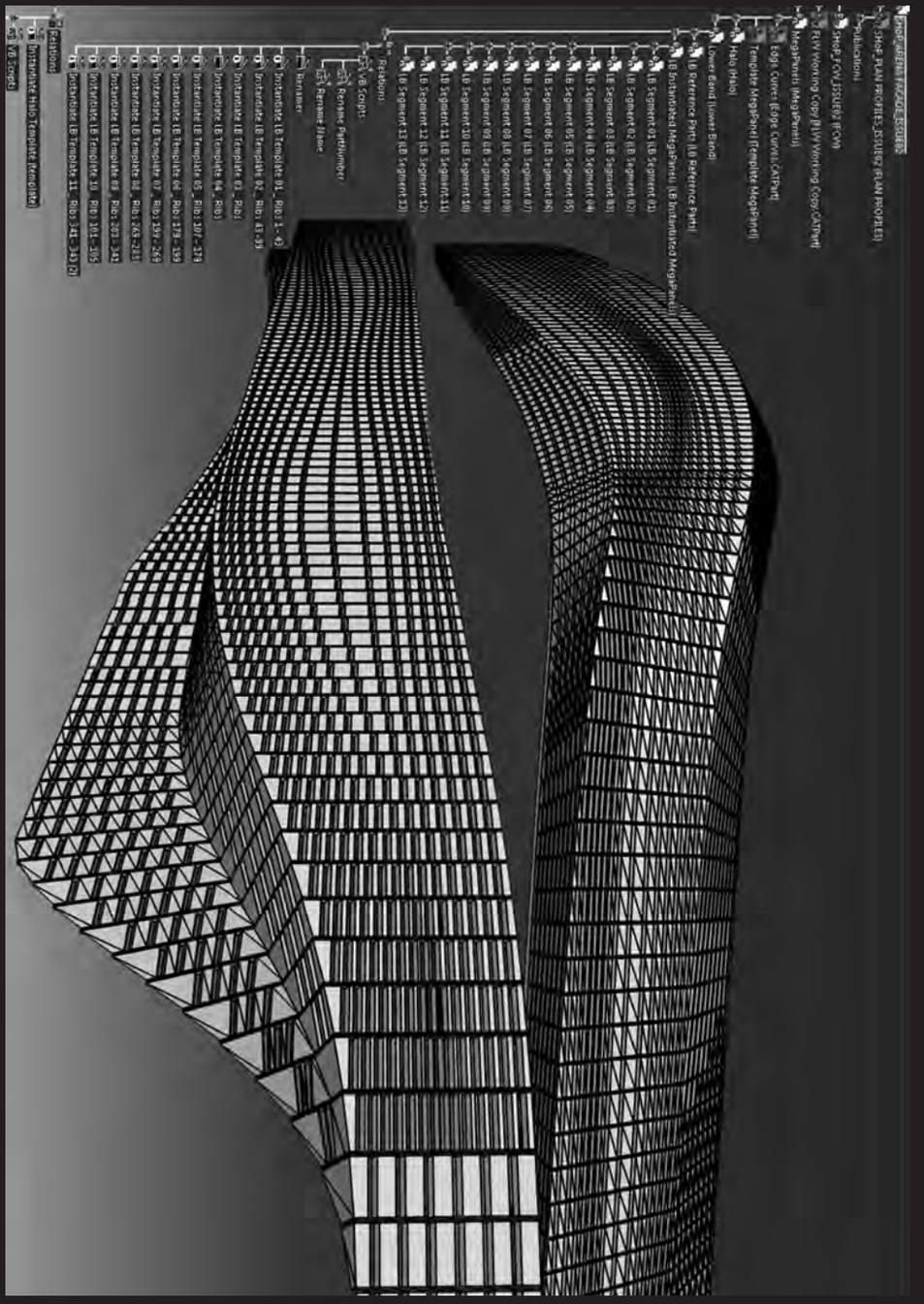
P47 When SHoP Architects is starting a project, do you consult with SHoP Construction (or another construction company) early in the design process? Is there any danger or drawback to thinking about construction early on? Traditionally the worry about working with contractors is that they will take the easy route. It's cheaper and easier, and it eliminates the tension.

GP We are not a design-build firm; that is for damn sure. We are not even close. We can do design-build, and we have done it for select clients, but that is not the goal. We actually allow that tension to occur in the meeting, but we try to solve it early, before it is a year down the road, and the result is that it gets value-engineered out of the project. We keep sixty to eighty percent of the ideas intact instead of losing the majority by the time we are battling it out with the guys in the field. Although the design-build model doesn't necessarily help with that, being in equity positions certainly does.

When we first took equity positions in some of our projects, I was teaching at Columbia. I was talking to my colleagues, who I have the utmost respect for, and they said, "Be careful, you are getting in bed with the devil. This is the slippery slope to hell. You are going to become one of those guys and take the easiest route." So I started to get worried. I had a meeting with Bernard Tschumi, then dean of the architecture school, and asked him, "Bernard, am I going to lose my street cred?" He said, "Don't worry about it, there have been lots of architects who have done this." He brought up Adolf Loos, who was mostly a developer.

We took the first shot with the Porter House. We did a lot of the work through a joint venture with one of our clients to pull it off. We couldn't sign for the loan because we didn't have the money, so we did all of the "sweat equity," then put money in, took a position, and executed the building. We found that the quality of the building design went way up. The second we got our skin in the game, the adversarial relationship across the table of "I'm trying to build this thing and this guy is just trying to

A few of the Barclays Center's 11,499 unique metal façade panels hanging in the factory, which subsequently arrived on-site cut and sequenced for installation.



Barclays Center, Building Information Model of façade panels.

SHoP Construction's iPhone app which was used to track the fabrication and construction of the Barclays Center's façade panels.

spend my money" totally changed. We were the ones saying, "No, you don't want to spend money there, you want to spend money here—this is where you will get value." On every project where we have an equity position, we get almost total design freedom.

P47 Why are most architects reluctant to have their skin in the game?

GP I don't know, and I really wish I could tell you, but it is a mistake. What is the worst thing that can happen if you take the chance? You lose money? You get exposed for not actually being able to do it?

P47 So you believe it is worth taking the risk?

GP Again, I have total respect for paper architecture and people who just want to design big buildings—architects who want to enter competitions to build museums in XYZ, in somewhere like Kazakhstan. Awesome. Great. I'm only saying that it is not the only way. There is a way where we are not relegated to the sidelines all of the time. Quite frankly, when you are just the designer you are missing out on a lot of the decision-making process.

P47 Do you take on more liability in when you hold equity? Do you open yourself up to more lawsuits, for example?

GP Probably, but our position has always been that the architect is sued whether at fault or not. Our very first lawsuit was a trip-and-fall on our first park in Greenport, where we designed everything perfectly to code. They sued us anyway. Our feeling was, "so what." I would rather be in control of this stuff.

Nonetheless, the number of lawsuits has been minimal; there have been three in the whole history of the firm. The plaintiff in the trip-and-fall had a long history of tripping, falling, and suing. Another case was for a marina we didn't even design. The third, for a detail of a façade where we were the façade guys, hasn't even gone to court. They will sue you regardless. But on all of the stuff where we took big risks, like the façade of the Porter House or the [Barclays Center], we haven't had any issues.

P47 Most lawsuits come from the contractor or the owner. If you guys are acting as contractor...

GP I should make that clear: we are not the contractor. We are more like CM advisory, digital specialist, façade detailer; we are like a specialist company that shows contractors how to do this amazing specialized stuff to save money.

P47 Do you think it would ever be possible to insulate architects from lawsuits?

GP No, but that is fine. When the owner thinks you have given them incredible value, you won't be sued. My partner told me that most lawsuits come with the last payments. Many clients try to get something out of the last dollars, but that has never happened to us.

P47 Have you experimented with integrated project delivery (IPD) or these other highly collaborative methods? How do you feel about them?

GP Yes, absolutely. I think IPD is great. That is another risk/reward system in a lot of ways. We set up our Google project so we would share in the savings between client, contractor, and designer. We went in for a guaranteed maximum price, and if we were able to deliver the building for less, then we would share it equally.

P47 That incentivizes being under budget, whereas the conventional fee structure privileges the opposite: if the project goes over budget, our percentage-based commission may increase slightly.

GP There is the idea that you can put your fee at risk, but you could also get bonuses or ownership points based

Camera Obscura, which was constructed entirely from digitally fabricated components. Greenport, New York.

on the way the building is delivered. Every project, just like every development deal, is different. They are all different, every single one. There are lots of things one can do to rethink the system. The owner-architect-contractor diagram is the worst drawing ever. Who wants to live life like that? I don't.

P47 Do your alternative diagrams manifest in contracts? Do you write your own contracts?

GP Yes. This is still the nascent period, and we are still trying things out. Three-quarters of what we try does not work in the end—but what do you really have to lose by trying? You end up back in that stupid diagram?

P47 Do you think these new paradigms are dependent on digital technologies? Could you still redefine the architect's role without Revit, CNC, or other advanced software? If you were a small firm that could only afford AutoCAD 2000 and an inkjet printer, would you be able to reassert control over the entire building project?

GP Camera Obscura was the first building where we made every part. No one is saying, however, that we will build the Barclays Center like that. Ninety-five percent of the arena is totally standard construction. You just find the five percent that gets you the biggest bang for your buck, and you do it that way. There is less waste on the parts that we do execute. We wrote our own app for the iPhone in which every single panel of 12,000 is tagged with a code system, and you scan it and a 3D model pops up, and everyone from Bruce Ratner to a guy with a wrench has access to the same information. That is the future—it has to be.

The technology creates the paradigm shift that allows for redefinition that could lead to a new power structure. One should try to situate oneself in that and exploit it both artistically and technologically. For me it is always about both: one needs to be the image maker and the master builder. It's the both/and situation that makes us interesting and important and valuable.

Can one do this manually? Yes. The Camera Obscura was done manually; it was 2002, so there was no BIM software. But I think the speed of the technology and the way it rapidly shifts the game allows you to take advantage of the redefinition.

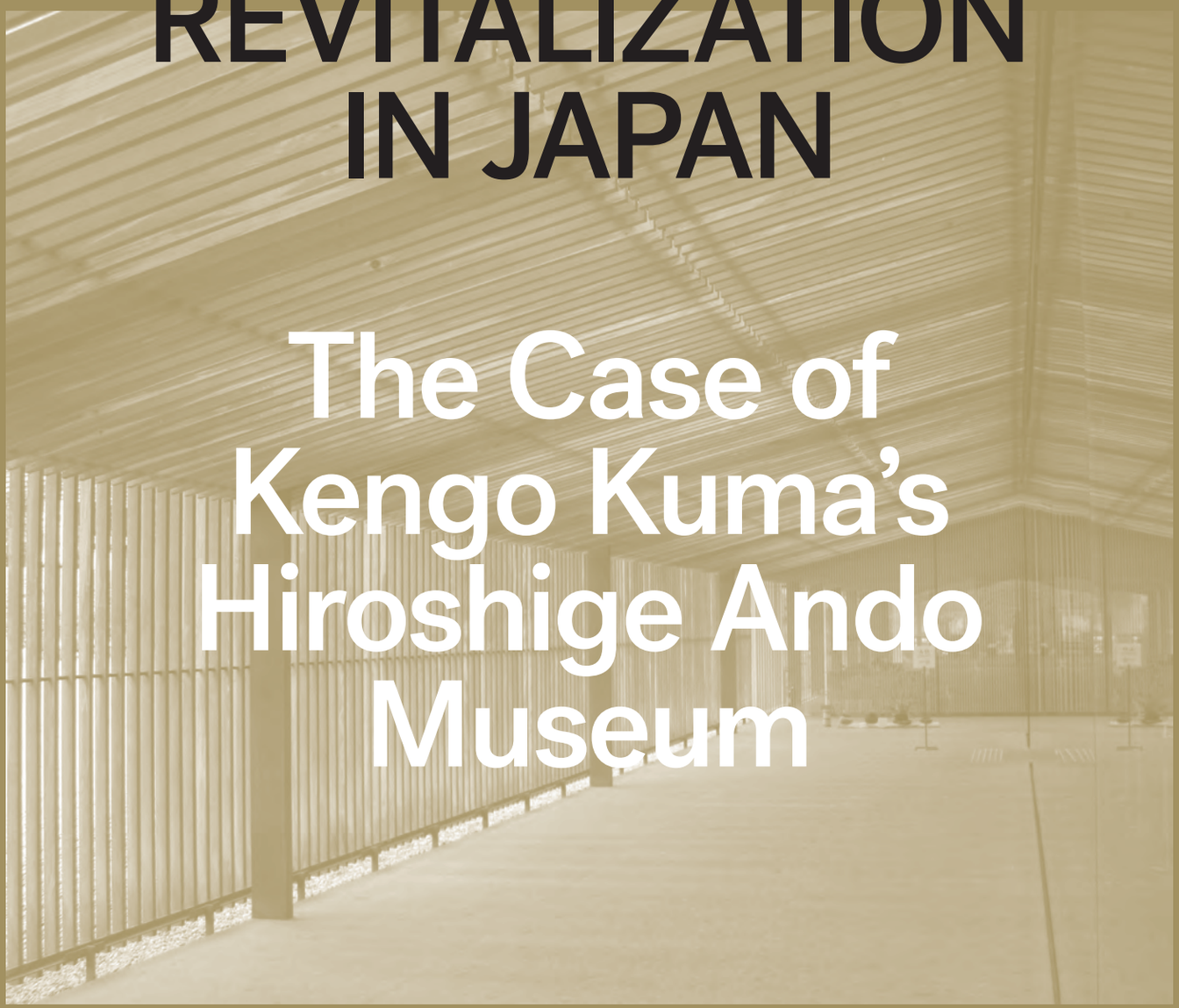
P47 And the profession really should capitalize on that redefinition...

GP We have so much to offer as a profession. I am a true believer in architecture. It is truly transformative of people's lives. But so few of the decisions are made by us as a profession, and we should be at the table. We can make little nudges that have a really big impact on people's lives. I really believe it.

Sustainability, for example—of course it is important. It is about using really smart materials and density, and linking to transit. It is about preserving open space and not perpetuating sprawl everywhere. It is about making super-efficient buildings that last a long time and aren't renovated every fifteen years. That is sustainability. Those decisions and policies are not at the table where we can have an impact.

When you go to get a mortgage and someone appraises your house, it is totally based on the size of your house. The bigger the house, the more likely you are to get enough money to buy it. They add all the stuff, and the whole system is gauged to make as much waste as possible. If there were architects on the board of HUD's Fannie Mae and Freddie Mac and all those places, they would say, "Give these people better loans if they have super-efficient housing," and we would change the world. But we are not at that table.

BUYING BRAND-NAME BUILDINGS FOR RURAL REVITALIZATION IN JAPAN



The Case of Kengo Kuma's Hiroshige Ando Museum

Mira Locher

In the late 1980s Japan's inflated so-called "bubble" economy appeared to be growing infinitely. Land prices soared and developers raced to gain notoriety with the largest (or sometimes wildest) possible buildings. Cranes dotted city skylines as new high-rise offices, residential towers, large cultural institutions, and commercial centers were constructed. Japanese architecture firms flourished, turning out buildings inspired by the chaotic urban fabric.

The dynamic energy of the cities was magnetic. Attracted by myriad employment and entertainment options, people moved to urban areas. The influx of people and the increase in disposable income of the middle class sparked the growth of the luxury goods market, in turn stimulating the already brand-centric economy. Designer goods were highly sought out, and luxury brand names were part of everyday vocabulary. "Japanese people appeared to have become thoroughly immersed in the business of defining themselves by means of the goods they acquired."[1] The latest must-have Tiffany pendants and Louis Vuitton bags were purchased as soon as they became available in the department stores of Tokyo and Osaka.

The times were good—unless you lived in a rural area. Once an agriculture-based culture and economy, Japanese society had become thoroughly entrenched in urban areas. As young people continued to leave the already depopulated towns and villages in search of opportunities in the cities, rural areas faced issues typical to declining populations. Despite the country's overall economic prosperity, the focus on urban development combined with Japan's negative population growth made it difficult to sustain rural businesses and schools. "Progress in the center does not automatically result in progress everywhere else... the lack of progress elsewhere ultimately compromises the power of the center to generate progress anywhere."[2]

In truth the problem existed long before the 1980s, although the era's bubble economy certainly exacerbated it. The shift in population—and government focus—from rural areas to urban centers had started in earnest after World War II, with the rebuilding of major cities. Government policy in the 1960s and 1970s continued to focus on urban commercial development, making Japan an economic powerhouse. "By the 1970s, the era of large-scale movement to urban areas was over, and by the late 1980s, the first generations to be born and brought up within the prosperity and security of the post-war cities were emerging into the economic world."[3]

This economic fame and its related rewards did not, however, reach very far into the countryside. Despite their strong name recognition and popularity, Louis Vuitton and Tiffany stores certainly were not sprouting up outside of urban centers—not even in the newly developed, posh seaside resort areas or the popular mountain spa towns. Meanwhile the purveyors of these luxury brands looked to move beyond their department-store counters into stand-alone shops. They started planning flagship stores in major cities, hiring big-name architects to design appropriately distinctive buildings. In turn, the architects commissioned to design these flagship stores for luxury brands (including Kengo Kuma[4]) developed both design prowess and growing brand power.

Meanwhile the rural areas suffered. Local industry declined, intensifying the scarcity of jobs. Entertainment options were few, and young people continued to depart for the cities. About seventy-five percent of Japan's population became based in cities, and by the late 1980s many mountain villages had lost more than half their population within a thirty-year time span.[5] To generally improve rural urban planning, Prime Minister Yasuhiro Nakasone, who served from 1982 to 1987, sought to take advantage of the local population's energy (rather than that of the government, à la American-style Reaganomics) to strengthen towns and cities and to create "identity architecture."[6] Most of these projects were in urban areas, however, while the few rural projects were improvements to existing historic areas to better express the town's "identity."

In 1988 the subsequent prime minister, Noboru Takeshita (who served from 1987 to 1989), initiated the Furusato Sousei Jigyou ("Hometown Creation Project"). In 1988–89 Takeshita awarded more than 3,300 cities, towns, and villages 100 million yen each (more than US$750,000) to fund projects of their choice that would creatively invigorate the "hometown spirit" of the area. The idea was to use the funds as seed money for larger projects that would gain publicity and "put the village name on the map,"[7] thereby enticing young people back to these rural areas. The town of Tsuna-cho on Awaji Island, for example, purchased a 63-kilogram gold bar both as an investment and for notoriety.

Although the Furusato Sousei Jigyou supported a great variety of projects that were intended to bring positive publicity to the towns and villages, local governments were careful to avoid using the money to construct buildings that would be seen as extravagant. Although brand-name goods were highly sought after, brand-name architecture, while appropriate for privately funded commercial buildings, was generally considered to be an improper use of public funds.[8] Most of the building projects catalyzed by the Furusato Sousei Jigyou followed the lead of many of the publicly funded museums built during the 1980s economic bubble: straightforward, bland *hakomono* (literally "box-object") buildings, in contrast to the sometimes overly creative privately funded buildings found in the cities. Yet a number of villages wanted to use architecture as a form of advertisement or identity through buildings incorporating more interesting forms. Older people especially wanted to draw youth with buildings that would foster local pride while

functioning within the village context. One method was to have emerging local designers create buildings with a local identity. Another approach was to emulate city designs, at the time characterized by the "impact of the image."[9] As a certain image became associated with a particular architect (Tadao Ando with concrete, for example), the commodification of architecture as a brand-name product quickly followed. Many of these towns relied on government funding, which broke with the typical thinking that government subsidies shouldn't be used for anything "excessive." However, the leaders of these villages believed that distinctive new buildings would create place identity and attract young people as well as increase tourism revenue.[10] Architect Arata Isozaki, who has played important roles in a number of revitalization projects throughout Japan, stresses the importance of introducing new ideas into a rural community, as with the continuation of the familiar routine "the energy of life is lost and the strength of the village inevitably weakens."[11]

The concept of strengthening a place by using distinctive buildings for "hometown" revitalization appealed to Japan's extreme brand consciousness of the 1980s. A building by a brand-name architect might create enough buzz to stir the economy and help revitalization efforts take root. Many rural areas, however, were not ready to depart completely from the familiar and looked for architects who could provide the stimulus of something new while connecting to the existing context. Botond Bognar, a longtime chronicler of Japanese architectural trends, notes in particular the architecture of Tadao Ando and Kengo Kuma, in which "the sense of a Japanese quality is unmistakable."[12] Since the 1980s both of these architects have been selected to design numerous buildings meant to help stimulate rural revitalization efforts. It is perhaps the perception of a "Japanese quality" in their buildings that makes them popular candidates for this type of project.

Previous spread Thin wood louvers enclose the space of the Hiroshige Ando Museum.
Above The Nakagawa-machi (formerly Batō-machi) City Hall is a typical box-style public institutional building.

Buying into the power of brand identity, towns and villages (and occasionally corporations) began hiring leading architects to design prominent buildings in their rural precincts. "As rural… Japan continues to depopulate, economic dependence on tourism grows,"[13] and this interest in and dependence on tourism sparked the use of brand-name architects. Many of the areas are difficult to access and far from the typical tourist routes—or at least they were when redevelopment started. For example, the island of Naoshima, where Tadao Ando completed the Benesse House Museum in 1992, when accessible only by ferry, and the town of Batō, where Kengo Kuma designed a museum to house a collection of woodblock prints by Hiroshige Ando in 2000, when accessed using public transportation from Tokyo, takes more than two hours each way. With this movement toward commissioning brand-name buildings to reinvigorate the local economy, the towns and villages banked on tourists making the effort to travel to out-of-the-way places to see a collection of art or artifacts housed in a building designed by a well-known Japanese architect. They hoped that jobs created by the construction and operation of a new building, as well as the cachet of the building itself would attract both additional development and younger residents.

In Japan's strong economy of the late 1980s, it seemed like this strategy would pay off. Many leading architects received commissions for such buildings, and despite the extreme downturn of the Japanese economy in the 1990s, the trend continued. The utilization of brand-name buildings for rural revitalization fell into two distinct categories:
1. buildings conceived to be part of a larger group of new buildings, and
2. single buildings designed with the hope that they would stimulate additional (but not yet planned) growth.
Ando's Benesse House Museum falls into the first category, while Kuma's Hiroshige Ando Museum falls into the latter.

The Benesse House Museum was the first building sponsored by the Benesse Corporation to display the company's art collection, as well as aid in the revitalization of the small island of Naoshima. It is now one of four iconic buildings in a complex bearing the distinct Ando brand. The success of the Benesse museum led to the creation the triennial Setouchi International Art Festival and the construction of a number of additional brand-name buildings (designed by Ando, SANAA, and

Above The Hiroshige Ando Museum (left foreground) is located on a slope at one edge of Nakagawa-machi.
Below The town of Nakagawa-machi (formerly Batō-machi) nestles between forested hills.
Opposite page Seating and interior of the Hiroshige Ando Museum.

others), as well as a vast array of site-specific artworks on Naoshima and other small surrounding islands. By 2008, in part because of the national "Cool Japan" campaign to promote regional revitalization through "creative cities," tourism in Naoshima increased tenfold over ten years, to 340,000 visitors.[14] In a similar effort to revitalize a rural area utilizing both public and private funding,[15] the Echigo-Tsumari Art Triennial (with buildings by leading Japanese designers such as Tezuka Architects, Hiroshi Hara, and Atelier Bow-Wow, as well as international architects like MVRDV) was inaugurated in 2000 and continues to bring contemporary art and brand-name architecture to the countryside.

Predating both the Setouchi International Art Festival and the Echigo-Tsumari Art Triennial, the Kumamoto Artpolis was started in late 1988 as a public-private venture. Originally established by Kumamoto Prefecture Governor Morihiro Hosokawa and produced by its first commissioner, Arata Isozaki (Toyo Ito took over in 2005), Artpolis projects designed by Japanese and foreign architects have been constructed throughout Kumamoto Prefecture. Brand-name architecture, as a "prominent form of culture that could be developed as a catalyst,"[16] was seen as a good investment serving "the common interest of the public" in both urban and rural areas.[17] Unlike the art festivals, Kumamoto Artpolis utilizes only buildings, not artworks or regularly occurring events, to revitalize areas. The strength of the program is in its variety and the number of buildings constructed.

Differing from the above examples are singular buildings designed by signature architects in rural areas, exemplified by Kuma's Hiroshige Ando Museum (now known as the Nakagawa-machi Batō Hiroshige Museum of Art). Although often part of an undefined plan for further revitalization, these buildings are relied upon to jump-start the failing economies of towns and villages. Expectations of the power of the brand are very high—but do they pay off?

The idea for a museum featuring woodblock prints by the famous artist Hiroshige Ando in the small town of Batō did not specifically grow out of the town's history. In 1995 Batō was given the collection of prints by the Aoki family after they discovered them in their storehouse, which was damaged in the Great Hanshin earthquake in January of that year. Although they no longer lived there, the Aokis had a connection to the town and donated the prints on the condition that they would be stored in a museum, for which they had two specific requirements: 1. the design should incorporate local materials as much as possible, and 2. the museum should connect with the downtown area to create a "civic core."[18]

Batō had been experiencing many of the difficulties typical of a depopulated rural town. At its peak in 1960 the population was over 25,000 people; by January 2001 it had fallen to about 14,200. Of the forty-nine villages in Tochigi

The Batō-in Buddhist Temple is one of the few traditional buildings in Nakagawa-machi.

The town of Nakagawa-machi (formerly Batō-machi) is visible through the museum's entrance space.

Long eaves extend the space of the Hiroshige Ando Museum out toward a bamboo grove.

Prefecture, Batō was ranked forty-seventh for the both the number of daytime visitors and its financial index.[19] There were few jobs to bring in people living outside the town and few amenities to attract tourists. Town leaders saw the museum an opportunity to jump-start Batō's revitalization efforts. Like many other towns, they focused on ways to attract young people and to increase tourism. A distinctive new cultural facility designed by a well-known architect exhibiting prints by a famous artist held great promise.

The total cost for the museum, including the land, building, and additional artworks for the collection, was projected at 1.2 billion yen (about US$9.8 million), to be split between prefectural and local governments.[20] Given that the town's entire annual budget for the 1998-99 fiscal year was only 5.6 billion yen (about US$46 million), the project was an enormous investment. Hiring a brand-name architect added to the price tag since buildings designed by well-known architects could cost as much as twice that of a comparable locally designed *hakomono*. But Batō was set on having a building with a unique design to aid in the revitalization process, and the Tochigi prefectural government gave 35 million yen (about US$285,000) to cover half of the design costs. To raise the remaining funds for the museum, the town created a foundation and solicited donations.[21]

The choice of a particular designer for the museum came from a competitive process in which a short list of architects created proposals for the building design. Inspired by a Hiroshige print of rain falling in diagonal lines, Kuma proposed a building enclosed by thin slats of local wood. Keeping the form relatively simple to stay within the given budget, he departed from the late 1980s *hakomono* "box-style" with a gently sloping roof of wood slats.

> I started wondering why they referred to architecture that they don't like as "box style" and decided it was because the buildings generally didn't have pitched or otherwise prominent roofs. I think the box has negative connotations because people actually like roofs: if a building has a roof, it actually encourages a sense of ease and comfort with respect to the building.[22]

This "sense of ease and comfort" inherent in Kuma's design was certainly one of the factors that led to his selection as the museum's architect. The building design is very contemporary, yet it does not vary much from the traditional regional architecture in its scale and relationship to the context. This familiarity combined with a contemporary design and the architect's well-known name made Kuma's proposal the best solution for Batō.

During the first month the museum was open (November 3 to December 3, 2000), it had 36,497 visitors, averaging 1,352 people per day for the twenty-seven days it was open during that period.[23] That is not only more than two times the population of the town, but exceeded the most visitors per day (797) in a five-year time period at the Tochigi Prefectural Museum of

Historic photographs of Batō-machi decorate downtown signage.

Above The approach to the museum from the town provides a view of the forest beyond.
Below The roofed museum entrance space frames a vista of the town.

Fine Arts, located in the prefecture capital of Utsunomiya, a city with much easier transportation access than Batō. Within the first two years the Hiroshige Ando Museum counted more than 214,000 visits (including many foreign architects, researchers, and media, as well as a number of ardent "Kuma-watchers," who blogged about their visits[24]), exceeding the museum's goals.[25] Kuma credited the great deal of publicity the museum received as the primary reason for the large number of foreign tourists who visited.[26] Many Japanese visitors came back multiple times to view the changing exhibits. So it seemed as though Batō's investment in a brand-name building might indeed get its revitalization efforts off the ground.

However, more than ten years after that record first two years, it is clear that the answer to the town's problems did not lie in the construction of a single brand-name museum. Although ideas for a "civic core" to connect the museum to the traditional downtown area had been part of the initial planning, few of those ideas were carried out. After such a large financial investment, the town undoubtedly had little money left to pursue additional construction. The museum continues to attract visitors, but the numbers have stabilized,[27] and the increase in tourism has not spawned great numbers of new businesses. Unable to increase its population significantly and following the trend toward the merging of cities, towns, and villages as part of the Heisei Dai-Gappei ("Great Heisei Mergers") starting in the early 2000s,[28] Batō merged with a nearby town and became known as Nakagawa-machi in late 2005.

So did the purchase of a brand-name building really pay off for Batō? In strict financial terms, it probably did not. Based on the number of visitors from the museum's opening through 2011, admission fees brought in about US$2.8 million.[29] Even including additional revenue from gift shop and restaurant sales, it would not yet be close to covering the US$9.8 million initial cost, let alone the running of the museum. As a case study of leveraging a single building by a well-known architect to jump-start rural revitalization, the Nakagawa-machi Batō Hiroshige Museum of Art is not unusual. Such buildings were not intended to be financial blockbusters but rather to stimulate economic growth and civic pride. However, the economic growth was thwarted by a number of obstacles: 1. the Japanese economy has never fully recovered from the bursting of the 1980s economic bubble, slowing economic development in Japan generally; 2. the population and economic base of the town were too small to sustain the momentum started by the construction and opening of the museum; and 3. a single building—however famous the architect—was not enough of an incentive to attract young people to stay in the town. The museum did not create enough critical momentum (or have the corporate financial backing) to trigger a "Naoshima effect."[30]

Although Batō (like other rural towns with single buildings by leading

architects) did not experience the desired economic growth, the Kengo Kuma brand probably did pay off as a means to increasing civic pride—expressing "identity" and invigorating "hometown spirit" as well as gaining international attention. The museum became renowned and understood as the symbol of Batō, and the town became known as a "museum town."[31] The current museum director, Shinya Ichikawa, believes that having Kuma design the building was good for both the museum and the town."[32] When asked what he thinks about the idea of architects as brands and the value of those brands, Kuma says he feels that branding is "okay" if it gets visitors to the museum, however, the issue is what kind of brand is portrayed. He understands that these towns do not want to be forgotten and believes it is essential that people understand and treasure the history of a place[33]—more than a Tiffany pendant or a Louis Vuitton bag.

1 Penelope Francks, *The Japanese Consumer: An Alternate Economic History of Modern Japan* (New York and Cambridge, UK: Cambridge University Press, 2009), 207.
2 Anthony Rausch, "Japanese Rural Revitalization: The Reality and Potential of Cultural Commodities as Local Brands," *Japanstudien* 20 (2008): 223-4.
3 Francks, 185.
4 Kengo Kuma designed the Tiffany Ginza store in Tokyo in 2009 and the headquarters for LVMH (Moët Hennessy Louis Vuitton S.A.) in 2003.
5 John Knight, "Competing Hospitalities in Japanese Rural Tourism," *Annals of Tourism Research* 23: 1 (1996): 166-67.
6 Nikkei Architecture, *Nihon no kenchiku 30-nen no ayumi, 1976-2005* (Tokyo: Nikkei BPsha, 2006), 19.
7 Nikkei Architecture, 56-57.
8 Naomi Pollack, "Face of the Town," *Metropolis*, January/February 1994, 45.
9 Botond Bognar, *Beyond the Bubble: The New Japanese Architecture* (London and New York: Phaidon, 2008), 24. The "impact of the image" refers to many buildings built in urban areas in the 1980s that responded to the chaotic context of the city with distinctive and unique forms.
10 Nikkei Architecture, 56-57.
11 Pollack, 45.
12 Bognar, 87.
13 Knight, 168.
14 Ministry of Economy, Trade and Industry, Creative Industries Division, "Cool Japan Strategy" (January 2012): 23, accessed July 30, 2012, http://www.meti.go.jp/english/policy/mono_info_service/creative_industries/pdf/120116_01a.pdf .
15 Susanne Klien, "Contemporary art and regional revitalisation: Selected artworks in the Echigo-Tsumari Art Triennial 2000–6," *Japan Forum* 22:3-4 (2010): 515.
16 Ari Seligman, *Architectural Publicity in the Age of Globalization* (PhD diss., University of California, 2008), 309.
17 Bognar, 20.
18 Kengo Kuma, "Kengo Kuma & Associates: Bato-machi Hiroshige Museum, Tochigi, 1998-2000," *GA Japan: Environmental Design 47* (November 2000): 72.
19 Ikue Suzuki, *Bijitsukan to Chiiki Community: Tochigi-ken Batō-chō wo Jirei Toshite* (Thesis, Utsunomiya University, Japan, 2002), 2, accessed July 26, 2012, http://gyosei.mine.utsunomiya-u.ac.jp/sotsuron/2002sotsuron/suzuki/sotsuron.html.
20 The prefecture contributed 600 million yen (about US$4.9 million), and the local government 535 million yen (about US$4.37 million), with the museum covering the remaining 65,256,000 yen (about US$530,000).
21 Suzuki, 11.
22 Edan Corkill, "Architect triumphs in defeat: Kengo Kuma's creations elevate compromise to artistry as he happily 'loses' to everything," *Japan Times*, October 3, 2010, 3, accessed online July 29, 2012, http://www.japantimes.co.jp/text/fl20101003×2.html.
23 Suzuki, 12.
24 E-mail interview with museum director Shinya Ichikawa, August 12, 2012.
25 Ibid.
26 Interview with Kengo Kuma, June 20, 2012.
27 In 2002 there were 50,664 visitors to the museum (Suzuki, 12), and according to the museum director, Shinya Ichikawa, 28,304 people visited the museum in 2009; 29,885 visitors in 2010, and 20,888 in 2011 (e-mail interview, August 4, 2012).
28 Anthony Rausch, "Post-Heisei Merger Japan: A New Alignment in the Dōshū System," *Electronic Journal of Contemporary Japanese Studies* (April 20, 2010), accessed July 30, 2012, http://www.japanesestudies.org.uk/discussionpapers/2010/Rausch.html.
29 The calculation is based on visitor numbers for the first two years plus an estimated annual average of 30,000 visitors from 2002-11 (see note 27) multiplied by the entrance fee of 500 yen.
30 "Naoshima effect" is a play on "Bilbao effect," a term coined after Frank Gehry's Guggenheim Museum (completed in 1997) successfully reinvigorated the economy of a neglected part of the city. Unlike Bilbao, Naoshima is an island with no large cities, and the "effect" is the result of a partnership between the local government and the Benesse Corporation. Since beginning in 1989, the partnership has continued to develop its collection of art and architecture (particularly buildings by Tadao Ando but also by other leading architects), as well as related educational and cultural programming, thereby revitalizing towns not only on the island of Naoshima but also on two nearby islands.
31 E-mail interview with museum director Shinya Ichikawa, August 12, 2012.
32 Ibid.
33 Interview with Kengo Kuma, June 20, 2012.

FRANK GEHRY

Interview

The following is an excerpt from the question-and-answer period after a conversation between Frank Gehry and Paul Goldberger at the Yale School of Architecture on April 12, 2012. The segment was moderated by Dean Robert A.M. Stern.

P47 Previously you mentioned the "marginalization of the profession." Could you expand on the pioneering work of your practice in terms of project delivery methods?

RS This is a chance for you to pitch "the technology."

FG Well, first of all, I created Gehry Technologies, which a lot of people won't adopt because of my name. I told the team to change it, but it has a brand identity, so they won't. But what I realized after a few particular instances was that we had a powerful tool and that whoever was in charge of that tool... For instance, when the contractor said he couldn't build Disney Hall, I was on top of him so fast he couldn't breathe. In fifteen minutes, I had him by the cojones. That guy is out of business now, and at the time he was the best contractor in LA.

I think you can manage pragmatic issues along with design and your signature if you follow the rules—and there are rules to the game. You have to really understand them and also who is playing each role. We found that with general contractors, when we give them the precise stuff, they are happy with it because they don't have to think about it. They don't have to think about their profit; they know how to put a price on everything. They know the quantities are accurate to seven decimal points, and they don't have to worry about issuing change orders because they get their profit from the knowledge, understanding, and safety they have from using these documents. It's pretty powerful stuff.

I've always had the dream that we should get the insurance companies that give us coverage to take into consideration the use of these tools. We now we have a tool where two hundred people can log on (in Revit or CATIA) and it leaves a record of who did what. So when something happens you can identify who is at fault and avoid the typical conflicts. I got brazen and wrote a letter to one of the biggest insurance companies in the world that said, "We're doing this, and I need some advice on the implications to someone in the risk business you're in." A week later the president of the company was in my office. It's a big deal to them too because of the risks in the building industry; anything that cuts back the risk is a good thing. If that pays off in the future, it will be a big deal for our profession.

There are a lot of niches like that which need tending to, like getting the approval process through the building department. The 777 and every aircraft since has been paperless; that's going to happen in architecture, and it *is* happening. Insurance coverage also needs to go from good to better. Right now architects pay a higher premium than contractors; we have to equalize these things and make it a stronger, more parental profession. We should have a course on that for anybody who wants to go there.

RS We do!

FG How come you never invited me?

RS Well, because you didn't sign up with Phil Bernstein until recently.

FG Ten or fifteen years ago, when we started this thing, Phil Bernstein said, "Stop it, Frank, you're never going to get anywhere with this."

RS Then he tried to buy you.

FG Well, Autodesk is now a partner, so that's been pretty good.

Opposite page 8 Spruce Street, New York City.

ARTHUR ERICKSON

Money, Media and Canadian Architecture

Michelangelo Sabatino

Arthur Erickson came of age as "Canada's Master Architect" in a particularly auspicious time for the development of modern architecture in the country, during the years leading up to its centennial celebrations, in 1967.[1] One of the first prominent Canadian architects to be born and educated in his native country (he earned his B.A. in Architecture from Montreal's McGill University in 1950), he honed a career that saw his status in Canada and abroad rise, fall, and—to a certain extent—rise again toward the end of his life. Erickson was born in Vancouver in 1924 and died in the same city eighty-five years later, building his career in the 1950s and '60s, an era that coincided with the rise of jet travel and the media industry. New media such as film, radio, and television dovetailed with an exponential growth in traditional media like print and photography. His coming of age in what Canadian communication theorist Marshall McLuhan described the "global village" would prove to have a profound effect on the organizational model and design process that came to define Erickson's professional practice and image, characterized by extensive travel, international networking, and the management of multiple offices.[2] Erickson was featured regularly in the Canadian (and international) popular and professional press and even posed for an Air Canada Aeroplan advertisement, published by *The Globe and Mail's Report on Business* magazine in February 1987.

Throughout his career Erickson strategically cultivated relationships with both the architectural press and mainstream media to boost his exposure and status, and ultimately to increase the ability of his practice to win prestigious commissions. In this way he crafted a public persona as one of Canada's most vocal and visible advocates for modern yet timeless civic and commercial architecture and urban design during the key decades in which the nation's major cities were expanding and transforming. Erickson received the most prestigious recognitions bestowed upon Canadian citizens: in 1973 he was appointed as an Officer of the Order of Canada and in 1981 he was appointed a Companion of the Order of Canada, which recognizes "outstanding achievement and merit of the highest degree, especially in service to Canada or to humanity at large." In 2007 Erickson was one of four architects to have a building—in his case, the University of Lethbridge main hall, completed in 1971—featured on stamps issued by Canada Post to mark the centennial celebrations of the Royal Architectural Institute of Canada. To commemorate the fiftieth anniversary of the University of British Columbia's Museum of Anthropology (1949–99), a new stamp was issued with Erickson's new building, completed in 1976, featured alongside Bill Reid's *The Raven and the First Men*.

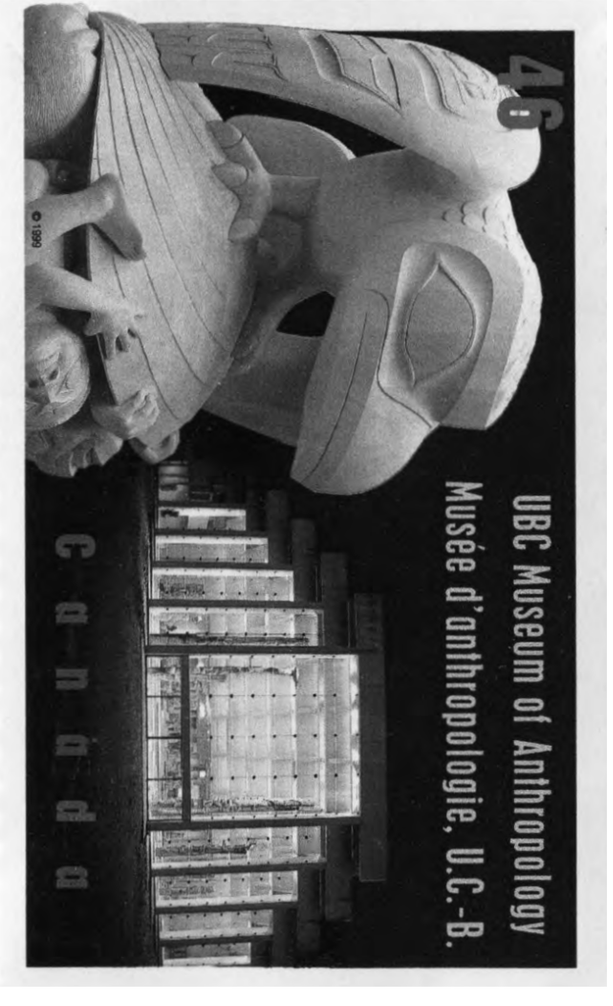
Through his example, Erickson transformed the identity of the architect in Canada from a technocrat to a public intellectual whose concern for the arts and culture were part and parcel of a new modus operandi. Erickson's professional ambition to elevate the level of practice and discourse both inside and outside his native country—he was the first Canadian architect to establish three permanent offices in Vancouver, Toronto, and Los Angeles—enabled him to generate considerable income while taking part of a jet-set lifestyle that eventually also came under scrutiny with a humiliating declaration of bankruptcy in 1992.[3]

As Erickson's finances waxed and waned, so too did his role in the media, in which he was at times portrayed as famous and at others as infamous. This changing relationship with the architectural press and mainstream media does not fully explain, however, why Erickson's important contribution to modern architecture and urban design has largely failed to register outside of Canada, even though influential critics and architects such as Ada Louise Huxtable, Philip Johnson, and Phyllis Lambert have championed his work.[4] Although a number of high-profile American journals—including *Life*, the *New York Times* and the *New Yorker* featured and discussed Erickson's contribution, it was in Canada, especially in his native British Columbia,

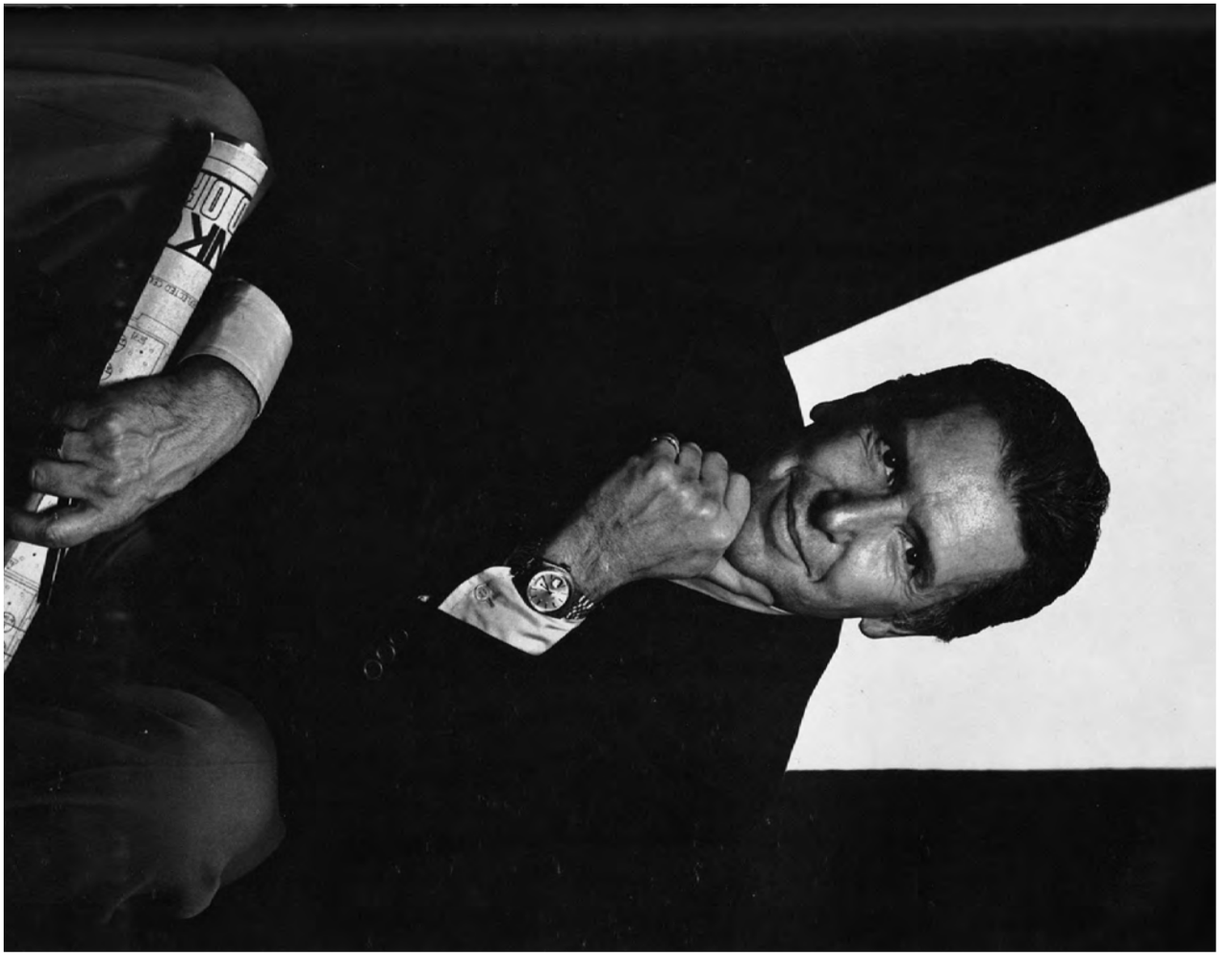
Previous spread Fig. 6. Arthur Erickson on viewing platform in his Vancouver house.
Above Air Canada, Advertisement.

Arthur Erickson, University of Lethbridge (University Hall, 1971); Stamps to commemorate the 100th anniversary of the Royal Architectural Institute of Canada (1907–2007).

Cover, "Arthur Erickson—Canada's Master Architect," *Time*, (Canadian edition), February 14, 1972.



Arthur Erickson, UBC Museum of Anthropology (1976) and Bill Reid, *The Raven and the First Men* (1980); Stamp to commemorate the 50th anniversary of the UBC MOA (1949–1999).



Arthur Erickson, in *Karsh Canadians* (1978), by Yousuf Karsh.

that he achieved his greatest following. There the visibility of his most outstanding work—such as Robson Square, Simon Fraser University, and the Museum of Anthropology—has assured that his legacy would remain intact.

To be sure, Erickson's relationship to media and money was a complex one that changed over time. He identified with the

42

PROFILES

SEVEN STONES

ARTHUR ERICKSON is a witty, semisynthetical, not at all humble Canadian architect, who has performed the sizable feat of adorning the North American landscape with some of its most admired structures while remaining almost unknown in the United States. At present, he is reconstructing the center of a major North American city, Vancouver; and assorted other current projects of his include a new concert hall with an acoustical ceiling of superfrisol cylinders in Toronto; a ski condominium in British Columbia; plans for a new town, to be called Fiatas, in Kuwait; for several large buildings in Saudi Arabia; for a performing-arts center in Calgary, Alberta; for a pharmaceutical plant in England; for a cedar house to be shipped in a building kit to Germany; for additional touches to his handsome, unorthodox Museum of Anthropology, at the University of British Columbia; and, finally, for the opening of an office in the Orient, preferably in Peking. The Erickson work that first caught the world's attention, more than a decade ago, was his design for Simon Fraser University—a dramatic, low-lying concrete megastructure that hugs the ridged summit of Burnaby Mountain, in British Columbia, against a scenic backdrop of snow-covered peaks, which it shares with Vancouver, its nearest neighbor. Tagged "the instant university," because it was conceived and completed in two years by Erickson and his then partner, Geoffrey Massey, working with four other firms, Simon Fraser (named for a noted Canadian explorer) is faintly reminiscent at a distance of a Greek acropolis, and has a beauty that has prompted another Canadian architect, Bruno Freschi, to predict that it will make an elegant ruin. The *Times* critic Ada Louise Huxtable, who made a special pilgrimage to Simon Fraser several years ago, declared it a "remarkably impressive experiment in academic architecture" of "edifying brilliance." Viewing the several university buildings as one structure, she pronounced the unifying device, a glass-roofed central mall a quarter of a mile long, "one of the more magnificent socio-architectural spaces of recent years."

Paul Rudolph, former chairman of Yale University's Department of Architecture and today an eminent New York architect, regards Erickson as Canada's best architect. "He's one of the most distinguished architects living," Rudolph says. "The Canadians are showing good sense in Vancouver. No United States architect of comparable stature is rebuilding a major city center."

Erickson has the admiration of such other establishment luminaries as Philip Johnson, *grand seigneur* of American architects, who said recently, "Arthur Erickson isn't one of the smart young men—he's not their generation—but he is by far the greatest architect in Canada, and may be the greatest on this continent."

I wanted to ask Johnson the question I had put to myself not long before in British Columbia, standing at the entrance to the great mall of Simon Fraser, with frosty mountains to my right, the gleam of the Pacific Ocean to my left, that light, piping wood in a Mozart sonata from the flute of an unseen student floating in the air. I had looked down a dazzling series of stairs and landings where sunlight and shadow added design within design, stairs flowing to levels of space flowing into the lengthy sweep of the mall, half covered by a long roof of trom-supported glass that continued to its sunny distance beyond my vision—the whole suggesting by its grace and freshness such creative versatility that I had to know at once who the architect was. When I returned to the United States, I found the name Arthur Erickson quite unknown as color non-architects, as it had been to me.

"Why?" I asked Johnson. "It's a question of acceptance," he replied. "Erickson's a Western architect, and, what's worse, he's in British Columbia, which is a province of a province to us. In architecture, there is always a problem we are trying to solve. In the twenties and the fifties, it was the skyscraper. In the sixties, we expressed our talents in new campuses, and Simon Fraser was the best. Its spatial arrangements are incredible. A centering device is not new—the Greeks had their temples, the Romans their circuses, and in medieval times it was the church—but the vastness of the covered mall at Simon Fraser University is the best symbolic central device for a campus I know of anyplace."

ERICKSON, a youthful man of forty-four, says, "Where I am or who I am is no concern of mine. I am concerned with what our civilization is all about, and expressing this in buildings. Everything I do, everything I see is through architecture. It has given me a vehicle for looking at the world. I am not involved in the aesthetics of architecture or interested in design as such. I'm interested in what buildings can do beyond what they look like, and how they can affect what

Edith Iglauer, "Seven Stones," (Profiles) *The New Yorker*, June 4, 1979.

image of architect-artist more than that of architect-entrepreneur. This likely underlies his preference for managers rather than partners in his various offices. Maintaining ultimate control over the creative process seems to have mattered more to Erickson than empowering partners. He shared little with John C. Parkin and John B. Parkin, whose "collaborative and corporatist" approach, modeled upon Albert Kahn's firm in Detroit, transformed the Toronto-based Parkin practice into Canada's largest during the 1960s and '70s.[5]

Many twentieth-century architects have seen their careers fluctuate negatively in response to strained financial circumstances outside of their control or critical responses from laypeople and professionals to their newly completed buildings. Not unlike his self-elected mentor, Frank Lloyd Wright, to whom he attributed his decision to study architecture, Erickson projected an image of a worldly, elegant, and at times controversial architect, especially in the popular media. Yet the controversy with Erickson, especially during the 1980s in the years leading up to his bankruptcy, and the perception that he was wealthy came about not because of his fame but because of his highly visible extravagance, coupled with his office's dwindling finances and the resulting frustrations of staff, suppliers, and other stakeholders. Amid a whirlwind of innuendo, the soft-spoken, elegantly dressed Erickson continued to practice. He lived in a former garage on a double lot in Vancouver's west side (Point Grey), which he had skillfully transformed into a modest-sized house with a mesmerizing garden. Perhaps to offset the growing perception of his out-of-control spending, and more poignantly as a self-reminder about his modest middle-class upbringing, he often mentioned his home's humble origins in media interviews.

Erickson's high media profile came at a relatively early age for a profession whose members typically require many years to gain renown. He was only forty-eight when he made the February 14, 1972, cover of the Canadian edition of *Time*, alongside an image of Simon Fraser University and a heading describing him as both "Superstar" and "Canada's Master Architect." [Fig. 1] Erickson has also been the subject of several documentaries, sponsored by both publicly funded and private Canadian broadcasters, a breadth of coverage conferred on no other architect in Canada.[6] A Hollywood turn of events led Erickson to serve as the real-life model for the protagonist of the film *Intersection* (1994), in which an architect named Vincent Eastman (played by Richard Gere) designs a Museum of Anthropology (Erickson's real-life design).

