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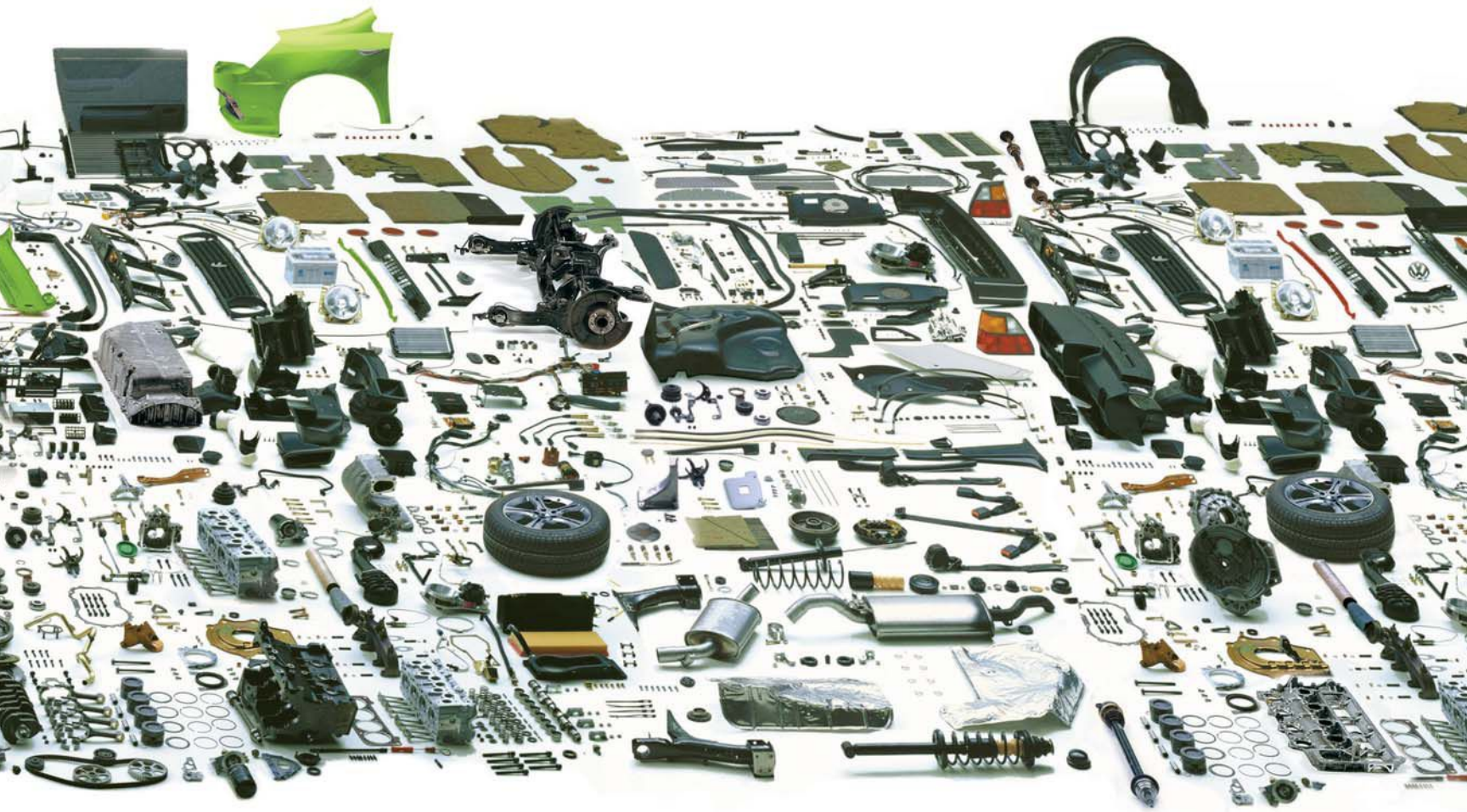


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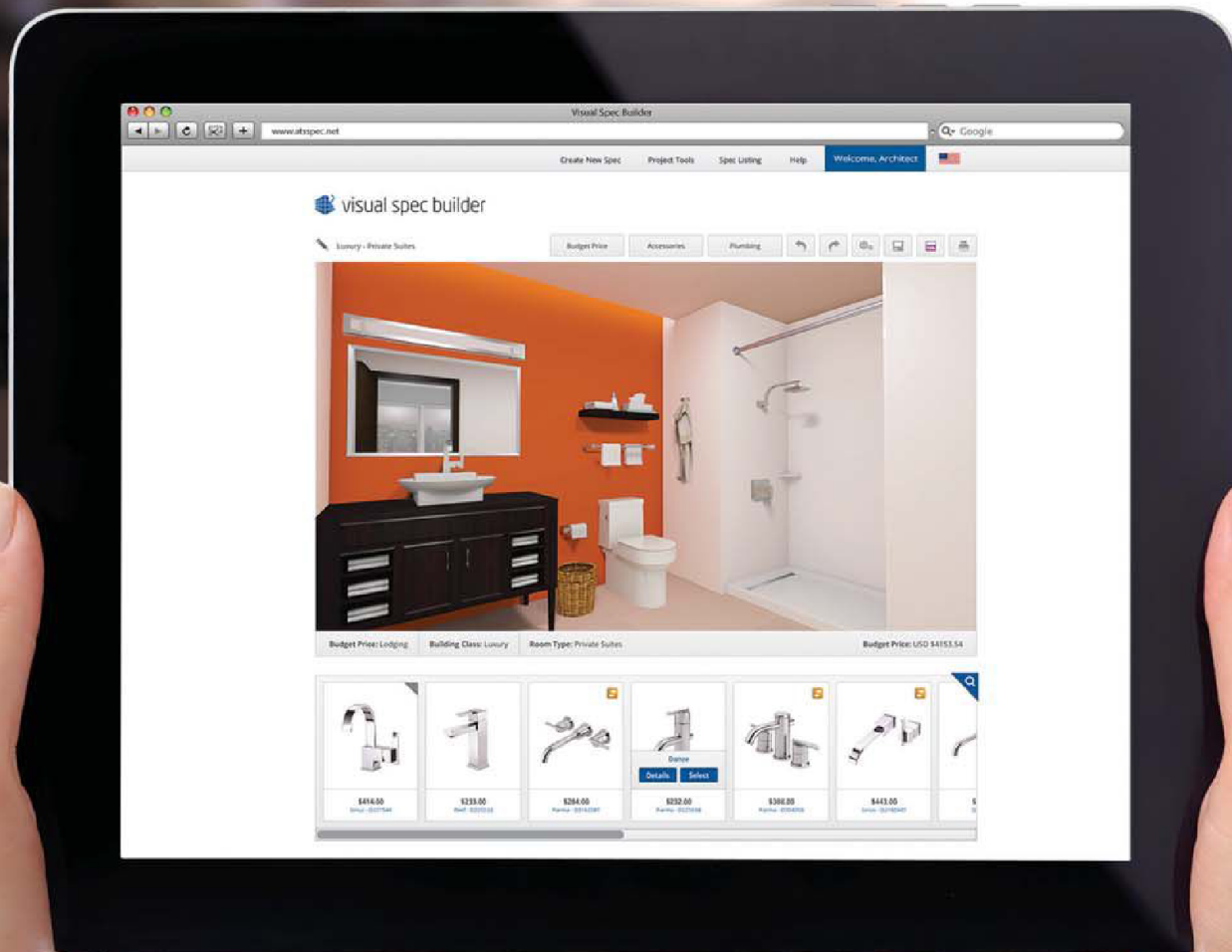
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