Erickson gradually became Canada's main public commentator in both domestic and international media. This media coverage, coupled with his alliance with Pierre Trudeau (Canada's prime minister at the time) fueled Erickson's ability to acquire commissions. In fact, his "Man in the Community" and "Man and His Health" pavilions, designed for Expo 67 in Montreal, his award-winning Canadian Pavilion for Osaka World's Fair of 1970, and the controversial Canadian Chancery in Washington (1986–89) were all governmental commissions received while Trudeau was in power. In 1972, the same year Erickson appeared on the cover of *Time*, Prime Minister Trudeau emerged as an advocate for Canadian architecture and urban design

when he introduced a special issue of *Progressive Architecture* dedicated to his country:

> I believe you will find that Canadian architecture has an unpretentious quality and reflects the diversity of its people and its climate. As our cities grow, we shall demand of our architects a sensitive interpretation of society's needs as well as the eloquent architectural statement. The day of the individual building in isolation is over; our concerns are in building communities that offer enrichment and increased choice to their citizens. More and more our friends in the United States of America are discovering that although we share a continent we differ in many ways.[7]

Erickson's professional practice expanded rapidly as it shifted from predominantly site-specific houses in the Pacific Northwest to large-scale public buildings such as university campuses and governmental offices. He understood the importance of strategic alliances between governmental leaders and individuals in the private sector, as well as of effective communication with the general public. The gentle demeanor Erickson displayed in public interviews belied his fierce professional drive and determination. A window into his charming yet combative personality can be seen in a portrait taken by Armenian-Canadian photographer Yousuf Karsh (1908–2002), published in the *Karsh Canadians* collection in 1978. Tellingly Erickson was the only architect to be featured. The photography session took place in Karsh's Ottawa studio, in the neo-Gothic Château Laurier hotel, near Parliament Hill, the country's seat of government. In the photograph, an image of wealth is projected through Erickson's impeccably tailored suit, conspicuously placed Rolex watch, and other carefully selected elements. He props up his head with one hand and holds a roll of Bank of Canada drawings in the other. At the time of the portrait Erickson was engaged in the design of the bank's new headquarters in Ottawa, on a prestigious site between Sparks and Wellington Streets. The architectural drawings consciously emphasize his status as an architect. By comparison, Karsh's 1958 photograph of Frank Lloyd Wright displays neither conspicuous status symbols nor elements that allude to his identity as an architect.

More than vanity or narcissism, Erickson's desire to appear impeccably dressed and in control of his image was part of a self-conscious plan to increase his stature in order to advocate for high-quality architecture in the public realm. The Bank of Canada commission was highly significant for his professional image and career strategy as his practice continued to grow and to accommodate large-scale civic buildings and sites. More importantly, he understood that bankers held a lot of power and responsibility for the built environment. He believed they could invest money in transformative projects to improve cities and the lives of ordinary citizens. In his address to the Institute of Canadian Bankers in 1972, Erickson asserts the following:

> I have come to plead, also, for the comprehensive approach as the most urgent issue facing us today. We can no longer afford the short term and limited view of things because of the broad impact of the consequences of our decisions. You, as bankers, cannot afford to be concerned with only the economic aspects of projects that you finance. There may be serious implications on the natural environment, on the urban environment, on human culture, which at some future time may even be considered crimes against mankind. … As lending institutions, you have enormous power over development in this and other countries, and with that, an enormous responsibility.

Erickson's three-block reflective glass curtain walls and copper-clad scheme for the bank headquarters resists the object-building model and pushes the boundaries of contextually sensitive design.[8] The final scheme conveys not only innovation but also sensitive integration of the existing modern classical building, realized in 1938 by the Toronto firm Marani, Lawson & Morris. Erickson designed two light-filled atriums to flank the existing building and animated them on the ground-floor level with an interior landscape that recalls the 1968 Ford Foundation Headquarters, by Kevin Roche and John Dinkeloo. The Bank of Canada is located in a historic neighborhood near the Gothic Revival Houses of Parliament and Sparks Street (Canada's first pedestrian mall, evocative of Victor Gruen's Kalamazoo Mall). Erickson deployed a sloped façade that abstractly recalls the profile of the copper-clad mansard roofs of the Parliament and surrounding buildings. Despite the building's critical acclaim, Erickson did not receive any more commissions in the nation's capital.

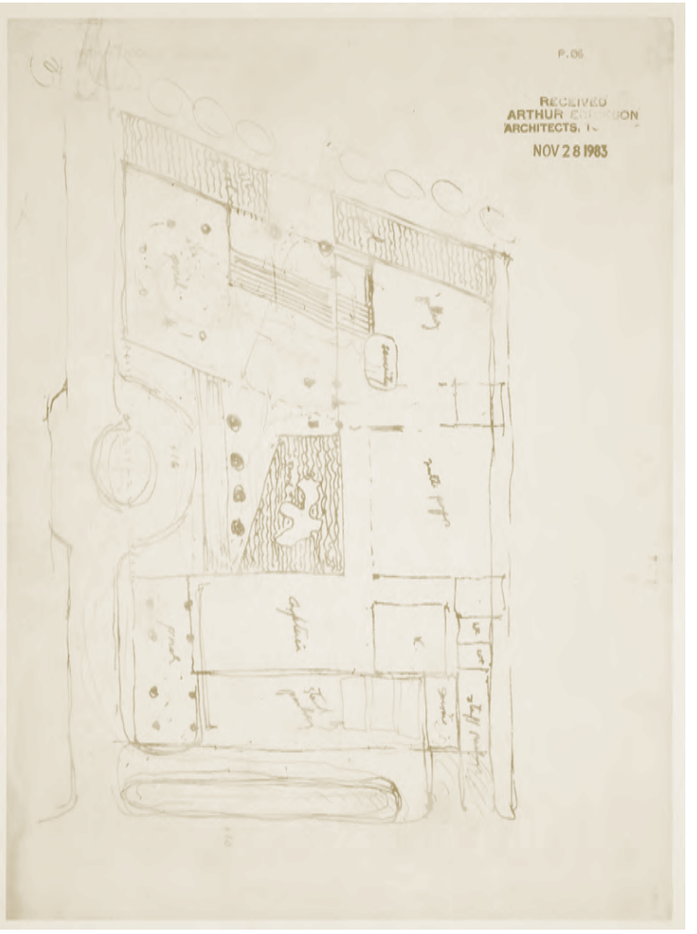
The American capital was a different matter. In the early 1980s, when the Canadian government decided to commission a new chancery for Washington, Erickson's national and international prominence was at its peak, stoked by his constant media presence. Prime Minister Trudeau overruled the chancery selection committee, which had chosen another architectural firm for the project, and gave the commission to Erickson. By the mid-1980s Erickson directed offices in Vancouver, Toronto, and Los Angeles. In 1986 he was awarded an FAIA Gold

Medal; he was the first (and so far only) Canadian architect to be so honored.

The Arthur Erickson Archive at the Canadian Centre for Architecture contains materials ranging from preliminary sketches to models and presentation drawings.[9] These artifacts speak to Erickson's continued embrace of innovative new technologies to facilitate his increasingly complicated professional practice. Among the most unusual of the documents is a sequence of seven faxes that was sent with Erickson's sketches of the various floor levels of the Chancery. His Toronto office oversaw the project, so Erickson probably executed the seven sketches on the five-hour flight from Toronto to Vancouver. Since the heading reads "Arthur Erickson Vancouver," it seems that upon arrival he asked his office assistant to fax the sketches to the Toronto office; the faxes are stamped: "Received—Arthur Erickson Architects, Toronto, November 28, 1983."

Erickson always traveled with a pad of 8 ½" × 11" vellum paper. These original sketches of the different floor levels of the Chancery, beginning with the underground level and ending with the top floor, hosting the ambassador's offices, were most likely drawn over a site plan and photocopied before being faxed. What makes these faxes of scholarly interest is what they reveal about Erickson's global professional practice. As Erickson began traveling regularly between his three offices, employing a fax machine on a regular basis became increasingly necessary for staff-to-staff communication. In 1981 Erickson discussed his peripatetic lifestyle and the importance air travel played in his creative process in a convocation address given at the University of Lethbridge, on the campus he and Geoffrey Massey had designed a decade earlier:

> Though I am an architect by profession, I am a wanderer by circumstance. Since weekly I pass through a time zone change of a minimum of three hours and have been doing so for many years, my constitution makes none of the usual demands for regular intake of food or hours of sleep. Divested of such routines it seems to slip into the time slot of each destination with ease. Moreover, in the five hours of transcontinental travel which I undergo three or four times each week, I float in marvelous detachment from the electronic earth systems that extend our range of sensory experience and communication to the world's remotest corners. For those hours, cut off from all such worldly involvement such as the telephone, I return to myself again, and on the one-by-two-foot table in front of me, allow myself to dream. I return to a state of almost original bliss.



Arthur Erickson Associates, Fax, November 28, 1983.

Erickson's candid and somewhat nostalgic account of the distraction-free hours he spent at the "one-by-two-foot table" reveals how opportunity for design thinking was increasingly undermined by his competing responsibilities. Reading between the lines of Erickson's convocation address, one might question whether he could meet the challenges of managing and financing his three offices while maintaining a level of engagement and a standard of excellence that had distinguished his earlier production.

Upon its completion in 1989, the Chancery in Washington received mixed reviews in both Canadian and American media. For example, Paul Goldberger's review in the *New York Times*, on July 9, 1989, described the building as an "odd mix of the grandiose and the graceful, the pompous and the inviting, the awkward and the appropriate." Architectural critics such as Peter Blake and Canadian-based

Trevor Boddy countered with praise for Erickson's design. To be sure, the Canadian media coverage of Trudeau's decision to override the selection committee led his disgruntled colleagues to feel that Erickson's personal friendship with the prime minister had subverted the democratic process. Since he was such a familiar presence in the media, it was hard for him to avoid the very public widespread dissatisfaction toward both the design quality and the process surrounding the chancery. The mass media he had harnessed strategically to advance his vision for high-quality design in Canada and abroad at the height of his career proved a double-edged sword for Erickson.

* Special thanks are due to Christos Bolos for patiently shepherding this article to publication. Adele Weder provided a considerable amount of editorial help throughout the writing process.

1 Rhona Richman Kenneally and Johanne Sloan, eds., *Expo 67: Not Just a Souvenir* (Toronto-Buffalo-London: University of Toronto Press, 2010). See particularly Inderbir Singh Riar, "Montreal and the Megastructure, ca 1967," pp. 193-210.

2 For an overview of Erickson's life and work, see Nicholas Olsberg, "Canada's Greatest Architect," in ed. Rhodri Windsor Liscombe, *Architecture and the Canadian Fabric* (Vancouver: University of British Columbia Press, 2011), 429-45; see also my essay "Modern Architecture and Nature in the Houses of Arthur Erickson," in eds. Linda Fraser and Michelangelo Sabatino, *Arthur Erickson: Layered Landscapes: Drawings from the Canadian Architectural Archives* (Halifax: Dalhousie Architectural Press, 2013), 6-23.

3 For a detailed account of his bankruptcy, see "Bankrupt," in David Stouck, *Arthur Erickson: An Architect's Life* (Madeira Park, BC: Douglas & McIntyre, 2013), 341-65; Donna K. H. Walters, "The Collapse of an Architectural Pillar Jolts L.A. Real Estate: Arthur Erickson Associates' financially ailing Southland office was abruptly closed last month. Its renowned Canada-based principal admits that he is no numbers whiz," *Los Angeles Times* (July 15, 1991).

4 Phyllis Lambert, "Tribute to a Visionary Architect Ahead of his Time: Arthur Erickson, 1924-2009," *Architectural Review* 1349 (July 2009), 27–28.

5 See Michael J. McMordie, "John B. Parkin Associates and Albert Kahn Inc.: An Industrial View on Architecture," in eds. Linda Fraser, Michael McMordie, and Geoffrey Simmins, *John C. Parkin, Archives, and Photography: Reflections on the Practice and Presentation of Modern Architecture* (Calgary: University of Calgary Press, 2013), 31-52.

6 Erickson was the subject of three documentaries and countless other television interviews: Arthur Erickson, directed by Jack Long and produced by the National Film Board of Canada, 1981; *Arthur Erickson, Poète du Béton*, directed by Michèle Smolkin and produced by Radio-Canada Télévision Colombie-Britannique, 2003; *The Life and Times of Arthur Erickson*, written and directed by Gordon McLennan, 2003.

7 Pierre Trudeau, "A Message from the Prime Minister," *Progressive Architecture* (September 1972), 88-89.

8 Recently the integrity of the Bank of Canada building has been threatened by proposed "renovation" plans. See Maria Cook and Michelangelo Sabatino, "Destruction Looms for Arthur Erickson Designed Bank of Canada Atrium Garden," Cultural Landscape Foundation, January 7, 2014.

9 Additional Erickson archives are held by the Canadian Architectural Archives of the University of Calgary.

NOTGELD

Nina Rappaport

NOTGELD AMTSBEZIRK KOBERG
25
PFENNIG
GRUNDRISS
DES
BURGWALLES
IM
REBBENBRUCH

50
50
Zog darauf sein langes Schwert,
kommandierte: Rechts um kehrt;
hinterwärts von Naumburg."
Pfg
Pfg

50
50
D
Viel Wollartikel fertigt man
Mit Haspel, Raschel, Rundstuhl an.
50
50

75 PFENNIG 75
GUTSCHEIN ÜBER 75 PFG. DER STADT NORDHAUSEN A/H
NORDHÄUSER
GUTSCHEIN ÜBER 75 PFG DER STADT NORDHAUSEN A/H
De allerbeste Medezin.
Das äss Nordhieser Branntewien.

A dusty, tattered, darkened brown scrapbook sat on the shelf; but upon opening, it came to life in all their colorful glory: intricate drawings of faraway people and places, of castles and churches, soldiers and farmers, flowers and bread, dark silhouettes and watercolor fantasies with numbers and names on their intricate borders. Was it real or make-believe, or a bit of both?

It was in fact Notgeld, an emergency currency used in Germany between the wars, when inflation was so high that money was printed in each county or town so that people would have enough. This currency was issued in 1914, when silver, copper, and nickel coins became too expensive for the Reichsbank to mint for Pfennigs—whose intrinsic value was more than they were worth. Paper money could be printed cheaply, resulting in increasingly larger Deutschmark denominations. The Notgeld was considered an "I owe you" for some, a debt bill for others, but it was always honored. The hyperinflation that came in 1923 was a result of reparations Germany had to pay for World War I. People filled suitcases to go to the market as the prices continued to increase. Finally bills of 500,000 to one million marks had to be printed. Some Notgelds were printed on silk, tin, or leather, depending on available materials, and all executed with excellent craftsmanship. While the central bank did not print them, they helped to stabilize official currency as it declined in value and bolstered its value for export.

Notgeld bills were primarily small yet elaborate, adorned with patterns and scenes depicting local towns, main industries, or historic sites, as well as daily life and framed by decorative borders. The scenes were beautifully rendered and evocatively capture a particular time of transition in an unstable country. They were often inscribed with poems or local expressions in elaborate black script or colorful lettering. Some were designed by artists, including an unusual 1923 series for Thuringia by Herbert Mayer, who taught printing and advertising at the Bauhaus. His experimentation with typefaces provided a stark contrast to the archaic fonts on traditional bills: using modern typography with sans serif fonts, he created a color series with a much more abstract design than the elaborate, more traditional notes by other artists.

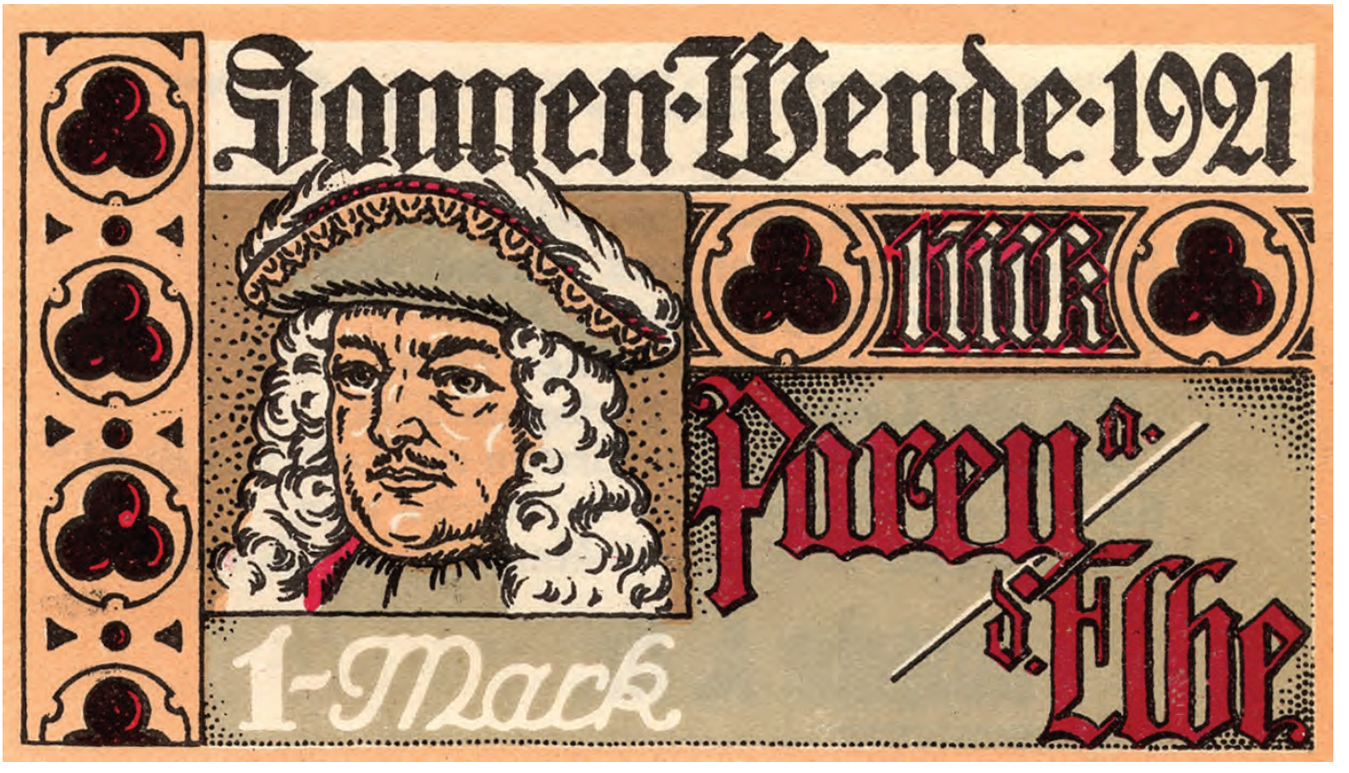
It was a wild time for a wild currency: untethered and playful, but foreboding too. In 1914 just over four hundred places issued more than five thousand Notgeld; by 1923 over five thousand places issued more than seventy thousand different notes. Because it was so easy to make this temporary money, many people and companies printed their own versions, and even false imitations. With eye-catching designs, some were printed for the sole purpose of collecting and were called "Serienscheine." One serious collector, Arnold Keller, documented the variations in the money and the counterfeits in his publication *Das Deutsche Notgeld*. Today they recall a nationalistic imagery of a type that Hitler would adopt to promote strength and a certain localism. With continued inflation the Notgeld lost total value, finally having only that of the piece of paper, and became more useful as wallpaper or for kindling. Today it remains a document of the lost art of currency design, of what can be embodied on a small slip of paper and represent a volatile time that most don't recall, or care to.

Die städt Sparkasse
Swinemünde
zahle gegen diesen Scheck
aus meinem Guthaben
an den Inhaber
fünfundzwanzig
Pfennig
Swinemünde, den
25 ₰

Notgeld der Stadt Steinach.
50 Pf.
50 Pf.
STADT STEINACH
Fünfzig Pfennig.
I. X. MDCCCCXXI
I. X. MDCCCCXXI
DER MAGISTRAT
DER GEMEINDERAT
Gültig bis 2 Monate nach Aufruf in den hies. Zeitungen.
Einlösung bei der Stadtkasse Steinach S.-Mein.

Gerökert·is·de·Gosebost·
As·jeder·weet·'ne·leckre·Kost·
Un·oken·saftge·Swienebraen·
Is·moje,·wenn·he·god·geraen·
Darüm·willt·wi·vör·alle·Tieden·
Us·op·de·Gos·un·Swientucht·smieten·
J. H. Mordemann
7 PF
CASTEN & SUHLING, BREMEN.

50
GREIFFENBERG IN SCHLESIEN


Sonnen·Wende·1921
Mk
Pareu a. d. Elbe
1-Mark

25 NOTGELD VON 25
DAHLENBURG
25
Das deutsche Land versinkt im Sumpf
Hilf Bauer und Bürger - Arbeiten ist Trumpf
Hilf dem Nächsten Dein - Laß das Wuchern sein
25

50
50
Zog darauf sein langes Schwert,
kommandierte: Rechts um kehrt;
hinterwärts von Naumburg."
Pfg
Pfg

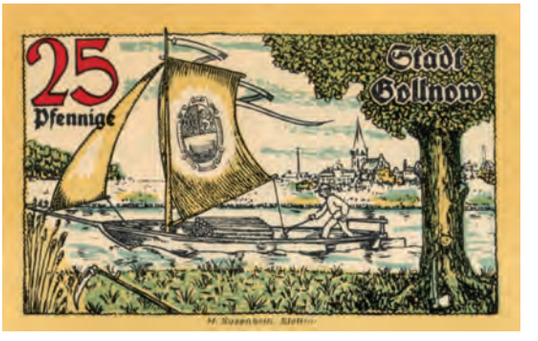
PFENNIG
10
PFENNIG
SPAR u. DARLEHNSKASSE
DAHLENBURG
DAHLENBURG

MOTORSPRITZEN PIANOS
EINE MARK
1mk
STADT
LUCKENWALDE.

Seefahrt ist not!
50
PF.
Deutschlands Handels-Flagge ist schwarz-weiss-rot!

INDUSTRIE-u. GEWERBE
75
Pf
AUSSTELLUNG
23.30.OKT.1921

Stadt Schmölln
Ausgabe
1921
Gültig bis
1 Monat
nach Aufruf
Schmölln
(Thüringen)
Der Stadtrat
Steinnuß - u. Horn - Knopf - Holzschuh
Schuh - Pantoffel - Cigarren
Stoffmaschine - Uhr - Gehäuse - Maschinen
Zahnbürsten - Packungs - Fabr.


25
Pfennige
Stadt
Gollnow

FÜNFZIG PFENNIGE
50 Pf.
FRIEDHOF
DES DOMES
50 Pf.
P.Michels.

·ZAHLE·GEGEN·DIESE·PLATZANWEISUNG·AUS·UNSERM·
·GUTHABEN·AN·ÜBERBRINGER·
·DIE·STADTSPARKASSE·PADERBORN·
FÜNFUNDSIEBZIG PF.
PADERBORN,
DEN 10. NOV. 1921
DER MAGISTRAT:
Haarton Pickel
PM
75
Dei Gullen steiht up hunnert Mark.
Dei Kümpe giewet kein Water.
Drüm maket wey us sülwer Geld.
Et is et reinste Theater!
P.
·GÜLTIG·BIS·1·MONAT·NACH·ÖFFENTL·AUFKÜNDIGUNG·
OFFSETDRUCK GEBR. PARCUS MÜNCHEN.

50 Preetzer
A. GÖTTING
50 Notgeld.

Wir sind nicht auf dieser Welt um glück-
lich zu sein und zu geniessen, sondern um unsere Schuldigkeit zu tun.
Alfred Hanf - Erfurt.

der schwarzen Schmach folgt
Der roten Flut
75
Pf
F.J.
75
Pf
sonnengoldne
Zukunft nach!

CHRISTO

Interview

P47 When you were a young artist, how did you get your practice off the ground?

C I had the greatest parents. When they noticed that I was drawing all the time, they decided that I should have private lessons, so after school I would go home to a tutor. I loved it! Then I went to university to study art. For four years I studied everything: painting, sculpture, architecture, decorative art, even two semesters of medicine, making dissections of human bodies, very much like in a nineteenth-century academy. I was visiting a relative in Czechoslovakia in 1956, early in the Cold War, when the Hungarian Revolution started. There was a fear that a third World War would start, and like many others, at the age of twenty-one and a half years, I escaped to the West—Austria in my case. From there, of course, I wanted to go to Paris, because Paris was the world's art capital! I arrived there in March 1958. I had no money, no relatives, and I didn't speak French, but I made a living by washing cars, doing dishes, and making portraits. There were a lot of United Nations officers helping refugees, so I made portraits of them and their children. This is how I met Jeanne-Claude, because I painted her mother's portrait.

P47 What are you currently working on?

C Right now we are working on *Over the River*. Like all our projects, it started from a very simple premise. It is first experienced from above, driving, for one and a half hours, then inside, on the river itself, for four and a half hours. Along forty-two miles fabric panels suspended at eight different locations, sometimes with small interruptions, sometimes big ones, respond to the landscape.

For this project we needed to find a site to fit the idea. We chose the Arkansas River in Colorado for aesthetic reasons. It took a long time. We looked at eighteen different rivers and narrowed it down to six possible sites in the summers of 1992, 1993, and 1994, and then finally down to this one. It is two hours from Denver, one hour from Colorado Springs, and two and a half hours from Aspen, right in the middle of a densely populated valley where there is a busy highway going to California. The river is very accessible and is the most rafted river in the United States.

All of our projects are seasonal. *Surrounded Islands*, in Biscayne Bay, Florida, was done in spring to avoid hurricanes. *The Gates* was a winter project because we wanted to have a leafless environment in which to experience the work. *Over the River* is a summer project because rafting only happens there in the summer. Our projects are free to experience, and that freedom is a very important part of each project. We always say that we borrow a space and create a gentle disturbance for a few days. In this way we address the banality of the late twentieth century. Our projects happen only once in a lifetime—a sublime moment—and this is what attracts so many people.

P47 How do you direct your projects?

C Technically the projects have a lot of similarities to sculpture, architecture, and urban planning. Each has a project director, engineers, construction firms, storage facilities, curators, lawyers, and people who handle things like taxes and insurance. All of our projects have two distinct periods: the software period and the hardware period. The software period is when the work exists only in drawings, sketches, and the minds of people who try to stop us and those who try to help us. It's a very unpredictable period. An architect prepares a precise model; I never do that. Each project changes through the process: the site, the weather, the permits, the town hall meetings are all part of the aesthetics of the work. We like to benefit from this energy. Each project inherits everything that is inherent to that place. A project is not an illustration; it is the real thing. The software can be exciting but also frustrating. But when you get past that, to the hardware period, you get the real thing.

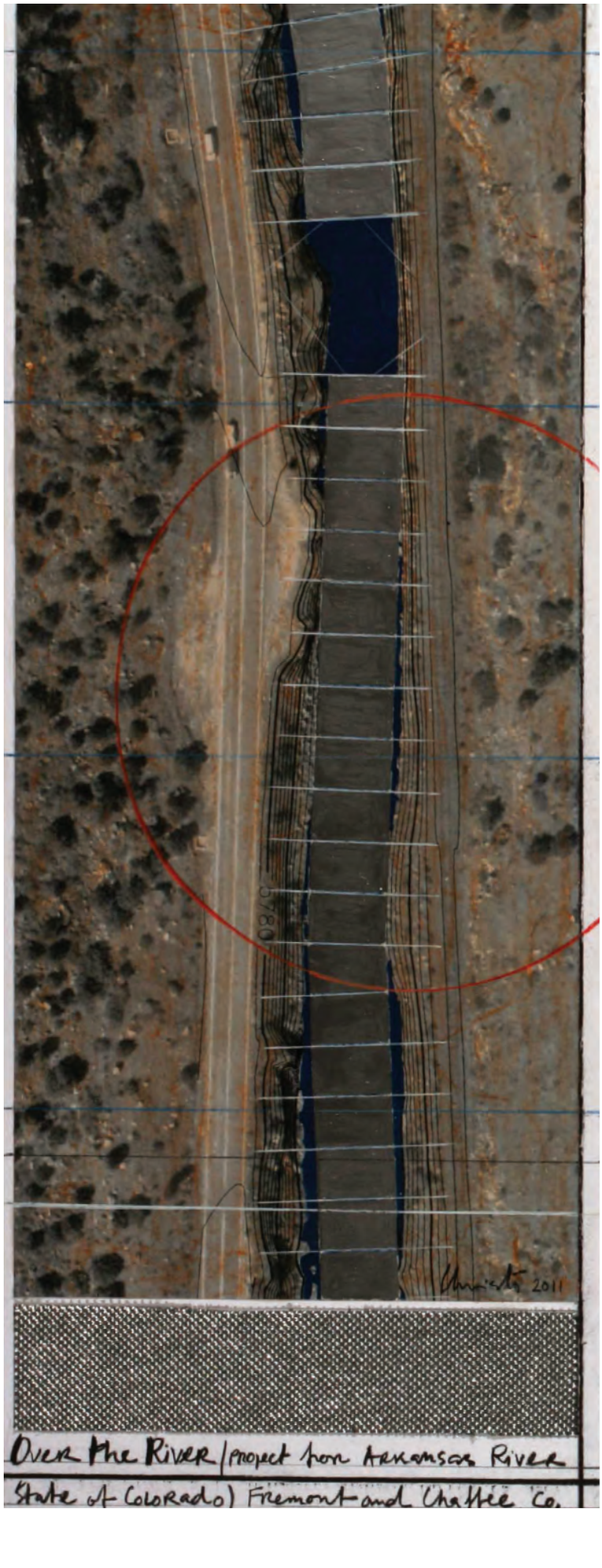
P47 How does money fit into the process?

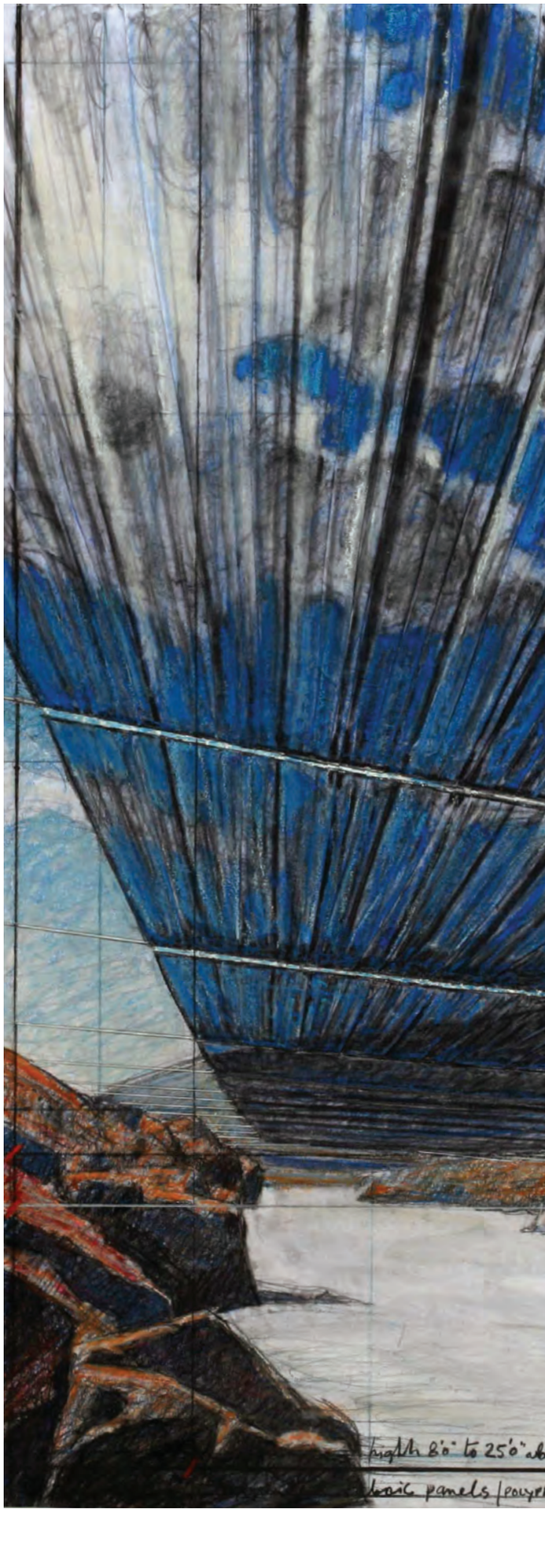
C Money is part of the software period, and it is very difficult. None of our projects makes a profit, and each is very expensive to put together. When we built *The Umbrellas*, for example, they were "Rolls-Royce" umbrellas designed by Japanese engineers, with seams that met at the top perfectly. We wasted half a million dollars of fabric—which was manufactured by North Sails, who made the spinnakers for America's Cup—because we wanted each seam to be at the rib. We spent more than $12 million on *The Gates*. We gave $3 million to the Central Park Conservancy to use the park for three months and had to pay the thousands of people who worked around the clock during the two weeks that it was up. But because we have works to sell—commodities—we find a way to generate the money.

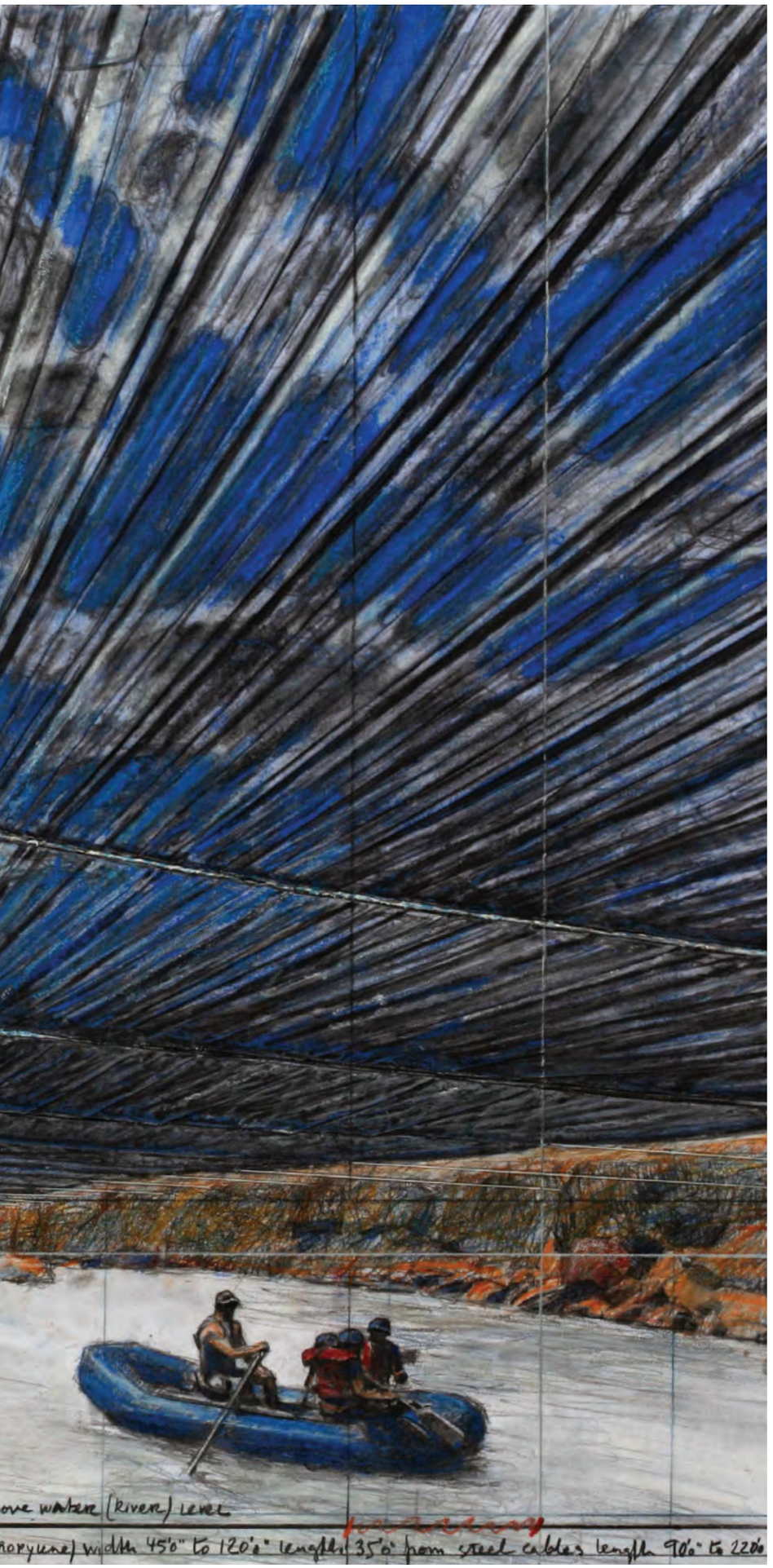
P47 Would you elaborate on that?

C All the money we need flows through our holding company, CVJ Corporation, which was created years ago to finance our projects, as well as subsidiary companies that are created for each project. The main purpose of CVJ Corporation is to buy back and sell our original works of art. I personally own most of our original works, and I give them to the corporation in the amount that the corporation needs to pay the bills. We continuously buy back our works, if they are on the market, so that we have them sitting at the ready. The early works are worth the most. That one behind you is a $5 million work. Usually an artist's early works are in the hands of dealers because artists sell them right away, but not in our case. We also make drawings and sculptures to develop our large works, and they have their own value as separate works of art. Our collectors like to buy these studies to make the projects happen. There is complicity between us, the study works, and the collectors.

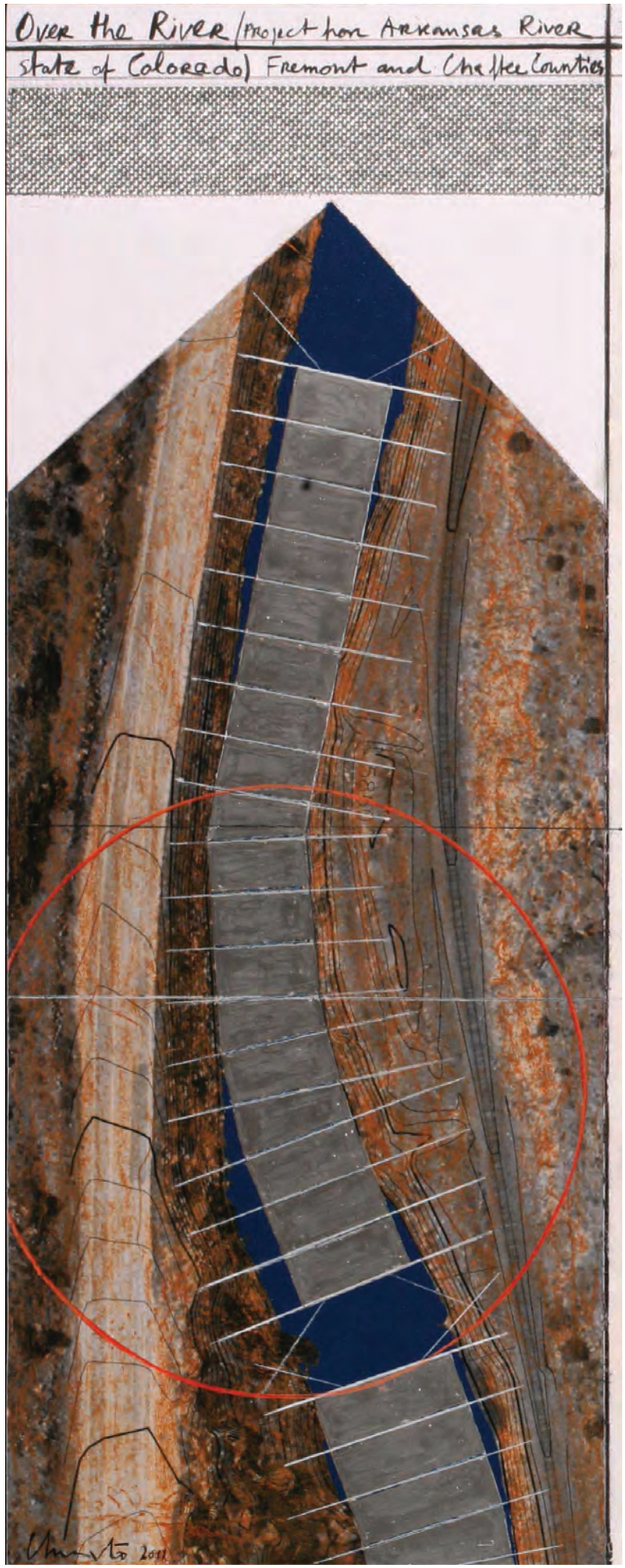
Below and following spread Christo and Jeanne-Claude, *The Gates*. Central Park, New York City, 1979–2005.


Over the River/project for Arkansas River
State of Colorado) Fremont and Chaffee Co.
2011





Christo, *Over the River, Project for Arkansas River, State of Colorado*,
Collage 2011 in 2 parts:
77.5 × 30.5 cm and 77.5 × 66.7 cm (30½ × 26¼"),
Pencil, fabric, twine, pastel, wax crayon, charcoal, enamel paint,
aerial photograph with topographic elevations and fabric sample.



Christo, *Over the River, Project for Arkansas River, State of Colorado*,
Collage 2011 in 2 parts:
77.5 × 30.5 cm and 77.5 × 66.7 cm (30½ × 26¼"),
Pencil, fabric, twine, pastel, wax crayon, charcoal, enamel paint,
aerial photograph with topogarphic elevations and fabric sample.

P47 At what point in a project do you begin to raise the required funds?

C We have to have cash flow before a project is built. And as you know if you're familiar with the art world—museums, dealers, collectors—they are notoriously slow payers! They pay in installments and sometimes miss the payment deadlines. And we can't say to our employees that we can't pay them. This is why, for a long time, we have worked with different banks around the world. When we get permission to do a project, we get a line of credit from a bank—standby money—for which we pay a fee. The collateral for the line of credit is our works of art. Usually for each dollar of credit we set aside $4 in artworks—very simple! Some projects are so expensive that we use an entire line of credit, and to pay it back we have to add millions of dollars in interest. With other projects—*The Gates*, for instance—the works related to them sell really well, and we don't have to use our line of credit at all. The bank where we had a standby line of credit for *The Gates* was Credit Suisse, also the bank for *Over the River*. We maintain very good relationships with a number of financial institutions, including the Julius Baer Group, Deutsche Bank, and Citibank.

P47 How else do you raise money?

C We also put aside all the artifacts related to each realized project. When a project is completed, we collect the components—posts, cables, fabrics, scale models, photos, films, archives, materials—and put on a huge exhibition depicting the whole story of the project. We sold the *Running Fence* exhibition to the Smithsonian Institution and are now trying to sell the *Wrapped Reichstag* show to the same type of institution. When we sell these exhibitions, we raise millions of dollars and use the money to pay for future projects.

P47 What is it like to get permission to build your work?

C Every artist makes people react— the art is either "terrible" or "beautiful." In our case, over several decades thousands of people have discussed works of art that do not exist. What gratification we have that they are discussed so much—thousands of pages of books for things that do not exist! And that is why it's so exciting: so much thinking, emotion, energy, involvement. In the last fifty years Jeanne-Claude and I have realized twenty-two projects and have failed to get permission for thirty-seven.

For *Over the River* we have had countless town hall meetings, with vocal, screaming opposition. You have the supporters on one side and the opposition on the other. Often I tell the opposition that I'm very happy that they're there because it makes our project seem more important. And they're furious! In the case of *Wrapped Reichstag*, the German chancellor, Helmut Kohl, was so against the project, and made the permit process so difficult, that the decision came down to a debate in parliament that was televised to the whole European Union. It was the first time this had happened in the history of art. By making everything so difficult, Kohl elevated the importance of the project a hundred times.

It was slightly different with *The Gates*. We started in 1979. Mayor Koch said no in 1981. And we tried with Mayor Dinkins. Again, no. We tried with Mayor Giuliani. He also was not excited. Through the years the project struggled. But we had been meeting with members of the Central Park Conservancy—a powerful, rich body of movers and shakers—for several years. There was a gentleman who had been very excited about our project—how it would be financed, that sort of thing. One day he invited us to his television studio, and we explained it. Then by chance, in 2000, that gentleman was elected the Mayor of New York City! If Mr. Bloomberg hadn't been elected, we never would have built *The Gates*.

Sometimes when we are refused permission, we decide not do to the project anymore. I'll give you an example. In 1974 we tried to wrap the Christopher Columbus monument in Barcelona. We tried to negotiate permission with the city, and the mayor said no. He was later assassinated, but not by us! In 1980 there was a new mayor who also said no—and he was nearly killed! Then in 1984 we received a telegram from Pasqual Maragall, the famous mayor of Barcelona who brought the Olympic Games there, and he asked us to come and do the project. But we no longer wanted to do it.

P47 Did the city offer to pay for it?

C No, they didn't. And we wouldn't have wanted to do it anyway. We have people asking us nonstop to do things. But we have cultivated relationships not only with people who collect our works but also with those who want to see our projects happen, to be part of the process of making the projects. We want to be involved with them. They don't buy the works and disappear; it's a different type of relationship.

P47 Do you make a salary?

C I'm officially paid $20,000 a year. Most money for my personal income comes from lectures now. We don't need much.

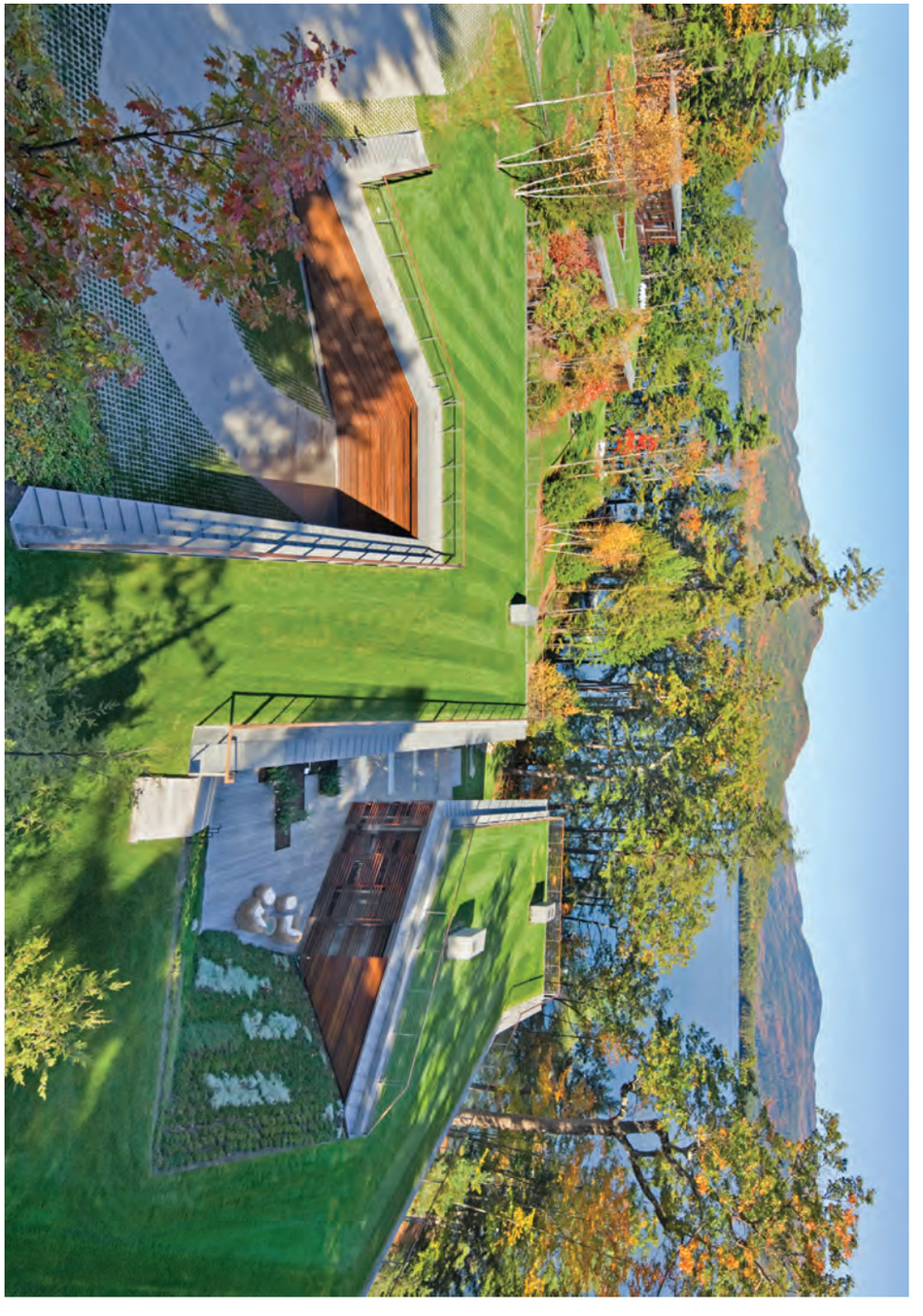
P47 Do you see yourself as a businessperson?

C I try to learn about business. I am not very good at it, but I manage.

THOMAS GLUCK

Interview

A “tower house” stacks bedroom suites to lift the living space up to the view above the trees. New York.



Inspired by the tradition of Adirondack Great Camps, this modern family retreat is nestled into a heavily wooded and steeply sloped lakefront property. New York.

P47 Could you describe the approach of GLUCK+ and how it differs from the status quo of the profession?

TG Our attitude starts with a global perspective on where the profession has been, where it is right now, and where it's going. What's happened over time is that through trying to limit professional liability and reduce risk, the profession has also limited its own role and capacity to engage effectively.

Sometimes we talk about architect-led design-build as a strategy to regain control over the building process, but "control" can conjure up a desire for complete power. The control we're interested in is instead the ability to follow the clients' interests and the conceptual underpinnings of a project through to completion. As the architect retreats back to an increasingly narrow realm of influence, he or she limits the ability to craft a building that truly serves the client and the urban, social, and economic contexts.

P47 Does this produce a conflict of interest? Isn't it the architect's job to advocate for a better project even if it may cost a little more, while the contractor's interest is to build as cost-effectively as possible?

TG By dissociating from the larger building process, the architect is actually less equipped to look after the client's basic interests. The knowledge that comes from the building process has been lost because the architect simply does not see construction as part of his or her scope or area of expertise.

P47 Why is this a problem?

TG Architects don't know what they are drawing! Many have no idea of the cost implications of the details or understand that they may have far-reaching implications that make them very difficult to achieve. Over time this problem compounds exponentially and contractors get drawings that can't be built. The contractor's job becomes not just to build cost-efficiently but to figure out what they are building in the first place. So many architects do not know how things go together. So what do they do? They rely more and more on systems of products and packages of wall systems as well as engineers to design mechanical and structural systems. There may be a minimum level of quality that's guaranteed in specifying systems, but there is often a huge added cost too.

Many architects simply don't see construction industry information to be in their area of concern. But we depend on the architect to be fully equipped to look after the primary goals of the project: what the program is, what the building wants to be, and how it fits into its site, the larger context, and the big picture. These issues matter to the architect, and to many contractors they do not. They simply don't. They don't consider these issues, and they are not asked to consider them. It's just not part of their job. And the architect doesn't know how much materials or details cost because that's not considered part of the job.

This divides the project between the front end, the design of the building, and the back end, the construction of the building. It is a completely artificial line, and it doesn't serve the project or the client. It often behooves the project to have an architect thinking about what it means to excavate on a narrow site, for example, to be able to design an appropriate solution for the problem. There are times when it equally behooves the client to have a contractor that really understands the big picture so that if a compromise has to be made they can err on the side closest to the larger design goals.

The worst thing about this divisive system is that the party left to mediate between these two frequently warring camps is the client, who typically isn't an expert in design or construction. Clients are teachers, doctors, and businesspeople who have their own professions, knowledge, and expertise yet they are asked to act as the arbiter between these two worlds. It's crazy.

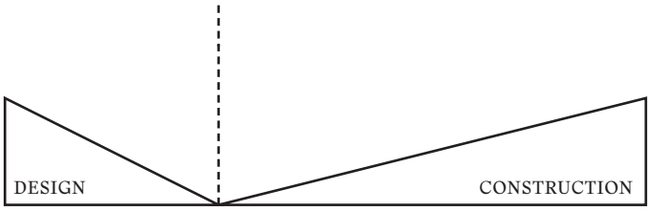
This is why single-source responsibility can be advantageous to all parties involved. We hold both contracts: we're the architect and the builder, with two distinct legal entities under one roof. We take all the design and construction information. There is still the potential, however, that even in one firm you could have designers that are just designing and contractors that are just building. Indeed that doesn't address the real problem when designers still lack the knowledge of how things go together. The key in architect-led design-build is continuity of the players.

At our firm the people who design and conceive the architecture are the same people who have had experience in the field, and they will be there to see it all the way through. For us, the knowledge sets have to be not just in the same team but within each individual.

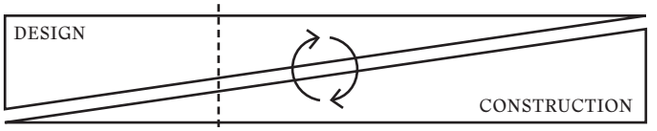
P47 How do you do that?

TG Obviously there is a lot to know. It's hard enough to be just a good architect or contractor; but there is nothing that precludes a great designer and architect from knowing how buildings go together. I should note that we have all architects in-house. We tried hiring contractors and trying to get them to understand the architecture end of it, but that didn't work. The only reason architects can't understand the details of construction is because they are unwilling.

Peter Gluck often talks about architects as a hugely underutilized resource: at its core, architecture is solving problems on various scales. Construction is the same in that regard and can benefit tremendously from an architect's skill set. If you can deal with the conceptual problem, the urban problem, and the cultural problem, then you can certainly handle the technical aspects—as long as you are willing to try.



Traditional Design-Bid-Build



Architect Led Design Build

There are lots of people who wouldn't be able to work in our office because they just aren't interested in the construction side of it. Conversely there are lots of people who may be adept at solving technical problems but can't engage the front end. Having a brain for both is the most important part. So most people in the office, all of the principals and almost all the more experienced people, actually run a job on-site from morning until night as project superintendent. That information circles back.

P47 How does your insurance company feel about all of this?

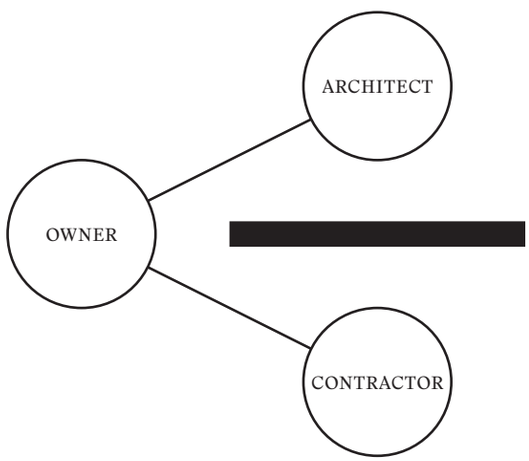
TG They love us because they feel confident that we construct buildings with fewer problems. If a building leaks, for instance, we take responsibility. In the traditional system, if there is a problem the architect and contractor fight it out and the architect attempts to prove it's the contractor's fault. This creates an incentive for the architect to show nothing about how things get waterproofed, for example. The division puts all the responsibility on the contractor so they can't be held accountable. They just include the note "waterproof" and make it the contractor's responsibility.

P47 How does GLUCK+ deliver projects? Does the client engage one entity or two?

TG The financing is structured very much in keeping with the traditional system. We have a contract with the owner as the architect and a separate contract with the owner as construction manager. The contracts are written with the understanding that we will be the architect and the construction manager, but they don't have to commit to that upfront. This gives the client a time to get to know us and understand the system. It's structured so they can potentially hire one and not the other. No one is held hostage.

The architectural fee structure is based, as it typically is, on the cost of construction and is broken into phases. We have different phases than the standard AIA contract because of the way we work. Normally there is schematic design, design development, construction documentation, and construction administration.

We do schematic design and then we jump way ahead, doing bid drawings and sending them to the field to get pricing and feedback from the tradespeople early on. We get early feedback both in terms of cost and of ways to build things and what's appropriate for the specific time, place, and economy; what is appropriate in one location might be totally different for another, and we build all over the country. We find out what specific new technologies tradespeople might be aware of that we are not, or that they are aware of but the engineers are not. Similarly we are made aware of specific resources available to them that we didn't know about and might consider. We do schematic design then send out a construction document or a scope set for pricing and that gives us pricing feedback. If a product or process is too



Design-Bid-Build

expensive, we find this out in schematic design more realistically than in the traditional way.

In the traditional process it is not uncommon for an architect to do schematic design and get a construction manager to provide preconstruction services, but there are two difficult parts to that. First, estimating is usually more imprecise because there are no documents that could really be bid. Usually they have only schematic design drawings of a building that's still being developed. Second, the only way for an estimator to go wrong is by underbidding; estimators generally overbid to compensate for lack of information. By doing this early construction document set, we get information early enough to make adjustments and even change the basic concept of the building, if necessary. In common practice, the cost adjustment happens at the end of the project through "value engineering," after everything has been coordinated and worked out—and then it becomes an exercise in scaling back finishes. Our position is that if you had this information early enough, you might have designed a different building.

P47 Are you making more money with this system, saving your client money, or delivering a better product for the same money?

TG We're delivering a better product for less money and making more profit. It's a trifecta. There really is that much waste in the design and construction industry today. But the clients benefit the most.

Take, for instance, the East Harlem School: a big gym space we originally designed to be buried deep in the ground with a big open level at grade to create a public gathering space as an essential component of the building. We did our first construction document set and found out that the cost of the foundation was exorbitant because of the poor soil in East Harlem and because the site lies in a floodplain. If we had found this out only at the end, the client would have had to stop the project. You just can't make up that kind of money with value engineering.

We would have had to come up with more money or cancel the whole thing, after having already invested a huge amount of time. So we got the feedback early in schematic design, and before we spent any significant money we were able to fully redesign. We realized the gym had to be higher, so we changed the premise so it was split. It still has public and private sides, but there are two halves. We were able to update the architectural concept to make it more appropriate for the client. Is it a lesser building architecturally because our pure initial concept wasn't realized? No. It was a much better building because we refined the architectural idea while taking into account real site conditions, and the client is happy.

P47 Are your fees still based on a percentage of the overall budget?

TG It's still percentage-based. The construction management fee brings in a huge cash subsidy. Even if our architectural fee remains the same, the architecture business is subsidized by the contracting business. No one bats an eye at the five, ten, fifteen percent overhead in profit that goes into construction, not to mention all of the hidden profits rolled into "contingency." That money subsidizes the architectural work. We don't do the architecture at a loss: the profit margin is small but typical. So with the influx of money from the construction management, the firm overall does very well.

P47 Just how much more profit do you get as a general contractor?

TG Much, much more—that's just the way the industry is. In case you're not aware of the relative profit margins between owner, contractor, and architect, there's a quote in the AIA Handbook of Professional Practice relative to liability issues on a project. I think it's informative, and I'm quoting it here:

> "For example, suppose an owner wants a factory designed and budgets $5 million for construction. The owner expects a minimum 10 percent rate of return, or $1.5 million, on the facility, which will have a thirty-year useful life. At the end of thirty years the building will still have some utility and can be sold. The contractor expects to earn a profit of 10 percent, or $500,000. For design services, the architect may bill 6 percent of the construction value, or $300,000. From that $300,000, the architect hopes to earn a profit of 10 percent, or $30,000. With the potential exposure to claims and lawsuits, ever-rising expectations of perfection, shrinking budgets and tightening schedules, a profit of $30,000 is the best this firm can possibly expect to achieve."

P47 If the architectural profession gave away the responsibility to a general contractor to avoid risk, then does your approach put you more at risk?

TG No, we have two separate insurance policies—one to cover the work we do as architects and one as a contractor. When we act as a contractor, even though we're the same person, the same head and hands, we're doing that as a construction manager and are covered specifically for that. Contractor's insurance costs significantly more than architectural insurance because there's a lot of risk involved.

Getting contractor's insurance is hard at the beginning because no company wants to insure somebody who says, "I'm going to get into the contracting industry!" So we started small and built it up. We have a track record from roughly $200 million worth of business by now. Our contract insurance rates have gone down; and, in terms of the fee structure, construction insurance is a line item that is paid for in general conditions by the client. It doesn't come out of the fee. Usually architects have to keep track of

A guest house in the Rocky Mountains integrates into and accentuates its mountain environment. Colorado.

The East Harlem School, a new building for an independent middle school. New York City.

their fees and make sure they pace their design accordingly, but because we know that there's this big chunk coming down the pipeline from the construction management fees we're actually able to spend more time designing.

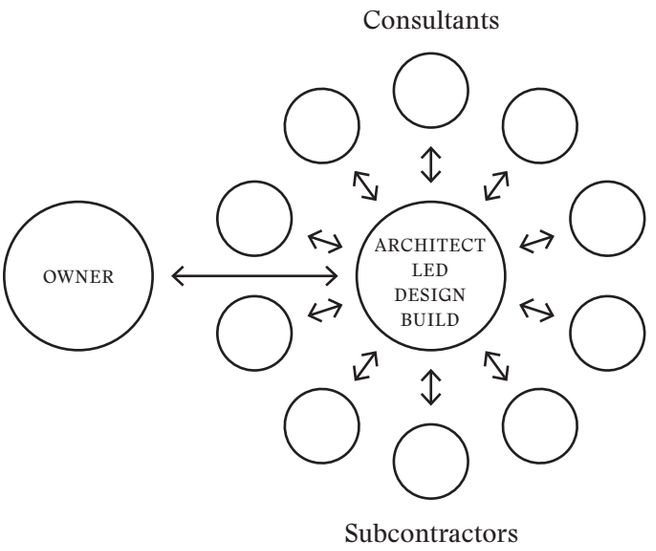
P47 Current law mandates an administrative split in the firm; even though you're the master builder, you have to call yourself an architect and a contractor, and the two remain legally split. Would there be any benefit to doing away completely with this legal division?

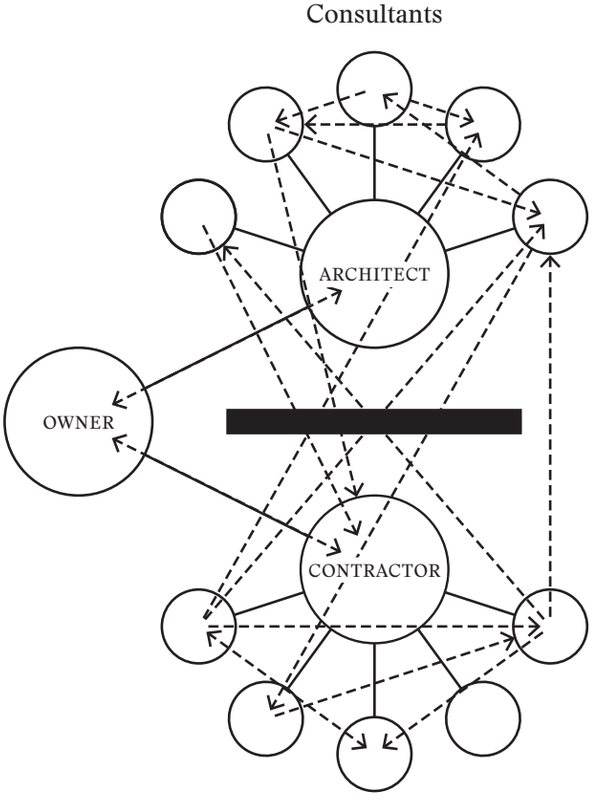
TG No, it's actually in our benefit to keep them split because we've separated our responsibilities and are taking advantage of the fee structure of construction in the United States. There's no downside to it because we haven't separated into two groups of people. Having two company names is meaningless; it's simply on paper. What we would never do—would never want to do because we would lose all the benefit—is to separate into two separate groups of people. That would take us right back to where we started. We want the same person to be thinking about the design and building.

P47 Do you ever work for equity?

TG We're doing that now. Ninety percent of our practice works where we're the architect and construction manager, but we are always looking to be involved even more. So we've done projects where we're the developer and architect and contractor. Take, for example, an affordable-housing project in Aspen, for which we found and bought the land, looked at market value, designed, and built. Aspen has a big affordable-housing subsidy program. We were interested in that, so we approached the city, worked out a deal, got financing, designed and built the whole project, and that was turnkey from conception to completion. The city gave us $5 million and we took care of everything else—built the building, gave the city the key. We had fourteen affordable units, and that was it. The city gave us the subsidy and dealt with finding all the tenants through a lottery (more than a hundred people signed up for the fourteen spots). It's the same basic premise; it's not about control or ego or megalomania. As an architect that understands construction as we do, you start looking at potential developments with an eye for architectural opportunities. If you're just a developer looking at land, you have only a small toolbox to pull from and analyze these things. As architects we are intellectually committed to providing affordable housing. It is one of the impulses that define "the modern."

It wasn't that we didn't go to other experts or consultants in the field for advice. Nevertheless we are the ones pulling it together, digesting it, and analyzing it against the goals of the project. It's the coordination, analysis, and decision-making that is really at the heart of the architect's practice. We are careful not to handicap





ourselves by trying to do it all, so we hire people who do financing day in and day out to work in the office and run the numbers. We understand basic financing now, not the most complex stuff, but enough to serve our developer clients because we know what it's like and we're not just gunning for them to spend more money on the façade, regardless of what the benefit is—that's irresponsible! That's how architects earn poor reputations.

P47 It's clear that a lot of waste is avoided in the design process, but does that also translate to the construction?

TG There's definitely less waste from the RFI question tree. One of the most onerous and wasteful parts of the process is converting the drawings to reality, for example, translating a complicated geometry to the site or understanding offsets for framing so that finishes align. However, the architects who drew and designed it can do it very quickly.

On a normal construction site there are thousands of questions that come up about how something should be done, a small percentage of which run through the entire tree: a tradesperson asks the master plumber, who asks the head of the plumbing company, who goes back to the general contractor, who sends it to the architect, who asks his mechanical engineer, who sends it back to the plumbing department, and the plumber answers the question. All of that takes weeks, even for just one little problem. There are a significant number of questions that can be answered immediately by the person who designed it if he or she is on-site. One can also find unanticipated opportunities while on-site, for example: if we can put the chase on one side then we can include that extra closet we were talking about. That sort of thing is too cumbersome through the normal processes.

P47 Is this made possible by technology? Could you work with this business model if everybody had a pencil in hand?

TG Yeah, of course. Right now we are not using BIM, although we're about to engage it. There was an article where we were called the analog version of BIM, which is basically a tool. If architects no longer have the knowledge to understand what trade comes first they can draw and draw and draw, but it's garbage in, garbage out. BIM is not going to solve anything. You're not going to be able to solve a problem of knowledge with a tool.

P47 Are change orders not a part of the business model for you anymore?

TG We still have change orders because there are always things that can't be accomplished. There are two types: things that can't be foreseen (those are the easy ones—nobody has a problem with them) and those that could have been foreseen but weren't. What we know in this system is that we can't resort to hanging the architect out to dry to maximize profit because we are the architect.

P47 Do you have to invest a lot in educating your employees?

TG Yes, and we see it as not only a necessity but a responsibility. We have an opportunity to effect change in the industry. The teaching and training that goes on here is something that we do because we need to and we believe in it. We don't expect everyone to run their practice this way, but there are a lot of benefits. Even if our staff members work this way only while they're with us, when they go off to practice in the traditional way they'll be much better architects—more responsible and better qualified having done it at least once and having understood it, even if it's not for them. The investment we make is one in our profession as well as our office. Obviously we do it partly because we need to for the firm, but we also do it because we believe it's the right thing for the industry.

P47 Do you have words of encouragement or warning for firms that are considering the same route?

TG Peter Gluck spends a lot of time speaking and helping other firms that are trying to do this for the first time. People always come up to him and say, "Gosh, it's so amazing, it's so clear, what do I need to do it?" His answer is always the same: "Just the courage to do it." That is the bottom line. It takes courage, and he has it. He's not intimidated by the prospect of building. Way back, his class was the catalyst for what would become the institution of the Yale Building Project. The building project culture was basically started at Yale. All the architects lived together, working in the studio and going to school, and then in the summers they would build. They designed and they built. And that's what was happening in the early 1960s when Gluck was at school.

When he started this firm, we were doing all the work and not being compensated for it. We were basically running job sites trying to protect the architecture without any real responsibility or reward. At some point we realized that it was just insane—"I half-built this building, so why don't I just build the building?" Gluck has no problem doing something that's obvious even if it's scary—he did it, and we've been doing it since.

HASTY JOHNSON AND JERRY LEA

Interview

Previous page BG Group Place, Houston, Texas.
Above Pennzoil Place, Houston, Texas.

P47 Could you tell us what your roles are in the firm?

HJ I currently run the investment management side of our business. I started as a project manager then shifted later in my career. When Hines began it was purely a development company. Then, during the 90's we began buying buildings in the U.S. and developing internationally. This led to Hines raising investment funds both to diversify risk and provide ready capital for acquisitions. This in turn grew into an investment management business which I now head.

JL The Conceptual Construction Group consists of architects, engineers, and contractors that are involved in the preconstruction phase of most of our projects. This group was put in place more than forty years ago with the knowledge that we were going to make mistakes and that all of the lessons learned on every project would be taken forward to the next project through our group. We are tasked with hiring the architect and the balance of design consultants, negotiating the agreements, establishing the construction budget and most of the soft-cost budget, and managing the design to meet our schedule, budget goals, and quality objectives. We manage the buyout process with the contractor and subcontractors, and then when construction starts we are less involved but remain a resource to our on-site construction team.

HJ When I was a project manager, I'd have a construction manager who worked for me, but during the hiring of the architect, the design of the project, and the buyout of the building, Jerry's group would come in and he would basically run the process together with our construction manager working. When the buyout was finished, he'd back out and the project and construction managers would run the project.

P47 Let's talk about choosing design-oriented architects. What is design worth to your firm?

JL It's pretty critical. Gerald Hines was the first developer who used "world-class" architects for commercial office buildings. He did it with a purpose in mind. Gerry believes that people will gravitate to quality and that if you intensively manage the development process then you can save money and shed risk, which will allow you to afford a better quality building: better architecture, better MEP systems, and better all-around design. So that has been the philosophy of the company since its inception.

P47 How do you manage the cost of high design and shed risk?

JL You intensively manage the entire development process: by watching every penny, you save enough pennies to pay for better design and a better building.

HJ One thing we always look for is financial downturns. In a downturn, people can afford any building they want. If every building has a low price tag, which of them will people want to be in? The better-looking, better-designed buildings will be the last to empty out. And so it does in some ways help with risk—not on the upside, but on the downside.

P47 So how do you manage the process and the architect?

JL We don't believe the architect really understands costs. For example, the AIA architectural agreement basically says that the architect designs to a budget, and if his design is proven to be over budget, he has to redesign. We don't have any stipulation like that in our contract. Our role is to work with architects to help them understand when they start to stray away from what our budget limitations are. When we hire a world-class architect, we want world-class design, but we monitor it to make sure the building is leasable. We are monitoring the budget, and we provide feedback. If the architect shows something that we don't think we can afford, then we work together to find other ways to cut expenses or modify that design element to something that we can afford. It is a team effort to work with an architect and get that great design in an affordable way.

Transbay Center, San Francisco, California.

P47 Is there a breaking point where you may be losing tangible value like leasable floor area but you gain intrinsic value through the design itself?

JL Good architects will fight for the important things. We have worked with them long enough that if, for example, Cesar Pelli is really fighting hard for something, I realize it is important and maybe I need to back away. If it is not important, then he will acquiesce and we will go in a different direction. Again, we hire good architects, so we don't ignore what they tell us. That is the reason we hire them, so it really is a collaboration to get to the finish line.

P47 You have done a lot of buildings with unique designs, like Frank Gehry's DZ Bank, in Berlin. Was there some level of risk involved in that?

JL Gehry's designs are unique, and he is very passionate about them. On that particular job, we felt like we needed a great architect. We needed someone who would do something distinctive. In fact that building is a little more subdued than many of his others. Frank understood the direction we wanted to go. We couldn't get too bold with the design, but we wanted to make a statement with something unusual, and he delivered for us.

P47 Does a distinctive design help to create enduring value?

JL Yes, but you want to take care not to be dated, and there are designs that you look at and know exactly what period it is from, so we try to make sure that ours are timeless. And we don't always hire world-class architects. We try to build the best-quality projects in any given market. If in a given market a world-class architect isn't going

BG Group Place, Houston, Texas.

DZ Bank building, Berlin, Germany.

River Point, Chicago, Illinois.

to bring any advantage in leasing, then we may choose somebody that is a notch below.

HJ The thought process we always go through, or at least I always go through, is that if the market completely falls apart will people still want to be in this building? Would they rather be in this building than another building? And if so, what is the reason? It could be that it is on a transit stop or it is right next to the river, or it could be the way it looks, but it has to be something that makes you want to be in that building as opposed to the one two doors down. We find that if you have a really outstanding design, you don't get as much premium as you should in an up market and you get more than you would think in a down market. It seems that the design helps you more in a down market than it does in an up market.

P47 Are there specific building features you generally choose to include in your projects—inviting lobbies or large public spaces, for example?

JL We do those kinds of things, but we are judicious about how we do them. For example, we rarely do atrium buildings. We did a few in the past, and they were not well received. In atrium buildings tenants look inward. You can make the claim that there is daylight, but there are not really good views, and you are paying for a big open space that you are not generating any revenue from. We do nice lobbies. We have made mistakes in lobbies, making them too grand or tall. We did a project with Philip Johnson where when he came and walked through the lobby and said, "I made a mistake." It was too tall, and when you walked through it you felt uncomfortable, so Philip had us hang banners from the ceiling to improve the proportions. So we learned from that. Lobbies are expensive, and to a degree they are wasted space. We try to make a lobby inviting with things like furniture and fountains, something that generates interest to make people want to sit there. We try to make very nice lobbies, but we try not to overdo it.

P47 What are other common mistakes in implementing design features?

JL We are trying to stay on the cutting edge and constantly looking for ways to do things in new and better ways. We are trying to stay ahead of the competition, and any time that you do that you run the risk of doing something that doesn't work. Luckily we haven't made any big mistakes. We are pretty conservative. We test things out in labs and install things on our existing buildings to try them out. We make mistakes every day, but we learn from them.

HJ Jerry's office looks like a showroom. He has different light fixtures and kinds of glass.

JL The lighting manufacturers send us prototypes that are not yet on the market, and we put them in our offices to test and help redesign the fixtures if necessary. We also like to do that to make sure something works before we put in our own buildings.

P47 You said architects often make decisions that make no financial sense. Are they also choices that make no sense for the occupant of the building?

HJ The perennial test is how much the plain rectangle costs. Users may want something that is a whole lot nicer but are under financial pressure because they know how much the box costs. The exception is a rapidly growing company that is making so much money that real estate is just a fraction of its costs. They can be much more creative and forward-looking—that is the architect's ideal client.

P47 Would streamlining the process from conception to completion help minimize mistakes or test the design against the "plain rectangle"? Have you experimented with early collaboration between the architect and the contractor?

JL We have done very little design-build. When you do that you are taking the design through schematic design, handing it to a contractor, and they will give you a guaranteed maximum price and take responsibility for the design. The problem is that there is only so much shown on schematic drawings; from there the design-builder

40 Mercer Street, New York City.

controls the design. As they begin to finish the design, for example, they show us a detail and the architect says that's not what I had in mind, and we also say that is not what we had in mind, and the design-builder says, well if you want what you had in mind, you will have to pay more money. So they control the design and thus the costs. We have had bad luck with that. We haven't done that much of it, but it just is in conflict with trying to control the quality of design that is so important to us.

P47 Can you identify any issues common to your most financially successful or profitable projects?

JL Sustainability is a big feature of the buildings we are designing and building today. We want them to last longer, but I can't prove if it makes them more valuable assets to our investors/partners. However, we find that sustainability is an important part of marketing a building. We look at both energy and the working environment, which has become much more important in the last five to ten years. Clients understand that a healthy and productive environment is key to recruiting and retaining employees. Our people tell us that when they visit colleges to recruit, one of the first five questions a graduating student asks is, "What is your firm's position on sustainability?" So if you are going to recruit people you need to be focused on it. We typically do higher ceilings and floor-to-ceiling glass, which works against energy conservation, so we do other things to offset that and create an energy-efficient building. We make buildings with very good indoor air quality. We find then that our buildings get LEED certified at various levels and we are able to lease them easily.

HJ Additionally, market timing is key. In terms of financial success, if you look at the outlier buildings that are unusually successful or unsuccessful, luck has a lot to do with it, assuming they all have good design and location. No one can really predict what the market will be like when a building is finally delivered. The buildings that have been most successful became so when the market improved more than we thought it would four or five years before. In two of our most successful buildings, the tenant actually went broke while we were building, but we happened to finish it in a very good market, so it was just pure luck. On the other hand, those that have not been successful are when, four or five years out, you are in the middle of a 2008.

P47 Your company obviously sees the value of good design. What is it that most businesses do not understand about architecture or the value of design?

HJ I would think it is a shorter view, or perspective. The quality of design helps more and more over time. If you are going to construct a building and sell it right away, then all you are thinking is, "When I sell this the year after next, can I get fifteen percent profit on cost?" Also, you can't model the benefit of a good architect; some people just don't believe in the added value.

P47 Do you have any advice for how architects might be able to demonstrate their value to developers?

HJ If you look in the New York trades at these buildings that are super-expensive, some of them are incredible designs and others are not. So I don't think you can prove that better architecture always leads to higher value. I wish you could. The most successful architects are able to explain the "feel" of the building. You can give examples of how better architecture stands the test of time. Also, the factors that Jerry mentioned, such as light, energy efficiency, and space efficiency can be demonstrated.

P47 Is that a reason why architects might really want the buildings they are responsible for to be financially successful, so they can integrate that into the firm's reputation?

JL Absolutely. They would love to be able to say, "Every project I have done has been a financial success." That would be a great thing.

RICHARDSON'S DEATH, AMES'S MONEY, AND THE BIRTH OF THE MODERN ARCHITECTURAL FIRM

Jay Wickersham
and
Christopher Milford

What happens to an architecture firm when the founder retires? It's a problem that challenges architects to this day, but it arose in the late nineteenth century with the emergence of professional offices staffed by skilled assistants. Sometimes, but rarely, the answer was inheritance: if the founder had a son working alongside him, the office might turn into a family business, bequeathed to an heir. Otherwise a practice would dwindle out and disappear along with its founder. But there was an alternative, as shown by the fate of Henry Hobson Richardson's office after the death of its larger-than-life founder. Richardson's successors were able to transform his reputation and client base into a marketable asset. They demonstrated how a second generation could take over a famous architect's practice and reshape it to their collective inclinations and desires.

On April 27, 1886, H. H. Richardson, America's most famous and successful architect, lay dying. He was only forty-seven years old. Although Richardson had been a very sick man for years, he had made no plans for succession; he saw his office solely as an instrument of his personal artistic vision.

Over the next month Richardson's three principal assistants, George Shepley, Charles Rutan, and Charles Coolidge, created a new firm with an independent identity to carry on after the master's death. These young architects (only twenty-five to thirty-five years old) were guided and financially underwritten by two business innovators, both long-standing friends of Richardson's: Edward "Ned" Hooper, a Boston lawyer and treasurer of Harvard College, and Frederick Lothrop Ames, an industrialist who was Richardson's leading client. The recent discovery of an unpublished letter from Hooper to Ames, written six days after Richardson's death (and attached in its entirety at the end of this article), together with business documents preserved by the firm,[1] allow us to tell the story of this crucial step in the emergence of the modern architectural firm.

Richardson's office staff, January 1886. (SBRA Archives, used by permission of SBRA).

In 1874 Richardson moved from New York to the affluent Boston suburb of Brookline so that he could better oversee the construction of his largest project, Trinity Church, in Boston. He rented a house owned by Hooper, a Harvard classmate. For the next four years Richardson worked at long distance, sending sketches of his designs to the New York office maintained by his partner, Charles Gambrill. In 1878 he dissolved the partnership with Gambrill and began to develop an office in Brookline.

Richardson grew the first truly national architectural practice. At the time of his death the office had twenty-five ongoing projects at all stages of design and construction, located from Boston to Chicago and St. Louis, and ranging in size from large houses to the immense Allegheny County Courthouse complex, in Pittsburgh. His reputation stood so high that in 1885 when the *American Architect and Building News* polled architects on the best buildings in America, five out of

Henry Hobson Richardson; unknown photographer, c. 1880 (Van Rensselaer, *Henry Hobson Richardson and His Works*, frontispiece).

the top ten were designed by Richardson.[2] The scope of his practice and the demands of emergent general contractors such as Norcross Brothers, who needed detailed plans and specifications in order to give fixed-price bids on large projects,[3] all gave rise to the largest and most professional private office of its era in the United States. James O'Gorman has described in detail the working methods of Richardson's office,[4] where up to twenty-one draftsmen,[5] many of them trained in the architecture program at the Massachusetts Institute of Technology (MIT), worked in a rambling one-story studio addition to Richardson's house.

Edward "Ned" Hooper; unknown photographer, c. 1885 (*Later Years of the Saturday Club*, following p. 256).

With the growth of Richardson's practice, three principal assistants took on key roles. Charles Rutan had the longest tenure of any employee, having begun working for Richardson as an office boy in 1869. He was the office authority on engineering and construction.[6] George Shepley and Charles Coolidge were among the young MIT-trained professionals who entered Richardson's office after he moved to Brookline, both starting in 1884. Coolidge was seen as the master's favored designer; Shepley emerged as the architect's alter ego at client meetings and construction sites. Richardson called him "the only man I've ever trusted to represent me."[7] Equally important, Shepley was engaged to marry the architect's daughter Julia. In March 1886 Richardson consented to their engagement; at the same time he increased Shepley's annual salary to $3,000.[8]

Although Richardson for years delegated specific management and design tasks to his assistants, he never shared ownership or control of his practice after the dissolution of his partnership with Gambrill. His friend

Frederick Lothrop Ames; unknown photographer, c. 1890 (Winthrop Ames, *The Ames Family of Easton, Massachusetts* (privately printed: 1938)).

F. L. Ames Store, Boston, MA; H. H. Richardson, designed 1886, completed 1888 (AABN 21, May 14, 1887, "Imperial Edition"), listed as "Store of Messrs. J. H. Pray, Sons & Co., Boston, Mass. H. H. Richardson, Architect"; reprinted in Jeffrey Ochsner, *H. H. Richardson: Complete Architectural Works*, p. 419.

and biographer, Marianna Van Rensselaer, wrote that Richardson "could not have consented to a division of authority in his office or have held himself accountable to any one in matters of art or business; he was too much the born autocrat, and his individual ideas and personal fame had grown too dear to him."[9]

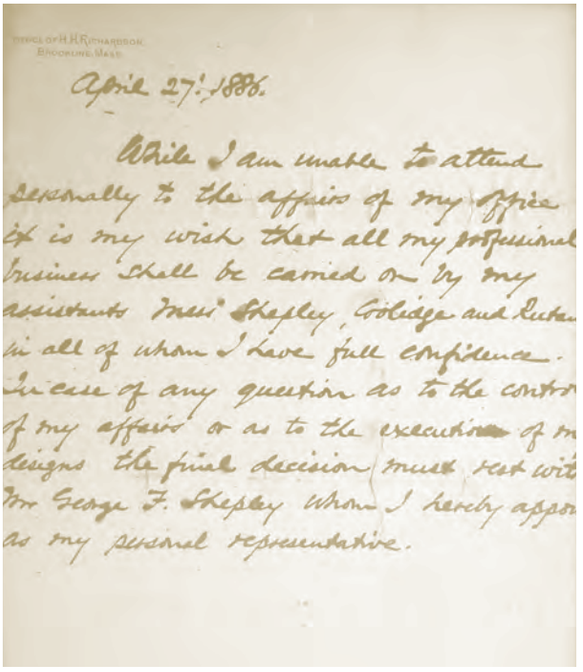
Richardson relied heavily on his assistants because of the volume of his work and because of his poor health. He had been sick for much of his adult life, suffering from Bright's disease, a severe kidney malfunction. Illness did not cause him to curtail his practice; O'Gorman believes that in his final decade, when he was literally "dying on his feet," the architect's fears of death spurred him to the extraordinary burst of late great works—often designed from his bed, where he critiqued the drawings that his assistants pinned up on the cork-lined walls of his bedroom, upstairs from the Brookline studio.[10]

In his last six months, Richardson's health declined. In March 1886 he had a severe attack of tonsillitis, followed by a worsening of his kidney disease. Richardson mentioned only the minor illness when, on March 29, he dictated his last letter to Ames: "I have got tonsillitis, and your elevation ready. The tonsillitis is bad, but I think the scheme for the elevation is good."[11] The elevation to which Richardson referred was a six-story commercial building on Harrison Avenue, on the edge of downtown Boston, described by Henry-Russell Hitchcock as "Richardson's last great work."[12]

Nevertheless Richardson was determined to travel to Washington in early April to review several projects. Frederick Law Olmsted saw him for the last time in Washington and was deeply worried by his friend's weak condition.[13] On Richardson's return to Brookline he was bedridden and in great pain. At last he began to think and talk about the future of his practice with a mixture of hope, realism, and denial. On April 27, the day he died, he told his doctor that he wanted to live two more years so he could see the completion of the Allegheny Courthouse and the Marshall Field store.[14] On the same day he wrote a short unsigned document:

> While I am unable to attend personally to the affairs of my office it is my wish that all my professional business shall be carried on by my assistants Mess'r Shepley, Coolidge and Rutan in all of whom I have full confidence. In case of any question as to the control of my affairs or as to the execution of my designs the final decision must rest with Mr. George F. Shepley whom I hereby appoint as my personal representative.[15]

Even this document was phrased as a power of attorney rather than as a will. Richardson granted Shepley and the other two assistants temporary authority to carry on "my affairs" and complete "my designs" while he was incapacitated—without acknowledging his impending death or the need to plan for the office's future ownership and operations. Yet in taking this step Richardson devoted more energy to his architectural legacy than he did to the financial future of his wife and six children. He never wrote a will, and the probate documents for his intestate estate show that despite the generous fees he collected, he died leaving his family over $4,000 in debt.[16]


OFFICE OF H.H. RICHARDSON
BROOKLINE, MASS.

April 27th 1886.

While I am unable to attend personally to the affairs of my office it is my wish that all my professional business shall be carried on by my assistants Mess'r Shepley, Coolidge and Rutan in all of whom I have full confidence. In case of any question as to the control of my affairs or as to the execution of my designs the final decision must rest with Mr George F. Shepley whom I hereby appoint as my personal representative.

Richardson's deathbed letter, April 27, 1886. (SBRA Archives, used by permission of SBRA).

Now let us shift the focus to his three young assistants: Shepley, Rutan, and Coolidge. They confronted, with little warning and less preparation, the challenge of completing the final works of America's greatest architect while providing for their own professional and financial futures.

After Richardson's death, Shepley emerged as the leader of the trio. The clarity and decisiveness of his actions showed his leadership skills; they also suggested that he had anticipated this challenge and had started planning for it in advance. Hooper's letter shows that by May 3, only six days after Richardson's death, Shepley had already developed a fully fledged plan to continue the practice; he had discussed it with his prospective partners, with Horace Chafin, the court-appointed administrator of Richardson's estate, and with Hooper; and he had won the support of all parties.[17]

In planning the new firm Shepley was relying on two of Boston's most experienced business advisors, both of whom had long-standing professional and personal ties to his former employer.

Hooper was a leading Boston lawyer and part of the closely knit group who comprised Richardson's friends and leading clients; he was also, as previously mentioned, the architect's Brookline landlord. He acted as a trusted confidential advisor in managing the affairs of Boston families, businesses, and institutions. As the treasurer of Harvard College, Hooper may have helped direct two major commissions to Richardson, Austin and Sever Halls.

His sisters, Clover Adams and Ellen Hooper Gurney, had also been clients.[18]

The other major figure in this story, Frederick L. Ames, led the third generation of one of New England's most successful industrial families. The Ames Shovel Works, established by his grandfather in the village of North Easton, Massachusetts, had grown into a factory complex that produced sixty percent of the world's shovels. Upon the death of his father in 1877, Ames had succeeded to the role of overseeing the family's investments in many different business sectors, from railroads and commercial real estate to a stake in the founding of General Electric. When he died in 1893, he was on the boards of fifty-two companies.[19]

Ames had been Richardson's most significant client; his family gave the architect fourteen separate projects, nine of them built, ranging from a library, a town hall, and a train station in North Easton to three large commercial buildings in downtown Boston and Richardson's most personal and idiosyncratic design, the muscular gate lodge to Langwater, Ames's North Easton estate. It is unknown how Ames first met Richardson, but like Hooper he shared many social connections with the architect. Both were Harvard graduates; Ames had also been a Harvard classmate of Gambrill, Richardson's former partner. Other possible links included the Massachusetts Horticultural Society and the Unitarian Church. Over time a relationship of intimacy and trust developed between the expansive, gregarious architect and the cool, reserved financier.[20]

In short, in the wake of Richardson's death, Shepley and his colleagues could turn to Hooper to serve as their advisor, drawing on his experience as lawyer and counselor. And Hooper turned to Ames for his business acumen and financial backing; Ames's approval would be an immensely valuable symbolic guarantee of the firm's stature to other potential clients. Both men were deeply involved in the post-Civil War transformation of American business: a time when collectively organized corporations and partnerships were displacing individual business owners and entrepreneurs as the building blocks of the economy. As Hooper and Ames understood, a firm had come to be seen as an independent entity that controlled its own assets and enjoyed a continuing existence.[21]

Shepley faced three principal business challenges in trying to transform Richardson's practice into a new firm. He needed to resolve the division of ownership; he needed legal control of Richardson's key assets, his contracts and drawings; and he needed sufficient working capital for the start-up period.

In his deathbed letter Richardson had already instructed Shepley, as his prospective son-in-law, to team with Coolidge, the other young MIT-trained designer, and Rutan, the in-house authority on engineering, construction, and finances. But this didn't necessarily mean giving them full status as partners, with equal rights of ownership and management. Hooper had consulted with Leopold Eidlitz, a New York architect who was a trusted colleague and friend of Richardson:

> Eidlitz... dislikes Rutan, and advised strongly that one man & not a partnership should handle the business, but Shepley needs both Rutan & Coolidge, & thinks best to give them the position of partners, with reserve of final control to himself.[22]

As Hooper's letter describes, Shepley disregarded Eidlitz's advice and structured the new practice as a partnership among himself, Rutan, and Coolidge. They would each take $3,000 in annual salary, and they would divide any additional profits (or losses) equally, both from the existing Richardson projects and from any new work. Consistent with Richardson's deathbed instructions, Shepley would "have the final decision and control as to matters about which the partners may differ."[23]

The choice of a partnership for the new venture was not preordained. By the late nineteenth century the limited liability protections offered by corporations were increasingly available for businesses of all types. Partners remained jointly and severally liable for the partnership's debts—unlike a corporation's stockholders, who were liable only to the extent of their investments and could not be sued individually if the company failed.[24] But lawyers, merchants, financiers, and architects continued to favor the partnership form because they believed it ensured greater effort and vigilance from its principals.[25]

Shepley's decision to invite Coolidge and Rutan to join him as partners—to which Hooper and Ames evidently concurred—was a critical one. The urban practices against which Richardson's successor firm would have to compete—Peabody & Stearns and Sturgis & Brigham, in Boston; McKim, Mead & White, in New York; Burnham & Root and Adler & Sullivan, in Chicago—all brought together some combination of complementary artistic, technical, and business skills in their leadership. For Shepley to try to carry on as Richardson's sole artistic heir would have been tempting but also foolhardy.

To make the practice work, the partners needed control over Richardson's most important assets: the contracts and drawings for his existing projects. These now belonged to his widow, Julia Hayden Richardson, who was also Shepley's prospective mother-in-law.[26] Without these assets Richardson's deathbed letter was a hollow promise since it would be impossible for his successors to carry on the practice.

The twenty-five projects then underway offered both a great responsibility and a great business opportunity. Shepley had already telegraphed the principal out-of-town clients for whom projects were underway, including the Allegheny County Commissioners (for the Pittsburgh Courthouse and Jail, both under construction), the Cincinnati Chamber of Commerce (their new building was currently out to bid), and in Chicago, Marshall Field (his wholesale store was under construction), and the Glessners (the drawings for their large new house had just

been completed and the project was out to bid).[27] On May 3, while Hooper was writing to Ames, Shepley was getting on a train headed west to meet these clients in person and try to convince them to stick with him and his partners.[28]

If the contracts and drawings for the ongoing projects were to be transferred to the new firm, Chafin, administrator of the estate, would require the payment of compensation to Mrs. Richardson. These assets were her only inheritance; her husband had otherwise left her nothing but debts. Under Shepley's plan, in addition to the initial purchase the partners would commit to pay Mrs. Richardson "any surplus of net receipts [beyond their salaries] up to the sum of one hundred thousand dollars."[29]

Where would the working capital come from to launch this venture? Then as today, architecture was a competitive and relatively low-margin business. Outside investors were not drawn to it because it lacked the high profits and rapid growth potential seen in railroads and other industrial sectors. For Shepley, Rutan, and Coolidge, the primary source of capital would have to be their own financial resources, along with the reinvestment of their profits back into the business.

But in this start-up phase they did not yet have any profits to invest. The partners needed to buy the contract rights and drawings from Richardson's estate, and pay the staff and themselves until fees started coming in. None of the three were rich; Shepley thought he could raise no more than $5,000 among his own friends. Hooper informed Ames that the partners would need another $10,000 to $20,000 beyond what Shepley could manage. He had agreed to let Richardson's widow and children stay in the Brookline house for the next five years, presumably at a nominal rent, but "I cannot conveniently do much more now, except to fill some small gaps which I foresee as to certain personal debts &c."[30]

Hooper now came to the central point of the letter: Was Ames willing to provide the necessary start-up financing for this new venture entirely on his own? And was he willing to forgo any guaranty of repayment from the young architects and risk his entire investment if the firm failed? Hooper's letter closed with a statement of his confidence and trust in young Shepley and a direct appeal to Ames's loyalty toward Richardson's memory:

> I think Shepley shows much sense and pluck about the whole matter. I have assured him that any advances made to him would be made with a full knowledge of the risks of the business, and that he would not be left with a load of personal indebtedness, if after doing his best & risking some money of his own for Mrs Richardson's benefit the venture should fail. I assume that this was your understanding as to any advances you might be willing to make to him.[31]

Time was pressing. Richardson's architectural projects were proceeding and needed direction, Shepley was already headed west, and Hooper himself was sailing to Europe that same day, May 3.[32] Hooper had recommended that Shepley should meet with Ames when he returned from his western trip, in about ten days, to see whether Ames would finance the new venture.[33]

Subsequent events unfolded largely as Shepley and Hooper had anticipated. On May 26, 1886, less than a month after Richardson's death, the legal and financial arrangements were completed. Their plan proceeded with remarkable speed, precision, and fidelity to create the new firm that would complete Richardson's unfinished projects and carry on into the future. With Hooper by now in Europe, Ames played the central role in this transition; he had the business experience to convert the tangle of Richardson's affairs into statements of legal rights and duties, of financial assets, liabilities, and revenue streams. Certainly only a man of Ames's reputation could have convinced Chafin—who as administrator of Richardson's estate had a fiduciary duty to protect its resources for the benefit of the architect's widow and children—to agree so quickly to what must have seemed a highly uncertain venture.

The principal change from the initial plan outlined in Hooper's letter was the splitting of the venture into two separate partnerships. The first would "carry on and complete all architectural and decorative work begun by H. H. Richardson."[34] A memorandum signed by the three partners and by Chafin acknowledged that Shepley, Rutan, and Coolidge had obtained the consent of Richardson's clients to complete his projects, and that "there was probably due to him at his death no very large amount of money for professional services." On that basis the estate conveyed to the partners for $5,000 all of its claims for payments on the current contracts, together with the good will value of Richardson's practice. The estate also sold the drawings to the partners, for an appraised value of $5,000, adding up to a total purchase price of $10,000.[35]

The contract for the Allegheny County Courthouse, the most valuable asset in Richardson's estate, was separately assigned to the partners for one dollar.[36] The partners, Ames, and Arthur Blake (another former client of Richardson's)[37] pledged jointly to act as sureties in the amount of $20,000—in effect privately insuring the estate against any risk associated with the Courthouse project (for example, in case of a construction failure caused by defective design).[38] Thus the total investment equaled $30,000, higher than Hooper's estimate, but only $10,000 had to be paid in cash. Of that amount it appears that Shepley and Coolidge each put in $2,500,[39] with the balance coming from Ames and Blake.

This first partnership was intended to be a temporary arrangement that would dissolve upon the completion of Richardson's projects.[40] Upon dissolution and the payment of expenses, a separate agreement among the partners stated that up to $90,000 would be paid to Mrs. Richardson, with any residue divided among the partners. The document stated that this was a voluntary act of the partners, made "by reason of their affectionate gratitude to the said Henry H. Richardson and their regard for his wife and family, which they recognize as imposing a high moral

Ames Gate Lodge, Easton, MA; H.H. Richardson, designed 1880, completed 1881. *Inland Architect*, December 1885.

Heliotype Printing Co., Boston.

GATE-LODGE for F. L. AMES, ESQ., NORT

TH EASTON, MASS.—INTERIOR VIEW.

Previous spread Ames Gate Lodge, Easton, MA; H. H. Richardson, designed 1880, completed 1881 (AABN, December 26, 1885).
Above Rendering of Ames Building, Boston, MA, by D. A. Gregg; Shepley, Rutan & Coolidge, designed 1889, completed 1891 (SBRA Archives, used by permission of SBRA).

THE HOOPER LETTER

40 STATE ST. BOSTON
MAY 3 1886

Dear Mr Ames

As I am to sail for Europe next week I think it well that I should leave with you in writing this statement of present understanding with Mr. Shepley as to the carrying on of Mr Richardson's business.

Mr Shepley proposes at once to form a partnership with Charles Rutan and Mr Coolidge, as nearly as practicable upon the following terms:

1st. Mr Shepley is to have the final decision and control as to matters about which the partners may differ.

2: Mr Shepley (having already communicated by telegraph his expectations) is to start to-day for Pittsburgh, Cincinnati, & Chicago, to get the consent of Mr Richardson's principal clients for the carrying out of existing contracts by the new firm.

3: If fairly successful in this matter, Mr Shepley is to raise personally among his own friends what money he can (perhaps about five thousand dollars) and then in his own name and on his own responsibility to borrow from friends of Mr Richardson such additional sum as may be necessary to buy from the administrator of Mr Richardson all plans, and all right as to existing contracts, together with a moderate sum to pay the expenses of office until money from clients can be got in. I have used to Mr Shepley the word "moderate" as to the amount he could probably borrow for these purposes from Mr Richardson's friends. My own notion now is that he will need in all from $10,000 to $20,000, in addition to what he can himself raise, the uncertainty depending upon the appraisal value of plans and the chances of other architects bidding for them. It is proposed to sell the books & photographs separately. Coolidge intends to buy as many of these as he can personally.

4: The articles of partnership are to provide that after payment of the expenses of office, traveling &c., including a salary of $3000 to each of the partners (and payment of salaries & wages of business for April, taking an assignment of claims against the estate) the fairly estimated next proceeds of all existing contracts shall be applied as follows:

(a.) to repay as soon as possible to Mr Shepley & his backers all their advances, after which Mr Shepley is to own personally all old plans.

(b.) to pay Mrs Richardson any surplus of net receipts up to the sum of one hundred thousand dollars.

(c.) to divide any further surplus equally between three partners, who also share equally all new business.

The sum of $100,000 as possible for Mrs Richardson seems to me excessive, and I think that in order to encourage the partners to work (Rutan especially) it may be necessary to name a smaller sum for Mrs Richardson.

Mr Horace B. Chafin has been appointed administrator, and he will probably be ready to consider and submit to the Court an offer for plans as soon as Mr Shepley comes back, which will probably be in about ten days. I have told Mr Shepley to lay the whole matter before you when he comes back. If he does not need more than you are willing to advance on such a risk, it will be better for him not to go to any other of Mr Richardson's friends. If he needs too much, I think Mr C.F. Adams Jr., Mr Arthur Blake, Mr C.S. Sargent, & perhaps others whom you will think of might help. I have already arranged with Mrs Richardson for occupancy of the Brookline estate for the next five years, and I cannot conveniently do much more now, except to fill some small gaps which I foresee as to certain personal debts &c.

Mr Rutan, who is the best man in the office as to figures, is very confident that there can be great reduction of expenses, that most of the old business can be secured, and that a large net result for Mrs Richardson is probable. He seems to me too confident. Eidlitz said to me that the plans and old business were worth little if badly handled—much in good hands. He dislikes Rutan, and advised strongly that one man & not a partnership should handle the business, but Shepley needs both Rutan & Coolidge, & thinks best to give them the position of partners, with reserve of final control to himself. I think Shepley shows much sense and pluck about the whole matter. I have assured him that any advances made to him would be made with a full knowledge of the risks of the business, and that he would not be left with a load of personal indebtedness, if after doing his best & risking some money of his own for Mrs Richardson's benefit the venture should fail. I assume that this was your understanding as to any advances you might be willing to make to him.

Shepley and Miss Julia are to be married in June, & to live with Mrs Richardson, such an arrangement seeming to the family the best solution of existing problems.

Yours very truly
E.W. Hooper

duty." Mrs. Richardson would not have any legal claim on the assets of the partnership.[41]

The second partnership would be a continuing venture; the trio would "carry on the profession and business of architecture" under the name of "Shepley, Rutan & Coolidge." Under the new contract profits and losses would be equally divided, and all three partners would have equal powers to make decisions; the new firm did not grant Shepley the same veto power that he possessed over Richardson's work.[42]

The dual partnership structure reflected the dual nature—both backward- and forward-looking—of Shepley, Rutan, and Coolidge's venture. The first partnership reflected the dynastic view of an architectural practice that, if it survived at all, was bequeathed to family members—just as Richard Upjohn's New York practice had been passed on to his son in 1872 and Richard Morris Hunt would pass his practice on to his son in 1895.[43] In his deathbed letter, Richardson had anointed Shepley as the ultimate arbiter for executing his designs because of his status as the architect's future son-in-law. Shepley and his partners, in turn, worked faithfully to carry out Richardson's intent. They always credited the unfinished projects as designed by Richardson, and not by their new firm.

The second partnership was a business venture rather than a family affair, and its name—Shepley, Rutan & Coolidge—implied the break from the past. In agreement with Hooper's letter, Shepley recognized that he needed the complementary artistic and business talents of the other two. And where Shepley's controlling vote in the first partnership implied a succession from Richardson to his chosen heir, the equal votes of the trio in the second partnership reflect Rutan and Coolidge's insistence on its professional and business character.[44]

The success of Shepley, Rutan & Coolidge repaid the trust that Hooper and Ames had placed in the three young architects. Shepley and Coolidge wooed clients and oversaw the designs, while Rutan managed construction supervision and the office's business affairs. Coolidge acted as the firm's principal rainmaker right up until his death, in 1936. He discovered this talent early on:

> I made a deal with the firm we formed (Shepley, Rutan & Coolidge). I had never traveled much around the United States, and I wanted to do so... and if in this way I got any work, they, of course, could pay my expenses; if not, I could pay them myself. The result of this was that I got a good deal of work, and at one time I had offices in St. Louis, New Orleans, Chicago and San Francisco...[45]

"A good deal of work" is an understatement. Coolidge landed a series of very large projects across the country, starting in 1888 with the campus for Stanford University, in Palo Alto, California. Coolidge capitalized on his relations with Leland Stanford's principal advisors, Olmsted and Francis A. Walker, who was the president of MIT and Coolidge's cousin. And the young architect was undaunted by challenges; when his impatient client wanted to start construction at Stanford immediately, "I made the drawings during the night, and they dug the foundations during the daytime."[46]

In Chicago the firm won the commissions for two major cultural institutions, the Art Institute of Chicago (awarded in 1892) and the Chicago Public Library (won through a design competition in 1896). Projects in the Boston area ranged from train stations to office buildings and a series of projects at Harvard: Coolidge forged a relationship for the firm as the university's architect of choice that would endure through the 1960s.[47]

As Coolidge noted in his memoir, the firm supported its expanding national practice by creating branch offices. The strategy helped them develop and maintain client relationships in different marketplaces. The San Francisco office grew out of the work at Stanford University. St. Louis was Shepley's hometown; this connection, which had already produced several projects during Richardson's lifetime, became stronger still. In Chicago the partners sought to allay the jealousy of local architects, who had started calling the firm "Simply Rotten & Foolish" after it won the Art Institute and Public Library commissions, through their continuing local presence. The creation of the Chicago office led in turn to the commission for the University of Chicago, where the firm designed the campus master plan and most of the principal buildings.[48]

The designs of the young firm initially carried Richardson's signature Romanesque Revival manner, as shown by such far-flung projects as the Granary Exchange, in Boston; the Shadyside Presbyterian Church, in Pittsburgh; the Lionberger Warehouse, in St. Louis; and the Howard Memorial Library, in New Orleans. Within five years of Richardson's death, the partners started to branch out stylistically. The buildings at Stanford incorporated materials and ornament inspired by the Spanish Colonial missions. The firm's earliest independent work at Harvard, Perkins and Conant Halls, were the university's earliest example of Georgian Revival. Their unbuilt 1891 competition design for the Rhode Island State Capitol was a full-blown exercise in classicism, prefiguring the designs for the Art Institute of Chicago, the Chicago Public Library, and the Harvard Medical School.

It may seem surprising that Shepley, Rutan & Coolidge would abandon the design approach for which the firm was so well known; Richardsonian Romanesque may indeed be the only architectural style named for an individual creator. But, as Jeffrey Ochsner has shown, by 1885 what was then known as Romanesque Revival, or even Modern Romanesque, was being used widely among architects designing civic and commercial buildings across the country.[49] Even before Richardson's death, the firm was losing commissions to its imitators.[50] The shift away from the Romanesque after 1895 was reflected in the work of other prominent firms, including Peabody & Stearns, in Boston, and Daniel Burnham & Co., in Chicago. The precise nature of Shepley and Coolidge's motivations may reflect a mixture of outside

market pressures, personal curiosity and innovation, and the desire, conscious or unconscious, to declare artistic independence from their former master.

Ames continued to act as a leading patron for Shepley, Rutan & Coolidge until his death in 1893, even as his family members were turning to other architects. He commissioned the firm to renovate and expand the main house on his Langwater estate in a late medieval French chateau manner, closer in style to the contemporary houses of Richard Morris Hunt than to Richardson's work. Ames also gave Shepley, Rutan & Coolidge the commission for Boston's first skyscraper, the fourteen-story Ames Building. It was one of the firm's last buildings in Richardson's signature style. When it was completed in 1891, both the client and the architects moved their offices into its top floors.[51]

The aftermath of Richardson's death marks the birth of the architectural firm as a continuing business. Shepley, Rutan, and Coolidge showed how a firm could outlive a prominent founder if it has both artistic vitality and economic value in the marketplace. Their success provided a model for other architectural practices. New York's McKim, Mead & White rejuvenated itself by admitting new partners following White's murder in 1906 and McKim's subsequent retirement. In Chicago, following Daniel Burnham's death, in 1912, his surviving partner, Ernest Graham, and three other principals reorganized the firm as a partnership: Graham, Anderson, Probst & White.[52] Hooper's and Ames's involvement with Shepley, Rutan & Coolidge ties the emergence of the modern architectural firm to the post-Civil War transformation of American business. This story marks a pivotal moment in the metamorphosis of architectural practice, from the work of individual artists and craftsmen to the collectively organized enterprises that dominate the field today.

1 The firm still exists today, as Shepley, Bulfinch, Richardson, & Abbott Inc (SBRA). Dating its founding from 1874, when Richardson moved to Massachusetts, it has been in continuous practice for 140 years. Our thanks to the Ames family and to SBRA and its archivist, Robert Roche, for making their archival materials available, and to James O'Gorman and Jeffrey Ochsner for their helpful and incisive comments on our paper.

2 "The Ten Best Buildings in the United States," *American Architect and Building News (AABN)* 17 (June 13, 1885): 282.

3 On the relationship with Norcross Brothers, Richardson's favored builder, see James O'Gorman, "O. W. Norcross, Richardson's 'Master Builder': A Preliminary Report," *Journal of the Society of Architectural Historians (JSAH)* 33 (May 1973): 104–13; see also Sarah E. Wermiel, "The Rise of the General Contractor in 19th Century America," *FMI Quarterly* 3 (2008): 117–29.

4 James O'Gorman, "The Making of a 'Richardson Building,' 1874–1886," in *Selected Drawings, H. H. Richardson and His Office* (Cambridge, MA: Harvard College Library, 1974), 1–36. Jeffrey Ochsner, in "The First Modern Practice? H. H. Richardson and His Office," *Proceedings of 81st Annual Meeting of ACSA* (1993); 231-35, suggests that the managerial innovations of Richardson's practice provided a model that was adopted by other firms to meet the challenges of multiple large projects and complex building technologies.

5 Shepley, Rutan & Coolidge General Ledger, 1886-1889, vol. 1 (Archives of Shepley, Bulfinch, Richardson & Abbott Inc. [SBRA Archives]).

6 James O'Gorman, *Living Architecture: A Biography of H. H. Richardson* (New York: Simon and Schuster, 1997), 92, 104; J. D. Forbes, "Shepley, Bulfinch, Richardson & Abbott, Architects: An Introduction," *JSAH* 17 (1958): 19-20.

7 Julia Richardson Shepley, undated memoir, p. 7 (SBRA Archives). Although a series of talented draftsmen assisted Richardson over the course of his career, including Charles McKim, Stanford White, H. Langford Warren, and Alexander W. Longfellow, he did not give any of them the degree of responsibility and trust with which he favored Shepley.

8 On Shepley and Coolidge, see O'Gorman, *Living Architecture*, 159–60, 187–88; and Forbes, "Shepley, Bulfinch, Richardson & Abbott."

9 Mariana G. Van Rensselaer, *Henry Hobson Richardson and His Works* (New York: Dover, 1969, reprint of 1888 first edition), 123.

10 O'Gorman, *Living Architecture*, 154, 167, 187.

11 H. H. Richardson to F. L. Ames, March 29, 1886 (private collection).

12 Henry-Russell Hitchcock, *The Architecture of H. H. Richardson and His Times* (Cambridge, MA: MIT, second edition, 1966), 283-84. The building was demolished in the 1950s.

13 Van Rensselaer, *Henry Hobson Richardson*, 36.

14 O'Gorman, *Living Architecture*, 185.

15 H. H. Richardson, unsigned memorandum, April 27, 1886 (SBRA Archives); reprinted in Hitchcock, p. 330, note XIV-20, and in Julia Heskel, *Shepley Bulfinch Richardson and Abbott* (Boston: SBRA, 1999), 19.

16 O'Gorman, "Documentation: An 1886 Inventory of H. H. Richardson's Library, and Other Gleanings from Probate," *JSAH* 41 (May 1982): 150-55.

17 E. Hooper to F. L. Ames, May 3, 1886 [Hooper letter] (private collection). For Coolidge's agreement, see C. Coolidge to G. Shepley, May 3, 1886 (SBRA Archives).

18 Edward W. Emerson, "Edward William Hooper," in *Later Years of the Saturday Club, 1870–1920*, ed. M. A. DeWolfe Howe (Boston: Houghton Mifflin, 1927), 256–61. Depression and tragedy haunted the Hooper family. Both of his sisters committed suicide. Hooper himself suffered from depression. In 1901 he threw himself out a window of his Boston town house; he was committed to the McLean Asylum and died there several months later. See James O'Gorman, "A Tragic Circle," *Nineteenth Century* 2 (Autumn 1976): 46–49; Natalie Dykstra, *Clover Adams* (Boston: Houghton Mifflin, 2012); Otto Friedrich, *Clover* (New York: Simon and Schuster, 1979).

19 On the Ameses and their shovel business, see Gregory J. Galer, "Forging Ahead: The Ames Family of Easton Massachusetts and Two Centuries of Industrial Enterprise, 1635-1861" (PhD diss., MIT, 2001), and John Garner, "Architecture and Philanthropy in a Model Company Town," *Places* 5/2 (1988), 23-35. On Frederick L. Ames, see Leverett Saltonstall, "Memoir of the Hon. Frederick Lothrop Ames, A.B.," *Transactions of the Colonial Society of Mass.* (February 1894): 258-64; David Ames, "The Ames Family," in *History of Easton, Massachusetts, Vol. II, 1886-1974*, ed. Robert F. Brown (Easton, MA: Easton Historical Society, 1975), 262–69.

20 The authors are preparing the publication of twelve previously unknown letters from Richardson to Ames, the only correspondence between the architect and his leading client; these were found in the same collection holding the Hooper letter.

21 Alan Trachtenberg, *The Incorporation of America* (New York: Hill & Wang, 1982), 3–7, 82–86; Lawrence M. Friedman, *A History of American Law* (New York: Simon and Schuster, second edition, 1985), 511–25.

22 Hooper letter.

23 Hooper letter.

24 On the increasing flexibility and protectiveness of American corporate law, both judicial and statutory, in the second half of the nineteenth century, see Friedman, *History of American Law*, 511–25. The Ameses converted their shovel business from a family partnership to a corporation in 1877, following its near bankruptcy several years earlier.

25 See Naomi Lamoreaux, "The Partnership Form of Organization: Its Popularity in Early Nineteenth-Century Boston," in *Entrepreneurs: The Boston Business Community, 1700–1850*, eds. Conrad Wright and Katheryn Viens (Boston: Massachusetts Historical Society, 1997), 269-96. On nineteenth-century architectural partnerships, starting with that of Ithiel Town and Alexander Jackson Davis (founded 1829), see Mary Woods, *From Craft to Profession* (Berkeley and Los Angeles: University of California Press, 1999), 111-37.

26 Richardson's library of architectural books and photographs was another valuable asset. Coolidge purchased the library as his personal property for $5,200, with the agreement that the firm could use the books at no charge. O'Gorman, "Gleanings," 151; Memorandum of Agreement, note 35. Several years later Coolidge granted Shepley one-half ownership interest in the library. Coolidge to Shepley, April 8, 1893 (SBRA Archives).

27 On the status of these projects, see Jeffrey K. Ochsner, *H.H. Richardson: Complete Architectural Works* (Cambridge, MA: MIT, 1984). For the full list of ongoing projects, see Van Rensselaer, *Henry Hobson Richardson*, 140.

28 Hooper letter.

29 Hooper letter.

30 Hooper letter.

31 Hooper letter.

32 Hooper needed the rest badly; in October his sister Clover, wife of Henry Adams, had killed herself only months after their father had died. See works cited, note 18.

33 Hooper letter.

34 Memorandum of Agreement among Shepley, Rutan, and Coolidge, May 1886 (SBRA Archives). This document exists only in an unsigned handwritten draft.

35 Memorandum of Agreement among Chafin and Shepley, Rutan, and Coolidge, May 26, 1886 (SBRA Archives).

36 Assignment, Chafin to Shepley, Rutan, and Coolidge, May 26, 1886 (SBRA Archives).

37 Less is known about Blake's relationship to Richardson. He commissioned Richardson to design him a house in Newton Lower Falls, Massachusetts, in 1874, at a time when both men were living in New York City. When Blake's father died, he moved into his father's house in Brookline, so he did not pursue the project further. See Ochsner, *Complete Architectural Works*, 140-41. In addition to acting as co-surety for the Allegheny Court House, Blake purchased from Richardson's estate the general library, the Burne-Jones photographs, the fire screen, bric-a-brac, furniture, rugs, and "all plaster casts excepting office models," all for $2,250 (O'Gorman, "Gleanings," 150). The two families remained close; Blake's oldest daughter later married Richardson's youngest son, Frederick L. W. Richardson, the only one of his offspring to become an architect.

38 Surety agreement by F. L. Ames, A. Blake, Shepley, Rutan, and Coolidge to Chafin (SBRA Archives). Although this document, which exists only in an unsigned, undated draft, refers to the "payment" of $20,000, there is no reference to an escrow or other arrangement. It therefore appears that the five sureties were making a prospective pledge to cover future liabilities. Since the assets of the three partners were limited, Ames and Blake were effectively bearing all the risk.

39 Coolidge's share of the investment is shown by a side agreement in which Shepley agreed to repay a loan from Coolidge, to be secured by a one-half interest in Richardson's drawings. Shepley to Coolidge, December 29, 1886 (SBRA Archives).

40 Memorandum of Agreement among Shepley, Rutan, and Coolidge, note 35.

41 Agreement among Shepley, Rutan, and Coolidge, May 1886 (SBRA Archives). Like the previous agreement, this document exists only in an unsigned handwritten draft. This document, which articulates Mrs. Richardson's claim as moral and not legal, appears inconsistent with the legal obligation in the assignment to give the estate all client payments over $7,500. The explanation may be that the bulk of the expected fees were for the Allegheny Court House—and these were transferred to the partners outright.

42 Memorandum of Agreement among Shepley, Rutan, and Coolidge, May 26, 1886 (SBRA Archives).

43 Wood, *From Craft to Profession*, 116–18; Paul R. Baker, *Richard Morris Hunt* (Cambridge, MA: MIT, 1980), 166, 456-57.

44 Family considerations were not absent; Coolidge would eventually marry Shepley's sister, and in the twentieth century Shepley's son and grandson would enter the firm, but as partners, not controlling owners.

45 Coolidge, "Random Jottings" (undated memoir, SBRA Archives).

46 Coolidge, "Random Jottings."

47 Shepley passed away in 1903, and Rutan followed in 1914; Coolidge continued in active practice as the surviving founder until his death, in 1936. On the firm's early work, see Russell Sturgis, "Shepley, Rutan & Coolidge," *Architectural Record* 6 (July-September 1896). On its history, see Forbes, "Shepley, Bulfinch, Richardson & Abbott," JSAH 17:19, and Heskel, *Shepley Bulfinch Richardson and Abbott*. On the firm's work at Harvard, see Bainbridge Bunting with Margaret H. Floyd, *Harvard: An Architectural History* (Cambridge, MA: Harvard, 1985).

48 Forbes, 25; Heskel, 29–31.

49 The fullest treatment of the American Romanesque Revival, placing Richardson's work and its influence in the national context, appears in Jeffrey Ochsner, *Distant Corner: Seattle Architects and the Legacy of H. H. Richardson* (Seattle and London: University of Washington Press, 2003), 90–141. For a study of Longfellow, Alden & Harlow, the firm based in Boston and Pittsburgh that was another significant offshoot of Richardson's practice, see Margaret Henderson Floyd, *Architecture after Richardson* (Chicago and London: University of Chicago Press, 1994).

50 A prominent example is the competition for the Hoyt Library, in Saginaw, Michigan, awarded to Boston firm Van Brunt & Howe over Richardson for a design in the latter's manner. See Kenneth Breisch, *Henry Hobson Richardson and the Small Public Library in America* (Cambridge, MA: MIT, 1997), chap. 6.

51 The Shepley firm maintained its offices in the Ames Building until 1972. The building was recently renovated for use as a hotel.

52 Leland Roth, *McKim, Mead & White, Architects* (New York: Harper & Row, 1983), 335–45; Sally Chappell, *Architecture and Planning of Graham, Anderson, Probst and White, 1912–36* (Chicago: University of Chicago Press, 1992), 260.

ECOTECTONICS?

ALEJANDRO ZAERA-POLO, CAN VU BUI, VINCENT CALABRO, STEPHEN GAGE, ERIK HERRMANN, AND IAN STARLING

For architects in search of meaningful influence on the way people live, the realm of the city has always been a compelling stage for testing new ideas. While the architecture of global centers of capital has slipped into a mature stage of generic development, the developing world is on the brink of an unprecedented era of urbanization: in the next twenty years 1.3 billion people will migrate to the cities of emerging countries,[1] and in half that time these markets will produce nearly fifty percent of the expected global GDP growth.[2] These new populations will be seeking not only jobs but access to health care, infrastructure, recreation, and other advantages of urban life; it is a migration that will compress people, resources, and capital. How will the built environment adapt to such rapid changes, and how can architects take the lead? While many complex forces will shape this emerging urban order, the focus will be on two pressures in particular: finance and energy.

Following years of financial deregulation and growth of secondary markets, the contemporary city has been transformed from a fixed place to a liquid asset. Financial instruments such as Real Estate Investment Trusts (REITs) are augmenting and even replacing traditional "brick and mortar" investments. The importance of real capital has diminished greatly as new financial tools subsume it, a process that has been described as the "financialization" of the economy; economic performance is tied increasingly to complex financial systems rather than physical output. Thus, in several sectors of the built environment, appeal to investors and rate of return have become the most important aspects of a project's feasibility. The result is an imperative for predictable results and an aversion to risk from which arises a pervasive ethos of genericism heavily restricted by global industry standards of development and construction. Countless scholars within and outside of the discipline have noted this trajectory.

Meanwhile the massive challenges of urbanization and climate change are producing unprecedented frictions on the local front. Within cities the dual challenges of reducing energy consumption and confronting climate change exhaust communities coping with the responsibility of providing quality living conditions and equitable access to infrastructure. Stretched to their limits, local governments with ambitions of social equality are forced to relax restrictions on the same developers they are mandated to oversee and regulate. Local municipalities and agents desire efficient buildings that are calibrated to climatic conditions and capable of responding to site-specific criteria, yet this variability is at odds with the value-driven genericism of the majority of architecture constructed today.

What is the ultimate role of architecture caught between the top-down organization of the pro forma and the bottom-up criteria of local development? The following article outlines a scenario describing how the forces of financialization and sustainability combine to affect contemporary urbanism through two projects that speculate in physical terms on the architectural potential resulting from this convergence. The projects propose finite but expandable units of urbanism for the contemporary city that can be proliferated as infill in dense, mature cities or as replicable urban fabric in areas of new development. Here *data*—urban, economic, and environmental—is fundamental. It informs the conceptual framework and operates as the active agent in the design process—as new possibilities enabled by computational tools have provided the capacity to generate and test these propositions. These proposals explore the possibility of reconciling the parallel, and often opposing, concerns of financialization and sustainability through data-based, performance-driven building delivery mechanisms.

FROM FIXED TO LIQUID

The transformation of the global economy and concerns over the stability of our physical environment are not new phenomena. It is therefore useful to consider a brief account of how these parallel concerns have emerged and transformed over the last half-century, especially as they underscore the intensity of the contemporary situation. The rise of new and more sophisticated financial mechanisms began in the 1950s and '60s. These took many forms, but in terms of the built environment the 1960 Cigar Excise Tax Extension was crucial in the creation of REITs, a security designed to furnish small investors with opportunity to invest in large-scale diversified portfolios of income-producing real estate. Rather than purchasing physical real estate holdings, investors could invest in shares of this new security. Traditionally real estate has been distinct as an asset class due to the limited liquidity of investment. However, REITs allow for the rapid trading of real estate with the speed and ease of other market securities. In the 1990s the Clinton administration drafted legislation allowing pension funds to participate in REIT investments, bringing in large institutional investors and their collective $20 trillion in assets to the REIT market. In 1972 the total capitalization of U.S. REITs was less than $1.5 billion; today it is almost $500 billion.[3] The REIT model has since been launched in twenty countries, transforming the investment in real estate securities into a global practice.

From a broader perspective, global capital markets have quadrupled in size over the last three decades as a result of globalization and financialization of the economy. In 2008 this rapid ascent, fueled by the overleveraging of assets, was brought to a screeching halt. The world's combined financial assets lost more than eight percent of their total value, falling from $194 to $178 trillion.[4] After the crisis the prevailing sentiment was that the global financial landscape would never be the same, providing politicians with the opportunity to express the consequences of a deregulated neoliberal global financial marketplace while championing the pressing issues of social and environmental sustainability.

However, the global financial crisis has only reconfirmed the strength and resilience of the system. Two years after 2008, the value of the world's combined financial assets soared to an all-time high of $212 trillion and continues to grow.[5] World GDP has also surged, from $54 trillion during the crisis[6] to more than $71 trillion in 2012.[7]

With global capital flowing once again through the world's markets, cities both established and emerging are in competition to attract development and financing. Indebted municipalities, often unable to undertake projects due to the associated risks, seek partners capable of delivering projects that can attract equity financing. Reciprocally, developers seeking to lower the risk of development rely on an increasingly standardized set of building models and codes so as to rapidly maneuver through municipal approval and accurately predict construction costs. These trends have led to substantial physical consequences, from increases in the scale of development to the intensification of urban inequality due to the prioritization of areas deemed more desirable for investment. In short, the prevailing logic of the built environment is determined almost *entirely* by financial performance, transforming the city from a real resource into a financial asset. As such, at what cost is the environmental performance of a city marginalized when driven by finance alone? More importantly, are there possibilities to redirect these financial processes toward the production and sustainability of ecological ones?

"CRISIS OF CONFIDENCE" AND A NEW APPROACH TO ENERGY

Although he could hardly have known it then, when President Jimmy Carter delivered his televised "Crisis of Confidence" speech on July 15, 1979, he foreshadowed capitalism's environmental impact:

> "Energy will be the immediate test of our ability to unite this nation, and it can also be the standard around which we rally. On the battlefield of energy we can win for our nation a new confidence, and we can seize control again of our common destiny."

Carter blamed the country's poor environmental standing partly on the malaise clouding over the country's directionless progress; during the broadcast he cast guilt over the consumer culture that propelled the United States into becoming the global economic superpower following the Second World War. Carter went on to declare that "too many of us now tend to worship self-indulgence and consumption. Human identity is no longer defined by what one does, but by what one owns." These excesses, he suggested, contributed substantially to our environmental problems; Carter's speech was an effort to rebrand energy policy and conservation as an existential issue. In a strange twist of fate, that same year China opened its inaugural special Economic Zone (SEZ) in Shenzhen, the first step in political and economic reform toward state-sanctioned global capitalism. The first of many SEZs, Shenzhen spurred unrivaled growth and urbanization, not to mention setting the precedent for other emerging nations and consequently an environmental challenge for the world.

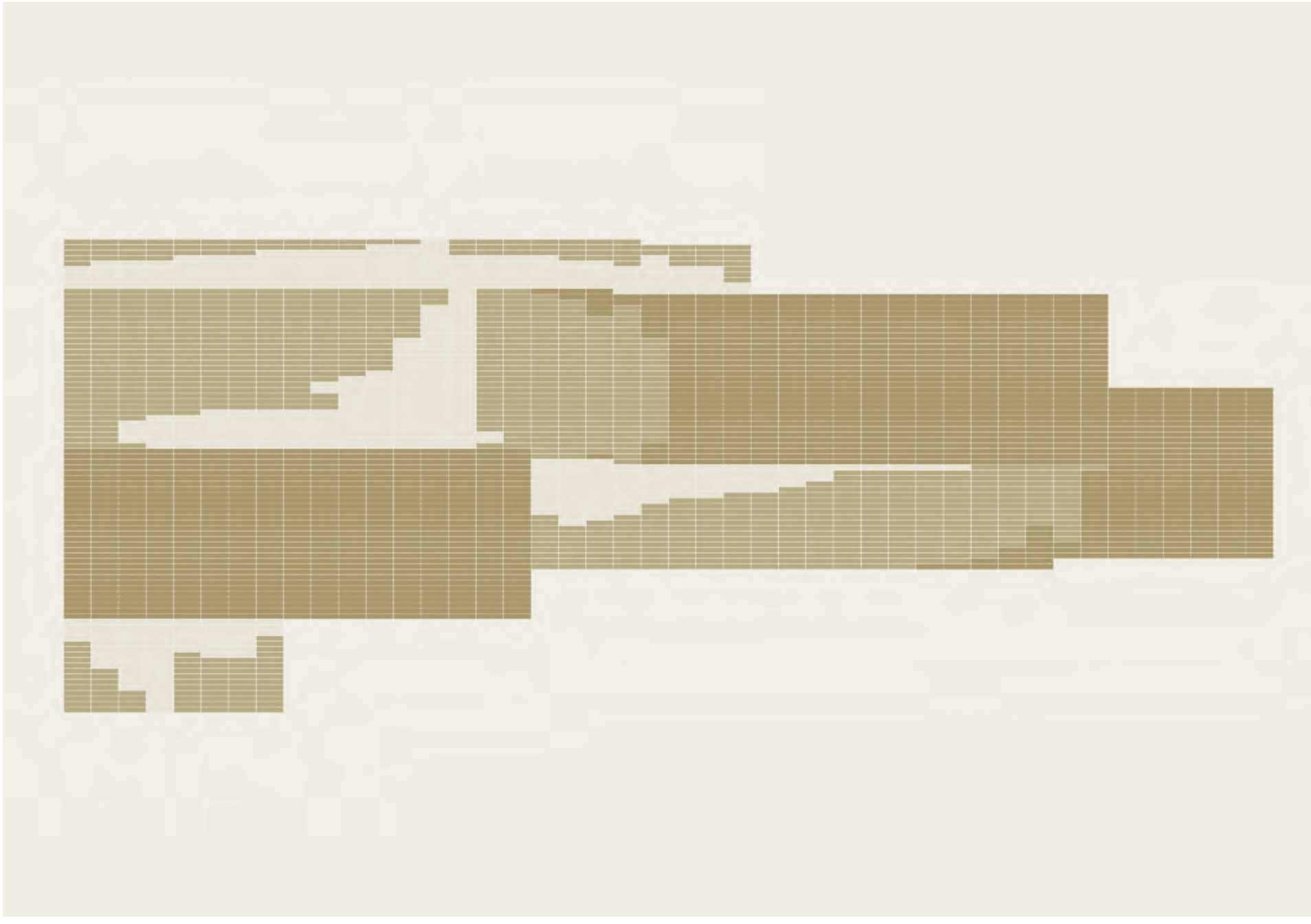
Yet even as public awareness of the environmental threat continues to escalate, efforts at curbing the potentially disastrous effects of climate change and energy shortages have been more problematic. International efforts such as the 1997 Kyoto Protocol were attempts to enforce legally binding emissions reductions, but with the failure to have major powers ratify the treaty (the United States and Russia among them), its success is debatable. Efforts in the building industry have concentrated on rating systems such as BREEAM, the UK-based assessment started in 1990, and the ubiquitous LEED scale, founded in 1998 by the United States Green Building Council.

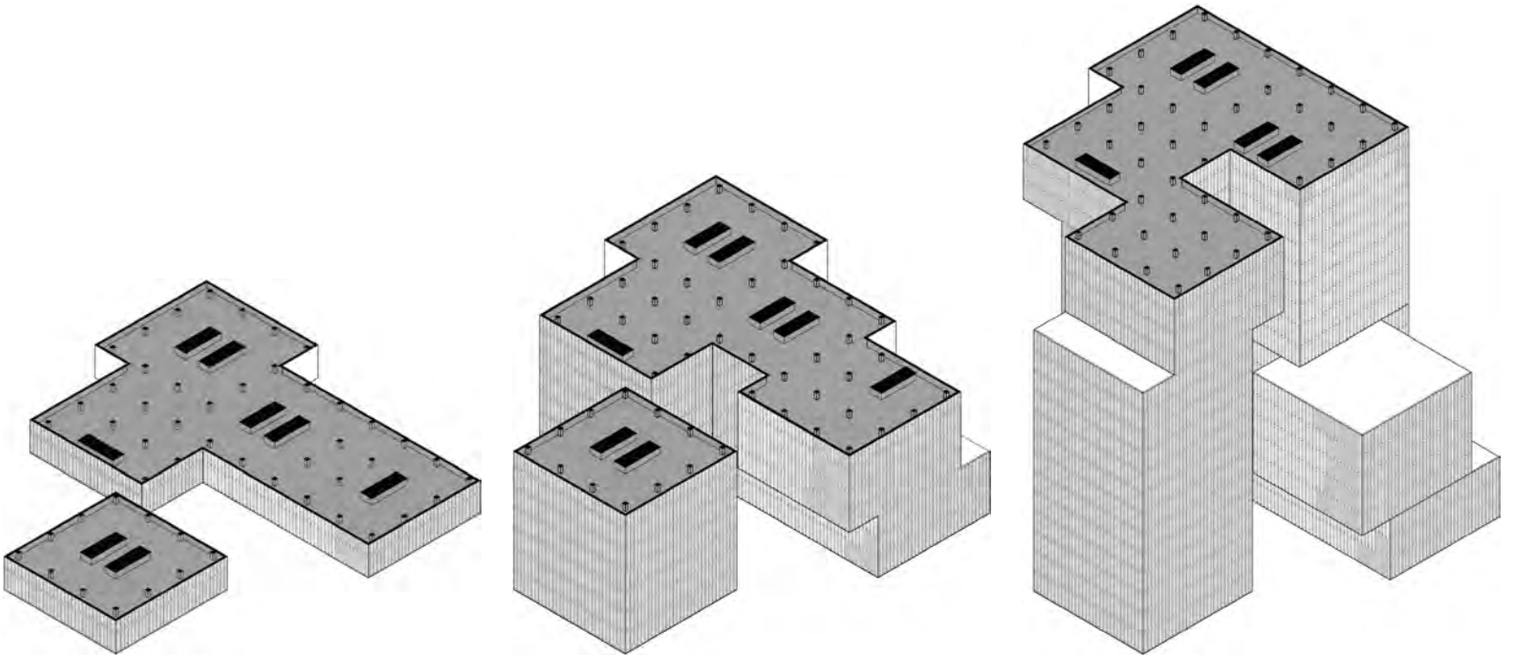
Unfortunately the real merits of these systems are difficult to assess, and many developers embrace them for monetary motives rather than a genuine pursuit of sustainability. The "greenwashing" of cities is one such practice currently *en vogue*. Metrics that provide certification of a building's environmental performance have been reduced to marketing ploys intended to gain higher rates of return for developers and investors. The "race for the cheapest 'green building certificate' continues in commercial development and has no real impact on the sustainability of construction."[8] A study carried out in 2008 by the Green Building Council concluded that fifty-three percent of all buildings given LEED certification before 2006 did not perform to Energy Star standards. Moreover, a substantial percentage of those LEED-accredited underperformers operated worse than seventy percent of existing buildings.[9]

However disheartening such statistics are, new environmental analysis tools are empowering architects with social and environmental performance data, providing a live feedback loop to better inform the design process. Other emerging tools take this analysis a step further, understanding that development and life-cycle costs are crucial to the implementation and construction of a building. For instance, Aedas has collaborated with Arup, Hilson Moran, and Davis Langdon to create the Tall Building Simulation Tool, which compares economic against environmental factors in the early stages of the design process, enabling them to understand capital and life-cycle costs in relation to mechanical, structural, and architectural ambitions. This software has the potential to advance projects in a way that is socially, environmentally, and financially responsible.

Software like the Building Simulation Tool has yet to make a major impact, but it is a small step in a larger trajectory toward a holistic approach to building and design in which big data, or performance factors, can be analyzed and integrated into the design process. The progress in this discourse is collective consideration of the urban environment: "There is a growing consensus

Façade panelization map according to performance criteria of New Generic deployed in Moscow.



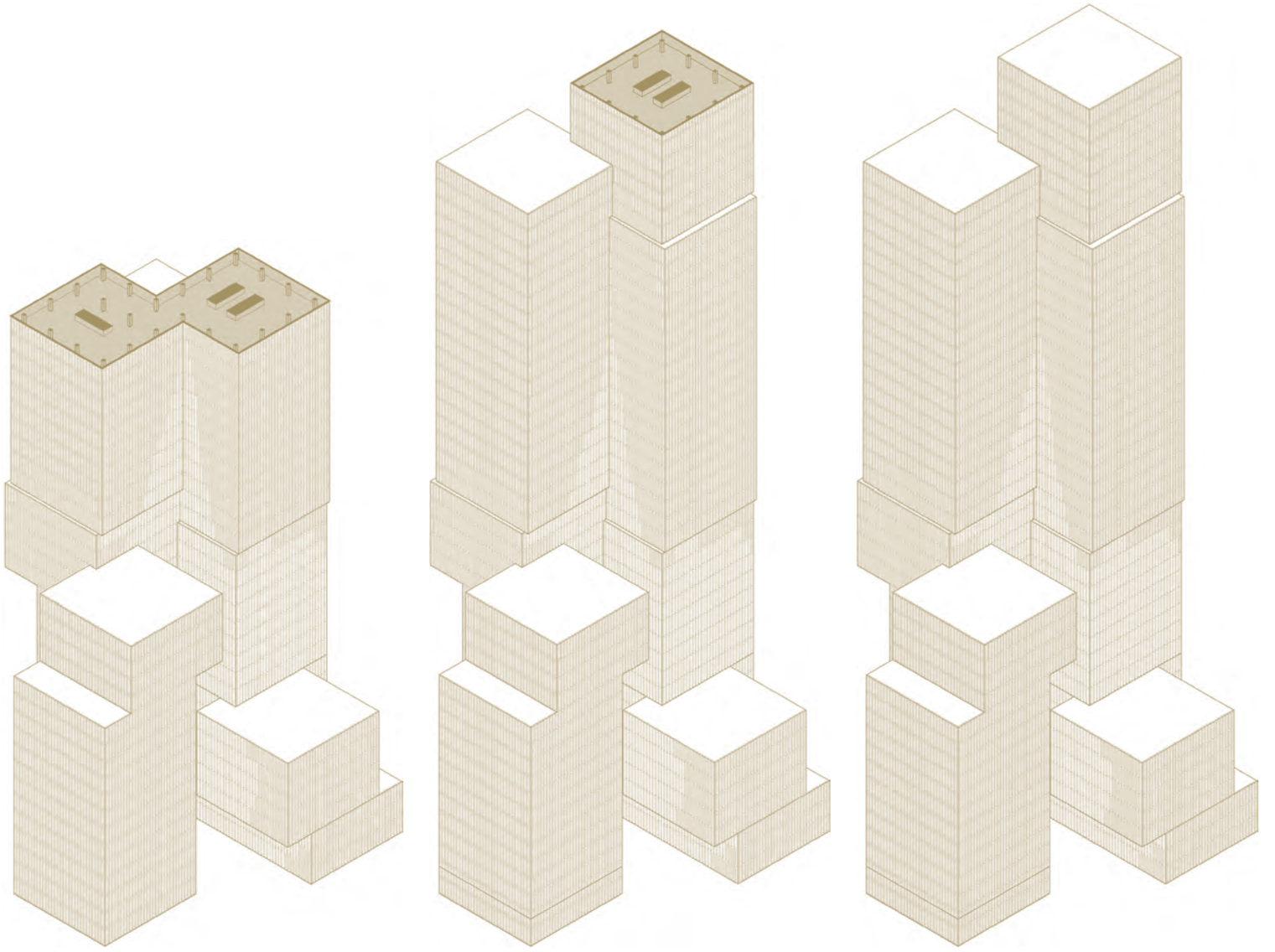


among experts about the need for systemic analysis and performance-based and time-bound sustainability criteria, which go far beyond the walls of a single building. Buildings are sustainable only as elements of sustainable cities and infrastructure."[10]

Foster + Partners' Masdar City, in Abu Dhabi—a two-square-mile eco-city designed and constructed to work as a whole—is one such project. Here formal principles of Arab settlements are combined with technological innovation and big-data analysis; climate, transportation, street layouts, power generation, massing, and façade strategies are designed to work together to generate a carbon-neutral and zero-waste microcity. Unfortunately these new cities require massive capital investment, and many master plans rarely make it off the page. Meanwhile extant cities have to work with what they have. Strategies of adaptation, retrofit, and infill are necessary for these cities to continue to thrive and grow. To this end the Sustainability Design Lab at MIT is working to provide urban planners with data-analysis tools to aid in the creation of better urban environments. One such tool is the Mapdwell Solar System, which combines solar-radiation data with the ease of Google Maps to create a searchable interface designating optimal locations for solar panel installation. These new computational tools could lead to better building codes and strategies that consider how buildings work together to create more sustainable and productive cities.

THE EFFECTS OF GLOBAL URBANISM TODAY

The direct consequences of the complex interaction between finance and energy are felt most acutely in cities. Of course, the effects are exacerbated by the evolving nature of cities: the world is witnessing a massive urbanization that is changing the way we live.



New Generic: Programmatic variability through aggregation.

Indeed the rate at which it is taking place is threatening; not only are cities getting larger, but new ones are developing in record time, and their impact on the global economy and environment cannot be overstated. The 2012 United Nations report "Development in the 21st Century" states that more than half of the world's population currently lives in cities. By 2030 that number is projected to increase to over sixty percent, with most of the growth occurring in emerging markets:

> The estimated rate of urbanization means that in 2030 about 1.4 billion more people will live in cities than in 2010. About 1.3 billion of the new city dwellers are going to be in developing countries. They'll all need homes, services and places to work—new buildings. In the coming years, there will be more construction on the globe than ever before. The impacts of those buildings are long term.[11]

This will result in global construction on a scale that is unprecedented and almost unimaginable: a city of one million, facing demand for nearly 80,000 buildings, will be designed and constructed every week.[12] These numbers are more staggering when one considers the potential environmental impact of building. Urbanization consumes from twenty-five to forty percent of the world's energy and creates nearly forty percent of all CO_2 emissions (both during construction and through operation).[13] With a global construction pace projected to grow seventy percent, to $12 trillion by 2020, each emerging city places more strain on the acquisition of raw materials.[14] Such statistics make apparent how improbable it is for current practice standards to continue.

The effects of urbanization are also moving beyond energy challenges. As more countries enter into global capital development, a new global consumer class emerges: more than one billion people in the next ten

years "will inject around $20 trillion a year in additional spending into the world economy."[15] In turn, the new cities supporting these populations will emerge already enmeshed in a globalized world. As a new phenomenon in urbanization, these environments will be formed, shaped, and financed contingently on how well the market and foreign investors evaluate them. Most cities currently embarking on this trajectory toward participating in the globalized economy have adopted similar generic development models, producing mediocre outcomes at best. Rem Koolhaas observed the eventuality of this path in "The Generic City," where he describes the tendency of cities to grow in line with certain predictable parameters of development entirely stripped of character and determined predominantly by financial pressures. This generic model for urban growth has had undeniable success, and remains globally palatable in many cases, but it can also have a tendency to fail. Without better means to evaluate and analyze how to build emerging cities, we run the risk of colossal failures: for every Masdar City, whose success is arguable, there exists a reciprocal ghost city in China, like the Kangbashi district in Ordos, as a reminder of wasted resources and urban potential.

ARCHITECTURAL PARADIGMS

Returning to urbanization's contemporary chimera, how can architecture, which occupies a critical junction between this complex web of political, financial, and environmental forces, adequately respond? The rise of the global middle class coupled with rapid urbanization presents promising opportunities; but to take advantage of them, newly flexible building delivery models should be considered. Furthermore, these new models must provide quality space to meet the needs of the new consumer class and achieve the level of environmental performance required to curb the effects of climate change—while meeting the criteria of the financial pro forma. In this scenario, architecture's slowness becomes a dangerous liability. The inherent risk is hyperbolized in the financialized city, where the typical four- to five-year period between feasibility study and project realization may pass through whole economic cycles. Unlike design, the financing of projects today is fluid and dynamic.

With the vacuum of debt financing left by the crippled postrecession banking system, developers are seeking high-yielding, efficient urbanization models capable of phasing and shifting scale or program flexibly to navigate rapidly modifying financial situations in dense, growing cities across the globe. Regardless of a project's location, the central endeavor of development is valuation, so it is subjected to the same standardized pro-forma models. Revenues against expenses, economic cycle analysis, absorption rates, the lending environment, and zoning complications are a few of the universal economic criteria that precede any design. Only later does a project confront architectural standards like the predictability of building systems, reliable material resources, or infrastructural and life safety. All said, these projects rely on predictability and are thus converging the architectures of the global city. These demands have implications not only on built form, but also on the conceptualization of an architectural project and its delivery method, both of which architects must address to remain relevant.

Under mounting economic pressure, developers pursue the slim margins necessary to remain competitive. As cost-cutting measures often reduce quality in materials and design possibilities, some developers are expanding their search to innovative project delivery methods. Building delivery processes based on modular construction and prefabrication have demonstrated viability recently in the marketplace. SHoP Architects is following the Barclays Center with a 32-story prefabricated residential tower in Brooklyn, New York. The 363-unit structure will be the first in a series of fifteen modular buildings planned for the Atlantic Yards development. Controlled construction of building components in a 100,000 square-foot off-site warehouse will reduce construction time and cost. In a similar vein, in the Philippines a burgeoning construction business has grown to provide refinery components for projects in the United States and Brazil. Companies outsource building-scale component construction to the Philippines, where the parts can be produced for a fraction of the cost and then shipped across the ocean to the site. Citing the advantages of off-site construction and lower demand of skills from a cheap labor source, analysts claim that outsourcing construction can lower costs by as much as twenty percent.[16]

In urban centers across Korea, the "officetel" (an office and hotel portmanteau) is a modified commercial building typology that focuses on program flexibility rather than construction methodology to drive its innovative development model. Constructed near major transportation hubs, officetels are designed with the fluctuating marketplace in mind. Versatile floor plates, accommodating circulation cores, and larger corridors make the building adaptable to both commercial and residential uses. As demand from the marketplace drives one program ahead of another, the building can adapt: for instance, where conventional building typologies keep commercial tenants on lower levels, it is not uncommon to find gyms, dance clubs, and offices fluctuating through the upper floors of the officetel. Since the demand for residential and commercial real estate can be volatile, especially in emerging markets, the officetel remains successful because of its programmatic flexibility.

These projects provide promising alternatives to traditional building delivery and programming models, but they do not go far enough toward providing a more universal paradigm that can be deployed effectively on a global scale. One way to move toward this goal is to take advantage of new computational tools and technologies that provide sophisticated means of analyzing and interpreting data, providing a possible avenue for reconciling the

disparate concerns of optimal economic and environmental performance. These methods formed a jumping-off point for the following two proposals.

TWO EXPERIMENTS

Observing the slow speed of conventional development and the shortcomings of the green architecture movement, we can assume that current methods of project design and delivery will hinder rapid urbanization. In an era of high-efficiency global construction, innovative design methodologies will be needed to keep pace with global growth. In emerging cities this pace makes the construction of individual buildings obsolete, and a reconceptualization of complete urban ecosystems, where ecologies of energy, finance, and matter can emerge. The speed and scale of this growth suggests the need for an expanded architectural project, one positioned at the no man's land between architecture and urbanism that is capable of expeditiously adapting to both market and environment. It is in these unresolved territories that we nest the following experiments—between building and city, finance and energy.

To interpose the dual concerns of economy and ecology, the following experiments propose the intelligent adaptation of generic high-efficiency development models designed for global urban fabric. In this instance, the architect does not produce the built environment as a fixed vision but rather as a *potential scenario* that can be informed by its context, both fiscal and physical. The architect authors the scenario by defining what fundamental relationships of a typology are fixed and what characteristics are considered mutable or variable. In the case of a development scenario, fixed values might maintain valuation, code compliance, and constructability. Variable parameters could allow for different building heights or more efficient daylighting and ventilation strategies through manipulations in massing. Ideally projects will adapt dramatically to fit the maximum scope of potential environments, while maintaining a minimum threshold of efficiency in all potential permutations. We posit that a project of this type, subjected to thorough data analysis *during* design, could potentially bridge the spheres of finance and environment, offering new modes of agency to architects in a global development era of shrinking margins and resources.

The proposed projects outlined below deploy two fundamental typologies of contemporary city making: the tower and the courtyard. Each possesses the typical advantage of high-density development, including high floor-area ratios, the easing of infrastructural requirements, and more efficient energy distribution. Additionally they consider the primacy of natural ventilation and daylight to improve the typical drawbacks of urban living. In both models, the initial generic typology develops speciation through the application of algorithms driven by climate and site data. The software analyzes and transforms the proposals through a recursive process, with each generation further optimizing the performance of the generic. The envelope actively transforms to adapt to the given climatic conditions, and the building massing mutates to maximize daylighting and comfort in public spaces. When complete, these algorithms transform the development from a generic model to an efficient proposal for a given site.

Eroded Urbanism: Axonometric.

NEW GENERIC TOWER TYPOLOGY

The "New Generic" proposal is predicated on the inherent efficiencies of the tower typology in urban areas and on how the form's continuous reinvention via technological advancement is primed to make another step forward in the age of information.

Taking the tower as its base condition, this proposal seeks to create an urban prototype that reconciles the specific spatial needs of growing cities worldwide with optimal economic and environmental performance. This typological prototype bridges Rem Koolhaas's observations in the "The Generic City"[17] and Kenneth Frampton's "Towards a Critical Regionalism: Six Points for an Architecture of Resistance." Koolhaas describes the phenomenon in which global cities are homogenizing spatially and culturally at the expense of native character, but he notes that the vacuum created by this absence of local identity is in fact an asset, not an impediment for progress. This prescient essay, while adroit in describing an almost irreversible vector toward globalization's homogenization, does not consider that the most efficient and responsible models of urbanization might actually have a large local component. This lens offers a new reading and relevance to "Towards a Critical Regionalism," where Frampton argues against the contemporary status quo, in which technological standardization has sabotaged the possibility of "creating significant urban form."[18] As an antidote to the urban stagnation brought on by the universalization of modern building, Frampton proposes a regional inflection of the tectonic language that promotes local identity and restores significance to urban form.

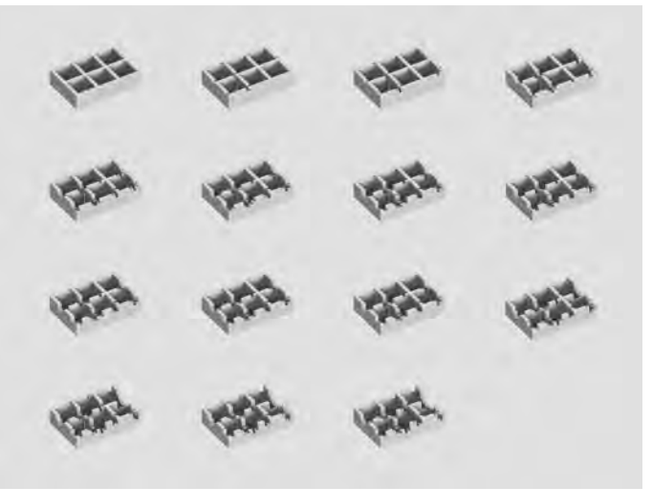
Now, three decades since Frampton and two decades since Koolhaas, the onset of global capital has far exceeded either's imagination, totally freeing style and tectonic from the local: a regionalist approach to building at high densities is rare, extinct in most cases. How can architecture at the speed and scale of contemporary development be responsive to local considerations?

The "New Generic" proposes that regionalism today can be technologically driven, with data analyzed and used to create local difference. The effectiveness of the prototype, as an answer to the opposing considerations of finance and energy, is its flexibility from two perspectives: massing and envelope. The prototype retains the typological advantages of the tower, while its spectrum of adaptation designed into the algorithm drives its massing and envelope and allows it to be deployed effectively in different contexts.

The data driving the algorithmic changes are categorized into three intertwining variables. One is development criteria, which includes local conditions on the ground: maximum building heights, site area, floor-area ratios, number of street edges, and adjacent building input. The second stems from global construction standards: construction type, typical bay sizes, building dimensions, core sizes, and façade. Finally, the third set of data aggregates climatic information and sets it against a long-term seasonal analysis. Rather than a regionalism figured by semiotic inflections of Modernist grammar, the prototypes reevaluate tower strategies, mutating form through computational tools analyzing data from a spectrum of criteria.

New Generic: Deployed in New York City.

The massing strategy of the "New Generic" proposal is predicated on a nine-square floor plate with an 8.1 m structural grid, consistent with universal construction standards. Furthermore, the nine-square organization shares a building core, which occupies one bay, or eleven percent of the overall floor plate. This layout optimizes depth with regard to natural ventilation and daylighting while enhancing natural ventilation and cooling through a pressurized core. This compact floor plate (24.3 m × 24.3 m) allows the prototype to be constructed as infill or aggregated as new urban fabric. The aggregation of the building units is programmed to work differently in different locations, according to development and site criteria, and climate profiles. The building volumes snap on the structural grid, allowing for larger floor plates that accommodate larger programs. The overlap is determined by the desired envelope ratio established by the input data: for instance, with one bay of structural overlap, there is a



Eroded Urbanism: Erosion sequence.

relatively high surface-to-volume ratio, optimal for performance in warmer climates. Conversely, if all three bays are shared, this produces a relatively low surface-to-volume ratio, which is optimal for performance in cooler climates. As such, the clustering between forms aggregate in the same manner: by solar, where in hotter climates the space between buildings is minimized to provide self-shading while maximizing the envelope ratio, and vice versa in colder climates.

The same logic is then applied to the vertical aggregation of buildings units. The software determines the sectional shifts, in increments of 0.9 m based on the optimal overall envelope ratio. In cold climates the volume shift is less frequent and dramatic to ensure a compact building envelope, while in warmer climates the opposite is true. In the warmest climates balconies project from the building on strategic sides of the envelope to provide more shading.

The envelope strategy for the "New Generic" consists of a panel with two prototypes that share a common aeroponic planter system, its orientation optimized for warmer or cooler climates. In warm climates horizontality is integral in minimizing solar gain, whereas in cold climates verticality *optimizes* it. Each panel on each building face is individually tested against a logic that combines climatic and programmatic data to determine its type. For instance, since larger floor plates indicate commercial program, the façade consists of higher glazing ratios than the façades of smaller floor plates that suggest residential use. Furthermore, the ratio of glazing panels to vegetation panels are arrayed on the envelope based on the intensity, location, and amount of solar exposure received, while native plant typology is configured to increase cooling and filtration performance.

Through a process of data analysis calibrating the optimal massing and envelope strategy, the "New Generic" prototype strives to take the financial and performative efficiencies inherent to the most ubiquitous form of generic global development and calibrate it with local differentiation suited to the needs of the population it serves.

ERODED URBANISM
COURTYARD TYPOLOGY

The "Eroded Urbanism" proposal begins with the courtyard as a fundamental urban typology. While courtyard spaces have been used for centuries as a baseline for both urban housing and civic space, Modernist obsession with object buildings and sprawling parks has resulted in a hesitancy to reconsider the courtyard typology as a serious solution for contemporary needs. Rather than return to the small-scale patterns of older courtyard urbanism, however, this proposal adapts the traditional courtyard block to the scale of the superblock. The result is a flexible spatial framework that delineates a series of civically scaled and pedestrian-oriented "urban rooms" within a larger footprint.

The superblock has a long urbanistic history that can be traced to visionary Modernist expansion projects for existing cities, such as Sert's 1933 plan for Barcelona, Hilberseimer's scheme for Hochhausstadt, and Le Corbusier's *Ville Contemporaine* and *Ville Radieuse*. In each of these proposals the architects offered a tabula rasa as an alternative to the existing city, promising ample access to light and air for all citizens along with oversize infrastructure to handle rapid transit. When realized, as in Brasília, these visionary strategies resulted in poorly bounded, misscaled public realms isolated from one another by massive traffic arteries. Furthermore, the resulting fields of slab buildings produced little variation or articulation of the individual within the context of the whole, and exhausted the landscape with infinite, redundant spatial units. From an environmental standpoint, these projects were often complete ecological failures, with the idea that more light and air were always better, replacing a more nuanced consideration of different ecologies and energy movement. Thus these Modernist visions proposed universal solutions that failed to reflect the ecological or cultural pressures of each specific location.

Despite this rather destructive history, the viability of the superblock model is hard to ignore, particularly in terms of its provision of efficient infrastructure and large-scale development opportunities. The "Eroded Urbanism" project generates a new urban realm that retains the advantages of the superblock while infilling with a fabric of continuous linked urban rooms that is adaptable to the unique challenges of environment through formal deformation. This new model inverts the traditional urban grid, moving the public realm into well-defined interior courtyards and replacing local streets with a built system that will constitute the chief fabric of the new city.

The "Eroded Urbanism" superblock thus establishes a flexible framework contingent on two primary parameters: the scale of the courtyards and the thickness of the floor plates. A 16 m floor plate can be used for most residential and commercial applications, although this depth can be expanded to 24 m for double-loaded corridor typologies. The scale of the courtyards is derived from a study of global urban precedents, which indicate an ideal range from 60 m to 120 m. As a continuous fabric of linked courtyards, the project can be partitioned or zoned in infinite variations. The courtyards themselves can develop for a range of public and private functions, from local neighborhood parks to large public gathering places, and anything in between. The repetitive nature of the courtyard fabric also provides a variety of floor-plate types suitable for both larger-scaled commercial offices and smaller-scale residential units. This continuous fabric is thus incredibly flexible and capable of any programmatic mix necessary to adapt to market pressures. Additionally, as programmatic needs change over time, the continuity of space provided by the continuous grid will allow for easy programmatic change, particularly between commercial and residential space, an uncommon feature in traditional development models.

While it can be used for urban infill, one of the chief advantages of the "Eroded Urbanism" model is

its capacity to generate entirely new urban districts of responsive and replicable fabric. To this end computation software has been employed to create an algorithm that works on several scales. After basic floor-plate depth and courtyard scale have been established for a development, it is calibrated to its specific site through a process of massing erosion. This attempts to reduce the total occlusion of sunlight by the built form, maximizing solar exposure for the courtyards while maintaining daylight for the programmed space. Each subsequent erosion of the courtyard walls increases solar penetration into the central space. The erosions also lead to the creation of unique developable spaces, such as terraces and balconies that can be used to further enhance environmental performance (through planting and other strategies) and can serve as tenant amenities. Although the erosion of the superblock model results in an aesthetic of aggregation, the script ensures continuity of space and services throughout the development. In other words, the project calibrates to local concerns while retaining the efficiency embedded in the initial courtyard type. In this way the concerns of development standards and environmental performance are placed into a back-and-forth dialogue with each other, not as oppositions battling for control but as sets of parallel concerns reinforcing each other through the workings of the algorithmic model.

A further level of differentiation is the building envelope itself as an inflection of local needs, in terms of both programmatic constraints and environmental performance. The envelope and façade provide the architect with a smaller-scale exploration of the major pressures discussed above. Yet in the context of this project, façade performance is not an isolated concern but one intimately related to the parameters of the whole. What the "Eroded Urbanism" project provides is a more holistic paradigm for envisioning the urban environment, one that seeks to exploit both development and environmental pressures into a new type of urban realm that is at once feasible, flexibly adaptive for the future, and attractive as a living environment for its inhabitants.

A NEW ARCHITECTURE OF DATA

In the past twenty years architectural expression has evolved greatly through the process of digitalization. Over that time, however, the impact of computer-driven design has been almost exclusively tectonic, introducing new formal and spatial possibilities to conventional design and construction. In turn, the emergence of the information-based economy has expanded the *understanding* of buildings as environmentally regulated constructs of embodied energy and finance. The projects outlined above are direct responses to this paradigm shift as experiments in the potential evolution of a "data architecture." They provide open frameworks that are predictable due to shared DNA but programmed to be infinitely variable and expandable subject to the economic, urban, and ecological pressure under which they are developed. Both experiments embrace a formal agenda that suggests they are never complete and, for that matter, never incomplete: they are manifestations of the invisible forces of contemporary development calibrated at a particular moment. In each the performance of the individual unit is optimized in the organization of a heterogeneous whole. These new organizational structures become archetypal of the exigencies of the local urban ecosystem in its multivalent use, ensuring the most equitable and democratic distribution of resources possible, elevating the quality of the built environment, and allowing for the possible development of new political orders.

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WHAT'S ON THE FACE OF A COIN?

Elisabetta Terragni

Buildings cost money and often appear on tender, be it Monticello on the U.S. nickel or the White House on twenty-dollar bills. How can something so large and complex be condensed into a token image, and what does it reveal of its object?

Key historical events—such as going to war, founding institutions, or entering a new era—have been commemorated on coins since antiquity. The tradition returned to full vigor in the Renaissance, when rebuilding the church of Saint Peter was celebrated in 1506. The medal cast for the occasion preserves Bramante's original idea of the project better than the surviving drawings or the building as it stands today.[1] What shape do buildings take and from what viewpoints are they represented on coins and medals? In the medal for Saint Peter's Caradosso depicted the "rock"—symbolic of Peter as the stone on which Jesus built his church—which was included in the cornerstone for the turreted and domed temple.[2] Collecting the funds for the church's construction triggered a revolt in the Germanic lands and stirred Luther into secession from Papal authority, shaking the rock to its foundation. Ironically the medal's message celebrates consolidation while its financing brought the Church to the brink of schism.

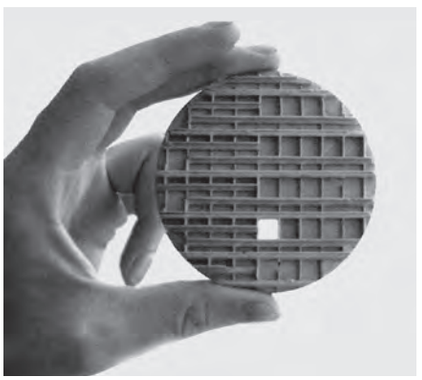
The figural relief on a coin is necessarily minimal and often crude, but it is always related to three-dimensional objects such as the coin itself. Compressed into shallow relief, a building appears starkly abbreviated and reduced to its defining features. Typically a temple or an arch is seen in elevation with just a slight suggestion of depth, whereas monumental structures such as the Colosseum or a harbor require a synthetic image combining different views.[3] On the Brass Sestertius issued by Titus in 80 AD, the huge ellipse of the Colosseum was captured in a dual representation that matches its elevation with a view into the crowded arena. The challenge of imaging an entire harbor, as it appears on the Neronian sesterce of 64 AD, is approached by means of a montage: an aerial overview with the lateral façade projected onto the ground and ships seen head-on.[4] On the other end of the scale, relatively small objects, such as the Temple of Janus (the altar of peace), also find their place on coins, as do triumphal arches and pieces of sculpture.

Previous page Medal commemorating the Beheading of the King and Queen of France, 21 January 1793 on the (future) Place de la Concorde. **Above** Brass Sesterce with the Colosseum, issued by Emperor Titus, 80 AD.

While the difficulties of representing a building on the small face of a coin are obvious, the greatest challenge lies in capturing its features to convey its public significance. To introduce these issues, I asked students in a course on visual studies at the Spitzer School of Architecture at the City College of New York to design and cast a commemorative image of a contemporary building inspired by those on coins and medals since antiquity.

From among the attempts to capture the connection both of architecture to money and of a building's physical character to its representation, the following experiments produced interesting results, each showcasing a different set of characteristics, in a different material, and with a different technology in order to make the identity to its object unmistakable.

Perhaps the most direct link between the key features of a building and the intrinsic qualities of a relief emerges in a comparison of the Temple of Janus, in the Roman Forum, and Le Corbusier's Unité d'Habitation.[5] The new coin matches up elevation and section, whereas the ancient one combines front and side elevations in one plane. The comparison draws on the essentially domestic pattern of the façade and the staggered arrangement of apartments (as only a section can reveal). Unintentionally perhaps, the meaning of Janus in Roman antiquity and the significance of the Unité d'Habitation in modern culture converge in the god's connection to peace, the passage of time, the solar year—remember Le Corbusier's insistence on the cycle of night and day in many of his drawings—and the inauguration of a modern form of collective dwelling. Le Corbusier saw his Unité as directly connected with peace when he argued against rearmament and in favor of urban housing, including the somewhat doubtful observation that freestanding high-rises would be less vulnerable to bombardment than the traditional city. What links the ancient Roman coin of the Temple of Janus most closely with the new rendering of the Unité is its detailing, the geometry of balconies and windows that conjure the vision of peacetime domesticity that the architect desired for postwar reconstruction in France.[6] These buildings were to shine with the "splendor of rough concrete" as the material most appropriate for the times. In reaction to the importance of concrete, the coin was cast not in metal but in cement as a bearer of the material's special significance.



John Evans and Chad Richardson: Medal with Le Corbusier's Unité d'habitation, Marseilles.

Temple of Janus. Coin from the time of Nero (54 to 68 AD) The doors of the temple are closed in peace time.

There are iconic buildings that coalesce in a single figure, such as Frank Lloyd Wright's Guggenheim Museum, in New York City. Not only does it stand for private patronage, as did ancient objects of munificence or Renaissance palaces, but it also possesses a unique architectural character in its allusion to the Pantheon. By adapting the curvilinear surface of the building to the circular shape of a coin, this modern medal demonstrates how one can make, even in hindsight, a fitting commemorative image; and the coin's realization in silver adds qualities of richness, finish, and simplicity.[7] Like the silver dollar, the Guggenheim Museum coin has a touch of munificence and exceeds its value as common currency.

In a contrast, another student adopted an ancient representation of the Colosseum, picking up the competing features of a monumental building whose external shape betrays little about its nature and purpose. Roman coin depictions of the second and third century AD combine the cylindrical shape of the arena with a steep view to the interior, where corrida-like fights of horsemen and animals took place.[8] Starting from such a composite image, other students sought to adapt the concept to an equally intriguing contemporary structure, Rem Koolhaas's Seattle Public Library.[9] Its volumes are displaced in space and its public areas greatly extended, while a glass veil envelops solids and voids with its taut membrane. This envelope—half hinting at and half obscuring the disjointed volumes of the building—evokes the pattern of a QR Code, which holds key information for library users, hence the visual pattern (en)closing the building becomes the symbolic token of admission. In keeping with the contemporary materials prevailing in the public library, the coin is made of multicolor Plexiglas. The use of a synthetic material suspends the traditional link of coins to the value of metal to suggest that in the information age only the information on the coin holds any convertible value.

The only way to render extended spatial relationships within the shallow relief of a coin is to collapse them into a single foreshortening. Baroque coins privilege the depth of city views and the lengths of gardens and palaces to affirm their claim to a God-given rule over the land. The vast views extending to the horizon are transformed into a geometry of power in which cardinal points enter into visual correspondence and override any other concern.[10] The fact that spatial connections among buildings prompted urban interventions that ascertain dominion goes to show that the city fell into a kind of anonymity while landmark buildings and fortifications assumed a paramount role. Furthermore, much of Baroque planning was motivated by the desire to make explicit what had been merely implied before. To be sure, an unobstructed view from one building to another is more readily achieved in images than on the ground, hence the number of Baroque vedute that create an illusory second city in which things fall into place by virtue of representation alone. As an exercise in this vein, a student commemorated two of the most remarkable buildings in Barcelona by Catalan architect Antoni Gaudí by framing the towers of the Sagrada Família cathedral with an odd-shaped attic window of the Casa Milà.[11] The gnomic shape of a palace chimney silhouette contrasts the soaring spires of the cathedral. The Trinitarian symbolism takes the mysterious form of a magic quadrangle whose numbers always add up to thirty-three.

Many historical buildings are known only from their representation

Jamie Silvestro, Medal of F.L. Wright's Guggenheim Museum, New York.

Francesca Bucci-Vernizzi, Timothy Myron and Gregory Nakata, Medal of Rem Koolhaas's Seattle Public Library.

Previous image and above Steven Rusche, Medal of Antoni Gaudi's Casa Mila with rooftop view of the Church of the Sagrada Familia.

on coins and medals because they were changed or vanished altogether.[12] It is intriguing to think that what may be most valuable (and costly) about a building survives only in the form of its representation on tender of the wealth sacrificed for it. Buildings, in order to be realized, do require sacrifices. In archaic societies such sacrifices were often real: animals, even humans, valuables, and precious artifacts, not to mention the actual cost of material and labor. Typically the sacrificial objects would be embedded in a cornerstone or in the foundations of a building, recognizing that the structure represents an investment in the future. Even when invisible, this piece of metal is "a guarantee of exchange in the future for something not given in the present."[13] Its purpose is to remember, to establish continuity, and to escape disappearance.

Coins are two-sided, so looking at one face means not seeing the other. The duality of head and tail reflects perfectly the Janus-headed character of buildings and the two-faced nature of time. If the imprint has as an invisible complement in its absent mold or matrix, the image is only a thumbnail version of its object on a diminutive surface. This engenders a game of absence versus presence, positive versus negative, softness versus hardness. To flip a coin is nothing other than to provoke a decision, or rather to have the chance to make a choice. There is always a loss, not only of memory but also of presence. Casting or striking coins obliges the maker to an exacting process of redaction, as everything inessential needs to be cut away, knowing full well that much will inevitably disappear and only little will slip through the sieve of time. Knowing that you will lose something, be it a bet or the mold, the head or the tail, you recognize the coin's dual nature as a token of fate.

1 Arnaldo Bruschi, *Bramante* (London: Thames & Hudson, 1973, 1977), 145: "An early project may possibly belong to the summer or at the latest to autumn of 1505, when Julius II [...] must have decided to demolish the dangerously ruinous Constantinian basilica and rebuilt it.

2 Ibid.: Twelve of [Caradosso's] famous medal[s] were placed with the foundation stone in the base of the first pier on 18 April 1506.

3 See Harald Küthmann and Bernhard Overbeck, eds., *Bauten Roms auf Münzen und Medaillen* (Munich: Egon Beckenbauer, 1973), 32-33; and Daniele Leoni, *Le monete di Roma, Nerone* (Verona: Leone, 2010).

4 Leoni, *Nerone*, 24-26.

5 John Evans and Chad Richardson, *Visual Studies*, City College of New York, Spitzer School of Architecture (Spring 2010).

6 André Wogenscky, "The Unité d'Habitation at Marseille," in Le Corbusier, ed. H. Allen Brooks (Princeton, NJ: Princeton University Press, 1987), 117–25; Tim Benton, "Marseille: Unité d'Habitation, or the Company of Clouds, the Sky, or the Stars" in Le Corbusier, An Atlas of Modern Landscapes, ed. Jean-Louis Cohen (New York: Museum of Modern Art, 2013), 201-11.

7 Jamie Silvestro, *Visual Studies* (Spring 2009).

8 *Bauten Roms auf Mauf M und Medaillen*, 32-33.

9 Francesca Bucci-Vernizzi, Timothy Miron, and Gregory Nakata, *Visual Studies* (Spring 2011).

10 Based on dominion as the monarchies and principalities were, their medals and coins frequently included views of entire cities, *Schlösser*, and castles, as on the 1685 silver coin of Maximilian II with a view of Munich, or the gold ducat of the Elector Karl Theodore of the Palatinate, struck in 1764, with a view of Mannheim. A particularly striking example is the silver medal (by C. H. Küchler) commemorating the beheading of the King of France on January 21, 1793. The regicide took place in what is today the Place de la Concorde—so named after the revolution in hopes of harmonizing the parties. An immense crowd occupies the square and the Rue Royale, witnessing the beheading on a scaffold erected at the intersection of two axes, the Louvre linking with the Tuileries, and the square with the Rue Royale and the old church of La Madeleine. The two prominent buildings flanking the square are the Ministry of the Navy and the Hotel de Crillon, where Louis XVI and Benjamin Franklin signed a document recognizing American independence in 1778. Today an Egyptian obelisk occupies the spot of the scaffold.

11 Steven Rusche, *Visual Studies* (Spring 2009).

12 From among many ancient Roman examples, the Temple dedicated to Isis and Serapis in the Campo Marzio appears on sesterce and denar by Vespasian and Domitian, but all traces of it have vanished (cf. *Bauten*, 68-69). Likewise the Triumphal Arch of Nero is known only from a sesterce issued in 64-66 AD. The Arch was dismantled along with the cancellation of other works by Nero as an act of damnatio memoriae (cf. *Antike MMtike aus der Sammlung Amersdorffer*, ed. Klaus Vierneisel [Berlin: Staatliche Museen, Antikenmuseum, 1976], 79).

13 Aristotle, *Nichomachian Ethics* 11b11-13, discussed by Anne Carson in the context of inscriptions and epitaphs as they, like money, enter into the economy of exchange: u 'To be exchanged, commodities must be somehow comparable,' says Aristotle. That is why money was invented. It provides a sort of mediator." (*Economy of the Unlost: Reading Simonides of Keos with Paul Celan* [Princeton, NJ: Princeton University Press, 1999], 76.)

ROBERT SHILLER

Interview

P47 Could you speak about your particular interest in real estate and the crisis that started in the late 2000s?

RS I'm particularly interested in bubbles. The recent financial crisis was related fundamentally to a bubble in the real estate markets. It was an especially severe one—the biggest single-family home price bubble in U.S. history. Most of this crisis was caused by kind of a social phenomenon we're all connected to in one way or another. It was an epidemic, a contagion of ideas, that had to do with our fears and hopes, and it echoed the stock market boom of the late 1990s. Our language changed; there was no longer a "land bubble" but rather a "housing bubble." Somehow buying a house to make a profit became an amateur sport, a phenomenon that was remarkably absent in earlier times. Bubbles are built on a number of psychological factors. One of them is a sense of regret for not having participated—a feeling of envy. You also have to look at the historical context: the real estate bubble was preceded by the dot-com bubble. People wanted to be part of that. The idea of entrepreneurship was stronger and the age of protests was fading. So when people heard stories of young, smart people flipping houses and making money fast, it excited them. Particularly people who didn't have much for themselves in terms of business or education opportunity saw that anyone could do this. So it caught on, and it seemed to be working.

P47 Do you think bubbles have an effect on architectural quality?

RS In a bubble people's judgment may be thrown off by the apparent opportunity to make quick profits, which has an effect on the quality of buildings. You could see that during the savings and loan crisis, in the 1980s. Under President Reagan, the government deregulated deposit insurance and banks, feeling safe because deposits were government-insured, were lending freely with high interest rates. So as money flowed in they had to go through the charade of building something. This led to the so-called "see-through buildings," built quickly and then totally unoccupied. In some cases the developers were really not even interested in success. A developer would go through all the motions of building a new shopping center, for instance, doing a flimsy, horrible job, and the financiers, who were insured, would get bailed out by the government. And they'd all end up keeping the money—a big scam.

P47 So the building was built just to have something to show?

Previous page Houses under construction at the corner of Buckley Road and Blueberry Hill in Marlboro Township, New Jersey.
Above Zürich-Affoltern, Switzerland, as seen from Unteraffoltern.

RS Yes. They didn't want to get sued. When the government came back and asked what happened, they'd say, "Well, we tried, but it just didn't work. We had cost overruns." There are different kinds of people with different attitudes in the business; some people just want to make money.

P47 What happened in 2008?

RS People thought the same thing happened in the latest crisis, but in a different form. We didn't make the same mistakes, but there was a push to have Fannie Mae (FNMA) and Freddie Mac (FHLMC) support mortgage lending, to make more money available to low-income borrowers. Some people blame the government for the subprime revolution in lending. But I don't think that is a clear case.

P47 Do you know if there were any types of building that retained their value through the most recent housing crash?

RS There was a co-movement of everything, to some extent, and there are different markets—they're not all the same. Some buildings retain much of their value through a crisis.

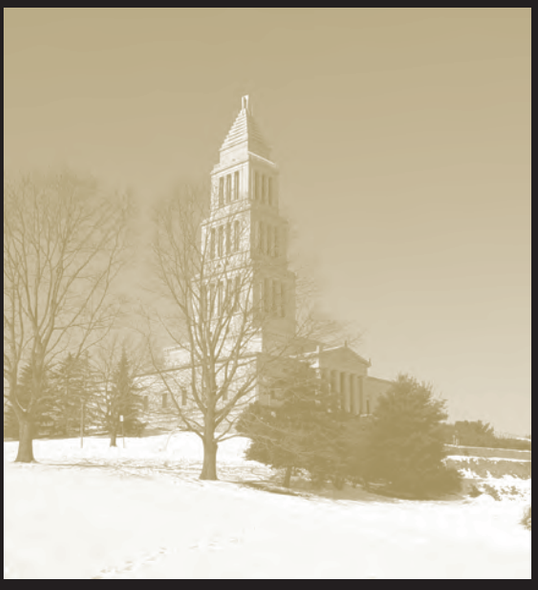
P47 What do we do with all of this housing stock?

RS McMansions may have to be torn down. The baby boomers are retiring. Those great numbers of people who would be occupying McMansions may not want to live there on the outskirts anymore, with a long commute. Older people may want to go back into the city center, where better health care and more amenities are available. So those formerly valuable places may lose their value. It happens more than most people realize. It's like throwing away books to make more room on the shelves. We tend to assume that books stay on the shelf forever; but they don't, and the same thing is true with real estate.

P47 We're interested to hear what you think the United States government policy encourages developers to build.

RS Fannie Mae, Freddie Mac, and the FHA are currently financing something like ninety percent of all our mortgages. There wouldn't be any mortgages without government support. And that means that mortgages must meet the standards of Fannie, Freddie, or the FHA. They are accustomed to doing scattered-site mortgages. If a developer wanted to build a dense new project somewhere, I don't know how they would react. The problem is that government agencies can be bureaucratic. Any project to build a new type of urbanism is risky; it would be big fiasco if it were to fail. If you're a government bureaucrat, you would be blamed for that, and you don't get profits from succeeding either.

Applicants in line for farmland, Oregon, October 26, 1907.



The George Washington Masonic National Memorial, Alexandria, Virginia, February 8, 2003.

So you might have a conservative bias. Right now the government is in an austerity mood, and they're worried about taxpayer revolts. So it's hard to pitch anything exciting to the government.

P47 What is the basis of the government's desire to increase homeownership?

RS There's an interesting history to this. Western civilization has been emerging over the last few centuries from the feudal period, where architecture was for the lords and aristocracy, and the people were vassals and peasants. Ideas about land tenure started to change during the French and American Revolutions. In the United States we had the Homestead Act of 1862. There was a sequence of such acts that made it easy to buy a farm. Farmhouses were idealized then, in a vision for our society in the 1860s that was supported by really clear policy. Then this American Dream, which was to own your own farm, had to be changed because agriculture was becoming mechanized. So it morphed into

homeownership. Then it became another symbol of this country, that most of us could own our own home.

P47 Do you think it's a problem that federal policy focuses on suburban single-family homeownership rather than dense urban living?

RS I do see an issue with that. To me, it seems enlightened to have a nice walkable city center, like in New York, where there are all sorts of interesting and easily accessible resources. Outside of a dense city, you can preserve nature in a more grand form than all these little individual front lawns. There can be many reasons for differences in the result. Take Switzerland, for instance, which is in many ways similar to the United States: it was the merger of separate regions with different cultures, has a participatory government, and a populace with a very independent streak. But the homeownership rate as of 2000 was only about thirty-five percent, whereas here it was over sixty percent. Why is that? Part of it is because they think of themselves as frontier people. They have the Alps, and a lot of the country is unoccupied. They think of themselves as "rugged," and they idealize that as their identity. So owning a house doesn't mean anything to them. They also have better rental policies, which protect the interests of both renter and landlord, so there seems to be a balance in Switzerland.

P47 Do you think that's why even the new developments in Swiss cities are compact and dense, with a lot of apartment buildings?

RS I think that's right. There's also a different sense of what proves that you've arrived. In America it's owning a suburban home. They just don't have that; they're proud of their city apartments.

P47 It seems like a lot of what you're saying has less to do with hard numbers and more with reading people's moods to get a sense of what's happening.

RS Psychologists are now saying that what is unique to the human species is that we form models of each others' minds. We're so intertwined with each other. Unfortunately economics has modeled itself in recent years after the hard sciences, which leaves out human behavior. But the most embarrassing thing for macroeconomics is that there's no answer to what causes all these changes. What's the ultimate driver? I think it's moods and changes in our thinking, which means we'll often be surprised by what happens. The narrative is not quantifiable.

P47 How is this notion related to architectural practice? Is architecture quantifiable?

RS The problem with architecture is that it's a much more cyclical, variable field than others. You have to think about what you do in the off years. That's been true for a long time. But architecture fundamentally has a symbolic value. I saw an interesting building recently in Alexandria, Virginia, that is a replica of the Lighthouse of Alexandria, Egypt, which was represented on ancient coins. It was one of the Seven Wonders of the Ancient World, and we still know what it looks like because the coins represented it! It struck me as a sign that people notice these things and put symbolic value on them. Architecture is an exciting field because what you do affects people's lives very directly.

A VALUE PROPOSITION

Kevin D. Gray

If architects want to have more influence with developers and investors, and to be properly compensated for their important contributions to the building process, they need to understand more clearly the valuable role they play in the ability of commercial property owners to increase rents and investment values. Only when architects demonstrate objectively how they increase the value of the projects they design will they be able to establish a standard by which to increase their income.

DESIGN VALUE METRIC

The law of supply and demand ought to apply to architects' compensation. If architects' fees and salaries are low, and profit margins thin, is this a function of *supply*—the number of architects being trained each year, compared with the very cyclical demand for services—or is it a function of *demand*—that the marketplace does not have any metric to value the contribution of the architect? It seems to be a little of both, but primarily the latter. In theory a shortage of architects ought to result in higher fees, but it is probably the case that competition among architects for commissions would result in the continuation of low fees. Computerization and outsourcing does not seem to have improved the profitability of the profession thus far. A reduction in the number of practicing architects would probably result in even less influence and control over the building process. On the demand side, can a metric be established for measuring increased investment value due to improved design?

A first step in any analysis of the situation is to formulate a system to measure the increase in building or investment value as a result of the architect's participation in the building process: a "*design value metric*." There is limited research in this area based on property transaction data, and the purpose of this study is not to add to that research but rather to establish a model for measuring the increase in real estate value in different scenarios. Since design value is being linked to increased investment return, this *design value metric* will apply to income-producing property rather than to noncommercial buildings.

WHY COMMERCIAL REAL ESTATE?

A review of architecture magazines says it all: the vast majority of "design" projects are for academic buildings, museums, government structures, and private homes. What do these projects all have in common? No profit motive or investment value. There is no need to lease offices, retail space, or apartments—no economic rigor or marketplace demands. The lack of a clear economic discipline goes a long way in explaining the variability in the type and quality of noncommercial projects.

High-quality architecture therefore seems to be relegated mostly to the world of academic buildings, churches, museums, and government buildings, where the demands for profitability do not exist. In the for-profit world, the situation is quite different. As the world of commercial structures has evolved, the types of building being built are so formulaic and predetermined by economics that architects of quality are usually left out of the development process.

A review of the great majority of office buildings, shopping centers, apartments, and industrial buildings shows very little evidence of the influence of the architect, which is as unfortunate for the built world as it is for the architectural profession. In most towns and cities in the United States, all of the beautiful architect-designed buildings in a given town—from any era—could probably fit in the parking lot of the nearest regional mall. Certainly for the worse, the vast majority of commercial structures are mere functional buildings, not works of architecture.

OFFICE BUILDINGS

In the development of suburban office buildings, there is little history of good architecture, at least not for speculative projects. The short lease terms and mundane tenancy of these buildings limit their investment appeal and value, and the role of architects in low-rise suburban office buildings is likely to remain limited. The exception in the past, especially during the glory days of the office campus, was the exciting and innovative design of the single-use office headquarters, whether by Saarinen, Edward Larrabee Barnes, Paul Rudolph, or others, back when corporations regarded themselves as patrons of the arts. Many of these wonderful modern Versailles have been demolished or altered. A look at the plans for new headquarters for Apple, by Foster + Partners, and Facebook, by Gehry Partners, shows that this tradition is being revived in some prosperous sectors of the economy. But for the most part, the suburban office building is both unloved by investors who question its role in future office demand and neglected by architects.

One bright spot for the profession in the world of commercial development is the construction of high-rise buildings in every major Central Business District of the world. Why? Unlike other property types, such as retail spaces, office

Previous page Mark Zuckerberg and Frank Gehry examine model for new Facebook headquarters. **Above** Horton Plaza, San Diego, California.

buildings rely less on their exact location within a market as tenants have a certain indifference between buildings. This indifference therefore *creates a need for differentiation* with competing supply. The long lease terms of the lead tenants—often ten years or more—and the prestige of the firms leasing the spaces, requires the developer to satisfy a need for a more "branded" image of quality and permanence. In an attempt at publicity and image for a place, American architects in particular are sought after for their technical and design expertise. The most successful example, of course, is the collaboration of Hines Interests with Philip Johnson, a relationship that has been duplicated by other developers and architects to great success.[1] But with demand for office space diminishing, this category of building faces real challenges in the future, and new commissions will likely be outside of the mature markets of the United States and Europe. One positive trend in the United States is evinced by Amazon's recent purchase of three city blocks in downtown Seattle to develop as an office campus. Could this be a harbinger of a new age of enlightened urbanism by forward-thinking companies, or is it a statistical outlier?

SHOPPING CENTERS

Retail buildings are everywhere, yet the role of the architect in this property type has been minimal. Because each retailer, whether Wal-Mart or Tiffany and Co., has already developed a distinct design from which there can be no deviation, little innovation is possible. The department stores,

Former Wal-Mart in Savannah, Georgia.

owned typically by a chain and not a mall owner, provide soulless anchors to the windowless expanse of a given mall. The regional shopping mall, that fortresslike bunker, has diminished appeal and investment value except for the most dominant properties, which continue to fetch record prices. An attempt to lure customers has resulted in some effort to open up the building to the outside, with restaurants and outward facing stores, but mostly in a formulaic way. The occasional attempt to "design" the mall as an "experience"—such as the Jerde Partnership's Horton Plaza, in San Diego, or Main Place, in Santa Ana—have not resulted in any substantive change to the model. In fact mall retailers and investors both remain very wary of any deviation from established formulas. Any design innovation will have to be incremental.

Among grocery-anchored community centers and freestanding buildings, such as gas stations, fast-food chains, and drugstores, there is even less experimentation. The design of these structures has evolved and continues to do so without the input of architects, and is driven by brand considerations. A Whole Foods must look like a Whole Foods, no matter what the climate or context is. In the past, Eliot Noyes's design of the Mobil gas station in the 1950s, the logos of Raymond Loewy, and gas station designs by Mies van der Rohe and Norman Foster, among others, indicated an exceptional period of experimentation in retail. The demand for design services for what was a new and commoditized product (gasoline) has also become a formula. The retail industry has the longest lease terms of any property type—typically up to fifty or sixty years (including options) for department and grocery stores, and even twenty-five years or more for drugstores and fast-food outlets (on ground leases), so the physical permanence of the finished product lingers long after the excitement of the opening. The landscape is dotted with the old remnants of these long leases. The commercial real estate industry's general suspicion of innovation (which they read as "experimentation") and departure from "what works" is even more pronounced in the retail sector than in the office sector.

MULTIFAMILY

No property sector would appear to be as tradition-bound as the residential apartment type: values and culture play a huge role in what the market will accept. The result is a large and growing building industry with little perceived need for intervention by architects. The numerous garden apartments built every year in the United States are very much a product of what the consumer in a given market wants, produced at reduced cost to provide maximum profit. Location, amenities, and rental rates seem to be more important than any particular quality in design. High-rise residential towers present a different situation.

In those few U.S. cities with a market for high-rise apartments, there is an interest in "brand" similar to that for high-rise office buildings. The "Turning Torso," in Malmö, Sweden, and "New York by Gehry," at 8 Spruce Street are extreme examples of a type of building identity that favors architecture as a way to mitigate a poor location or a challenging market. More sustainable because it is an intrinsically more valuable project, Robert A. M. Stern's 15 Central Park West sets a standard of quality that enhances an already very valuable site. The high-rise residence has a limited market, at least in the United States, but offers the promise for architects of a lucrative appreciation for their services at the margins of the housing industry and abroad.

INDUSTRIAL BUILDINGS

Industrial buildings are the simplest commercial property types. Typically these structures are leased to single tenants under very long-term leases. Historically such buildings have been completely utilitarian and their markets have a commodity type pricing.

KEVIN D. GRAY

With little need for product differentiation and very competitive rent structures, there is little opportunity for architects to make a difference in this sector. Perhaps with innovative structural or green building systems, or better prefabrication, there can be a change in this dynamic that would favor more participation by architects—especially in the developing world, where prefabrication will be increasingly important. The branding of industrial buildings on a global scale, as evidenced by Pro Logis industrial parks at airports, may also create some new ways for architects to add value.

HOTEL AND RESORT ARCHITECTURE

This category of commercial real estate is the most design-driven of property types. The invention evident in the Disney Resorts and Las Vegas casinos is nothing short of astonishing. In this case design plays an important role in creating a kind of value-added mythology. Certainly higher room rates and restaurant prices are highly correlated with the image-driven designs in this category. Architects of this subset of design are often employed directly by developers, so even in this potentially lucrative area architecture firms have been largely co-opted.

AN EXAMPLE OF THE DESIGN VALUE METRIC

The commercial real estate marketplace speaks for itself, and the marketplace is saying that great—or even decent—architecture doesn't have much of a place in the world of commercial real estate development. With activities where a performance measure is key, such as investment banking, compensation is self-financing. Who wouldn't mind paying a percentage of the profit from a successful deal? Those activities closest to the flow of capital are the easiest to quantify and are not related to hours worked. The amount of labor required of architects seems at times to be almost ludicrously high relative to the compensation. With architecture there is no "box office" per se. There have been a number of studies, none very convincing, that attempt to prove that good design results in higher rents and property values, but the many other variables, such as location and developer expertise, seem to trump any attempt to give architects a metric that would justify greater compensation. With no clear measure to establish evidence of financial contribution, architectural practice seems destined to remain a cost center in the eyes of clients rather than a profit point.

The following chart displays a quantitative way of measuring the increased return to a developer or an investor as a result of an architect's participation. It assumes that the involvement of a "design" architect will result in increased rents, thus increasing the Net Operating Income (NOI). Even with no change in the acceptance of the building product on the capital market, the increased NOI should result in increased investment value and return on investment. In addition, there is another important benefit to the architect's superior vision and expertise (or outright fame as a "brand"): the capital markets may value the building, because of its superior income-generating ability (as evidenced by higher average NOI than its peer group), with a lower capitalization rate. In effect, there is a multiplier effect as both greater NOI and lower capitalization rates contribute to a dramatic increase in investment returns.

The standard value measure for commercial real estate is the Direct Capitalization Method. This simple method for valuation has three variables: the Income (or Net Operating Income), the Capitalization Rate (earnings multiple expressed as a percent), and the Value. The formula is expressed as follows:

$$V = \frac{I}{r}$$ where V is Total Property Value, I is Net Operating Income, and r is the Capitalization Rate.

If an architect's superior design or use of materials has resulted in increased income through superior leasing, then that increase would be expressed as:

$$V_i = \frac{(I+I_i)}{r}$$ where V_i is the Increased Total Property Value, $(I + I_i)$ is the Increased NOI, and r is the Capitalization Rate.

Even better for the architect, if the increased NOI results in a more liquid investment, as is likely, then the Capitalization Rate, r, will be lower as a result of the architect's involvement. The lower Capitalization Rate results in an additional higher value as shown in Table 1:

Table 1	Base Case	Case #1	Change Due to Architect	Case #2	Change Due to Architect
NOI (Millions)	$10	$11	+$1	$11	+$1
Capitalization Rate	8.0%	8.0%		7.75%	–0.25%
Market Value (Millions)	$125	$137.50	+$12.5	$141.9	+$16.9
Value Increase			+10%		+13.5%

As shown above, in Case #1, an increase in NOI as a result of superior design increases NOI and the total Value by the same amount, i.e., 10 percent at the same Capitalization Rate of 8 percent. In Case #2, the NOI increases by 10 percent, but in this example the market will value the asset at a lower Capitalization Rate of 7.75 percent, resulting in an increase in total Value of 13.5 percent. The increase in value of $16.9 million is $12.5 million due to increased NOI and $4.4 million due to reduced Capitalization Rate. Surely this increase in value ought to give support for increased compensation to the architect. This formula is expressed as:

$$V_i = \frac{(I+I_i)}{r_d}$$ where V_i is the increased Total Property Value, $(I + I_i)$ is the increased NOI as a result of the architect's involvement, and r_d is the reduced Capitalization Rate as a result of the architect's involvement.

A simple model demonstrating how to measure the architect's design value is shown in Table 2:

Table 2

All Dollars in (000,000)	Cost % Increase equals Value Creation % Increase				Cost % Increase less than Value Creation % Increase				
	Base Case	10%	15%	20%	Base Case	7.5%	10%	15%	Construction Costs Increase less than Value Increase
Construction Costs (Net of Land Costs)	$100	$110	$115	$120	$100	$108	$110	$115	
Architect's Fees 10% (Net of Engineering and Sub Fees)	10.00	11.00	11.50	12.00	10.00	10.75	11.00	11.50	
Total Costs (Net)	$110	$121	$126	$132	$110	$118	$121	$126	
						10%	15%	20%	Same NOI and Value Increase as Base Case
Base NOI	$8.75	$9.63	$11.07	$13.28	$8.75	$9.63	$10.06	$10.50	
Increase in Stable NOI (Premium for Good Design)	$0.00	$0.88	$1.44	$2.21	$0.00	$0.96	$1.51	$2.10	
Total NOI	$8.75	$9.63	$10.59	$11.65	$8.75	$10.59	$11.57	$12.60	
Base Cap Rate	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	7.00%	
Decrease in Cap Rate (Premium for Good Design)	0.00%	0.10%	0.15%	0.25%	0.00%	0.10%	0.15%	0.25%	
Total Cap Rate	7.00%	6.90%	6.85%	6.75%	7.00%	6.90%	6.85%	6.75%	
Base Value	$125	$139	$155	$173	$125	$153	$169	$187	
Increased Value	0	$14	$30	$48	0	$28	$44	$62	
% Increase (Investment for Good Design)	0	10.4%	19.1%	27.6%	0	18.5%	26.0%	33.0%	
ROI Costs (Developer's Profit)	113.64%	115.3%	122.2%	130.7%	113.6%	129.8%	139.6%	147.6%	

The scenarios shown assume that the architect's fees will be greater and that there may be some increased costs for superior building materials, curtain walls, finishes, etc. The powerful combined effect of increased NOI and lower Capitalization Rate is undeniable: in the best case (far right column), where the costs to construct increase by 15 percent but NOI increases by 20 percent, the architect's superior vision and clever use of materials and design elements has resulted in an increased return on investment from 113.6 percent of costs to 147.6 percent of costs. The increased value of the project is from $125 million in the base case to $187 million in this example, an increase of $62 million. Now it is up to the architect to articulate why this value increase is due to his or her involvement.

CONCLUSION

Architecture as a practice will always be a mix of design and business. There will always be a labor pyramid, and students should expect a period of apprenticeship at low wages. However, much can be done to improve the financial situation and economic viability of the practice, especially by a better understanding of what motivates commercial real estate developers and investors. If architects can communicate to developers the investment benefits of what they do—in the developer's own language and on his or her own terms—then better compensation should follow. Better skills of argumentation backed by solid numbers are the only way of accomplishing this.

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1 See interview with Hastings Johnson and Jerrold Lea.

Previous spread Proposal for new Apple headquarters, Cupertino, California © Foster + Partners, ARUP, Kier + Wright, OLIN, Apple

“ARCHITECT: WILL CRIT FOR COFFEE”

The Economies of Architecture

Charles Holland

So there I was, scrolling through my Twitter timeline when I came across it: a tweet from a recently qualified architect offering teaching services for free—or at least for the price of a cup of coffee.

At first I didn't think much of it. But then I wondered: Why would anyone do that? Is this normal? Do other professions offer themselves up for exploitation so keenly? Should they at least have specified the quality of coffee? Or was I missing the point, vulgarly sullying the purity of the gesture with my base venality?

Architects certainly have an odd relationship with money. While architecture is, on the most obvious level, a commercial activity, certain aspects, such as teaching, exhibiting, and entering design competitions, are considered to be not about the money, at least not directly. In fact, their lack of commercial value contributes directly to their value in other ways.

For many architects teaching retains a value that is more about prestige or—to use a term borrowed from the French sociologist Pierre Bourdieu[2]—about cultural rather than financial capital. Similarly architectural competitions are not only about winning work. They are also about developing an idea or an approach and getting the chance to speculate on larger and more complex projects than firms might normally be able to. Many architects use them to develop a body of work that, even though partly unbuilt, establishes their voice within architectural culture.

Recent architectural history seems to legitimize this view. Competition schemes—even, and perhaps especially, when unbuilt—play a large role in establishing the architectural canon. Both Adolf Loos's entry for the Chicago Tribune Tower, in 1922, and Alison and Peter Smithson's designs for the Golden Lane housing competition, in 1951, loom large in the history of modern architecture, despite the fact that the former was disqualified in the competition and the latter unplaced.

Architectural competitions aren't always about winning the job, and to discuss them solely on that basis is to misunderstand their point. Competitions exist within a separate economy from that of commercial development. Most architects lose money entering them and stand little chance of winning. The important question is how this economy works and how it intersects with the other, "real" economy. We could start by looking at the spaces where this alternative economy is established.

One of these is education: very few conversations occur about money in architecture schools. The essentially fictional nature of the work undertaken removes it from having to address financial or commercial issues directly. Indeed this is often seen as its primary asset: allowing a degree of "pure" research and speculation to occur away from the market. This reluctance to speculate on the commercial and financial aspects of architecture bears further scrutiny.

Architecture, as Mark Cousins has pointed out, is a weak discipline.[3] What I think Cousins means by this, is that it is not easy to define what constitutes its central body of knowledge. As a general studies tutor at the Architectural Association in London—a non-architect surrounded by architects—Cousins has observed the way that the subject is taught and how its various internal mythologies develop.

One remarkable issue for Cousins is the amount of literature that architects tend to read from other disciplines. Students, he has observed, move from one subject area to the next, reading about cybernetics one minute and the migratory habits of birds the next.

Architects habitually borrow from other disciplines to describe what they do. In recent decades, first structuralism, then poststructuralism, and then deconstructivism were enrolled in the service of architectural theory. The extent to which these bodies of thought were present in the work they inspired might ultimately be irrelevant. Architectural knowledge moves forward, magpie-like, through readings (and misreadings) of other bodies of knowledge.

Even the most prosaic description of an architecture school curriculum reveals a wide range of study areas, all of which are related but not central to the discipline itself. These include not just construction and building technology but law, planning, and government policy, ecology, sociology, geography, philosophy, and of course systems theory and the migratory habits of birds. The question then is, *Where is the center of architecture?*

Clearly there is a disciplinary confusion within architecture, not just about what kind of architects we want to be but about what architecture itself is. This confusion results in the architect inhabiting a number of different and sometimes conflicting roles. In his 1983 book, *The Image of the Architect*,[4] Andrew Saint explores some of these guises: architect as professional, as artist, as businessman, and as gentleman amateur, to name a few.[5]

Saint's book reinforces Cousins's assertion, showing how unstable the image of the architect is. This ambiguity is not purely historical—the result of an evolving role

Zaha Hadid: The drawing that made Zaha Hadid famous. Hadid's paintings transcend the practical function of architectural drawings, gaining hugely in financial and cultural value as a result.

over time—but also current. Are architects artistic visionaries, eccentric geniuses, reliable professionals, or the lackeys of venal developers? The ambiguous position of architects within society results in an ambiguity about the value we place on the work we do.

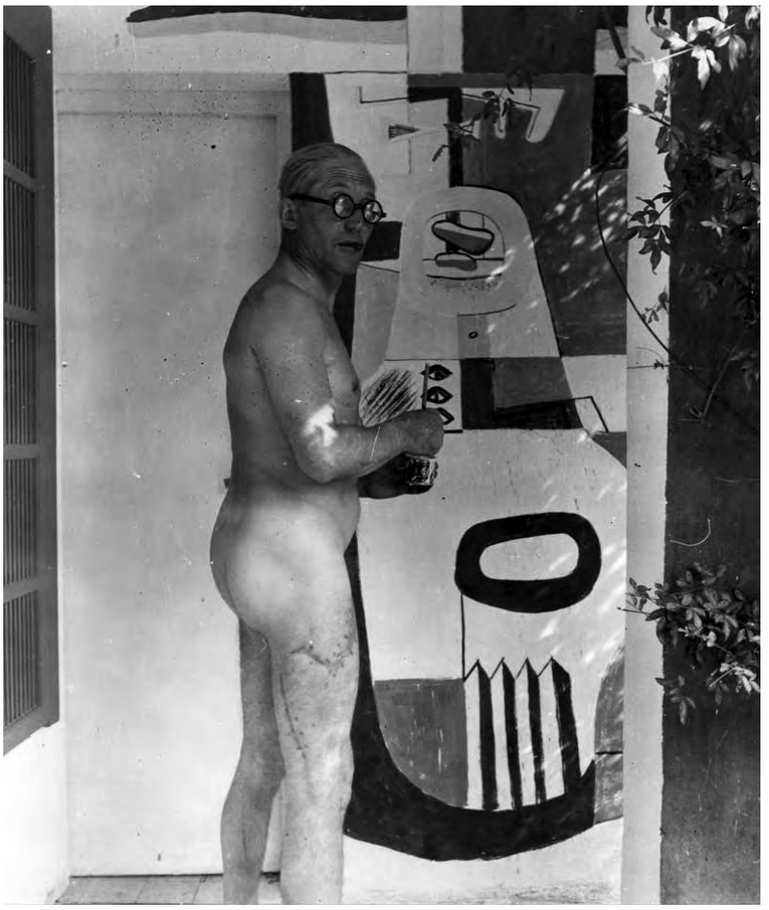
I mean this both in the general sense of how society views the role of architects and architecture, and in the immediate literal sense of how they get paid. Traditionally architect's fees are based on a percentage of a project's cost, on the (not entirely accurate) assumption that the more expensive a project is, the more complex it is.

This fee is linked to the progress of a project so that the fee reflects the architect's role in guiding a building through its various stages, from concept to completion. However, increasingly architects are paid in ways that reflect a more partial or fragmented role, for example, as purely concept designer, delivery architect, or a kind of hired hand at various stages.

These developments reveal shifts in the cultural and economic position of the architect and mirror the disciplinary ambiguities inherent in the profession. In general the architect is paid for a service that can be quantified via drawings and specifications or the achievement of milestones such as planning permission. Thus the architect is paid for producing something of direct quantifiable value to the client.

As one moves up the architectural food chain, however, the architect's work starts to become more valuable as a brand or signature placed on a project. This method of generating value mirrors the shift in the role of the architect from professional (paid for providing a service) to "starchitect" (paid for unique insight or moments of artistic genius). What's being valued in the latter category is not so much the physical stuff produced by the architect—the drawings and specifications—but something closer to what Walter Benjamin described as *aura*.[6]

This shift from something measurable to something more nebulous (but valuable) is mirrored in the shifting role of the architectural drawing. As Jon Goodbun and Karin Jaschke have pointed out in their essay "Means of (Re-)Production: Fame and the Changing Role of the Drawing,"[7] the primary production of architects is drawings, which perform a number of different roles: conceptual, technical, and cultural. Drawings allow the architect to operate within an imaginative realm in which ideas about space can be expressed. They also allow technically accurate expression of these ideas so that they can be constructed. Beyond that they express the work of the architect in a form that allows them to cultivate cultural value. In other words, drawings are not just a tool for the development and construction of buildings but also a marketing medium.



Le Corbusier: The architect as free spirit. Le Corbusier devoted his mornings to painting and sculpture, a literal and metaphorical shedding of the responsibilities of practice.

These different modes suggest corresponding ways in which the work that architects do can be assessed and valued. Zaha Hadid's drawings, for instance, have acquired considerable value as artworks and are worth far more than the man-hours involved in creating them. Like artists, architects working within the realm of high culture have the capacity to earn significantly higher sums of money than can be achieved by regular fee scales.

However, there is a compensatory downside to this possibility. Like pop stars, footballers, and actors, artists can earn lots of money. But they can also earn very little. What architects potentially trade in their desire to emulate the cultural and economic kudos of artists is the support structure of professional fee scales. As Goodbun and Jaschke write: "Because of the capability of architects to produce drawings without significant capital outlay, the drawing is in no small way responsible for the tendency of

architects to engage in large amounts of unpaid or low paid speculative work."

The different modes in which architectural drawings operate can be seen as corresponding to Marx's split between use value and exchange (or commercial) value. Drawings—and by extension what architects do—thus operate in a number of different spheres, attracting consequently different values. The "use value" of the drawing lies in its functional ability to get a building constructed, and the architect's value is assessed by his or her ability to produce such drawings.

At the top of the architectural tree, drawings have swapped use value entirely for surplus value. The growth of the "starchitect" shifts architecture away from a profession where all members are paid a reasonable amount to the creative realm of an artist, where there is a massive earning disparity between top and bottom. The price of potential fame and adulation is that the majority of artists will never achieve it.

In this sense certain shifts in the practice of architecture can be seen to mirror wider socioeconomic shifts in society, in particular the tendency of neoliberal economies to suppress general wage levels while increasing those at the top. Attacks on "restrictive practices" such as professional fee scales, for instance, echo neoliberalism's general impulse toward the deregulation of labor markets.

While architects are clearly not at the sharp end of a low-wage economy, their earnings have been steadily deteriorating in recent years. A 2013 survey by *Building Design* magazine showed that architects' earnings had been cut by thirty percent over the preceding six years. While this might be expected during a global financial crisis, previous periods show that fees rarely return to their pre-recession levels.

Alongside this attack from the right, the profession of architecture has been subtly undermined from the left. A poststructuralist critique of the paternalistic conservatism of the profession and its self-defining canon has opened up an interest in interdisciplinary practice. In U.K. architecture schools, this interest in blurring the boundaries of architecture has coincided with funding squeezes that have reduced the teaching of what used to be regarded as its core disciplines.

The teaching of architecture in the United Kingdom has become increasingly dependent on a model that promotes individual research over collective knowledge. The success of the "unit system," where students sign up for programs set by individual studio tutors from a menu of options, inevitably results in fragmentation of the syllabus. The philosophy of pluralism that underpins such a system promotes a number of parallel approaches over a unifying body of knowledge.

The resulting diversification, while offering a creative dynamic, also mirrors the fragmentation of an increasingly competitive marketplace. Schools of architecture offer their own internal market, where individual units are required to link artistic credibility directly with their ability to attract student sign-ups. In this sense architecture schools could be seen to have pioneered the introduction of the dynamics of consumer demand into higher education.

Mirroring wider trends in society, schools no longer rely on a large number of full-time tenured staff. Instead the delivery of the course depends on part-time tutors working on short-term contracts. Thus architecture schools have brought the instability of a deregulated employment market into academia. Paradoxically while the design output of architecture schools may appear increasingly obscure and lacking in commercial application, its internal mechanisms work as neoliberal marketplaces par excellence.

John Portman: The architect as businessman. Portman acts as both developer and architect, as closely linked to real estate developments as he is to an architectural style.

The instability of the architecture profession, and the extent to which it *is* a profession, makes it a pertinent lens through which to view the construction of value in our society in general. The myth of the artistic genius, removed from "everyday" concerns or general frameworks of value, allows exploitation of large numbers of workers supposedly untouched by such special talent. The exorbitant rewards for the few who "make it" supposedly compensate for the lower earnings of those who don't.

In the United Kingdom, as elsewhere, the issues surrounding inequalities of earnings are central to our current economic debates around capitalism. There is, for instance, a wider debate around the issue of unpaid internships, a practice that is habitual within architecture. A rhetoric of "showing initiative" and "striving" echoes similar language employed by the current U.K. government concerning reforms to welfare that substitute unpaid work experience for unemployment benefit.

To return to the issues addressed in the beginning of this essay, the culture of internships is undoubtedly linked closely to the amount of unpaid work architectural practices are willing to do. Undertaking design competitions that pay little or nothing depends on being able to draw on unpaid labor to do the work. In Bourdieu's terms, practices are willing to forgo economic capital in return for the compensatory cultural capital of a highly placed scheme or the notional prize of peer respect. This compensatory form of capital is thereafter handed down to the intern, who supposedly benefits from the experience of having worked for an established and/or respected practice.

Undoubtedly, as we have seen already, architects are able to cultivate subsequently lucrative careers through the establishment of their reputation through competitions. And as a body of knowledge, architecture moves forward through unpaid and often unsolicited speculative work. Nonetheless, as I have also attempted to show, the mythologies behind such working practices are worth unpicking in the light of wider issues facing the future of the profession.

It is not my purpose here to suggest ways in which architects could be better paid, to moan about the industry, or to suggest that architects deserve special sympathy in a time of wide economic uncertainty. What I want to explore is the way architects work within wider cultural, economic, and political ideologies. As a profession, our understanding of these ideologies can often appear unsophisticated. To return to the issue of education, one positive way to address this might be though speculation on issues of value—financial, cultural, functional—within architecture schools.

By placing its faith in an arguably outmoded model of artistic purity, architectural education has attempted to disengage itself from the economy on which it depends. This has resulted in two paradoxical effects: not only has education itself become a market-driven economy, it has left itself powerless to critique the wider neoliberal orthodoxy.

An engagement with the dynamics of the marketplace—in its widest sense—may offer a better chance to critically resist its effects. Understanding the economy in which architecture takes place does not necessarily lead to acquiescence to its effects. It may just lead to architects understanding the value of what they produce.

1 Anonymous architect's offer posted on Twitter, 2012.

2 Pierre Bourdieu, *Distinction: A Social Critique of the Judgement of Taste*, trans. Richard Nice (London: Routledge, 1984).

3 Taken from a lecture given by Mark Cousins at the Bartlett School of Architecture, 1996.

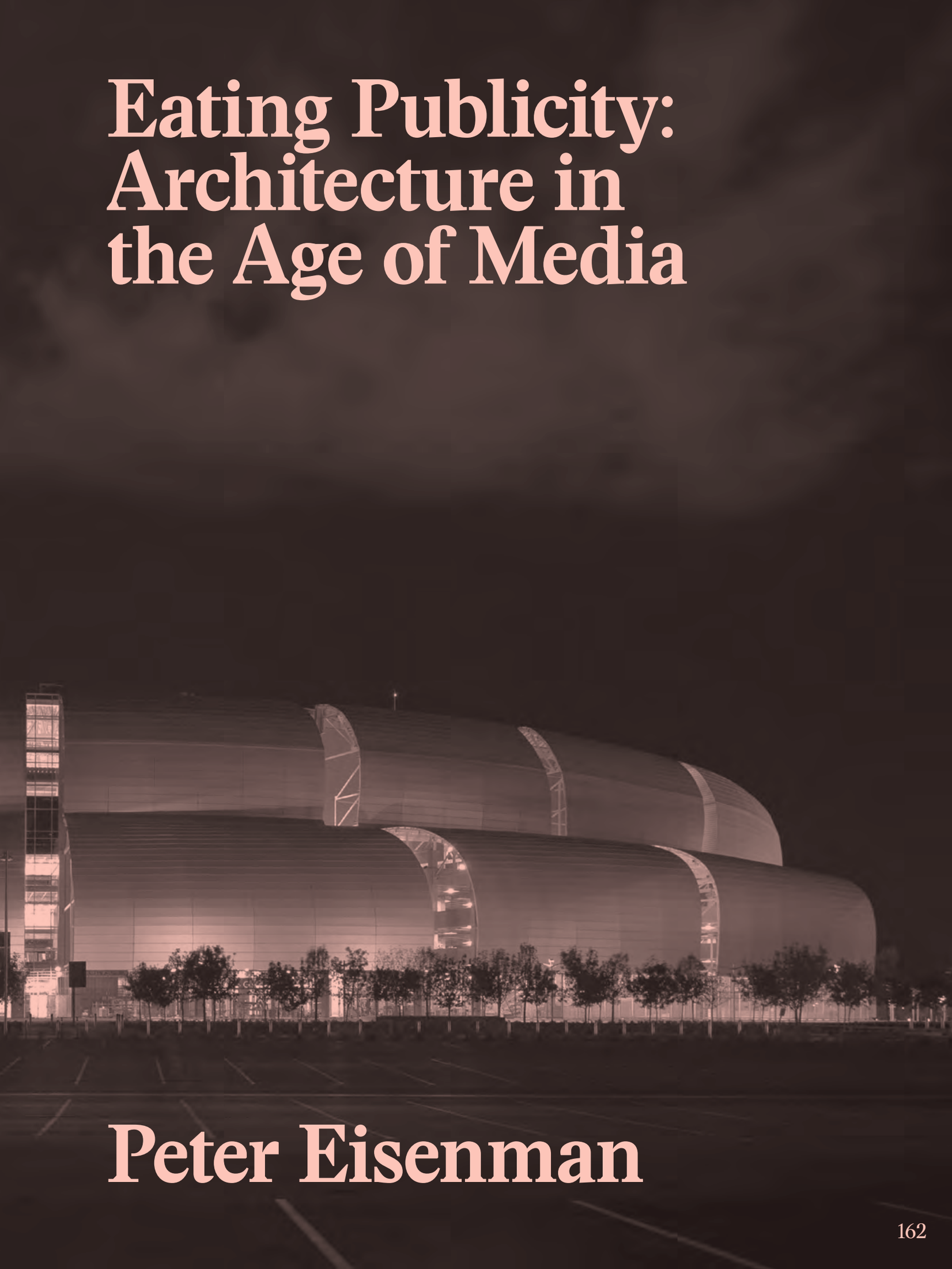
4 Andrew Saint, *The Image of the Architect* (New Haven, CT: Yale University Press), 1983.

5 The gender bias is deliberate as architecture was almost exclusively a male preserve.

6 Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," in Illuminations, ed. Hannah Arendt and trans. Harry Zohn (London: Fontana, 1982).

7 Paul Davies and Torsten Schmiedeknecht, *An Architect's Guide to Fame, Or Why They Got Famous and You Didn't* (London: Architectural Press), 2005.

Eating Publicity: Architecture in the Age of Media



Peter Eisenman

Previous page University of Phoenix Stadium, Glendale, Arizona.
Above Peter Eisenman with Matt Roman, "Palladio Virtuel," an exhibition at the Yale School of Architecture Gallery, August 20–October 27, 2012.

P47 Recently we congratulated you on your installation at the Venice Biennale and you reminded us that "you can't eat publicity." Could you explain what you meant by this within the context of your project?

PE I would say that was a very strange thing for me to say since I focus a great deal of my efforts on things that create publicity, for example, on our recent Palladio exhibition at Yale and the Venice Biennale exhibition about Campo Marzio and Piranesi, done with our students. Most practicing architects don't do that. I do it because it gives me enormous satisfaction. Publicity, for me, *is* eating, because it doesn't directly lead to making money. If I didn't make a meal of the Biennale, or of Palladio—food for thought, let's say—what do I have? Making money is not the object of what I do or what my work is about.

My work is about advancing my project, something that transcends any particular commission and attempts to elevate the work to a disciplinary and cultural critique. That is why I teach, write, *and* practice. However, because of the current nature of information and media, this proves to be difficult. Today the production of a building has changed to the production of an image of a building. Media has become so all-consuming, with a rapacious barrage of daily updates featuring ever more problematic new images, it is little wonder that architects have time to work, much less think.

P47 Do you actually have to get your buildings built to be successful in the realm of public media?

PE Today, more than ever, you don't have to build to get publicity. Images are as important as buildings. This idea began, to some degree, centuries ago. Take the example of Palladio's *The Four Books of Architecture*. If he hadn't written the books at the end of his life, redrawing all of his buildings as he wanted them built as opposed to the way they were built, nobody would go out of their way to see those particular villas. If Le Corbusier hadn't written *Vers une Architecture*, nobody would have gone to see his little white houses because any number of French architects were making white houses at the time. If Robert Venturi had not written *Complexity and Contradiction*, if Rem Koolhaas had not written *Delirious New York*, if Aldo Rossi had not written *The Architecture of the City*, few people would care about their actual buildings. What it means to be a successful architect doesn't necessarily mean building a hundred buildings. It means having a project, which can be described

as a philosophical, cultural, theoretical idea about the discipline of architecture. How many canonical buildings can one architect build in a lifetime?

On the other hand, Manfredo Tafuri once said to me, "Peter, if you did not build, I would not be interested in your ideas." That is the paradox. The project is greater than the single building yet dependent on it at the same time. If one doesn't build, one becomes labeled a "paper architect" and doesn't have the opportunity to test theoretical concepts. Ultimately one has to build one's ideas in order to develop one's project.

To build means you have to have clients. And the issue is, what is the nature of your clients and what is the nature of the projects you build. You have to choose carefully. I have been fortunate to choose projects that were built and turn out to be important both in a media sense—beyond their actual value, which provides publicity—and that develop my broader intellectual project. But not all buildings can sustain theoretical ideas. Many projects are done because we have to keep the office going, and we build buildings for the same reason.

P47 How do you convince a client to build a theoretical proposition?

PE You don't. Clients are generally uninterested in one's theoretical propositions. Any client that goes to Venturi—or whomever—knows what they're getting. The same goes for any architect with any client.

P47 Do you take on projects that are of no theoretical value?

PE "No theoretical value" is a relative term. Financial value is independent from that of our disciplinary project. While one can solve functional programs, one must continually ask, "Where is the architecture?" Can we make critical commentary on the high-rise, for example? While I don't want to do noncritical buildings, not all buildings afford us this opportunity.

P47 To what extent is the meat of the project bound only for paper?

PE The number of projects that gets built is less than twenty percent. Look at Le Corbusier—we actually have a better chance to build than he did. But what remains on paper is still very important. The opportunities for any architect to articulate a project in an individual building are very few. Schools rarely take this into consideration. There is no question that what we teach and what confronts us in practice are not necessarily the same, and they shouldn't be.

Take our Arizona Cardinals stadium as an example. I love football. Doing a stadium was for me like a Roman Catholic doing a cathedral. Can a stadium, other than the façade, be a critical work when there are sight lines, exit requirements, fire-suppression systems, points of sale, even rules of the game that dictate form? Can architecture transcend the myriad demands of building? Even though *Sports Illustrated* said it was the best stadium in the first ten years of this century, ultimately the stadium type has been fixed since the Roman Colosseum.

P47 Do you turn down commissions because you don't believe they can serve your project? How do you strike the right balance between projects that are interesting and those you need to do to sustain the office?

PE It's difficult to balance. At one time I had an office of forty people. We were doing two large projects with working drawings. I have difficulty balancing control of the work with control of the people. I felt I often lost contact with what I wanted to do, and the employees often didn't understand what I wanted to do. It was not their fault. So now we have only ten or twelve people with whom we do large projects, because we always associate with local firms to produce the working drawings. The phenomenology of building details is not what our practice is about. We do design-development

Entry to upper concourse: University of Phoenix Stadium, Glendale, Arizona. Stadium was completed in 2006.

drawings and let the CDs go. That's standard practice in many architectural design firms today.

P47 Do you think having a Peter Eisenman building has any financial value for your clients?

PE Definitely. Take the Arizona Cardinals franchise: its value went from $250 to $900 million because of the iconic nature of the stadium—and it doesn't even own the stadium. Fox Sports has said it is one of the best places to televise a game, and people tell the owners that it's a great place to watch a game. They will soon host another Super Bowl, which is worth something like $600 million for the local economy for the two weeks preceding the game. And Glendale has grown as a community. Nobody had heard of Glendale prior to our stadium.

Signature architecture is what media is all about, and I remain on the edge of that cusp. My son, for example, lives in a Richard Meier building in Brooklyn; the cost to buy an apartment there is way above anything else in the area because it is a Richard Meier building. Certainly my clients are interested in my intellectual or academic work. The fact that I am having an exhibition of my Istanbul project at the 2014 Venice Biennale is important to them politically. But being in the popular press is a different story. It is more important than ever to stay in the media. You can say, "You can't eat publicity," but in the age of media, publicity keeps many architects alive.

P47 Have you ever had a client who points to something essential in your project and says, "I don't want to pay for that?"

PE Yes, that's the danger one invariably confronts in so-called "value engineering." For example, in the Arizona stadium we had skylights that radiated out from the center and aligned with the cuts in the façade that go around the building. Their cost was prohibitive because we were cutting through the structural integrity of the roof. The client saw no reason to pay the extra money for an idea without any real functional value. Then, practically speaking, we discovered that the cuts also created strips of intense light on the field, which was problematic for television cameras.

P47 If you now have something to do with the franchise's financial success, do you ever want "skin in the game?"

PE I am not into real estate, and getting a piece of the action would require me to participate financially in the deal. There are firms, like SHoP, who are involved

Above Eisenman Architects and Aytaç Architects, Yenikapi Transfer Point and Archaeo-Park Site Plan, Istanbul, Turkey. Competition entry.
Below Peter Eisenman, sketch of urban parti, Yenikapi Transfer Point and Archaeo-Park, Istanbul, Turkey.
Opposite page University of Phoenix Stadium, Glendale, Arizona.

in that capacity. But that's not my intent. If I were interested in doing that sort of thing, I would go into management and get out of architecture school, because this is not the place to lead you to anything like that.

My father once told me, "Don't get involved in anything you don't know anything about." And if there is something I don't know anything about, it's money. That is not why I do architecture.

P47 Do you think an intellectual project could entice media on its own merits? And is it possible to promote one's intellectual project through publicity?

PE Frank Gehry has been very successful in merchandising himself, from lamps to chairs to his technology company. There is a way of doing it. Richard Meier has been very successful at being Richard Meier. Rem Koolhaas became successful once he partnered with a successful engineering company. Rem was not in the so-called "real world" until he decided to join OMA with a large engineering firm that had the capacity to produce like Wal-Mart. These are examples of people who make what I would consider to be top dollar for architecture. So it's possible to do, but it's not my personal skill set. If I were to look back, would I do it differently? Probably not.

P47 Does publicity subsidize your design work?

PE When I visit my grandchildren in California, a business-class ticket is three thousand dollars and I want to bring my wife. So I do a lecture and get someone else to pay for it. But I've never hustled work for the office, nor have I ever had someone hustle it for me.

P47 All the work comes from winning competitions?

PE Almost all of it. You ask, "Why don't you do x, y and z," and I say, "Why should I?" It's not the model that I work under. What I value in terms of architecture is not necessarily shared by my peers.

P47 You value architecture as a discipline and not as a practice?

PE More or less. I often marvel that the theoretical me has been able to build some large-scale projects. I sometimes ask myself, "How was I able to do that?" I still think they are pretty good. But then you could ask, "Why don't you do more?" Probably because I am not interested in doing what it takes to do more. A psychologist once said to me, "Why not have an A line and a B line?" That's impossible for me. I could never consciously put forward any work as a B line, even though Rem jokingly refers to me as a B-rated movie actor.

P47 Why do clients hire you if they don't understand or appreciate your work?

PE Clients are often more interested in branding than architecture. In the age of information clients want you to deliver publicity as much as a building, so one must be able to deliver both.

Paranormal Activity

Archi-Spectral Reflections on the Aesthetics of Austerity

AOC

"Pity me not, but lend thy serious hearing
To what I shall unfold."
—Ghost, *Hamlet*, Act 1 Scene V[1]

Architects have always been asked to do more with less. In the context of public projects in particular, value engineering is standard. Traditionally both clients and the media applaud us for conjuring clever, beautiful things from limited budgets. Magicians of the material, we "add value" through our design expertise. Or as Bourdieu[2] might put it, we are rather good at transforming available economic capital into symbolic and functional forms that both objectify and support the production of collective cultural and social capital. Consequently our own cultural capital swells. And hopefully we make a bit of money too.

This skill is our primary line of defense when our own "value" is called into question, as it regularly is in twenty-first-century Britain, either by politicians—as when education minister Michael Gove infamously accused us of "creaming off cash" from the government's £45 billion Building Schools for the Future program[3]—or by the "death of the profession" reports[4] that we produce for ourselves. Despite the best efforts of our professional bodies to "sell" us,[5] it can sometimes seem as though architects and the necessary "efficiencies" of late capitalism simply are not compatible.

However, developments have taken a disturbing, if intriguing, turn: professional anecdotes suggest that suddenly designers are quietly being asked to do *less* with less, to pull off some new, rather spooky tricks. In the austerity climate following the 2007 financial crash, none of us were surprised, or more than momentarily dismayed, by budget cuts. In the old order of things this could well have proved our professional moment. We are primed to take center stage to prove our ability to deliver the neo-Vitruvian triad of "build standard," "functionality," and "wow factor"[6]—even for reduced rates per square meter.

What people weren't expecting was to be asked to create places that look as if money had not been spent, to design buildings that look, well, cheap, even when a better "look" could be given for the same price. One practice was given a clear directive by a local authority to design only "boxes" from that point onward and to avoid any "design flair" trickery. The client could not be seen to be wasting money on school buildings. Another designer was told not to procure a high-quality paving slab for a new urban project, despite figures showing it would cost less over the projected life span, but to use a cheap paver. In some cases architects have been asked to undertake similar strategies where the budget has, in fact, remained at pre-crash scope.

So what's going on? On one level the answer is straightforward, even banal: politics. In austere times public representatives

and their servants must behave austerely or risk the wrath of a parsimonious electorate. What was once branded "public investment" now reads as profligate. Leaving aside the potential implications of this for ideas of shared civic or public goods—our collective cultural capital—and for any social value placed upon the expression of these, this trend has rather disturbing democratic implications. Apparently the voting public is deemed too dim (or too denatured by our "spectacular" society) to think beyond immediate visual impressions of "good value." As Guy Debord puts it, "All that once was directly lived has become mere representation."[7]

However, things are less straightforward once you try to look beyond surface "distraction techniques" into the backstage practices of spatial economics to work out what's *really* going on, and its architectural implications. Once one peeks behind the scenes, recent buildings start to assume troubling and unstable forms. Everything indicates that something may be seriously "out of joint," to quote Derrida quoting Hamlet in order to rethink Marx[8]—and not just because a subcontractor failed to assemble something properly.

The first thing that strikes one is how much economic capital is actually required to conjure even a relatively small public building into existence. The capital may be invisible; it may even be only theoretical. But nonetheless it is necessary, and can be found if you look hard enough.

Since the debt bubble popped in 2007, Marxist conceptions of money as an apparition—the outcome of some kind of magic that transmutes paper into gold, or in today's global banking practice, simply the *possibility* of money—have reappeared in public and media debate. Quantitative easing is explained, for example, as the process of creating money "out of thin air."[9] Loans and mortgages are understood increasingly as capitalized social relations[10] and specifically as capitalized "promises."[11] People are thus vaguely aware that much of the money that brings our public projects into being, often through complex private-sector partnerships, is phantom in nature.

What is discussed less publicly is how much a typical contemporary public project is supported by capital, much of it phantom, in other ways. The building may look cheap, with relatively little capital actively objectified—although as critics point out, the actual rate per square meter may not in fact be wildly different to that of a pre-austerity build[12]—but someone somewhere is still paying for it, in what can seem ever more convoluted and drawn-out ways.

Significant capital is required to fund an open and accountable procurement process. Significant capital is also required to cover contractors' bidding costs, with unsuccessful bids needing to be balanced out by the profits of successful ones. Significant capital is further required to compensate unsuccessful

bidders for any errors in tender evaluation—an unfortunate side effect that is increasingly common.[13]

Specifically on the aspiring architect's part, significant "past" capital must be evidenced in the form of balance sheets and turnover records in order to qualify a pitch, and significant potential "future" capital—sureties against risk—must be committed in the form of professional and public indemnity insurance. In both cases the sums required can often seem well out of proportion to the actual project. Architects too, particularly in the case of public competitions, often incur heavy costs at the bidding stage. Architect Walter Menteth, a leading voice in EU procurement reform, gives the example of the Stockholm Public Library's extension project, which "attracted over 1,100 submissions at a cost to the architectural profession estimated to be more than three times the building's construction cost."[14]

Economically these "production values" are arguably not only troubling but also wasteful. Psycho-spatially, in terms of the spectropoetics of our collective unconscious, they are both fascinating and precarious. The increasingly invisible hand of the architect, working in tandem with that of the market, conjures a disturbing apparition into being. A small, apparently levitating building gradually takes shape before us, held up by an extraordinary force field of capital trickery that channels the combined powers of money past, present, and future. The building is slightly swollen, like a novelty airship or a factory-farmed chicken, struggling to contain the invisible capital concealed by its form. That form is an insubstantial and generic carapace shaped by forces beyond its control—a kind of paranormal formalism. The walls are probably lightweight render, and the roof is lightweight steel. Only the colorful windows remain, like crude stage makeup, as spectral traces of its "iconic" pre-crash predecessors.

So is this terrible vision a harbinger of the architectural future? Has hubris at being able to pull off a few clever tricks led us into a dangerous pact with something supernatural? Is the world ahead similar to the dystopian picture painted by critic Rowan Moore in a recent article on the new wave of standardized schools: a haunting cycle of prefab public "retail shed" buildings, planned in front of the TV on a Thursday night, adding optional finishes and "desirable extras" such as CCTV[15] (so that we can be sure to capture any supernatural activity, such as the increasingly faint ghosts of perturbed architects roaming the central "street")?

Or is there the potential for something more interesting in this uncanny moment, as the forces of capital become simultaneously more and less visible, more and less "present," in the forms of our public buildings? Anthony Vidler describes the architectural uncanny as a "spatial estrangement," a "representation of a mental state of projection that precisely elides the boundaries of the real and

the unreal in order to provoke a disturbing ambiguity, a slippage between waking and dreaming."[16] It is similar perhaps to what Slavoj Žižek calls "interstitial space."[17] Both suggest the possibility of some kind of "return of the repressed" of the type that Freud links to the uncanny, where disjuncture opens up a Derridean "spectral moment"[18]—a crack in present time—through which "ghosts" of both past and future may make themselves visible, and potent.

Such a return could take various forms, some more palatable than others. At the dystopian end, there are possible cracks both literal and metaphorical. If the buildings do not physically fall apart, then the consequences may be that they are condemned as failing to function and/or inspire, despised and discarded as another architectural experiment gone wrong. Meanwhile the procurement strategies themselves may bloat, crack, burst, and implode as part of broader economic meltdown, with fiercer forces yet unleashed.

Or is this in fact an opportunity for architects—and architecture—to employ their newly found invisible hands more inventively and to exploit an opportunity to think differently about space, before "template" design can push us definitively off the playing field?

One criticism leveled at architects throughout the twentieth century has been the privileging, despite the Modernist credo, of form over function—making things look "good" while neglecting the ways in which people really use, and *change* the way they use, their buildings. When imagining an ideal architecture of the ostensibly frugal, British architects tend to call on precedents such as the crafty collages of the Rural Studio or the 'ready-made' assemblages of Lacaton & Vassal. Again, however, these are bespoke and controlled, designed for strong *visual* effect.

In contrast is perhaps a world of buildings that are perfectly fine but no one loves very much that opens up an exciting (Cedric) Pricean, (Lucien) Krollian territory of the unfinished, the re-makeable, the re-thinkable. Embracing the cheap and recognizing in it the potential for challenging dominant aesthetic values, not just within the architectural world but within wider democratic society and legislation, could result in the (re-)blossoming of a purposeful "aesthetically awkward" architecture where the physically and symbolically performative is prioritized over the static, and where the necessities and idiosyncrasies of the "everyday" (as practiced, not fetishized) find form without disrupting some preordained order.

Such an approach might facilitate a far more positive, and twofold, return of the repressed: (1) that of the empowered, intelligent, unpredictable user and of his or her ownership of the building, and (2) that of the spirit of the Post-Modern architectural project before it became reified (and spectralized) as a style. Directing focus away from the visual and the symbolic,

and prioritizing shifting process over defined "product," might open up opportunities for a true architectural multivalency where the "reading" of space is understood as a bodily activity, not just an intellectual one. It would also encourage us to keep calling into question not only what a specific building is and does, but what architecture *itself* is and does. Furthermore, such architectural experiments inevitably will offer discrete opportunities to explore the spatial implications of potential new models of social and political practice and of value generation, something that will be necessary if we are going to undertake any serious "ghostbusting"[19] at a broader ideological level.

The spectral studio: an east London architecture practice by night.

1 William Shakespeare, *Hamlet* (c.1600), quoted in Jacques Derrida, *Specters of Marx*, trans. Peggy Kamuf (London: Routledge, 1994).
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3 Will Hurst, "Michael Gove in New Attack on 'Award-Winning Architects'," *Building Design*, February 3, 2011.
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5 RIBA, *Good Design: It All Adds Up* (London: RIBA, 2011).
6 University of Sheffield School of Architecture, *Disseminating Good Practice (DGP): Developing an Exemplar Layer for AEDET Evolution and ASPECT Design Evaluation Tools* (London: Department of Health, 2007).
7 Guy Debord, *The Society of the Spectacle*, trans. Donald Nicholson Smith (Cambridge, MA: Zone Books, 1994 [1967]).
8 Derrida, *Specters of Marx*.
9 BBC, "What Is Quantitative Easing?" March 7, 2013, accessed December 31, 2013, http://www.bbc.co.uk/news/business-15198789.
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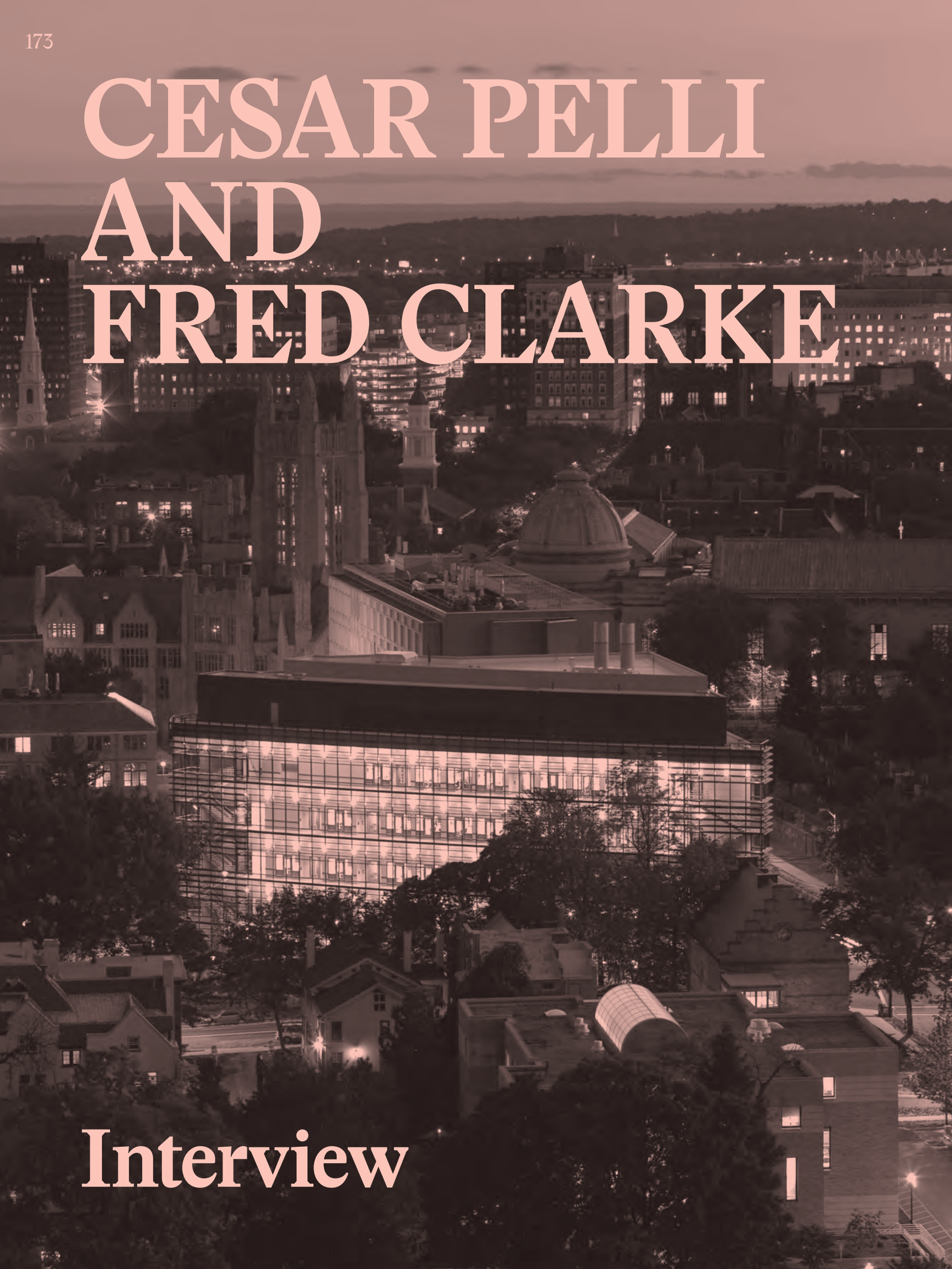
11 *Money As Debt*, directed and written by Paul Grignon, Moonfire Studio, 2006.
12 Rowan Moore, "Michael Gove's Standardised Schools Not Such a Class Act," *The Observer*, April 14, 2013.
13 Catherine Gelder, "The Hidden Cost of Public Procurement," *PLC Construction Blog*, November 6, 2012, accessed December 31, 2013, http://www.blplaw.com/expert-legal-insights/articles/plc-construction-blog-the-hidden-cost-of-public-procurement.
14 Walter Menteth, comment on "RIBA Competitions Accused of Exploiting Architects," in Elizabeth Hopkirk, *Building Design*, March 8, 2013.
15 Moore, "Michael Gove's Standardised Schools."
16 Anthony Vidler, *The Architectural Uncanny: Essays in the Modern Unhomely* (Cambridge, MA: MIT Press, 1994), 11.
17 Slavoj Zizek, "Architectural Parallax: Spandrels and Other Phenomena of Class Puggle," *Lacanian Ink* (New York: Jack Tilton Gallery, Spring 2009).
18 Derrida, *Specters of Marx*.
19 *Ghostbusters*, directed by Ivan Reitman, written by Dan Aykroyd and Harold Ramis, Columbia Pictures, 1984.

CESAR PELLI AND FRED CLARKE



Interview

P47 In much of architecture there is a dismissive attitude toward money, from unpaid internships to...

CP Is the problem the profession?

P47 It defines the profession, and yet it is something we are not taught about in school. It is almost a faux pas.

CP I thought it was taught in Professional Practice at Yale?

P47 It is touched upon, but it is not brought up in the studios. When we talk about design, we almost never talk about money, even though it generates form or modifies a project as much as anything else.

CP It's like some of the other limits we have. I think limits are good for architecture. Money is one big limit, but so are the site and the laws [building code] that you work with. There are many other limits that you are accustomed to working with.

FC It is better that money be an issue than not, because, like gravity, it is one of the great stabilizers of design. If you had all the money in the world to spend, you would not necessarily do a better building; some of the very best buildings historically have been done with relatively little money.

P47 Does it inform your design from day one?

FC Yes.

CP Absolutely.

FC The only way to really be in control is to recognize it. You must be part of the mechanism that guides the design through the budgetary process along with the client and the contractor.

P47 Let's start at the beginning of that process. Could you talk about acquiring projects, especially unpaid and invited competitions, and so on?

FC Today we try not to do unpaid competitions. If a client isn't willing to pay a modest sum, with some exceptions, to support a competition, then it probably is not someone you want to work with.

CP Unpaid competitions were very critical at the very beginning of my career, before I opened this office. They allowed me to gain name recognition. But if you are given the choice between a project and an unpaid competition, there really is no choice.

FC If you have the choice between a paid and an unpaid competition, you should definitely do the paid one. What Cesar is saying is that in some instances, when you are first starting out, you may not have the choice. Doing a competition or doing nothing is also a pretty easy choice to make.

Whether a competition is paid or not, it is a window into the mindset and the values of the client.

Some clients create competition without calling it a competition It is an interview, and you are invited to bring ideas. You can choose to not bring ideas, but if you want to be taken seriously you have to bring something.

If your client writes a suggestive letter to you saying, "We would love to have you interview for our complex in Bangkok, a million-square-foot project with a $200 million construction budget. Please come to Bangkok to interview with us, and if you have some ideas we would love to see those," you know that's a competition.

CP That is also very, very hard for architects. I was a juror in a competition for an art museum in Buenos Aires. There were four hundred fifty entries from all over the world. I set a modest rate per hour of work, and I calculated that the architects contributed twice as much money as the building was worth based on all the drawings that were there. If the architects had all just pitched in, they would have built two of the buildings for the client.

P47 Do you think that clients don't understand how much work goes into it, and that's why they don't think...

CP No, no, no. Architects really put a lot of effort into these things for nothing. One in four hundred and fifty!

FC Some clients know how much an architect's time is worth: prominent developer clients. They know as much as an architect knows; they know how much an architect charges and what our fees are because they have negotiated hundreds of contracts. When you prepare for an interview and you spend a week preparing for it, both they and you could easily put a value on it. Money starts being spent from the moment you get the letter of invitation—be ready for this cost reality.

CP About 30 years ago, in one of our first projects for Rice University, we invented a phase of the design process called "Predesign" (pre-schematic design). This was combined with the conceptual and budgeting phases, in which we measure the building size against its quality and the client's available funding. Within a two-month period we were able to reconcile all three of those aspects of the project in such a way that the client could see before the project got underway what they could get. This way you triangulate the problem in terms of quality, program size, and budget. Those are the three foundations of any project. So the client understood immediately that for their dollars they were going to get a brick cavity wall building or a stone building, and whether they were going to get

a nice interior space or not. It was the underlying set of assumptions that stayed with us through the entire life of the project. Now the idea of the Predesign Phase has become an industry standard; many architects have adopted it.

FC Clients are adopting it too. The nice thing is that you do it after you have already gotten the commission. It is part of your services, and it clearly puts the issue of money, next to quality and size, on the table from the beginning.

CP If you vary any one of those three, the other two are affected. Those are the three qualities that define a project, beyond site and program and other things.

P47 Do clients understand better why you are doing certain things because you are explaining the project that way?

FC They understand it better because it is a very logical way of teasing apart the issue.

CP We open our books, and we ask the client to do so. If the client understands, it creates a very strong ground on which to design—particularly with wise and experienced clients who welcome the process.

FC This understanding, however, gets tricky in times of high inflation. In that circumstance, there is little anyone can do proactively to control cost. When construction cost inflation reaches 15-20% per year, as it did in the early 2000's, every time you estimate the project it will be over budget. Over a series of four or five cost estimates we sometimes value-engineer nearly the project's full value. That's how extreme the money issue can be.

CP Sometimes you do that and the projects still go over budget.

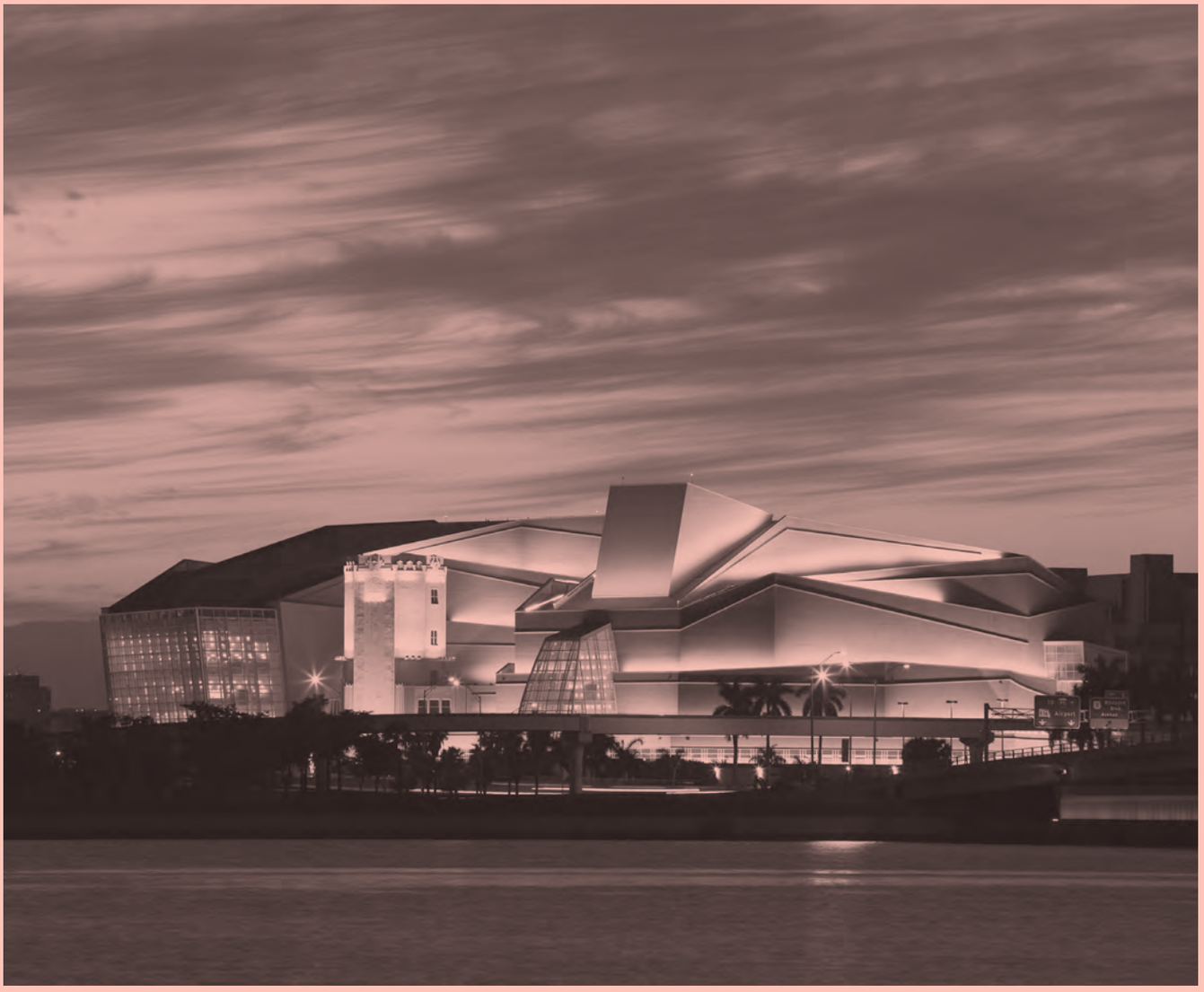
P47 Have you been finding that value engineering is less and less necessary when there is a Predesign Phase?

FC It is still necessary, but at least you get ahead of it and are not so surprised by it. On almost all of our projects we implement not only a Predesign Phase, which has a budgeting aspect, but we estimate costs at the end of every phase of design. Often we will ask the owner to have both our estimator and theirs do estimates.

CP Usually the owner has a contractor do the estimate and we engage a professional estimator. They use two very different approaches. The contractor will normally talk to subcontractors and get prices from them. The professional estimator will want the dimensions of every item. Their results are often different, so when they get together they discuss every item until they determine which estimate was too low or too high.

FC It is often best if they disagree because they take exactly the same set of specifications and drawings and, as Cesar said, they look at it in two very different ways. They each put a number out, and the best thing is if they are not the same because then they have to reconcile the two, and eventually it has to do with assumptions about size, unit costs, and industry standards—whatever it might be. But all of the most important cost-related matters come to the surface, and our contracts often state that we won't proceed into the next phase until the budget is

Previous spread Daniel L. Malone Engineering Center, Yale University.
Above Connecticut Science Center, Hartford, Connecticut.
Opposite page Transbay Transit Center, San Francisco, California.



Adrienne Arsht Center for the Performing Arts of Miami-Dade County, Miami, Florida.

fully reconciled between these two experts. Then we proceed. In that way you are value-engineering as you go rather than waiting for a big surprise at the end of the phase.

CP When costs are rising, the cost-estimators may be proven wrong.

P47 Has there ever been a situation where a design idea has won against the desire to reduce the budget?

FC I think the answer to your question is that there may be some architects who don't care as much about cost as we do. They may say, "You hired me for what I do and you are going to get what you get." So under those circumstances design absolutely will trump cost—if the client has the money. And that is a big "if." The risk is that the client may say, "I really love your design but I can't afford it, and I am going to stop the project." That happens a lot. It is a gamble. We don't do that because we feel that we are hired not only to produce the very best building we can, but also to deliver a service to a client. And those two things work together for us.

P47 So is that how you communicate your value as a firm: reliable, good design?

FC No, that is too pedestrian, honestly. I think the way we communicate our value to a client and why we get chosen for the job is, number one, because of our design and our reputation. Some clients assume the worst about good architects; they believe they will be abused.

CP The truth is that a large percentage of our work is with repeat clients. They know us, and they value our concepts and the way we work. That is the problem with the kind of architect that will try to get what they want and force the client to pay for it: the clients say, "Oh, he was a terrific designer, but we will never use him again."

FC Not having repeat clients is a serious problem. Often in an interview the question is, "Your

reputation precedes you, we like your work very much, you are here because of your work, but how serious will you be about our own limitations? Can our building be built for the money we have? Can we get a Pelli Clarke Pelli building for this amount?" "We want one of your buildings, but can we afford it?" At that point you must demonstrate not only that you want to provide the best building you can but that you are serious about the client's budget and other constraints. That is when you have to describe your process. Today it is not enough just to say, "Yes, we care." You have to prove that you care. There has to be a methodology for managing their resources.

P47 Can you talk a little more about evaluating design from a budgetary vantage point?

FC The first diagram for a building is the point at which you start to spend money, and the truth is that there are some inherently inexpensive and expensive diagrams. If you can develop an instinct for what is an inherently expensive idea versus a less expensive idea, and it is much harder than it sounds, then you are going to be successful.

CP A more expensive building is not necessarily a better building; it might just be the result of a more complicated idea or an ill-conceived parti.

FC And I am sure if you examine even the work you are doing in school, you have an instinct for when you are crossing the line of affordability and buildability.

CP Unfortunately in school the jurors like complicated projects. You get the wrong feedback; because if you practice like that it will not help you.

P47 Is that the big problem in the architectural profession—that these terms

Above Petronas Towers, Kuala Lumpur, Malaysia.
Below UN City, Vienna (Competition).

aren't being dealt with in the studio environment?

FC I don't think so.

CP Many things that are present in practice are not present in school. I don't know how much we can ask schools to imitate real-life practice. Many other avenues of learning would be lost if we made the academy too much like practice. You don't learn practice in school—you learn principles, you learn ideas. You learn to use your mind. You learn to create.

P47 And you learn whether your diagram is expensive or not.

FC Perhaps, but in school the measure you have is what you are doing to please yourself and your critics. The cost of an idea is rarely a consideration. But as an exercise you could look around in the studio at the designs of your colleagues and ask yourself, is that buildable? If I had to build it myself, how would I go about it? It is one of the reasons the Building Project at Yale is so valuable: because it is a moment in which you are testing the actual complexity and perhaps the cost of an idea.

P47 Is it easier to be innovative when the budget is larger?

FC No, you have to be more innovative when the budget is smaller. And actually, sometimes you know the budget and sometime you don't. There are some projects where we know, to the penny, what the client wants to spend. There are others where, for various reasons, the client doesn't want us to know the budget until there are cost overruns which almost always occur after a great deal of design work has already been done. In both cases being innovative, flexible, and responsive is critical.

CP I think our practice is really based on experienced clients. Inexperienced clients are disappearing. I don't know if that is good or bad.

FC It is important to be aware of how informed your client is. In some instances you may have to do some teaching and evidence leadership in reconciling program, quality and cost. Architects need to be able to communicate how we are helping to manage resources. We must demonstrate our value both as a designer and as a responsible partner—embracing and not dismissing the issue of cost. If you are clear, optimistic and helpful in how you present yourself and do your work, then money and design will become a blended concern, shared between you and your client.

Naomi R. Lamoreaux

Front Façade, New England Merchants Bank Building, State and Congress Streets, Boston, Massachusetts, 1967.

Interview

P47 Could you discuss the history of money in the United States?

NL Money has several purposes and properties, but one of the most important properties is that it is a simple way to measure value. We could say that this table is worth six shirts in a barter system, but that would get complicated quickly because you might ask what the shirts are made of, who made them, and so on. One reason gold became a store of value is because it does not rust or deteriorate. But even gold could be inflated, by debasing the amount that was actually in a coin. Some people might collect coins and take gold off the edges. That is why the edges have ridges, so you can tell if someone has clipped them.

In the late eighteenth and first half of the nineteenth century, before the Civil War, banks were chartered for the most part by state governments. The exceptions were the First and Second Banks of the United States, which were chartered by the federal government. There were also private banks, which were not state chartered. There were more than a thousand state-chartered banks in existence in the United States by the time of the Civil War, and these banks issued money, each printing its own currency. In essence, they were private demand notes particular to each bank. That was the bulk of the money supply in the country.

If you opened your wallet, you would find a range of bills from many different banks. As you can imagine, this created transaction cost problems. You might go to a bank and get money in the form of a loan, but everyone you gave that money to would wonder if the money was any good, because money was only as good as the bank that issued it. You had to be familiar with the situation of each bank, so money tended to circulate only locally.

In certain regions of the country, policies were put in place to allow money to circulate more freely. In Boston, for example, the Suffolk Bank took it upon itself to be the guarantor of money circulating in New England. It required all the banks in the region to maintain deposits with it, which essentially formed the guarantee of the notes. Even with hundreds of banks in New England, the notes all circulated at face value. No one worried about them. In much of the rest of the country, questionable values were a more serious problem; the farther away that you moved from a bank, the more the notes would circulate at large discounts.

P47 When did the system change to what we have now?

NL There were two stages at which this happened.

The first was the Civil War. The Union government passed the National Banking Act, which created a system of national banks

The Federal Reserve Bank of New York, Manhattan, designed by York and Sawyer, Architects, 1919–1924, 1935.

that issued currency, all of which looked very similar and was labeled "National Currency." These notes all had to be backed by U.S. government bonds. This was a way of making banks buy bonds to finance the war and had the effect of allowing the notes to circulate at par everywhere because the only banks that could issue them were those chartered by the federal government. Simultaneously the government levied a tax on state banknotes—essentially taxing them out of existence. State banks figured that they could exist without issuing currency because they could take deposits of national bank notes, hold some of the currency, and make money by lending out the rest.

The second stage was in 1913 when the Federal Reserve was created and its banks—the New York Fed, for instance—became the only ones allowed to issue currency. The ability to issue notes was taken away from all other banks. That is why today when you open your wallet, you only have Federal Reserve notes.

P47 Did that help the economy?

NL There were certainly transaction costs associated with the early system of private banknote issue. Banks generally limited their money issues at this point because they potentially had to be ready to redeem them using the bank's gold or silver reserves. In the period before the Civil War, we monetized both gold and silver, and inflation was tied to the quantity of these metals in the country. After the war, the federal government wanted to retire the national debt, and because the amount of national banknotes in circulation was tied to the amount of the debt, the repayment had a deflationary effect. People argued for inflating the currency. So the supply of money became a political issue; the value of money became dependent upon the decisions of people in government.

P47 Is the value of money really that arbitrary?

NL A dollar bill costs pennies to produce, so there is clearly no value intrinsic to the banknote itself. What gives money its apparent value? There are different theories: One is that the more money you print, the less value it has; the other is called the "backing theory" of money, in which people's sense of what money is worth is affected by what they think is sustaining that worth. People have to have faith in whatever backs the value. In the colonial period, when the colonies first experimented with paper money, taxes would be levied to retire the money being printed. So long as that was done, the money did not seem to lose its value when more was created.

P47 Could you tell us a little about early bank architecture in the United States?

NL Banks have not always been big edifices. In New England especially, there were lots of small banks that lent money mainly to people who were connected with the management of the bank. They were insider institutions. These banks were typically on the second floor, above the storefront. They were not imposing structures, and there was nothing that said "money" all over them. They had no public presence because they were not aiming to attract deposits. They mainly lent out their capital to a small group of people, so they did not need their buildings to advertise their activities.

P47 When did that change?

NL That changed following the Civil War. Deposits really become important during the 1880s. Banks tried to differentiate themselves architecturally to impress potential depositors. Their buildings became ornate and palatial; their spaces were differentiated to attract people into the "parlor" of the banking hall.

Second Bank of the United States, 1818–1824, Philadelphia, Pennsylvania, William Strickland, Architect.

P47 How does monumental architecture come into play today, with digital banking?

NL The calculus has changed a bit. In the nineteenth century there was no deposit insurance, so if you put your money in a bank and it failed, you might not be repaid. As a result, banks wanted to communicate their solidity and permanence through architecture. For most of U.S. history, in most places, banks were forbidden to have branch offices. They had one office, so if you had an outlying town, there would be a separate bank in that community. In the twentieth century it became increasingly common for states to allow branches, and a new kind of architecture developed for branch locations, especially after World War II. It was all about convenience: banks were built as drive-throughs. These branches did not have to show the solidity of the institution because that is what the downtown building represented. Today it is even more abstract. ATMs and Internet banking reduce the experience to a screen, and that's it!

P47 Has the current economic climate and ill will toward the financial industry affected the physical presence of banks?

NL Since the financial crisis banks have taken up more visual space in cities, at least through advertising. But certain institutions—Bank of America, for example—have started closing branch locations, which could be interpreted as a retreat.

The Architecture of Financialization

60 Hudson Street, New York City.

Kazys Varnelis

In 1900 Cass Gilbert, future architect of the Woolworth Building, defined the skyscraper as "a machine that makes the land pay."[1] Since his day the soaring vertical lines of the American city core, as epitomized by Manhattan, have embodied the intense value of real estate in the city. If the skyline appears as a visual representation of money, however, it is also the product of conspicuous construction: a desire to represent capital and, with it, power. From the Empire State Building to the Twin Towers, many of the great skyscraper icons were poor investments, even unprofitable, yet they served as monuments to the productive power of capitalism, as representative of our system as the pyramids were of the ancient Egyptian hierarchy.

The city core did not just represent capitalism but was made possible by it as well as by the new networking technologies of the late nineteenth century. Once the telephone permitted remote management, the division of labor between factory and administration could be realized in spatial compartmentalization, with the factory expelled out of the core, where real estate was expensive, infrastructure overloaded, and close-packed industrial buildings threatened uncontrolled conflagrations. This spatial division of labor cemented hierarchies, exacerbating the divide between worker and management. With management localized in the core, the corporatization of business proceeded at an exponential rate. Small-scale family-run shops gave way to large corporations managed by directors on behalf of a diverse and unrelated group of stockholders.[2] Investment banks, stock and commodity exchanges, insurance companies, accountants, underwriters, and other entities sprang up to service corporations, leading to a massive expansion of white-collar workers. In the most important American cities, such as New York and Chicago, cores developed not merely as managerial but as financial districts, serving the needs of corporations and spurring their growth still further.[3]

In the hundred years since, the operations of capitalism and the American city have become so intimately linked as to be inextricable. But this has had a downside too: economic downturns have serious effects on city cores. During the Great Depression, offices in downtowns emptied and, with building owners needing to charge high rents to recoup their construction costs, new tenants turned to secondary business districts springing up outside the city core.[4] Although the long postwar boom spurred significant growth in downtowns—adding sleek corporate towers to skylines established in the 1920s—by the late 1960s the rigid Fordist corporate hierarchies and big government produced a two-decade long crisis that hit businesses, American cities, and governments alike.[5] Falling profit rates strangled the large, vertically integrated industries of the day. Simultaneously pressure increased from abroad, most notably competition from Japan and other Asian countries,

and the consequences of growing U.S. dependency on foreign energy, following peak domestic oil production in 1971 and the 1973 OPEC energy crisis, led to a protracted economic downturn. As in the Great Depression, the entrenched value of downtown real estate kept commercial rents high and prevented redevelopment even as less expensive office parks beckoned. With tax coffers drained by the flight of both businesses and residents along with rapidly decaying infrastructure, cities were thrown into a crisis that many, particularly those of the Rust Belt, have yet to recover from.

However, in New York's case the disappearance of the industrial base from the city was anticipated as part of aspirations held by both factions within city politics and developers. Thus, although the city was experiencing the effects of the downturn in terms of rising unemployment and trouble paying its bills, as it simultaneously rose in stature as a global financial capital, its downtown and midtown business districts continued to develop. During the first phase of post-Fordist restructuring, from 1966 to 1973, some 66.7 million square feet of office space were built in the city. But tying the city's fortunes so strongly to the financial industry meant that when the recession hit after the OPEC energy crisis, the city's economy was disproportionately affected and tax revenues fell dramatically.[6] Within two years the city was near bankruptcy. Failing to receive an immediate bailout by the federal government, New York was saved by bankers on Wall Street, who in return extracted a concession from the Teachers' Union to invest $150 million of their pension funds in the city's Municipal Assistance Corporation bonds. In so doing, the union aligned itself with a massive shift in stock ownership then underway, with its own consequences for Wall Street and finance.[7]

Although the Great Depression had made most Americans feel that the stock market was no better than gambling, pension funds grew rapidly after World War II, investing heavily in the market in order to grow. In 1975, the same year New York experienced its brush with bankruptcy, management consultant and business writer Peter Drucker observed that "pension fund socialism" now dominated American finance, with employees of corporations owning some twenty-five percent of outstanding shares. "In terms of Socialist theory," Drucker wrote, "the employees of America are the only true 'owners' of the means of production."[8] The 401(k) deferred tax-savings plans introduced in the 1980s wound up within a decade replacing many defined pension plans and significantly normalized the stock market for many Americans. This led in turn to increased popularity in equity investment, a fact that, along with massive investment of overseas wealth, spurred the market's tremendous run-up over the next two decades.

During the long financial boom of the 1990s, cities that could position themselves globally by playing specific roles in the emerging

NYSE Euronext U.S. Liquidity Center, Mahwah, New Jersey.

Trading Floor, New York Stock Exchange.

worldwide financial market were thriving. With its stock markets and heavily developed financial industry, New York became the Western hemisphere's most important financial center; Chicago continued in its role as a commodities center; Los Angeles contained not only Hollywood but the financial institutions that made the media industry tick; Houston served the oil industry; and San Francisco became a center for venture capital associated with Silicon Valley. In other cities less directly tied to finance, like Boston, Seattle, and the Raleigh-Charlotte-Durham triangle, technology industries spurred similar growth.

Urban theorists and boosters alike have understood global cities like New York as critical nodes for the global financial market due to their ability to permit face-to-face communications among individuals who participate in that system. Well-served by international air transport as well as regional road, rail, and air travel, the cores of global cities have also benefited from historically being heavily wired for telecommunications. Since the start of the telecommunications age, the large number of telephones required by city offices prompted telecommunications companies to situate major installations in those areas. In the case of Lower Manhattan, buildings such as 60 Hudson Street, 375 Pearl Street, and the AT&T Long Lines Building, at 33 Thomas Street, provided a wealth of connectivity. With computerization, these facilities supported the networking demands of the financial markets and other area offices.[9]

This symbiosis between telecommunications and face-to-face business, however, has become disrupted during the last decade. Always eager to find ways to increase its profits, finance has rapidly adopted new technologies that have changed the way markets work. In particular, face-to-face trading has been wiped out by the rise of electronic trading. The precursor to electronic trading floors, the National Association of Securities Dealers Automated Quotations (NASDAQ), was founded in 1971 and originally consisted of an electronic bulletin board registering prices to improve the efficiency of transactions that took place between traders, generally over the telephone. During the frenzy of the market crash of 1987, however, NASDAQ found that traders were oversaturated by events and unable to take phone calls, thereby lowering liquidity and exacerbating the crisis. In response NASDAQ set up an electronic system by which trades could take place, thereby bypassing the need to place calls and setting up the conditions for one of the country's most influential trading platforms.[10] The success of this system, along with similar ones in Europe, encouraged electronic exchanges to spread throughout the market during the 1990s. During the last decade both traders and exchanges have sought to capitalize on the benefits of electronic trading to increase the number of trades executed daily as well as their speed. The result has been the virtual extinction of the

familiar "open outcry" system, in which traders made transactions face to face on trading floors.[11]

Instead new electronic exchanges and "dark pool" trades (those placed outside of traditional exchanges) have made it possible for traders to find quicker trades and better prices. Moreover, with the spread of electronic trading, high-speed trading algorithms dedicated to seeking out the best buy and sell prices have come to dominate trades on the market.[12] If the New York Stock Exchange (NYSE) trading floor, at 11 West Wall Street, remains a symbol of American finance, it serves primarily as just that by now—although the head of one investment consulting firm says it is "primarily a TV studio these days"—since three of its five trading rooms have closed. Specialists from investment banks handling particular securities have taken up the remaining electronic workstations, connected to the NYSE's high-speed network, giving access to a "liquidity center" in Mahwah, New Jersey, some thirty miles northwest of Manhattan.[13] This 400,000 square foot facility stealthily adopts the familiar anonymous appearance of a suburban processing facility—or perhaps a prison—giving little hint of its new role. Still, as the chief executive of NYSE Technologies stated, "Our data centers are the trading floors of the future. ... The network electronically replicates the physical floor where people used to walk and talk." Unlike the old trading floor, however, this distant center requires only a minimal staff of fewer than twenty employees to maintain it. Even though specifics are closely guarded, the Mahwah facility has multiple redundant connections to high-speed electronic networks and at least two electric generators, or backups, to ensure continuity in case of disruption. Moreover, the NYSE does not merely represent the New York market but today is part of NYSE Euronext, a multinational exchange that incorporates exchanges in London, Amsterdam, and other sites in Europe and the United States. Thus a second facility, the European Liquidity Center, mirrors the Mahwah installation in the London suburb of Basildon. To attract traders to its network, NYSE Euronext sets out to keep latency between its other installations, such as the European Liquidity Center and the Mahwah facility, as low as possible.[14]

NASDAQ was the world's first electronic stock market, so it is of little surprise that it also bases itself in anonymous warehouselike structures in New Jersey. Whereas the NYSE has become more virtual, NASDAQ opened a physical presence in 2000, NASDAQ MarketSite, in the lower floors of the Condé Nast building, in Times Square. Lacking the familiar icon of the Wall Street exchange, MarketSite makes every effort to advertise itself, boasting the world's largest video screen, which covers some 10,000 square feet of surface and contains 19 million LEDs. The interior is a stage set for networks such as Bloomberg TV, Reuters, CNBC, and CNBC India that gives them an identifiable location from which to broadcast

33 Thomas Street (formerly the AT&T Long Lines Building), New York City.

NASDAQ-related news and interviews. MarketSite also hosts public announcements, corporate luncheons, and teleconferences by NASDAQ-listed corporations (tellingly Facebook's notorious Initial Public Offering was broadcast live on the façade of the structure, although hoodie-clad Mark Zuckerberg and his IPO team were in their Menlo Park, California, headquarters).[15]

The current NYSE floor and NASDAQ MarketSite reflect a broader change in finance's relationship to the city core. Even after the development of electronic trading, a trader's proximity to Lower Manhattan was crucial, reducing the time it took for signals to transmit from trader to exchange hubs located in the area, thus increasing the value of Lower Manhattan real estate for financial services. But the growth of high-speed electronic trading changed matters. As algorithms owned by massive hedge funds running on computers located in high-speed trading hubs outside the city joust with each other, the amount of time it takes for a human to initiate the trade becomes less important. Instead the distance of the servers from trading hubs and the speed of the algorithms themselves becomes crucial.[16] The result is that financial services firms are freer to leave the city.

Although the new landscape of finance in Manhattan does not indicate that there is a wholesale migration out of the city, what we are seeing instead is a dispersal of finance into the broader metropolitan area, based upon the infrastructure established historically in each region. Thus where Northern New Jersey offered an existing industrial base to accommodate the power demands of financial data centers, Fairfield County, Connecticut, was already home to dispersed financial services firms and well connected to Manhattan with the Metro-North Railroad.

Bridgewater Associates, the largest hedge fund in the United States, is already located in Westport, Connecticut, while the eighth largest, Renaissance Technologies, manages its $20 billion in assets from East Setauket, New York. Heavily reliant on programmers, physicists, and mathematicians, these establishments envision their corporate culture as being closer to Silicon Valley than to old Wall Street, their employees wearing business-casual garb rather than power suits, sitting at computer terminals instead of boardroom tables.

Although finance is still considered New York's dominant industry, its presence in the city has changed. The attacks of September 11, 2001, brought down many Lower Manhattan financial firms for a week until they regrouped and both the sector as a whole and individual firms dispersed to multiple locations across the broader metropolitan area to facilitate business continuity, something urged in an interagency paper by the United States Federal Reserve System, the Department of the Treasury, and the Securities and Exchange Commission. In doing so they ensured that should one site be brought down, others would remain viable

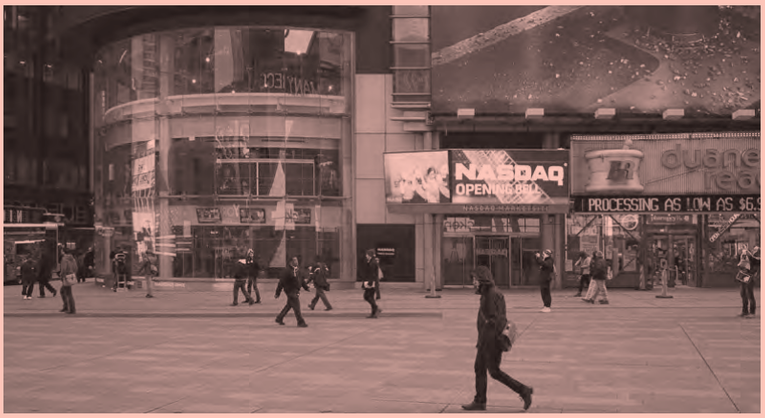
to serve as backup locations.[17] Firms with headquarters in the city now often have multiple offices both in and outside the center, with lean cores dedicated to advanced trading functions and wooing wealthy clients in New York, and dispersed back offices outside of the city, the Northeast, or even the country.[18] This coupled with the lean management practices that financial firms use, cutting payroll expenses even as profits climb, means that—notwithstanding the massive run-up in profits finance has experienced since the late 1980s—today there are roughly the same number of positions in New York City as there were twenty-five years ago while finance jobs in the greater metropolitan region have climbed rapidly.[19]

In particular, financial services firms have left behind downtown Manhattan. Those that did not feel it prudent to leave the city entirely generally moved to buildings in Midtown that are not only better situated but, with larger floor plates, are more suited to the type of work the firms now perform, or crossed the Hudson River to roost in Jersey City. Even when finance remains downtown its attitude can be telling of the current state of the industry. Consider the Goldman Sachs headquarters, the largest new downtown structure dedicated to the industry in years. The building does not advertise itself as a headquarters for the country's most notoriously successful investment bank, but rather as "200 West Street." *New Yorker* architecture critic Paul Goldberger has described it as appearing "to have been designed in the hope of rendering the company invisible."[20]

With so much capital sunk into Lower Manhattan real estate, the financial sector could only extract itself slowly. Fearing the decline of its downtown office district due to corporate flight as early as the 1960s, New York City sought to diversify the area by reintroducing housing, as outlined in its 1966 Lower Manhattan Plan. By the late 1970s obsolete office stock was being converted into housing, much of it purchased by foreign investors.[21] Proceeding in fits, the transformation of Lower Manhattan picked up again in the late 1990s. Just two days before the attacks of September 11, 2001, the area was the subject of a profile in the *New York Times* real estate section, with a large rental broker stating that within the last four years it had gone from being transitional to a "strong market in its own right."[22] During the last decade Lower Manhattan has accelerated its transition into a residential zone as financial services firms have deaccessioned their downtown properties. The area's real estate market, particularly the higher-end apartments, is part of the global marketplace, appealing to individuals hedging their bets and seeking to unload their potentially risky local currency holdings in favor of the seemingly more concrete currency of Manhattan real estate.

In the millennial economy the vast excesses of liquid wealth that wash the world's markets need to be reabsorbed somehow. Having carefully divested itself of the massive amounts of capital it had fixed

in commercial office space, the finance industry finds itself liberated from physicality in the interest of restructuring around the operations of high-speed trading algorithms. Historically associated with the creation of money, the skyline has become an investment itself, a place to store money. As a sink for overaccumulated capital, the skyline is now less a representation of the market than a byproduct of it.



NASDAQ MarketSite, Times Square, New York City.

1 Cass Gilbert quoted in "The Financial Importance of Rapid Building," *Engineering Record* 41 (June 30, 1900): 624.

2 On the development of corporations, see Alan Trachtenberg, *The Incorporation of America, Culture, and Society in the Gilded Age* (New York: Hill and Wang, 1982). On the move of factories to the outskirts, see John R. Stilgoe, *Metropolitan Corridor: Railroads and the American Scene* (New Haven: Yale University Press, 1986), 84-88. Stilgoe identifies demands for low, standalone fireproof buildings made by insurance corporations as a key prod toward the relocation of industry away from the city core in John Stilgoe, Metropolitan Corridor (New Haven: Yale University Press, 1983), 85.

3 The best book on the growth of the American downtown is Robert Fogelson, *Downtown: Its Rise and Fall, 1880-1950* (New Haven: Yale University Press, 2001).

4 Ibid., 224-26.

5 The list is long, but see especially David Harvey, *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change* (Oxford, UK: Blackwell, 1989) and *A Brief History of Capitalism* (Oxford, UK: Oxford University Press: 2007).

6 Kim Moody, *From Welfare State to Real Estate* (New York: The New Press, 2007), 13.

7 Christian Marazzi, *Capital and Language* (New York: Semiotext(e), 2008), 17.

8 Peter Drucker, *The Unseen Revolution: How Pension Fund Socialism Came to America* (New York: Harper & Row, 1976), 2.

9 See, for example, Saskia Sassen, "Electronic Space and Power," *Journal of Urban Technology* 4, no. 1 (1997): 1-17.

10 Maureen Burton and Bruce Brown, *The Financial System and the Economy: Principles of Money and Banking* (Armonk, NY: M. E. Sharp, 2009), 330.

11 Jerry W. Markham and Daniel J. Harty, "For Whom the Bell Tolls: The Demise of Exchange Trading Floors and the Growth of ECNs," *Journal of Corporation Law* 33, no. 4 (Summer 2008): 865-939.

12 Scott Patterson, *Dark Pools: High Speed Traders, A. I. Bandits, and the Threat to the Global Financial System* (New York: Crown Business, 2012).

13 Christopher Nagy, head of KOR Trading, quoted in Stephen Gandel, "Why the NYSE Flip-Flopped on Electronic Trading," *CNN Money*, http://finance.fortune.cnn.com/2012/10/29/stock-exchange-hurricane-sandy/. Nagy's statement is not merely polemical. The New York Stock Exchange is the single biggest "stage" for financial reportage, with more than thirty representatives of different networks broadcasting live from it every day. See Daniel Goodman and Kamelia Angelova, "How the NYSE Became the Biggest Stage for Financial News," *Business Insider*, March 20, 2013, http://www.businessinsider.com/how-nyse-became-financial-news-media-hub-2013-3.

14 Peter Chapman, "A Buttonwood Tree Grows in Mahwah: NYSE Euronext makes N.J. data center cornerstone of its technology strategy" *Traders-Magazine* 23, no. 308 (May 2010), http://www.tradersmagazine.com/issues/23_308/buttonwood-nyse-mahwah-nyfix-colocation-data-center-105760-1.html See also NYSE, "Global Liquidity Centers," NYSE Technologies, https://nysetechnologies.nyx.com/global-liquidity-centers.

15 NASDAQ, MarketSite Factsheet, http://www.nasdaq.com/reference/marketsite_facts.stm.

16 Algorithmic trading also exploits relationships between different markets, for example, by using changes in commodities prices from the Mercantile Exchange in Chicago to gauge the direction of upcoming trades in the NYSE, in Mahwah, or NASDAQ, in Weehauwken. To this end there has been a recent race in the development of low latency connections between Chicago and New Jersey.

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The Price of a Paradigm

David Ross Scheer

Architects like to think of architecture as having an immutable core that survives the vagaries of culture and history. When we speak of architecture in its purest sense, independent of any particular place or time, we implicitly invoke this core; otherwise it would be impossible to speak of architecture as an art that has been practiced throughout human history. In particular, architecture in this sense is supposedly immune to changing conditions of building production, financial considerations among them. Architects must adapt themselves to these facts of life but still strive to cleave to or discover the unchanging principles of their art. The idea that these principles could be sacrificed for financial reasons is anathema. Yet this is precisely what is happening now.

Drawing has been the lifeblood of architecture for more than five centuries. It was architecture's language and, like any language, it shaped its practitioners' thought and played a large role in setting its values, terms, and boundaries. The values that architecture embodied, it embodied through drawing. The making of a drawing was of the same order as the making of a building. As Filarete wrote: "It is impossible to explain clearly this business of building if it is not seen in a drawing. ... There is nothing made by the hand that does not partake of drawing in one way or another."[1]

This paradigm of drawing as both the language of architectural thinking and an act of making on par with the act of building sustained architecture from the Renaissance until the early twenty-first century. It is now being overthrown (although many architects do not realize it yet) by a new paradigm, in which buildings are coded as data and their making paralleled by processes of digital simulation. There will no longer be a physical act in which architects engage that is on the order of construction. The architect is implicitly required to take what his or her simulations show as the functional

equivalent of the building. The displacement of representation by simulation will have profound consequences for how architects think and the values their work embodies.

The immediate causes of displacement of the drawing paradigm can be found in the financial interests of building owners. The growing complexity of buildings, from the late nineteenth century onward, has placed increasing strain on drawing as architects struggled to provide the expanding volumes of technical detail needed to document a piece of construction adequately. Even with such technological developments as CAD and digital visualization, manual drawing remained at the heart of the design process and of architectural education. Drawing's death knell can be said to have sounded in 2004, when a federal study found that $15.8 billion had been wasted in a single year due to faulty coordination among construction documents.[2] Drawing had finally cost too much money. A new paradigm had to be found: enter building information modeling (BIM).

Owners benefit from the efficiencies BIM brings in many ways, including automatically coordinated construction documents, more accurate cost and scheduling estimates, automated program verification, and the digital transfer of design and construction data to building operations. On the other hand, architects have had to invest in expensive hard- and software, training staff to use the technology, and additional support personnel. Although these costs create a considerable financial barrier to adoption, there is evidence that architects see positive return on investment (ROI) as they become more expert with the technology,[3] although the methods used to calculate ROI have been questioned.[4] There are also the imponderable costs of resistance by older architects to the cultural changes brought about by the new technology, chief among them the loss of drawing. Moreover, while architects are adapting to the demands of BIM, it is subtly changing the nature of their work.

Like all technology, BIM presents itself as value-neutral, but like all technology it entails attitudes that enhance its effectiveness. Drawing (however heavily augmented by text) emphasizes form, the aspect of building wherein its expressive qualities are seen to inhere. BIM eliminates the traditional privilege of form, leveling all design information as computable data. In this form, the architect's work product can be smoothly integrated into the information flow of a project. It also enables numerical analyses of many aspects of a design, thereby promoting the idea that a building is a "solution" to a quantifiable problem rather than an expressive form.

The replacement of drawing by BIM and other digital media is also affecting the relationship between architecture schools and the profession. The former have traditionally been more concerned with transmitting the values that define the discipline of architecture than with teaching practical knowledge. The "bargain" between firms

and the architectural academy was based on the economic value of drafting, which people fresh out of school could do. The effective use of BIM, however, requires considerable knowledge of information technology and construction methods. This is putting pressure on schools to emphasize technical courses at the expense of more culturally oriented subject matter.

The building industry has committed itself to a new paradigm in which data is the medium of thinking and building. Driven by the financial interests of owners, architecture is abandoning drawing, with its unique modes of engaging the human mind, eye, and hand and uniting the architect's imagination with the material realm of building. The die is cast, and there is no going back for the industry as a whole. A sense of loss is natural but pointless. Rather the moment calls for critical reflection on how drawing, BIM, and other digital media affect how architects think and how their ideas become reality in order to understand and respond creatively to the transformation that is upon us.

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The Fiscal Topography of the Shrinking City

Brent D. Ryan
and
Lorena Bello

In the contemporary metropolis, the physical infrastructure of urbanism is mirrored closely by the fiscal infrastructure that constructed it. This fiscal foundation is hardly invisible; in global cities like New York and London as well as emerging ones like Shanghai and Istanbul, an ever-growing skyline of luxury towers reflects all too closely the speculative peaks and valleys of the financial markets that funded them. Just as buildings like the recently completed Shard (one hundred ten stories on the South Bank, both the tallest structure in Europe and the highest real estate prices in the United Kingdom) reflect London's overabundance of capital, speculation, and design talent, the slums of cities like Cairo and the vacant factories and inner-city neighborhoods of deindustrializing cities like Detroit reflect the absence of the same things. One could not exist without the other; as academic critics of capital like Neil Smith and David Harvey and populist critics like Michael Moore have argued for decades, the financial returns and tall towers of the global city are not only the opposites but, in some ways, the direct cause of the poverty seen elsewhere. General Motors, as Moore has persistently argued, created Flint, Michigan, by growing there, and destroyed it by leaving.

America's shrinking cities[1] comprise some of the deepest trenches in this fiscal topography of financial disinvestment. In places where deindustrialization has been draining a city for decades, like St. Louis and Camden, along with Detroit, house values are often so low that even those constructed directly before the recent real estate crisis are worth close to nothing. Where the global city's physical and fiscal landscapes resemble mountain ranges—Himalayas of finance, capital, and profit—those of shrinking cities resemble archipelagos of modest atolls, most only a few feet above water. In the shrinking city, only downtown and a few prosperous neighborhoods are close to the surface, above which modest profits are possible. These atolls of profit may be thought of as the peaks of a submerged mountain range. Not far offshore lie the products of the most recent market boom, renovated lofts and condominiums constructed by private developers. In these places substantial public-sector subsidies permitted the breaching of the profit surface, allowing islands to form for a few short years.

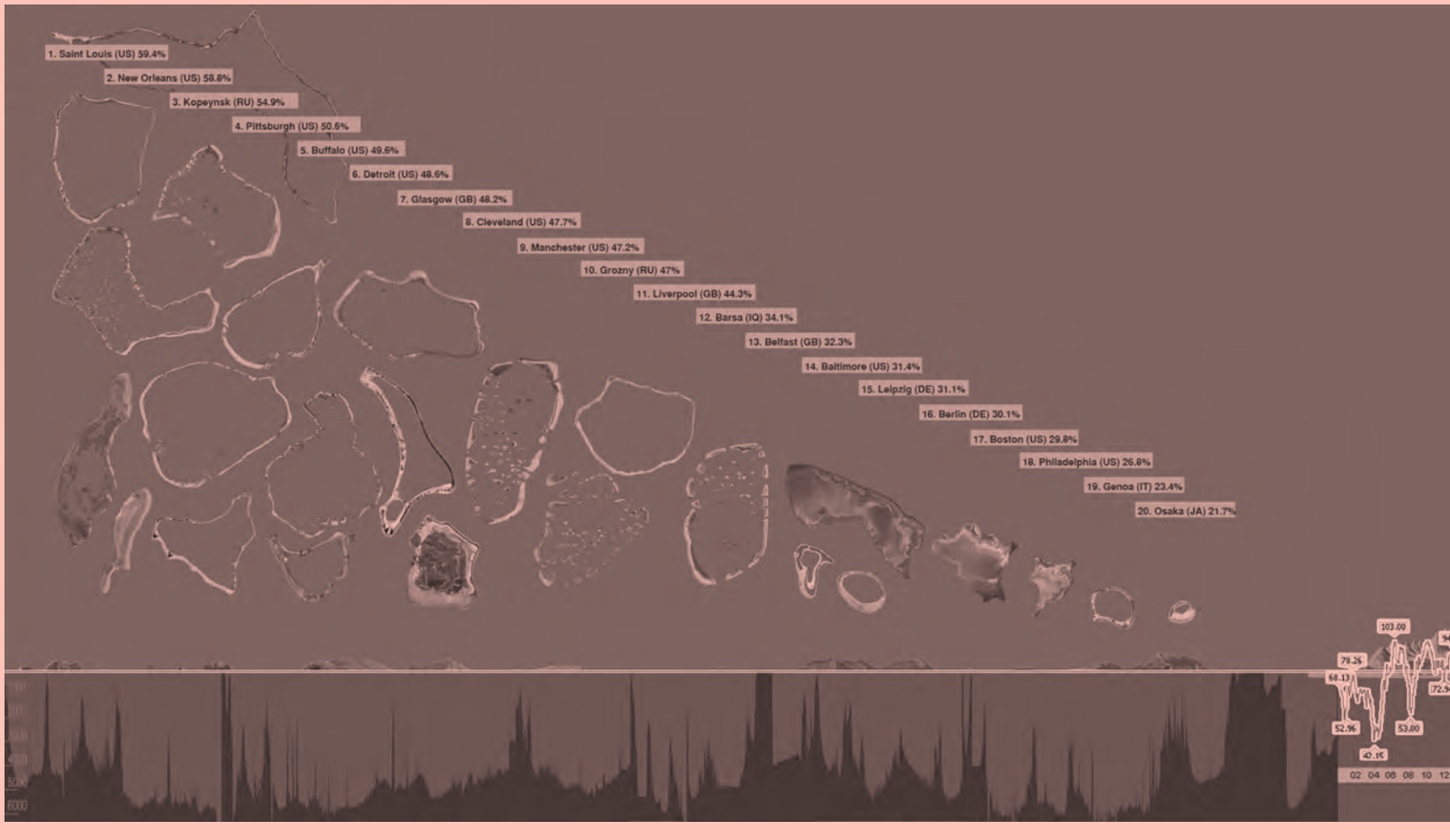
The rest of the shrinking city comprises the submarine trenches and abyssal plains of an ocean of loss. In neighborhoods inhabited by thousands of low-income city residents exist longstanding conditions of deindustrialization, abandonment, and poverty. Here the city's housing fabric may be nearly completely destroyed, as in Detroit, or well on its way, as in Flint, Michigan, or Buffalo, New York, where hundreds of houses have been demolished each year since the onset of the fiscal crisis in 2007. In these fiscal trenches, houses worth little or nothing deteriorate openly and rapidly, further diminishing the value of those around them. New housing is possible only with great subsidies, constructed by nongovernmental organizations seeking to house those most in need. This "underwater" physical and fiscal landscape is modest and unassuming. Its aim is not to transform the landscape of abandonment but to ameliorate its most brutal characteristics: homelessness, drug addiction, and slum living.

DETROIT'S TYPOLOGICAL TOPOGRAPHY

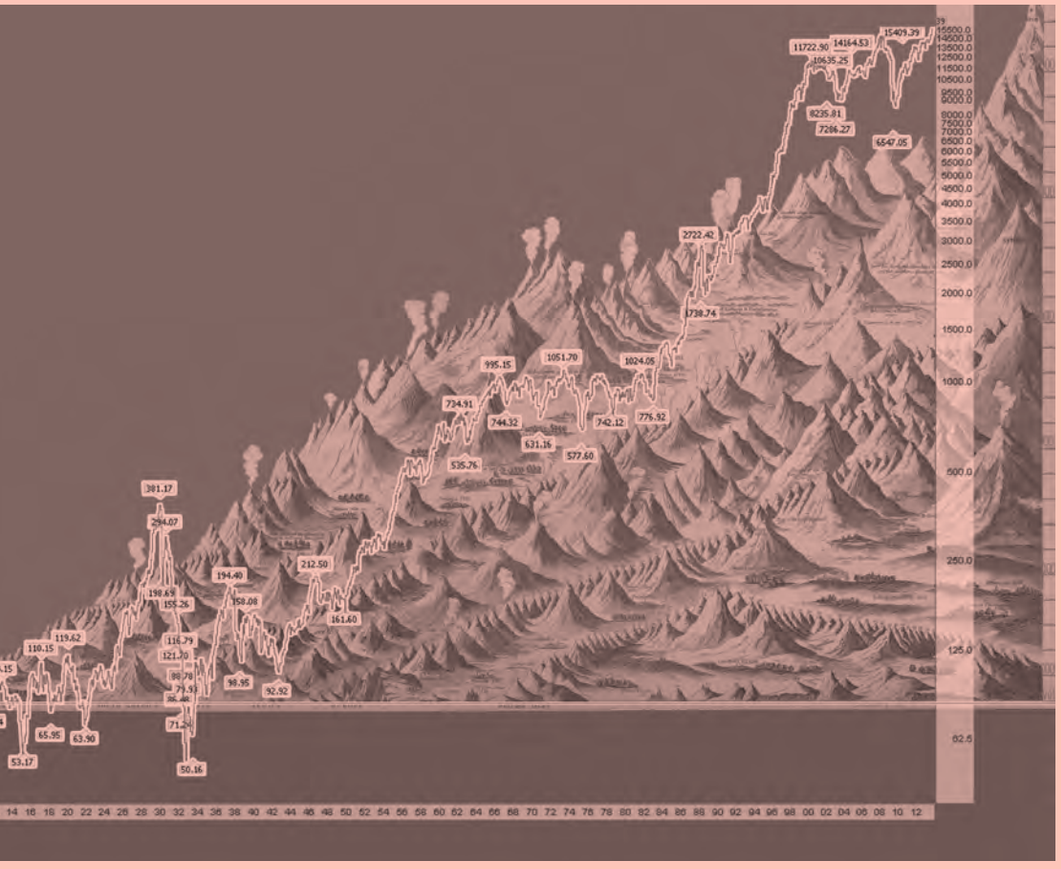
America's largest shrinking city, Detroit, is by now a well-known icon of decline. Since the 2008 financial crisis the city has become a convenient emblem for seemingly every problem faced by America: racism, deindustrialization, globalization, foreclosure. Images of Detroit's spectacular abandoned buildings have become almost too common, though their continuing publication indicates that they have not yet lost their shock value. While this objectification of America's poster city for crisis is accurate to a certain extent, it also permits a guilt-free displacement of issues that are surprisingly common to every American city. Detroit's summer 2013 declaration of bankruptcy confirmed the city's sad status as America's national crisis capital, notwithstanding declarations of its imminent revival from boosters such as Richard Florida.

The objectification of Detroit as a symbol of ruin also ignores the very real development renaissance the city experienced between 1990 and 2006. Far from being a symbol of decline, Detroit during those years was a surprisingly optimistic place wherein the fiscal topography of the shrinking city experienced dramatic transformations through equally dramatic urbanistic interventions. Exploring these interventions is a useful exercise, not only for broadening our generally simplistic view of the shrinking city but for better understanding the complex relationship between architecture, urbanism, and real estate development, and their potential to shift fiscal topographies where global cities merely reify the status quo.

Detroit's fiscal topography during the boom years of 1990 to 2006 both shaped and was shaped by the city's series of unique typologies. Together these typologies form a peculiar analogue to the archipelago model proposed for West Berlin by O. M. Ungers in the 1970s. Unlike Ungers's proto-postmodernist model, however, Detroit's does not adhere to any platonic ideal of form, placement, or program. In the place of Ungers's ordered and diverse assemblage of forms, presumably sited according to a master designer's wishes, Detroit offers an opportunistic assemblage of often banal typologies, as cohesive and isolated as Ungers's but sited according to the city's peculiar fiscal topography. The city's typological archipelago is the result of an almost accidental combination of street networks, remnants of historic fabric, surviving social prestige,



Above Topographical landscapes of wealth and poverty: global peaks of wealth vs. atolls of sinking economies.
Below The fiscal topography of financial global investment / disinvestment.

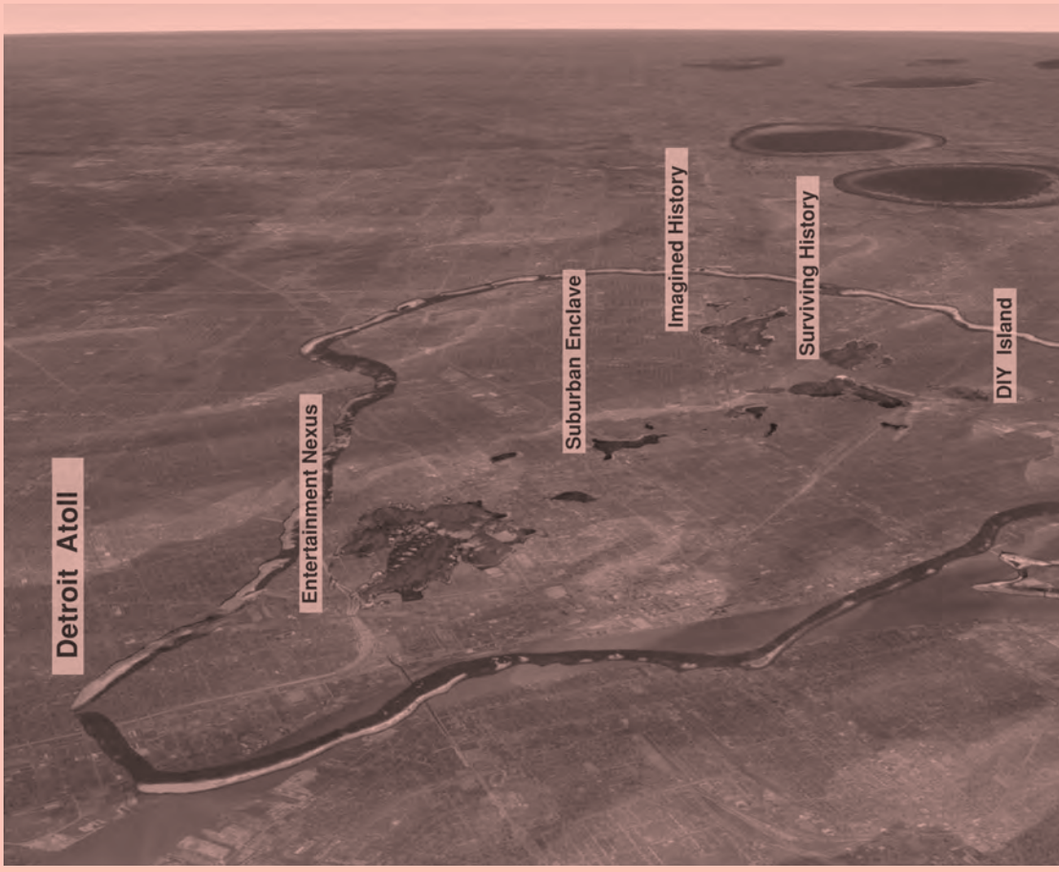


overlapping layers of public subsidies, and developer inspiration. The resulting topography is a paradigmatic version of twenty-first century urbanism with which urbanists per se had little to do.

Detroit's typological archipelago has a long historical lineage. Even as the city completed its early twentieth-century fabric it began to disrupt it with a series of discrete, often widely separated object-buildings. In the 1940s Eliel and Eero Saarinen's Detroit Civic Center proposal converted the formerly industrial riverfront into a series of monumental auditoriums and public plazas. Much of this design was realized, but in reduced form. Just a decade later Lafayette Park, designed by Mies van der Rohe, Ludwig Hilberseimer, and Alfred Caldwell, converted much of the eastern side of downtown into what Sarah Whiting has called a "figured field," as much greenery and infrastructure as building. Again, this design was realized only in part. Detroit's ongoing decline and population loss exacerbated rather than stopped this typological transformation. In the mid-1970s John Portman's Renaissance Center created a spectacularly isolated and even hostile cluster of towers at the edge of the Detroit River. This self-contained city of offices, hotels, shops, cinemas, and parking lots survives surprisingly intact today as the world headquarters for General Motors. The 1980s brought the largest, but perhaps least celebrated, elements of Detroit's typological transformation: the mammoth new Poletown and Jefferson North automobile factories, located at the northern and eastern fringes of the city. These generic structures, nearly invisible from the street, were constructed at great public expense for General Motors and Chrysler. Their construction was the epitome of what political scientists John Logan and Harvey Molotch call the public-private "growth machine." Each required the condemnation and demolition of hundreds of houses.

FIVE DESIGN LESSONS FROM THE CRISIS ERA

It is important to note that Detroit's typological topography developed during a steadily increasing atmosphere of crisis. This crisis culminated in the 1970s, when the city lost over 300,000 people, most of them middle-class whites fleeing a changing racial ratio and industrial job losses, and in the 1980s, when the city allegedly issued only eleven permits for single-family homes the entire decade. The surprising reversal of this crisis atmosphere at the beginning of the 1990s permitted a typological diversification that in turn dramatically altered the city's fiscal topography, at least for as long as the boom market lasted. At the same time, the products of the 1990s and early 2000s development boom each applied design lessons "learned" from the city's previous forty years of typological transformation, as follows.



Detroit's Typological Archipelago: Suburban Enclave / Entertainment Nexus / DIY Island / Imagined History / Surviving History.

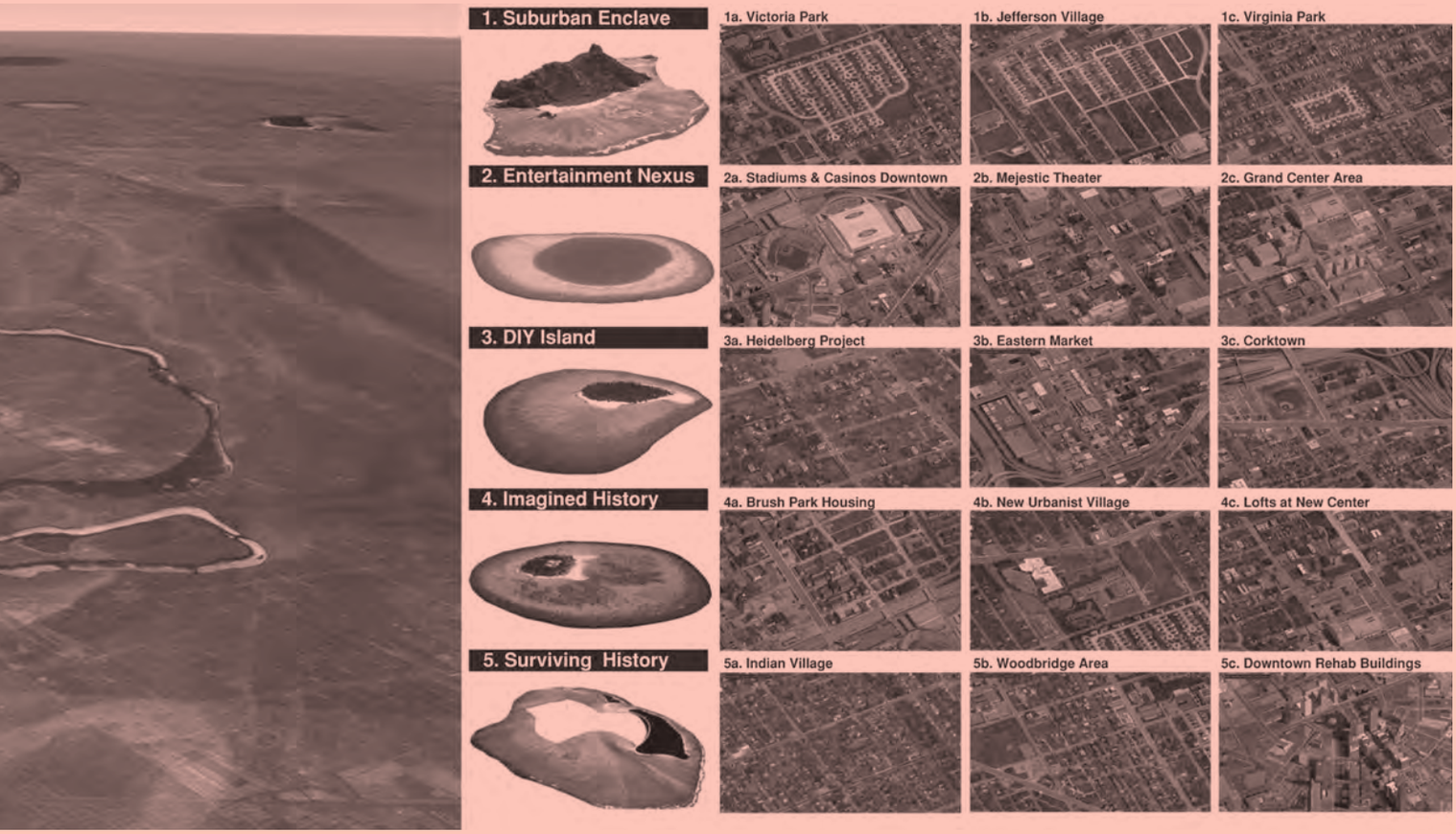
The fabric is irrelevant: If nothing else, Detroit's decades of postwar decline convinced developers not only that the historic fabric was irrelevant but that it should be removed if at all possible. It is not hard to imagine why: the city's deteriorating landscape of brick and wooden houses, many abandoned and burned-out, offered a strong disincentive to any form of contextualism. Detroit's context of ruins reversed the conventional situation for urban architecture, where the surroundings generally offer advantages to adjacent structures. In Detroit isolation from surroundings was the new norm.

Location matters, more than ever: In a prosperous city the usual adage of location, location, location is actually an illusion. London's Camden Town offers as much value as Belgravia these days, and maybe more. The opposite was true in Detroit, where the distance of only half a block could spell a difference of tens of thousands of dollars in housing value, as well as the difference between a developer's profit and loss. Detroit's deterioration meant that location mattered more than ever. As a result, post-1990 development was concentrated only in a few areas: along major streets, in historically prestigious neighborhoods, and of course in downtown.

The bigger the better: As a shrinking city, Detroit suffered from too many of what economists call negative externalities—outside factors that depress value. These could be reduced, or even cancelled, by the simple device of scale. A larger development would attract more people, and thereby create a self-contained market that could overcome the externally depressed market of the city. In other words, a big or very big project could act, physically and fiscally, as if the city of Detroit did not exist.

Make the people pay: The money lost collectively by homeowners, developers, and government in Detroit's decades of decline will likely never be calculated, but it almost certainly numbers in the tens of billions. The result, however, is easily calculated: the numbers of private housing developers willing to construct anything in the city post-1990 without public subsidies (thereby guaranteeing that they would make at least a modicum of profit) was precisely zero. In Detroit the public paid, even for private development.

Design is a luxury: In the global city, the link between design and finance is close and purposeful. Competition is stiff; design can distinguish one development "product" from another. The same was hardly the case in Detroit's typological topography. Consumers, developers, and the public sector generally celebrated the existence of any new development at all; design quality mattered little. The result was an archipelago of structures spectacular in scale and dramatic in form but mundane in formal details.



DETROIT'S NEW TYPOLOGICAL TOPOGRAPHY

These lessons being learned, what were the elements of Detroit's post-1990 physical topography and how did these new typological elements alter the city's fiscal topography? The five most prominent examples are summarized below, with each element's alteration of the fiscal topography shown in the graphic.

The suburban enclave: The lure of the suburbs in a metropolis as decentralized as Detroit is not hard to imagine. Somewhat more surprising is that the growth machine of city and developers constructed several simulacra of suburban subdivisions within Detroit in the 1990s. Located in disinvested yet convenient neighborhoods on the north and east sides, these enclaves of as many as one hundred fifty seven houses applied all five typological lessons in full. They were as financially successful for their developers as they were universally banal in design. Alteration: The enclave's anticontextualism and large scale created pseudo-suburban islands of prosperity in "close-in" but highly abandoned neighborhoods.

The entertainment nexus: The need for escapism is not hard to imagine for residents of Detroit, where everyday reality could be grueling. And in Detroit's boom years, suburbanites too were willing to reconsider their abandonment of the city, at least for a night's entertainment. As part of a national stadium boom, Detroit constructed not one but two new stadiums directly adjoining each other and the downtown (a third stadium for hockey will soon be constructed in this nexus). Combined with three new casinos and two surviving Art Deco theaters, now surrounded by parking, Detroit transformed its once dying downtown into an entertainment nexus. Alteration: Downtown, formerly an office and retail center, became something of a party zone housed within monstrous structures controlled by large corporations.

The DIY island: Post-1990 Detroit, still addicted to big cars and big companies, was far less officially accepting of the "creative class" of artists, musicians, and the like than other cities. This did not suppress cultural activity; rather the city's high level of abandonment permitted "DIY" (do-it-yourself) islands where the comparative lack of other activity could create cultural districts by default. These could be self-made, as in the spectacular Heidelberg project; ephemeral, as in the city's 1990s rave culture; or opportunistic, as in the bar districts of Midtown and Michigan Avenue. Alteration: The DIY approach took areas of the city that no one else wanted and made them loci of cultural activity and even modest profits.

The imagined historical fabric: Most of Detroit was constructed between 1900 and 1950, so the

city, even at its peak, was hardly the mixed-use, pedestrian-friendly dream of many urban planners. This did not stop some developers from creating imagined versions of the "historic fabric" where there had been none before. In the late 1990s and early 2000s builders constructed lofts and town houses aplenty, with alley parking and even the occasional corner store. The result was the unfinished Portlandization of Detroit—new pedestrian islands amid the surviving Autopian sea. Alteration: Faux pedestrian pockets in development-friendly stretches of the city north, east, and west of downtown.

The surviving historical fabric: The crisis era of the 1970s and '80s damaged Detroit badly (as did the post-2007 crisis), but it did not destroy it. All over the city, pockets of historic fabric, enmeshed in the urban grid yet isolated from other healthy neighborhoods, endured waves of abandonment. Survival of the historic fabric required sturdy, united neighbors able and willing to adopt former city services like security, sanitation, and even utilities; the rewards were low-priced, stable, and often beautiful early twentieth-century neighborhoods. Alteration: Fragments of the old Detroit, generally adjacent to prosperous corridors or near the city limits, preserved housing and housing values for middle-class residents willing to stick it out.

LEARNING FROM DETROIT

The nearly simultaneous death of old Modernism and the liberal state in the late 1970s has meant, at least in the Anglo-American sphere, an ever closer relationship between architecture and finance. This relationship may have reached its latest peak in today's global cities, but it certainly has not reached its end. In these places architecture's relationship to capital is all too clear: money not only talks but it buys architecture. In the global city, architecture is an ornament of capital.

The shrinking city offers a somewhat different perspective on this relationship. In a place where capital is mostly absent, architecture's transformative potential is ironically much greater. Detroit's bold yet unfulfilled design moves of the most recent boom transformed its fiscal topography in surprising ways. Amid a landscape of increasing abandonment, architecture mattered more than ever. The city's fiscal topography, its typological archipelago, proved surprisingly malleable to design-induced transformations of the urban fabric.

The most recent crisis has sent development in cities like Detroit into a tailspin, and architecture/urbanism is even lower on the agenda than it was during the boom. In a place where design is perceived as a luxury, interventions will have to be strategic, even subversive, if they are to transgress the still thriving growth machine. Yet design's transformative potential is great, and some islands in this typological topography are promising. DIY islands are the most open to new ideas, though the least open to profit, while despite persistent calls for change by designers, suburbia remains surprisingly resistant to formal innovation. Another option is that new hybrid typologies will emerge, or that designers will discover other areas of the archipelago—deindustrialized land, abandoned infrastructure?—to explore and perhaps transform into new islands in the shrinking city's fiscal topography.

1 The term 'shrinking city' was coined by German architect Philipp Oswalt for a series of 2005–07 publications and exhibits.

ARE WE THERE YET?

A Call to Action for Innovation Investment

Andrew Waugh
and Michael Green

As architects, our collective principal product is housing. The scale of the need for this product across the world is staggering. We have a responsibility to meet the demand to house three billion more people over the next fifteen years. This calls for us to step outside of the circles of influence and modest scales of our practices and address the dire housing shortage at a systemic level.

To date the approaches to this market have largely ignored the "big picture" social, economic, and environmental issues that define our contemporary context. On our current growth trajectory, seventy percent of the world's population will live in cities within thirty-five years.[1] The need for climate-sensitive, urban-scale solutions is clear, yet we have reached a point in which the innovative construction methods that fueled the Industrial Revolution are, ironically, preventing us from making meaningful progress. Construction has been dominated by the widespread use of steel and concrete since the late 1800s, and the environmental impact of the building inventory created from these materials is untenable. These buildings consume half of the world's energy supply and produce half of all carbon emissions, and this will grow drastically as new cities emerge and existing cities develop further.

This reality is not a new revelation. In fact, our daily conversations about architecture are dominated by ideas for and actions toward achieving environmentally conscious buildings and infrastructure. However, in the public eye our profession has been reduced to addressing these issues in our buildings by checking the boxes created by organizations like the USGBC and BREEAM. We frequently champion the capabilities of architects to be innovative leaders, yet the majority of our solutions within the field address purely cosmetic or whimsical aspects of our buildings. By failing to innovate beyond surface strategies, we have allowed our profession to become marginalized. If we continue to avoid the pressing needs of our time in a meaningful way, we will become even more discounted. Nero played the fiddle as Rome burned, and our profession will be seen by future generations to have merely wallpapered with parametric façades while the planet was saturated by carbon. If we don't make a systemic change toward innovations of substance, we will continue to see irreversible environmental degradation and an inability to provide basic needs for humanity. In contrast, if we seek to regain the voice of our profession and address our collective problems through triage, we can depart from a "business as usual" model and move toward truly inspired urban-scale approaches to the housing crisis.

Although it is unrealistic to expect every practitioner within the field to focus on the mainstream housing market, we each have the possibility to contribute to positive change through the daily choices we make as we design our projects. In our work we have

found a common approach toward the immediate housing crisis and climate change through the use of wood at a structural level. In contrast to steel and concrete, wood structures sequester carbon and are made from rapidly renewable resources. These structures can reach at least thirty stories, survive earthquakes, and remain usable postdisaster, while providing healthy high-quality housing options. Our goal in developing "Tall Wood" is to create a solution that has widespread application and the potential to reach the mainstream market. The propositions we've created to date are not perfect or by any means the only approach to the problem. They are simply two increments of investigation toward tackling the big-picture problems and exploring what we can do in our own practices to meet the immediate demand for housing. As we work to improve urban

Conceptual rendering of 30+ story tall wood buildings.

applications of wood, gaining funding for research and development in support of testing is exactly the challenge we've faced.

Unfortunately there is a desperate lack of investment in research and development within the building industry, which prevents the honing and implementation of creative solutions. Research and development funding generally comes from three primary sectors in Western societies: a small proportion comes from government; more from academia, nonprofits, and other organizations; and the vast majority, typically more than two-thirds, comes from industry.[2] In the United States the construction industry makes up twelve percent of GDP, but only a very small proportion of this is capital is reinvested into R & D for buildings. These statistics become even sparser at a federal level, with less than one percent of the total research and development budget allotted to the building industry. This tiny allocation is dismal in comparison to other research spending, with $80 billion spent on national defense, $36 billion spent on health, and $13 billion spent on science and energy overall.[3]

The lack of interest in building technology is a serious problem for our field, and for the world at large. If we're going to solve big problems within the architectural realm, our society needs to invest in solving these problems. There is no GE of architecture. There is no singular voice or all-powerful entity that defines our profession's response to the greatest challenges of our time. As a result, we need to amass our voices and generate a change of attitude toward spending on building technology. If you step back and consider the massive demand for housing, the fact that our industry is responsible for such huge energy use and consequent carbon emissions worldwide, and the tremendous influence our industry has on the overall GDP of the United States and all other nations, the question is obvious: Why are we not encouraging governments and the building industry worldwide to invest in solutions that will solve the problems that affect our society as a whole? And beyond that, can we afford not to?

1 Architecture 2030. <http://architecture2030.org>

2 National Center for Science and Engineering Statistics. The National Science Foundation. <http://www.nsf.gov/statistics>

3 Fiscal Year 2012. The United States Office of Management and Budget. <http://www.whitehouse.gov/omb/budget/Historicals>

DOHA THE POST-ACCUMULATION CITY

Inactive construction site along Doha's shoreline road.

Todd Reisz

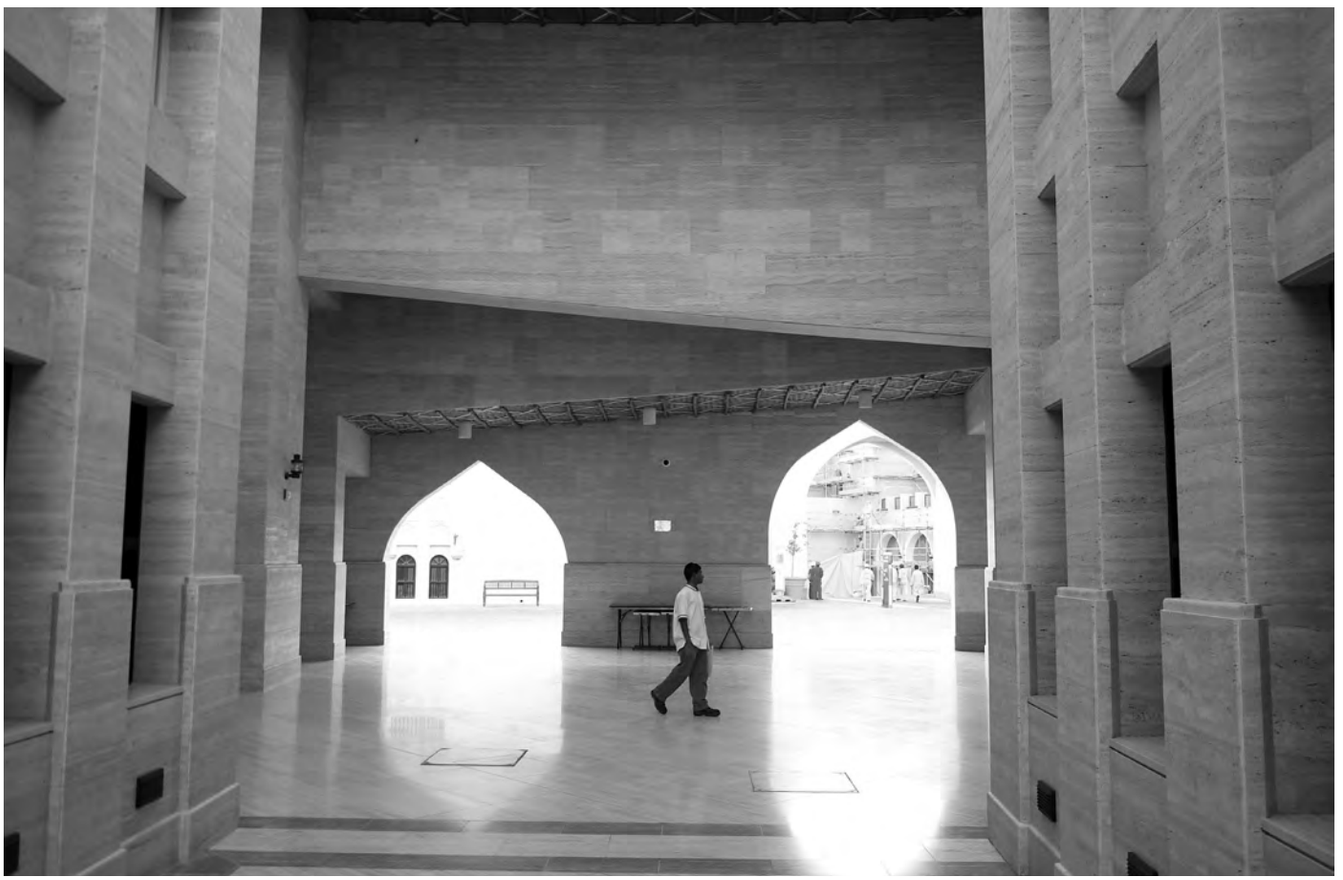
It seemed, at least for a while, that cities (world cities, developing cities, instant cities, ghost cities, hub cities) were in an unfettered race to gain, or maintain, "world-class" status. For better or worse, no institution or group has yet to define what "world-class" means. However vague the term and its associated rating indices remain, pursuit of a definition has generated billions of dollars of development and countless unrealized skyline proposals. Architects continue to draw images for projects that are supposed to attract global capital or, in PR language, to put a city "on the map." In every case of chasing world-class status, it is hoped that after so much new development, lifestyle experiences, and tourist attractions a tipping point will be reached; that some sort of global approbation will kick in and allow a city to rest on its laurels. But that moment is never reached.

As early as the mid-1980s, David Harvey grasped the role cities had defined for themselves for the coming decades:

> Urban regions compete for employment, investment, new technologies, and the like by offering unique packages of physical and social infrastructures, qualities and quantities of labor power, input costs, life-styles, tax systems, environmental qualities and the like.[1]

Whereas cities might have also been once locales of production, Harvey describes the subsequent phase of cities wherein a survival scenario reduces the city to a repository for drifting global capital. Built or proposed skylines along with promised corporate services encapsulated a city's means toward legitimacy through the attraction and absorption of that capital. Beyond just the physical forms of skyscrapers, office parks, and convention centers, Harvey also pointed to soft strategies that characterized any city's pursuit of longevity. Even the most seemingly stable and permanent of cities, like New York and London, search for success by means of now too often recycled tactics. They line up with brochures of perks and freebies to attract the latest transnational looking for a bargain-price headquarters. Therefore one should contest Harvey's use of the word "unique" as the competition has resulted in not many more ideas than increasing levels of tax breaks, zoning bonuses, and disingenuous panderings to the "creative class."

Cities increasingly have had to define themselves in contrast to other ones, despite the fact they are almost all fixated on similar, if not the same, strategies. So while "new wealth" seemed to be created through ongoing urban development, city governments reacted as if there was less of it to go around. Global rankings and seemingly transparent competitions for hosting rights to countless conferences and global events consistently



Entry to the outdoor travertine-clad amphitheater at Doha's Katara Village, designed as "a balance between the classical Greek theatre concept and the everlasting Islamic features," according to the cultural village's website.

raised the stakes to which mayors had to respond. By 2008, this urbanism brinkmanship had reached its apparent endgame, with Dubai epitomizing for many the extravagances and platitudes of city score-card tallying (though Dubai arguably initiated its competitive edge much earlier than most other cities). Beginning in 2008, cities such as Dubai were exposed as excessive harborers of debt and glut real estate from over-leveraged attempts at global place-making. The global crisis exposed heady development scenarios which had been at best short-sighted endeavors in creating cities.[2] Abandoned construction sites and spurned free zone deals throughout the developing world are some of the most easily discernible anecdotes of the global crisis, as if the world had run out of world-class vouchers.

It is no coincidence that Doha, the capital of Qatar, began its most watched and reported ascent onto the global stage of striding cities in the wake of the current global financial crisis. Doha's leaders have announced and begun to deliver a series of development proposals that have been filling the vacuum for good-news stories in real estate and development media outlets since the global financial crisis began. The city has a modest population size at under 1.5 million people (comparable to Phoenix, Arizona), a great majority (about 90%) of whom are expatriates and are expected to leave eventually.[3] The city is therefore inevitably international; it cannot exist without its overwhelmingly foreign majority, which is able to work there because of the country's vast natural gas reserves. As the only city of note in "the world's wealthiest country," Doha's development and ambitions represent those of Qatar, and vice versa. Therefore, there are few examples of where Doha's municipal governance is demarcated from a national one. One might describe Doha as a city-state surrounded by a desert of villages that defer to it.[4] News outlets like to add up Qatar's investments: $18 billion (2009), $34 billion (2010), $60 billion (2011), and over $200 billion (2013). Thoughtful, if not overreaching, projects include an 85-station metro system, public parks, one of the world's largest airports, and perhaps the world's most influential Islamic Arts museum, followed by other bold museums, and the studiously urban Msheireb Project. These are all endeavors Doha's leadership has pursued to withstand the criticism of global media just as eager to find a development miracle as to bring one down.

It has been argued before that Doha's committed development schedule is in service of the same reasons why any city might add to its skyline or insert a new convention center: namely the ambition to compete in a regional or global set of cities for designation as the hub of (fill-in-the-blank). Several articles on Doha's urban development have framed the pursuits of the city's leaders as such.[5] The recent and shifting situation in Doha, specifically the ever-increasing scale and altering direction of the urban development and how this multi-billion-dollar effort intertwines with other pursuits of the Qatari government, calls upon a reconsideration of the motivations for these pursuits. In the greater scheme of things, speculative development might distract from the potentially more significant developments at hand—namely that Doha could be departing from traditional notions of the city.

If one believed that a city's overseers might pursue a brand, Doha's brand might be described as one that aims to convince, rather than lure, a global audience. Beyond inordinate wealth that has imprinted its insignias on professional football teams, an airline, and other cities' skylines, the city has become synonymous with an interminable (somber but serious) series of WTO talks; its revolving door of peace negotiations for such places as Lebanon, Sudan, and the West Bank; a problematic but entrenched role in the Arab Spring; a $250 million Cezanne painting; a high-profile losing bid for the 2020 Summer Olympics which is now a precursor for its next bid; and a game-changing procurement of the 2022 FIFA World Cup. It might seem that these are all about building "Brand Doha"—that somehow they weave together the next CNN commercial asking you, the internationally incorporated, to invest in Doha. However, Doha isn't so desperate for your retirement fund's investments or your professional society's next convention. Doha is not designing a stopover tourist hub (though there's one included). Its brand campaign strives further.

Responding to the often asked question, why can't Doha just be happy being small and rich, Mishaal Al Gergawi, a commentator on Gulf affairs, states clearly what he sees as Doha's motivation:

> Qataris have very existential concerns. The purpose of all this—of all the diplomatic efforts, the World Cup, the support of the Islamists, the Darfur mediations—all of this aims to do one thing only: to make Qatar globally important so that it cannot be invaded. They want to guarantee their borders, their sovereignty. You have to be globally important so that if somebody invaded you, there would be a global outcry. Doha is now trying to become that "only light in the Arab world."[6]

In a similar vein, political analyst David Roberts explains that "anonymity [for Qatar is] a bad quality to have should something go catastrophically wrong."[7] Roberts signals that Qatar's leaders pursue a foreign policy larger than roundtables. Within this framework, the country's efforts on the international stage formulate a role for the city at once more complex and more basic than that of the traditional hub city. It is complex in the sense that urban development is directly linked to a nation's global political ascendancy and simple in the sense that the city just needs to be recognized, not consumed, by a global public. Therefore the underwriting of Doha's urban development must have in mind something broader than any hub economic theory. While there is not likely to be a grand narrative behind Qatar's development of Doha, the country's urban production signals an attempt to avoid any normative regional or global models. To understand

this further, Qatar's investments, both within the bounds of its own city and beyond, need to be considered in conjunction with its concerns beyond urbanism.

Since its first building boom, in the 1970s, Qatar has developed outward with an ever-increasing number of ring roads (now referred to as "orbital expressways"). Housing policy has historically offered Qataris residences farther out instead of creating a more dense center.[8] In contrast, most recent projects might not bring all city residents back to the center but will at least start to suggest how megaprojects will generate delineated urbanism ("island urbanism") as opposed to amorphous sprawl.[9] Even with a population that is a fraction of Saudi Arabia's, the city is the focal point of a development portfolio that surpasses any in the Gulf region. Here follows a brief index of some of the major ongoing projects: Education City, home to at least nine university campuses, has developed on an average of a billion dollars a year since opening in 2006. The $20 billion Pearl project extends into the Gulf waters an artificial curlicue peninsula decked with luxury towers, shopping, and vacation homes.[10] Lusail City is perhaps the largest megaproject in the region, at 35 square kilometers (more than half the size of Washington, D.C.).

The sunken entrance to Doha Tower, designed by Jean Nouvel, in Doha's West Bay district. Like many other buildings, it has been sheathed and finished from the outside but remains only partially finished and entirely vacant inside.

The recent surge in development investments has been attributed to the country's selection to host the 2022 FIFA World Cup, although officials claim Qatar would have been committed to most of these major infrastructure projects even without it. More than any previous World Cup host, Qatar faces unflagging criticism, including questions of how such a small state will utilize so many FIFA-sized soccer stadiums after the tournament. With most stadiums sited within the Doha conurbation, this will be the densest World Cup ever. Doha will also have one of the highest residents-per-professional-soccer-stadium-seat ratios in the world (almost 2.5).[11] Plans, for example, continue for a stadium in the fishing village of Al Shamal, whose population could fill the stadium with views of the North Field platforms more than seventeen times. Ideas to dismantle and send some of the seating post-tournament to unnamed "developing countries" have not appeared in the press of late.

The 2022 World Cup would rely on a new rail system, among other new endeavors for urbanity. Deutsche Bahn has been hired to oversee the rail projects that will run through Doha and stitch the city to minor towns. Costs exceed the company's own annual revenues from Europe's largest rail network ($35 billion). Eight billion dollars in new highways will connect the sprawling reaches to the old center, part of which has been gutted and is undergoing urban development that would answer any urbanist's wish list. The reclaimed district, Msheireb, now owned entirely by the monarchy's private nonprofit Qatar Foundation, claims culturally and ecologically attuned architecture in its 226 buildings, a 13,700-car underground garage,[12] pedestrian streets, trams (which might prove undoable), outdoor storefronts, downtown homes for locals, and cultural event spaces.[13] Additionally Msheireb Properties, whose operating capital originates from sovereign funds, has no plans to put its $5.5 billion of new properties and infrastructure on the market; instead it will remain as manager of the 76-acre "heart of Doha." The city will be its own landlord.[14]

Doha's urbanization pursuits are impressive and almost always high-minded. The Msheireb project has been described as an example of city leaders demonstrating lessons learned from previous development mistakes, presumably including West Bay, the 165-acre tower development that makes a convincing skyline from the distance, but up-close is little more than vertical office space surrounded by surface parking that would prove insufficient if the towers were ever occupied at capacity. It was supposed to include 180 towers.[15] Most of what has been built is sheathed in the glass, silicone, and steel planned for their exteriors. Beyond that, many towers stand unfinished, but not abandoned. For example, Burj Qatar, a tower designed by Ateliers Jean Nouvel, has already won industry awards and is prominently lit at night, but at the time of writing its interior still awaits finishes and a tenant. Left incomplete, these towers likely do not register in a vacancy census. Increased vacancy rates would sink rental rates and generate bad news stories. For now West Bay functions more as a skyline without function. It is not Potemkin, because it does not mask something less than it, but maybe something more.

Nevertheless vast new swaths of the city remain empty. The country's population could fill only a fraction of the offices and housing proposed. Moreover, sufficient business-attraction campaigns are not in place to fill Doha's office space.[16] There are also predictions that Doha's population growth will actually diminish around 2030, when infrastructural projects start to come to a close and the expatriates residing there for building up the gas extraction industries will start to leave. The World Cup and other events might give momentary jumps to the population count, but there are no clear signs of how Doha's population would rise more sustainably.[17] More obvious to Doha's critics are the city's stadiums and convention infrastructure, which will be impossible

to keep filled, or make profitable, for that matter. Critics suggest that in due time the empty infrastructure will become dilapidated and then obsolete. If eventually disassembled for scrap, the structures will prove as wasteful and wasted as the fuel exported to fund them. Were these strategies at all sharp and prudent they should together form a survival strategy. For that to be true, Doha would be implementing all too familiar development models, but for other, less familiar reasons.

All of this development frenzy does not suggest Doha as a new model of a city. In fact, it seems like a rehash with a standard set of parts from headier days of global development. Beyond this it is difficult to pinpoint any pervasive design behind Doha's urban development. The forces most capable of assessing the intentions of Doha's leaders seem uninterested in doing so, for that might risk undermining the short-term windfalls the city generates for corporations and banks. The city's development plans have their champions where necessary, namely in the guise of international banks, credit agencies, and financial analysts. No one from any of these camps has pointed out where Doha's long-term strategies are different than those of other cities that have gained their favor in the past. There might be padded warnings ("some downside risk") that are easily compensated for with assurances of governmental "cushions" and "aggressive fiscal initiatives."[18]

Bankers and credit rating agencies find solace in Qatar's ability and readiness to do what Dubai's government never could: bail everything out. Financial commentators often downplay the prospects of Doha's imminent success potential and focus on available government bailout largesse. More than any urban strategy, Doha's cash reserves provide reason for the likes of Dutch bank ABN AMRO to go so far as to make a commercial of bankers examining architectural models for Doha's World Cup venues and traveling in helicopters with fictitious Qataris over a fictitious Doha to enjoy views of development sites—this within a few years of the global real estate collapse that led to the bank's government takeover.[19] Whereas "the market" has been relied upon in the past to assess the feasibility of development plans, the case of Doha suggests that as long as there are bailout sources no level of excess in office towers or hotel beds should cause investment fears.[20]

Even while studies continuously show that events like the Summer Olympics do little to grow cities' economies, mayors propped up by "community business leaders" line up to plead their cases for the chance to prove otherwise. While a typical city's business and political leaders court event-based economy boosters with the ostensible reasoning that these will prime their city for the global economy, Doha's motivations materialize from other, more thoughtful ambitions. Qatar's leaders do not need to boost Doha's economy, but they do want to fill their city with worthwhile, if temporary, activity that establishes social, cultural, and political connections with the rest of the world. Profit-driven motivations remain distant. Whereas corporate interests have defined the last few decades of Olympic glory, Doha's leaders are ready to make the benefits work for their city as an operational and recognizable urban system.[21] Beyond a national cause, there is also an evident effort to describe the upcoming World Cup and a potential Summer Olympics as achievements for the Arab world.[22]

A view of Doha's West Bay district.

It can be helpful to hypothesize the kind of city Doha is becoming: perhaps one that does not attest to a traditional sense of "urbanity." In the last several years, Doha's makers have demonstrated they can build up the urban infrastructure much more easily than most other cities. It regularly hosts sporting events, diplomatic talks, professional conferences, and academic congresses with an ease that other cities cannot match. Doha's urban components add up to nothing unique. On the contrary, they read like the index of a modern city: smooth highways, cultural and leisure destinations, expansive metros, livability-driven neighborhoods, and universities made for the knowledge economy. In Doha one can see the ongoing materialization of the requirements of any soothsaying urbanist's advice reduced to a recipe. Here the city is purchasable, seemingly possible, and nakedly calculable. By achieving this feat, Doha reveals Harvey's competitive city portfolio to the point of divorcing the components of such a city from any traditional sense of the city. The physical infrastructure required

Above Inactive construction site along Doha's shoreline road
Next spread The West Bay district's Doha Tower, right, designed by Jean Nouvel, and other towers in various states of vacancy.

for hosting events and conferences breaks the city down into discernible and distinct components: expansive convention centers, stadiums, readily available "campus-style" office space, uncongested transit and roadways, restaurants, and hotel rooms of varying degrees of luxury. Bid applications generally expect a tally of all of them. Beyond the list, huge events demand that there is plenty of each requirement present, which means there is always excess vacancy. In order to be a "global convener," any competitive candidate city has to be able to readily receive the globe, and that means maintaining more real estate than it otherwise needs: enough to make it possible to be there, but not too much that it cannot be maintained or overseen. Recent tactics in Doha have made this condition more obvious.

Without much expressed interest in growing an urban population, Doha's leaders focus instead on maintaining steadily revolving doors. The spaces are filled in waves, and without the anxiety that they must remain filled. When spaces need to be operational, a functioning pool of temporary labor, from North America to Southeast Asia, is available at sufficient costs. A critic might ask, *When does fallow urbanism begin to decay?* Doha's answer might be, *It never does if there is a plan behind the emptiness*. With a combination of the wealth to sustain it and the will to do it, Doha's development has demonstrated how a city's "open-door" policy can oppose the very urbanity a mayor might say his or her city exudes. The question remains just how successful Doha can be despite demonstrating the failure of an urban model.

In the process, Doha reveals that the infrastructural development other municipalities find so complex is actually quite simple, and almost always purchasable upfront—that is if one's city has a lot of expendable space and capital. Doha, no doubt, has both.[23] In an odd moment of reckoning Doha's hosting capabilities, a member of the International Olympic Committee made an imperious statement upon its rejected 2020 candidacy: "This is a much more complex undertaking than a World Cup, and maybe [Doha] should do that first."[24] If one considers the vast professional network of events and conference organizers that this global sector has spawned, the comment suggests events organization as more complex than it has to be. Olympics development might be complex for a densely built city like London, but not for a lower density city with sufficient funding means. Beyond purchasable architecture and infrastructure, the software is also readily available, from the legions of builders in Asia to the steady handlers of development and management matrices to the city-hopping scribes who can write any city's bid book. One clear benefit for London in hosting the Olympics is that the process trained a host of homegrown development talent to go out and consult for other large-event candidate cities. This is already happening. Take, for instance, contracts acquired by British-based WS Atkins and Carillion, engineering and construction firms respectively, for development projects in Doha based on their performance for London's 2012 Summer Olympics.[25] Hyder Consulting recently announced a hiring spree of five hundred new workers "mostly from the U.K." to populate its 2022 World Cup contracts.[26] There are teams of consulting and management teams more than ready to steer Qatar's $200 billion development schedule, if the state feels it needs them. And Doha's industries have already demonstrated that they can work with European, North American, and Asian labor pools.[27]

Road construction along the highway connecting Doha to the country's northern reaches.

TODD REISZ

Just as such global networks can be harnessed to create a Doha Olympics, global and financially competent corporations have helped create Msheireb as an urban center, one particularly poised with decorous development standards. Built without a long-term population need, the Msheireb project still aces the standards in urban contemporary aesthetic, livability, sustainability, and cultural awareness. It supplies self-consciously new international standardized urbanism. At once honoring and trumping an American-defined standard, Msheireb's creators claim the most LEED-certified buildings in any place in the world.[28] In a positive though reserved review of the Msheireb project, the *Financial Times* claims, "If there is one scheme in the [Gulf] region to keep an eye on, this is it."[29] If Msheireb is not filled by a local and expatriate population, it will be filled with adulation and at times a visiting public eager for a taste of modern traditional Doha. With Msheireb's established advantage, Doha seems poised again to challenge what is necessary for a city to be valuable, useful, and powerful.

In his description of Doha's strategies, Mishaal Al Gergawi has compared Doha to a coliseum: a large, expressive, and expensive structure that doesn't need to be filled to be noticed or even functional. Doha's ongoing urban development, which continually prefers physical expansion to demographic (tax base) buildup, defies the standards set for a successful city through the very act of delivering those standards. "People movers" with empty seats; stadiums closed for months of a year; hotels with uneven occupancy rates. In the case of the hotels, it is preferable for the most luxurious ones to remain empty than swamped with budget tourists. That is mainly because Doha's grandest hotels serve a higher function: they are the chandeliered halls of diplomacy and international negotiation. Doha then, is neither a relatively small city of 1.5 million nor is it to become a city of several million. Instead it is a city that can be as big as necessary for as long as necessary. Doha's leaders have pursued urban infrastructure, but not necessarily for an urban purpose. It might very well be part of Doha's identity to be a receiver of or ambassador to the world, but not necessarily the bustling city that infrastructure and urban development supposedly require to be successful.

Whereas major sporting events like the Summer Olympics and FIFA have been used ostensibly to prepare cities for survival in a contemporary global economy, Doha's development might represent another kind of survival, one that uses the semblance of a traditional city to fulfill its "existential" argument.[30] In pursuing this agenda, it can win hands down against any other city, if it is just the tally sheets that are read. Doha is a city as a sum of its discrete parts. By nullifying the competition, Doha could very well bring prevailing notions of what defines a successful city into question. In other words, Doha can be the most livable city in the world without being actually lived in.

Doha continues to grow larger than it needs to be, while its leaders simultaneously stretch its borders by investing elsewhere. With a sovereign wealth fund estimated at more than $100 billion, it is a burdensome task to ensure that it is managed profitably. Even with such a spectacular development schedule, its cash still needs investment containers. Investment beyond Qatar is inevitable, but it also further sets an urban agenda. Specifically Doha is lodged into other cities' lifestyle (your consumption patterns) without you even having to think of visiting Doha. The city arrives in your city, whether Khartoum, London, or Washington, D.C.

One recent and well-publicized example of this Doha phenomenon is the purchase by Qatari Diar, whose finances are linked to Qatar's sovereign wealth fund, of London's Olympic Village development for more than $850 million.[31] Though rumored several years before the games, the purchase was a timely help to London's Olympic Delivery Authority, which was struggling after the event to prove funds were coming back to government coffers. The former village is likely to be a rental district; thus the Doha-based entity will be managing more residential square meters in London than available in the Msheireb project. Elsewhere along the banks of the Thames, Qatari Diar will also be invested in the Shell Centre's extension and redevelopment at South Bank. Other Doha-based investments in London make more expressive statements of Doha's influence, for example, the recent addition to London's skyline, the Shard skyscraper, and the recently announced neighboring residential tower.

Beyond London and Doha, Qatari Diar pursues development proposals in the second part of what one political scientist has described as Qatar's "two-pronged approach" to diplomacy, namely the "implied or explicit promises of vast financial investments once the dispute is settled."[32] The span of its development investments—politically, economically and geographically—reveals a concerted effort at embedding Qatar into other urban realities besides its own. The results have been projects, planned and underway, including towers on along Cairo's Nile, a new town in the hills of Palestine, exclusive living on Khartoum's Blue Nile coast, and tourism attractions in Tunisia. One might even see Qatar's efforts to invest in France's impoverished banlieues, known for their Arab diaspora populations, as enabling an Arab presence in Europe.

Just as foreign policy observers describe Qatar's diplomatic efforts, it is unlikely there will be a grand scheme redefining what a city is. However, that does not undermine the possibility that Qatar-funded urbanization efforts might very well destabilize the assumptions of what defines a city altogether, or at least what defines a successful one. It is difficult to ascertain just how much Qatar is putting into foreign real estate development, as the specifics to partnerships and percentages of sovereign wealth fund do not need to be revealed. Nevertheless, Qatar's commitment—as investor, developer, skyline maker—remains unparalleled by other states with comparable sovereign funds. Doha's leaders have taken the notion of competing cities to another level. Beyond straightforward interurban competition, Doha's makers see the real games

as one of mergers and acquisitions, hedging investments toward political and financial gain. Therefore, a well-publicized investment in London's Shard is expected to provide its Qatari backers more than winning shares; there's an investment in London that connects that city back to Doha—corporate thinking for urban survival. It complements investments in one emerging, riskier part of the world with those in an ostensibly more stable one.[33]

Doha is about being beyond Doha. Its wealth builds something more expansive than its own skyline.[34] Instead of asking the global corporate elite to invest in its real estate, it invests in them. Doha could be showing another kind of city, one that does the shopping; one that thrives on the histories of success achieved by others and steps in where it can be essential; one that welcomes visitors to its own city, just as a world leader invites guests to a country retreat. Contrary to Dubai's survival strategy of extending its debt to global investors, Doha has extended its financial bounty to other places to ensure its perpetual relevance. Flipping the role of a city from obsequious beggar for global capital to power-wielding investor, Doha achieves more certitude. Rather than asking the world just to come to it, it physically engages and invests in the world's cities. Want to meet your makers? Visit Doha.

In Doha's ongoing development projects, the notion of the city seems less bounded and therefore more globally influential. Arguably the richest city in the world, Doha cannot be considered an example of where other cities are or should be headed. Its combination of wealth and political conditions makes it unique. It nevertheless might represent the final failure of running cities against one another based on the diminishing returns of the discount portfolio. It could bring the foundational urban model of the last several decades to a close. And then? One highly optimistic result might be that cities acknowledge their natural affinity to places beyond assumed borders. While a state might have internationally recognized borders, a successful city bleeds through them.

1 David Harvey, *The Urbanization of Capital* (Oxford: Blackwell, 1985), 126.
2 See Todd Reisz, "Making Dubai: A Process in Crisis," *Architectural Design* 80, no. 5 (2010): 38–43.
3 http://www.state.gov/r/pa/ei/bgn/5437.htm
4 Qatar's Ministry of Municipality & Urban Planning oversee planning for all of the country's municipalities, including Doha.
5 See Khaled Adham, "Rediscovering the Island: Doha's Urbanity from Pearls to Spectacle," in *The Evolving Arab City* (London: Routledge, 2008). Adham's essay provides a concise history of Doha's modern urban development up to 2008. One might argue this current article picks up on signals and events in Doha's ongoing development since then.
6 Interview with Mishaal Al Gergawi, November 28, 2011, Dubai.
7 David B. Roberts (2012): "Understanding Qatar's Foreign Policy Objectives," *Mediterranean Politics* 17, no. 2 (2012): 239. Roberts's article provides a summary of the international relationships that potentially influence if not threaten Qatar's sovereignty.
8 Adham, 233.
9 Besides Adham, see Agatino Rizzo, "Metro Doha," in Cities 31 (2012), and F. Wiedmann et al., "Urban Revolution of the City of Doha," METU JFA 29, no. 2 (2012): 35-61.
10 "Prominent real estate projects," *Euromoney* [serial online] 39 (February 2, 2008):13-22. Available from Business Source Complete, Ipswich, MA. Accessed July 21, 2013.
11 Based upon statistics in *Middle East Economic Digest*. Qatar Supplement, February, 2013, 24.
12 To provide a sense of how much parking that is, it's about four times as many garage spaces as are provided to the public in Manhattan's Financial District (http://nyc.bestparking.com/#1).
13 "Msheireb," *Middle East Economic Digest*. Qatar Supplement, February, 2013, 22. See also http://www.youtube.com/watch?v=3q3cVPEJxhE.
14 Interview with Issa Al Mohannadi, former CEO of Msheireb Properties, November 20, 2011, Doha.
15 Adham, 237.
16 Interview with Craig Plumb, Head of Research, MENA, at Jones Lang LaSalle, November 24, 2011, Dubai. When compared to Dubai (not known as a shining example of permanent residency policies, although it is where regional headquarters more often have based themselves because of the city's long-term expatriate communities), Doha exhibits little apparent strategy in place to attract the people and businesses to fill it.
17 "Qatar census shows population boom as economy grows," Reuters, July 1, 2010. HSBC's chief economist in the Middle East is quoted as saying, "Many people are involved in the buildout of Qatar's energy infrastructure. When the work is done, they will go home."
18 "Country Intelligence: Report Qatar," IHS Global Insight, June 4, 2013.
19 http://www.youtube.com/watch?v=JSO1F1Ctmvw&feature=youtu.be, accessed March 1, 2013.
20 While stories abound about the eventual limits of global oil and gas reserves, it is important to note that Doha will be able to maintain its spending patterns, as a recent energy report states that Qatar "could still remain financially stable even with oil below $10 a barrel." The same report noted that Saudi Arabia would begin to crimp at $55. Report cited in Allen J. Fromherz, *Qatar: A Modern History* (Washington, D.C.: Georgetown University Press, 2012).
21 Stefan Kessene, "The economic impact, costs and benefits of the FIFA World Cup and the Olympic Games: Who wins, who loses?" *International Handbook on the Economics of Mega Sporting Events* (Cheltenham, UK: Edward Elgar, 2012).
22 This attempt at pan-Arab pride has not been so quickly embraced in the Arab world, and the diplomatic fumblings of Qatar through the course of the Arab Spring (specifically in Egypt) have made this a more difficult prospect.
23 A recent EC Harris report notes Qatar's risks lie mostly in the managing of delivery and construction schedules, and the inflation that such condensed scheduling might cause. This is characteristic of Qatar's challenge: not in the construction of the components but in the coordination of them.
24 IOC board member Richard Carrion as quoted in http://sports.espn.go.com/espn/wire?section=oly&id=7962328.
25 http://in.reuters.com/article/2012/07/29/olympics-britian-australia-idINDEE86S03C20120729.
26 "Hyder begins hiring spree for Qatar World Cup," *Financial Times*, June 25, 2012.
27 At the time of editing this article, there was increasing media focus on unfair treatment of laborers at Doha's development sites, many of which are being pursued for the 2022 World Cup. Though Qatari organizers have promised a labor "charter," FIFA and Qatar organizers have tried to defer such discussions. In the process of using development to raise its public image, the capital city is also faced with confronting historical regional labor practices that have been central concerns of groups like Amnesty International. See "The Dark Side of Mighration: Spotlight on Qatar's Construction Sector Ahead of the World Cup," Amnesty International, 2013.
28 http://www.greenprophet.com/2012/06/qatar-msheireb-regeneration-leed/.
29 Edwin Heathcote, "Bridge the Gulf," *Financial Times*, February 11, 2011.
30 Al Gergawi interview.
31 The former emir of Qatar has been described as "London's landlord." http://www.guardian.co.uk/sport/2011/aug/12/olympic-village-qatari-ruling-family.
32 Mehran Kamrava, "Mediation and Qatari Foreign Policy," *Middle East Journal*, 65, no. 4 (Autumn 2011): 540.
33 Todd Reisz, "Emerging Qatari Diar," Al Manakh (2007): 288.
34 The satrical newspaper *The Pan-Arabia Enquirer* recently published a funny and relevant article, "Qatar 2022 FIFA World Cup to be held in London," March 27, 2013.

MICRO-MANAGING MESSINESS

Pricing, and the Costs of a Digital Nonstandard Society

Mario Carpo

Last year I held a visiting professorship at a major U.S. university, located in one of those remote, bucolic retreats where Europeans love to go on holiday for a few days in August, and Americans still oblige their daughters and sons to spend some years of their youth. My weekly commute included a short hop by plane from a big airport to the airstrip serving the rural region around the campus, and as I had to travel with a small carry-on suitcase, I checked before my first trip which plane was used on that route. I found out the logistic was one I am very familiar with: the flight would be on a CRJ 200, an uncomfortable regional jet derived from an older executive plane, stretched and retrofitted with close-packed rows of four seats each. The overhead bins in that cabin are of course similarly minuscule, yet compliant with the sub-IATA standard of 55/40/20 cm for hand luggage that appears to have been tacitly adopted by many European low-cost carriers, and until recently enforced by Lufthansa and some of its European partner airlines. Not surprisingly this suits the size of my German-made Rimowa suitcase, which Rimowa sells, incorrectly, as an IATA-sized carry-on bag. To make a long story short, I knew in advance that my carry-on would fit in the overhead bin of the CRJ 200's cabin, and I said so when I was asked to check it at the gate of the plane, as is customary for regional flights.

The flight attendant was not forthcoming: "You will check it like everyone else," she shouted. The flight is almost empty, I suggested, and my luggage is made to measure for the overhead bins of your plane—it will fit just fine, and to no one's detriment. But the flight attendant, a young woman, evidently was not in a good mood that day. She screamed something unpleasant and added, "Come on in, try it! It will not fit; it cannot fit because it is a carry-on." But it did fit, perfectly and effortlessly, and the bin closed with a clear, loud, clockwork "click." Still she was not convinced: "You cheated," she raged. "I would not know how to cheat in such an instance," I think I answered. And I mumbled, half to myself, as the flight attendant abandoned the scene, that the suitcase fit into the bin so well because the makers of the plane and of my luggage had been following the same standard. But the combination of this information overload, of my non-American accent, and of the keyword I used in the mildly confrontational context, "standard," was unfortunate, and it drew the attention of an elderly gentleman sitting in the first row. He was wearing a button-down Oxford shirt *and* a tie (albeit not a bow tie) with some sort of blue blazer in lieu of the tweed jacket more often worn by academics on the campus I was traveling to. He looked up from the *Wall Street Journal* he was reading, perused me with some interest, and asked, puzzled: "Are you a socialist?"

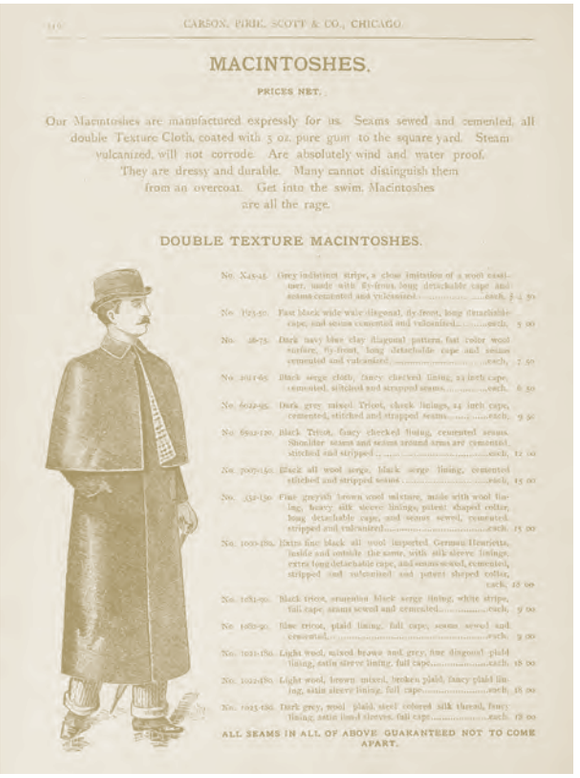
I do not remember what I answered—probably something bland and noncommittal; after all, I thought, the man might be a donor to the college I was working for,

Agenda-Buvard du Bon Marché.

or the father of one of my students. But the work I had brought on board stayed in the aforementioned overhead bin during the flight, while I pondered the apparent paradox so poignantly emphasized by the comment of that untweedy traveler—he was sitting in the first row and looked like someone used to being listened to. In the story I know, standardization is something inherent in the technical logic of the Industrial Revolution and has no particular political bias. All countries in the course of their industrial development have embraced and favored technical standards: in the twentieth century the assembly line, for example, was adopted by socialist and capitalist economies alike. How had my fellow traveler come to resent standardization, a staple of modernity, and why did he perceive it as a collectivist ploy?

The reason industrial standards are so central to modern mass production is well known. Most industrial technologies use mechanical matrixes (stamps, molds, casts, etc.) to reproduce identical copies. Matrixes have a cost, and once they are made it makes sense to keep using them to amortize their cost by spreading it over as many copies as possible. Economies of scale increase proportionally to the number of copies; hence in this mode of production it is cheaper to make more identical copies of fewer different items. One means to this end is the creation of catalogs of interchangeable, combinable items that can be sold to a larger market: for example, standard nuts and bolts, or standard steel I-beams that can be used indifferently by many industries, or indeed standardized carry-on bags that can be used on all planes, instead of having to make and sell a different bag for each airplane cabin. Such industrial standards require agreements and regulations, which are arrived at in many different ways.

It would be more contentious to argue that a similar logic also applies outside the ambit of mechanical matrix-based technologies of mass production. Do human bodies, for example, perform better when they are obliged to repeat the same gesture many times over? Frederick Taylor's *Principles of Scientific Management* (1911) assumed they do: in spite of the evident fact that human bodies do not function like machines, assembly lines force workers to take their cue from the mechanical tools of mass production they use, apparently not without some gains in efficiency. And I once knew a dentist who claimed she was the best in the world at pulling out tooth number sixteen—and not its symmetrical, number twenty-six—because from the beginning of her career she had been doing only that, and her hand had become perfect and infallible in that gesture. More contentious still, however, is the application of the technical logic of mechanical standardization to domains that are neither technical nor mechanical yet appear to have been, to some extent, standardized in course of the last two centuries to achieve similar economies of scale. Pricing, as a social practice and cultural technology, is a case in point.



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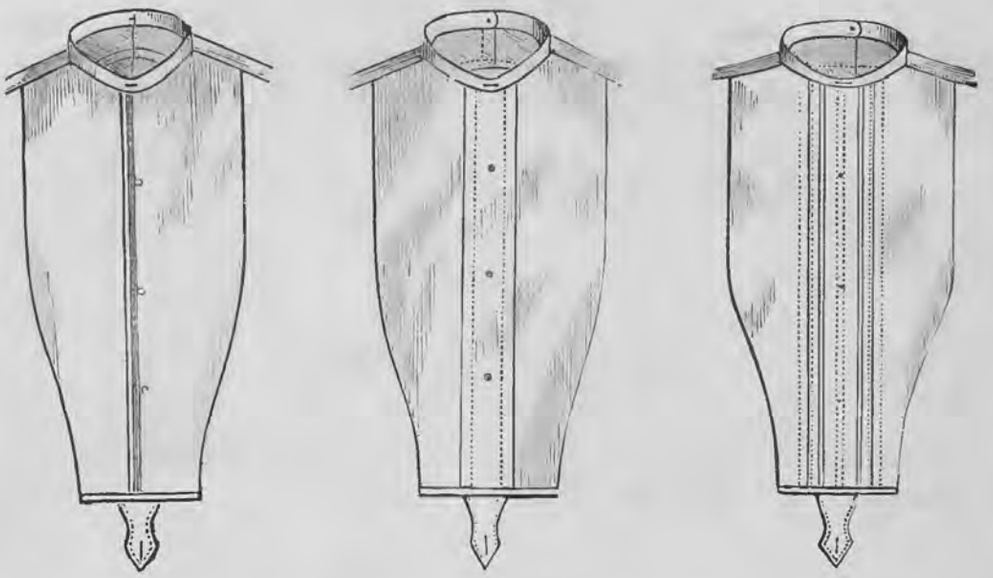
At the beginning of time, pricing (or barter) was the result of a free, unconstrained negotiation, or dialogue, conducted in person by two parties in the physical presence of each other, and of the goods they would exchange. As dialogue is an art, and haggling is an often theatrical figure of dialogue, the agreement between two hagglers famously depends on the talents of each actor, with the better rewarded by a better deal. But dialogue takes time, and so do dealing and haggling; and if each transaction takes forever, few transactions will ever take place. Additionally social groups may at times profit from some degree of predictability in the results of some such dealings. This is why over time societies have invented endless ways to limit the freedom of interpersonal economic exchanges and to regulate prices. For example, in late medieval and early modern societies the prices of many goods and services were strictly regulated by urban guilds. The power that preindustrial guilds wielded over economic life was so pervasive that at some point (particularly around 1776, when Adam Smith published his *Wealth of Nations*) many concluded that making and trading should be deregulated, and individuals should be allowed to exchange goods and services as they wished. According to classical economics, as it was formulated around that time, individuals freely pursuing their own self-interest also maximize the common good, and free prices are the best way to match supply and demand and allocate limited resources. In more recent times neoliberal, neoconservative, and neoclassical economists have used similar arguments against state regulation and (until 1989) against socialist centralized planning.

* An earlier version of this essay was published in AA Files 67 (2013). The images published here have been researched and annotated by Emily Orr, Royal College of Art, London.



A *B* *C*

A. Lap-centre, 3 cords, ½-in. from edge. Eyelets in bosom, stud in neck, open back.

B. Centre-plait, stitched ¾-in from edge.

C. Centre-plait, stitched, two plaits each side.

We make twenty other styles of bosom.

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Unlaundried "		1.19		
" Stock, Gents'		.89		
Laundried " "		1.19	to	$1.49
" " Boys'		.79	"	1.04
Unlaundried " "		.63		
" Night, Stock, Boys'		.69		
" " Gents'		.89		
" Night, to order, Gents'		.89		
" " " Boys'		.69		
Laundried " " "		.98		
" " " Gents'		1.24		
" " Stock, Gents'		1.04		
" " " Boys'		.84		

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Linen Collars	each	.10	"	.19
Paper "	per box	.11	"	.17
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Linen Cuffs	per pair	.19	"	.34
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MARIO CARPO

However, modern free pricing has also been fighting a long losing battle against other enemies from within, right at the core of free-market economies. Unrelated to cartels and monopolies—an easy target long singled out by Communist propaganda—the most successful foe to free pricing in modern free-market economies has been, oddly, the department store. Like many large corporations, department stores freely compete with one another externally, but they impose strict centralization and almost socialist planning and regulations within the ambit of their own organization. Dealings among branches of the same company are not visible to outsiders, but the retail price at which a corporation, in this instance a department store, decides to sell an item to the general public is one of its most conspicuous distinguishing traits. Since the late nineteenth century this has been a fixed price—nonnegotiable, centrally decided, and the same for all. Salespeople in a department store are not allowed to bargain, and customers cannot bid a different price. In compensation, department stores allow them to walk in and out at will.

The fixed-price revolution is often attributed to Aristide Boucicaut's Bon Marché department store in Paris, which still exists, albeit its original name is now somewhat misleading.[1] The names of other French department-store chains (Monoprix, Prisunic) bear witness to this retail revolution, which evolved over the course of the nineteenth century in all industrialized countries as a consequence of the growing size of retail outlets. An independent merchant who owns the stuff he buys can easily decide the price of the stuff he sells. But as stores expanded and had to train more and more salespeople to deal with customers, it proved safer and more efficient to diminish their bargaining leeway, and in the end to give them none and to centralize pricing decisions. Selling at fixed prices evidently saves time, allowing for more sales, and many transactions at a less-than-perfect standard price may yield more profit than fewer sales at a better price.[2] Moreover, many transactions in a department store are so small that they do not warrant the time and cost of bargaining. Fixed prices also seem more honest, transparent, and democratic—as no one, not even the gullible fool, would pay more than others—and they are often seen as symbols of a certain idea of modernity, whether that be a cause or a result of their adoption. Be that as it may, data proves that in contemporary industrialized economies approximately half of all consumer expenditure in goods and services is transacted at fixed prices. This suggests that the percentage of individual fixed-price transactions is much higher than that of individually negotiated ones, today limited to a few "big ticket" items, such as cars and real estate.[3] And economists today take for granted that most customers in developed countries prefer the ease and speed of "modern" fixed prices to the aleatory opacity of the "traditional" open-ended negotiations typical of the bazaar. This, at least, was the case until recently.

For once again, as architects have learned in the daily practice of computer-based design and fabrication, digital postmodernity is upending the game, creating a new environment and practices that are much closer to our premodern, artisanal past than to our modern, industrial present. The principles of postmodern, nonstandard seriality in digital making are now almost twenty years old, and their potentials and limits have been tested by the digital avant-garde in architecture since the early 1990s.

Bon Marché trade card (verso).

Marshall Field's Store, Chicago.

Unlike mechanical making, digital fabrication is rarely matrix-based; hence with file-to-factory digital technologies it is theoretically possible to mass-produce variations, within limits, at no extra cost. In other terms, digital file-to-factory technologies (today much popularized by the diffusion of cheap, distributed 3D printing) offer no economies of scale: the unit cost of the first item in a series is equal to that of all subsequent ones, whether they be identical or different.[4] However, it now appears that this technical logic may also apply to some social practices where no material production is involved, with similarly disruptive consequences.

As mentioned above, pricing decisions are time-consuming, labor-intensive, costly activities. But this is no longer the case when dealing and pricing can be automated, and the final price is agreed upon by humans dealing with computers—or by computers dealing with other computers. Algorithmically based, digitally networked transactions cost very little—in fact, almost nothing; and they are increasingly sophisticated and precise, as computers can now cull and process more data in a few seconds than an expert salesman could in a lifetime. Prices can be algorithmically determined wherever and whenever a Web-enabled device (at the time of writing, as small as a smartphone) can connect to the Internet—which is the same as saying almost everywhere and at all times. This means that even good old fixed prices can now be permanently updated and adapted in real time to fluctuations in supply and demand, and synchronized on a global scale without the glitches and quirks due to local specificities or lack of communication. These frictionless digital markets tend to become more "efficient" the more data they are based on, and in theory they would become perfect if all market makers could participate in the same market at the same time. An even better version of seamlessly unfettered pricing would be the permanent global auctioning off of everything that can be sold. The Roman Praetorian Guard once put the Roman Empire up for auction, but today eBay could offer it to a much larger pool of possible bidders, increasing the statistical chances of selling the empire to a better candidate than the hapless Milanese tycoon Didius Julianus, who bought it in the year 193 and came to no good.[5]

An additional step in computer-based automated pricing could simply use the same technology that Google or Amazon already use to customize search results and

book suggestions, respectively. While Google famously claimed until recently to use the "collective intelligence" of the Web to rank findings, search results are now increasingly prioritized based on preferences expressed by the searcher, on location, or on search history.[6] Amazon's recommendations for further reading based on each customer's past purchases are often more pertinent than the advice that the most expert bookseller, or even a close associate, colleague, or friend could offer.

As a teenager living in a town of 50,000 inhabitants, one high school, and one quality bookshop, I profited vastly from the expertise and insight of that bookseller—which was actually a team of two, a husband and wife. They were learned, cultivated people and they probably knew something about books; but they also knew me, my father, my mother, my grandparents, my high-school teachers, and most of my friends. The advice I received in that shop was always valuable, and in a few memorable cases determinant. After the next book I should read was agreed upon, so was the price, which was never the listed price (students often got discounts, some more than others). I see no reason why Amazon would not do the same at some point. Perhaps it does already—even though recent experiments of automatically or algorithmically customized prices in other markets have been met with ferocious opposition.[7] Yet customers may be getting used to the notion that when buying online fixed prices have already ceased to exist—air travel being the most conspicuous evidence of that and iTunes the most notable exception. Sure, the logic whereby most online prices change all the time is unfathomable—but so was that of the small-town bookseller I remember so well. The expertise and intuition of the astute haggler who knows who can and will pay more for a given item may already be matched by "machine learning," and by a computer-based analysis of a customer's buying patterns. The data is there, and its computational interpretation, or "mining," costs little.

Indeed, as the cost of each ad hoc computer-based pricing decision and of each automated transaction is almost equal to zero, computer-based buying and selling, just like computer-based manufacturing, is indifferent to economies of scale. On the Internet, buying or selling almost nothing to or from a single person costs the same as buying and selling in bulk and to or from many at the same time. So, for example, it is now not only possible to rent a car for just sixty minutes, which would have been unthinkable until recently; in theory, renting ten cars separately for one hour each should not cost more than renting the same car for ten consecutive hours, and in fact, through Zipcar, this is almost so. Likewise, renting one room for the night from a lessor who manages a stock of just one is not more expensive than renting hundreds in bulk from a lessor who manages a huge stock —and in fact through Airbnb it often costs less, albeit probably not for the reasons here under discussion. Remarkably, before the rise of zero-cost Internet-based transactions, such instances of micro-leases could only have been conceived as personal favors among friends ("Could I borrow your car till 4 pm?"..."Yes, you may have my apartment this weekend")—simply because no serious business would have managed individual transactions that are worth so much less than the cost of manually processing the administrative overhead applying to each.

Once again it would appear that digital tools may help us recreate some degree of the organic, spontaneous adaptivity that allowed traditional societies to function, albeit messily by our standards, before the rise of modern task specialization: preindustrial societies did not need hotel chains, not only because fewer people traveled, but also because the few that did were mostly taken in, somehow, by the local population (aristocrats by next of kin, pilgrims by convents, artisans by fellow guild members, and when necessary the army could be billeted with all of the above). Today many similarly messy micromanaged arrangements could become viable again using the Internet, Big Data, and algorithmic pricing: freeways could bill ad hoc not only for the use of faster traffic lanes, but even for minute driving decisions such as passing or parking, and traffic rules could change all the time, locally or due to contingencies, so long as each driver, or car, is in the electronic loop all the time. Cabs could sell their services in real time using a permanent auction system based on location and time, thus matching supply and demand more efficiently than the present archaic, theatrical, and capricious American practice of whistling, screaming, and haggling on the street, which by the way is forbidden in most countries in Continental Europe.[8] Buses could adapt their schedule and itinerary as needed, so long as demand is algorithmically optimized and all users can be apprised of the changing travel plans (which is what the driver of the bus that served the Alpine village where I went on holiday as a child always did, without any technology other than common sense, and without regard for a myriad of state and local regulations that nobody knew or cared about). To the limit, one could also imagine a system where trains do not leave and stop on schedule but follow computationally negotiated ad hoc surveys of all concerned, letting users decide in real time when a train should leave and where it should stop. And so on.

Economists have not failed to recognize that the Internet, and Big Data, are changing retail by allowing more and more customized pricing aimed at more and more fragmented markets—which is something akin to what postmodern philosophers, who certainly did not have retail in mind and whom economists seldom read anyway, called "the fragmentation of master narratives."[9] But the trend I have been describing goes far beyond the often unwieldy multiplication of customer choices already largely exploited by late-modern marketing tools and strategies. To understand what is at stake, one should look at the bigger picture. Once again the combination of connectivity and digital computation favors the simulation, and at times almost the reenactment of ancestral, preindustrial and premodern ways of making and dealing. Computer-based design and fabrication eliminates the need to standardize and mass-produce physical objects,

and in many cases this has already created a new culture of distributed making, which some call digital craftsmanship. Likewise, computer-based pricing and dealing eliminates any need to aggregate supply, demand, and items of trade, and this favors personal, one-to-one, zero-cost transactions, which are in many ways similar to the original, ancestral dialogue between two persons who freely agree to exchange some goods or services at conditions of their choosing. In this model every transaction is a nonstandard one-off, a special case: there are no standards and there need not be, simply because there would be no gain if the transaction were scaled up to include more people, or more items. Of course, not every transaction needs to be negotiated anew each time, just like not every mass-produced physical article needs to be mass customized. This just means that transactions and physical items that would profit from being made to measure now can be, at no extra cost. Standardization is no longer a money saver, and variations are no longer a money waster. In fact, in a digital techno-cultural environment the opposite is often the case.

And to go back to the anecdotal incident that sparked these thoughts: even if I had a 3D printer at home, I do not think I would like to melt and remake the rigid polycarbonate case of my carry-on for every plane I am flying in. I would prefer to have, say, three ready-made suitcases for three global standards of cabin. The standardizing spirit of the mechanical age would then live on, as it most likely will for many items of hard and fast mechanical mass production. Yet, in the bigger scheme of things, that untweedy WSJ reader might have had a point after all. If, in the digital techno-cultural environment of our imminent future, many standards become unnecessary, many regulating functions that governments have taken upon themselves over the course of the last two centuries may become unnecessary too. One might generalize and conclude that those regulating functions were necessary in our mechanical, industrial past to achieve economies of scale, but those regulations and regulators are now becoming equally unnecessary in a digital environment where economies of scale do not apply. If that is so, neoconservatives and libertarians could simply hire computers to fire some of the government bodies they abhor. Today's new right tends to like old technologies, so we may never come to that. We'll see.

1 Fixed prices were also needed for another of Boucicaut's innovations, the money-back guarantee. See Robert Phillips, "Why Are Prices Set the Way They Are," in Özalp Özer and Robert Phillips, eds., *The Oxford Handbook of Pricing Management* (Oxford, UK: Oxford University Press, 2012), chap. 2.5, esp. loc. 1238-69.

2 Ibid., loc. 1238.

3 Ibid., loc. 1115.

4 See Mario Carpo, *The Alphabet and the Algorithm* (Cambridge, MA: The MIT Press, 2011), and Mario Carpo, *The Digital Turn in Architecture, An AD Reader* (London: Wiley, 2012), esp. 6-14; Chris Anderson, Makers: *The New Industrial Revolution* (New York: Random House, 2012), 81-98.

5 The story is told in Dio Cassius's *Roman History*, LXXIV, 7:5, and elsewhere.

6 Google's original PageRank algorithm prioritized search results based on the quantity and quality of links between Internet (HTML) pages. As in the scholarly system of footnote cross-referencing that is said to have inspired the PageRank algorithm, these links were first established by the authors themselves, then added to by many others; hence Google's celebrated claim to use "the collective intelligence of the Web to determine a page's importance." This famous statement appeared on Google's corporate Website (http://www.google.com/corporate/tech.html) as late as June 27, 2011 (see "PageRank," Wikipedia, accessed August 1, 2011, n4); but at the time of writing (December 2012), the chapter on search relevance appears to have been rewritten both on Google's Website and in all related Wikipedia entries.

7 In 1999 Coca-Cola unsuccessfully tested a vending machine where prices changed based on demand; more recently outrage followed when Amazon was suspected of charging different prices to different customers based on their past buying behavior: see Robert Phillips, *Pricing and Revenue Optimization* (Stanford, CA: Stanford University Press, 2005), 302-303, 312.

8 On the recent regulatory woes of the "e-hailing" upstart Uber, see Marcus Wohlsen, "Uber Is Back for NYC Cabs as Taxi App Wars Escalate," *Wired.com/business/2012/12*, accessed January 10, 2013

9 Jean-François Lyotard, *La condition postmoderne* (Paris: Les Éditions de Minuit, 1979), 31. Lyotard's original expression was "décomposition des grands Récits."

LAUNCH

Keller Easterling

Architecture's relationship to money is symptomatic. The discipline seems not to know how to capitalize projects independently or garner the resources necessary to be a leader in any powerful platform or market, be it social, political, or commercial. In this way architecture is distinct among the intellectual and professional endeavors to which it is usually compared. Architects primarily offer a service to moneyed players and to the powers that be. To avoid the taint of this subservient position, the profession creates a narrative of artistic autonomy, one ironically overlaid with internal hierarchies and ateliers to which the youngest architects are beholden. Even the most powerful and influential player in this hierarchy, the star architect, like a Hollywood star, is still a contract player.

Meanwhile some of the most significant changes in the globalizing world are being written in the language of architecture and urbanism. Space is potentially a powerful instrument of ingenuity and problem solving in the world. Yet architects are rarely asked to lead in decision-making processes of any consequence beyond client relationships. The profession does not encourage an entrepreneurialism that would address the unfortunate and unnecessary fact that it is decoupled from its own relevance in the world.

Architecture professionals are, in general, underpaid. The median salary for architects at all levels is typically half that of lawyers and doctors. For architects just entering the workforce, the situation is even more disquieting. Young doctors, lawyers, and architects opt for a comparably expensive education, and all work long hours. But the young architect is often contracted into illegal internships or jobs that require an eighty- to one hundred-hour week, presence seven days a week, and work periods lasting longer than twenty-four hours. A salaried position of this sort translates into a pay rate less than the minimum wage. In 2013, for example, a law student just out of graduate school might typically expect a starting salary of approximately $160,000, while an architecture student carrying similar school loans can hope for a top salary of $60,000 and will more likely land a job that pays $30,000–$40,000.

As an intellectual pursuit deeply tied to prestigious universities, the discipline is also underfunded.[1] Grant funding for the sciences is measured in the millions of dollars. Even in the arts and humanities, funding to launch an exhibition or pursue a fellowship is often measured in the hundreds of thousands of dollars. There are no comparable sources of funding for capital-intensive architectural experiments. Budgets for research projects in architecture are measured in the thousands of dollars, usually less than $20,000. The most prestigious late-career prizes, the ultimate accolade for senior architects, typically offer at most $100,000. Despite the obvious practical applications of spatial, material, structural, and programmatic research related to architectural skills, universities do not sponsor laboratories for research related to building or urbanism. Larger universities charges architecture students a tuition comparable to that of medicine and law, yet it places the discipline within "the arts," or the lowest rank with regard to funding and salaries.

University-based fundraising for architecture schools typically supports programming such as lectures, publications, and exhibitions. Architecture schools primarily compete and signal vitality in the robustness of their discourse rather than in experiments with building, technology, or urbanism. With the exception of a handful of building projects, it seems that the default product is often a self-reflexive publication (even in the face of a glut of hastily prepared publications that threaten to cancel each other out). In this discourse or event-based culture, it is often assumed that practitioner-teachers will offer largely rhetorical proposals. For a profession that directs building, contact with building is oddly kept at arm's length.

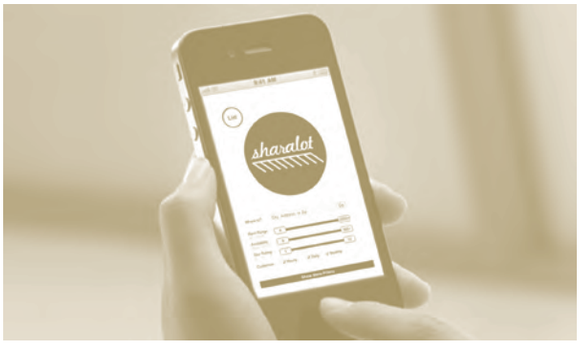
Curricula for the business aspects of an architectural practice usually mirror the profession's self-image as a service provider. Capital amassed through a fee structure can only hope to maintain an office, much less a surplus for experiments with material, technology, or urban protocols. Architecture students are consequently under-rehearsed in constructing alternative forms of practice with divergent business models.

Architecture's relative penury has been a subject of discussion for so long that it almost seems to fuel the profession's vigorous pedaling in place. It is an issue that joins the other perennial and perpetual crises used to produce the illusion of advancement in an inertial echo chamber. One has to assume that no professor, dean, or practitioner is truly proud of what Reyner Banham called the discipline's "operational lore." The profession has not significantly changed its relationship to funding in the whole of its history. The fact that few deans or others in the profession rail against these practices gives pause, and if it were true that the most powerful in architecture prefer the low expectations of the status quo, it would be quite an indictment.

A few years ago, in a Yale seminar on architecture and activism, we were studying a group of young social entrepreneurs in a remote Indian village who had raised a quarter of a million dollars for an open-source software company. We had to acknowledge that architecture students, reared in the wealthiest sectors of the global economy, had no idea how to raise comparable venture capital to address spatial issues. Not only did we have no idea how to raise that kind of money, but we did not have the skills to achieve even that degree of cultural currency in the world.

A subsequent seminar called "Launch" considered architecture and the entrepreneur, where *entrepreneur* was defined as a free agent or instigator in a number of different disciplines. We charged ourselves with designing not only spatial innovations but the means by which those innovations might gain traction in culture. The work quickly encountered a couple of default assumptions about working outside familiar professional structures. The first was that an architect who engaged in anything but a service model would naturally become a developer. Architects have routinely adopted a business model that benefits from proximity to development. Another assumption was that an alternative career would necessarily involve volunteerism or good Samaritanism, as if alternative practices could surface only in the face of disaster and extremes such as poverty or war. An especially powerful assumption was that an architect seeking a new business model would necessarily fall into the contemporary fads and clichés of start-up culture.

Certainly when faced with the alternatives of working in the corporate hierarchy at criminally low wages or as an artist/performer/hacker, the choice is tempting. For many "trained as an architect" has become a prestigious curiosity or credential to enhance twenty-minute performances and start-up demos. Architecture has no demos, no drones, and no breathtaking (or in TED argot, jaw-dropping) dance of data. The assumption is that architecture and urbanism can enter this discussion only if enhanced with digital media as an Internet of things or a giant wiki. The subject matter then migrates to biotech, high-tech materials, software, digital sensing, nanotechnology, robotics, and big data, etc. Often this reset career suddenly gains a sense of relevance, funding from the sciences or the art world, and inclusion in lists of top young movers. Finally the press arrives to take a portrait of the protagonist with crossed arms and a penetrating gaze.



Sharalot, by Lauren Chapman and Jack Morley, Launch seminar, Yale School of Architecture.

Yet after two years and twenty-six weeks, the "Launch" seminar quickly moved past these defaults and clichés into a rush of ideas and projects with a currency in space itself.

The conventional practices of the architect, different from those of the entrepreneur, also offered some additional artistic pleasures and approaches to form making. The architect often wishes to make a singular autonomous object as an expression of self; the entrepreneur responds to multiple changeable desires. In the seminar we were, like entrepreneurs, rehearsing the design not only of object but also active forms—those that establish relationships that generate or manage not a single object but a stream of objects. Active forms may also alter space through an indirect variable or remote control, or they may be part of an ecological system or interplay rather than a single object or master plan.

If one of the fads of start-up culture is to design a new app or technological instrument for every conceivable problem, architectural culture perhaps deepens the habit of mind that attends software production by extending it into time and space. Space itself is an information system. Repeatable formulas and spatial products—a nondigital software—make most of the space in the world. Active forms hack those formulas with new details, construction technologies, or urban protocols that find multipliers in these repetitive spaces. Like a software or content manager, active forms suggest new protocols for interdependencies between spatial variables. Active forms expanded a spatial repertoire, providing another mode of operating and reacting to the world's markets and politics.

The possible projects for the "Launch" seminar range widely over scales and sites. Most deploy object and active forms together, one propelling the other.

When construction details are designed for "Launch," they are designed to have maximum impact on a population of buildings. When a repeatable big box or suburban house adopts a new construction strategy, the architect has a chance to shape a larger context. A project that alters the position or use of a garage rewires the entire suburban landscape. A project that redesigns the roof of a big-box store like Wal-Mart to incorporate, for instance, daylighting can calculate the effect of that detail repeated across the acres and acres of roof that Wal-Mart controls and builds.

One project, a parking scheme called "Sharalot," choreographed the timed use of existing parking spaces in a way that reduced the need for municipal parking. It was designed in ways that only an architect or urbanist might anticipate, yet it was an unconventional mode of form making—an active form with remote controls. Another project repurposed the land surrounding airports, merging its critical spatial dimensions with those of agriculture.

Future projects will undoubtedly focus on the need for spatial variables in global governance and transportation. Some will reconsider ways to drive the development machine forward as well as put it into reverse—a subtraction protocol for retreating from distended development, flood plains, or rain forests. New vehicles that merge the intelligence of cars, elevators, and robotics or new modes of transport like the Google driverless car are in desperate need of spatial analysis. As many pin hopes on the automated car to solve a raft of urban problems, there remains a failure to consider the congestion they will generate unless they are part of a larger scheme to deliver populations of passengers to the capacities offered by mass transit.

All these projects are, at least initially, capital intensive. Fabrication projects for furniture or construction details require initial prototypes. New construction technologies aimed at structural or environmental performance require special engineering and testing. Building equipment and conveyance capable of altering building morphology require similar research and development. Urban protocols often need a test bed that requires property investments and exchanges.

The "Launch" project is intended as a platform for the architecture student to rehearse these leadership roles. The university is the institution that is likely to lead a change by inaugurating a new source of funding and a shift in disciplinary authority. A new architectural fund, initiated in the university, might award grants to a range of projects; if linked to professorships, fellowships, and lecture series, the award could generate events, pedagogy, and publications that would return resources to the school.[2] A fund that graduates more effective and self-sufficient professionals who go on to grow lucrative practices generates its own pool of support. Implementing such a fund would require determined leadership—leadership tenacious enough to overcome obstacles and forge new expectations in the university and the profession. There is no more significant structural change to be made in architectural culture today. Some school will get there first.

1 Bureau of Labor Statistics: Median annual wages of wage-and-salary architects—$72,550 in 2010. Median annual wages of all wage-and-salaried lawyers—$110,590 in 2010. The mean annual wage for family and general practitioners—$168,550 as of May 2009. http://data.bls.gov.

2 University of Milwaukee's Marcus Prize, described as "the most lucrative prize for young designers in the world, matched only by the Pritzker," has a similar structure in that it is tied to a fellowship and open to the larger profession. Harvard's Wheelwright Prize, a travel award for recent graduates, is not tied to a professorship and just recently opened to the public. Both join ranks with a small number of other prizes in architecture that do not exceed $100,000 in awards.

AOC

AOC is a practice of architects, urbanists and interpreters, established in 2003 by Royal College of Art alumni Tom Coward, Vincent Lacovara and Geoff Shearcroft, with University of Cambridge graduate and cultural interpreter Daisy Froud. Motivated by the ways in which forces and factors besides architects shape places, they are committed to delivering projects that fully engage with and respond to the contexts—social, economic, political and spatial—in which they are set. They place emphasis on participatory practice and brief-development, believing that a broader conversation creates a richer and more bespoke end product. AOC regularly lecture in the UK and overseas, and teach at The Cass, The Bartlett and Brighton Schools of Architecture, provide design and policy advice to governmental and statutory bodies, and contribute to contemporary architectural culture through writing and public debate.

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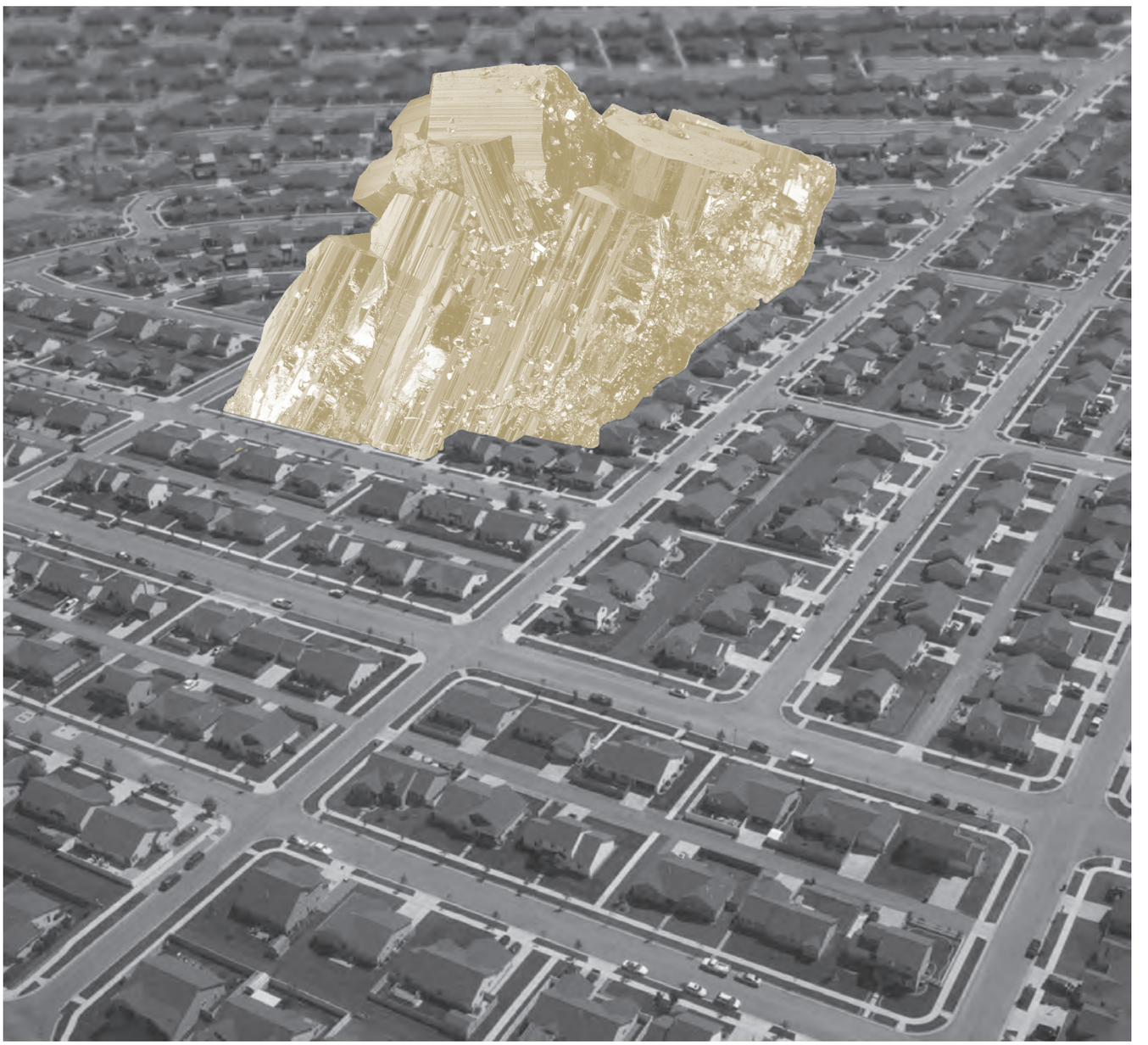

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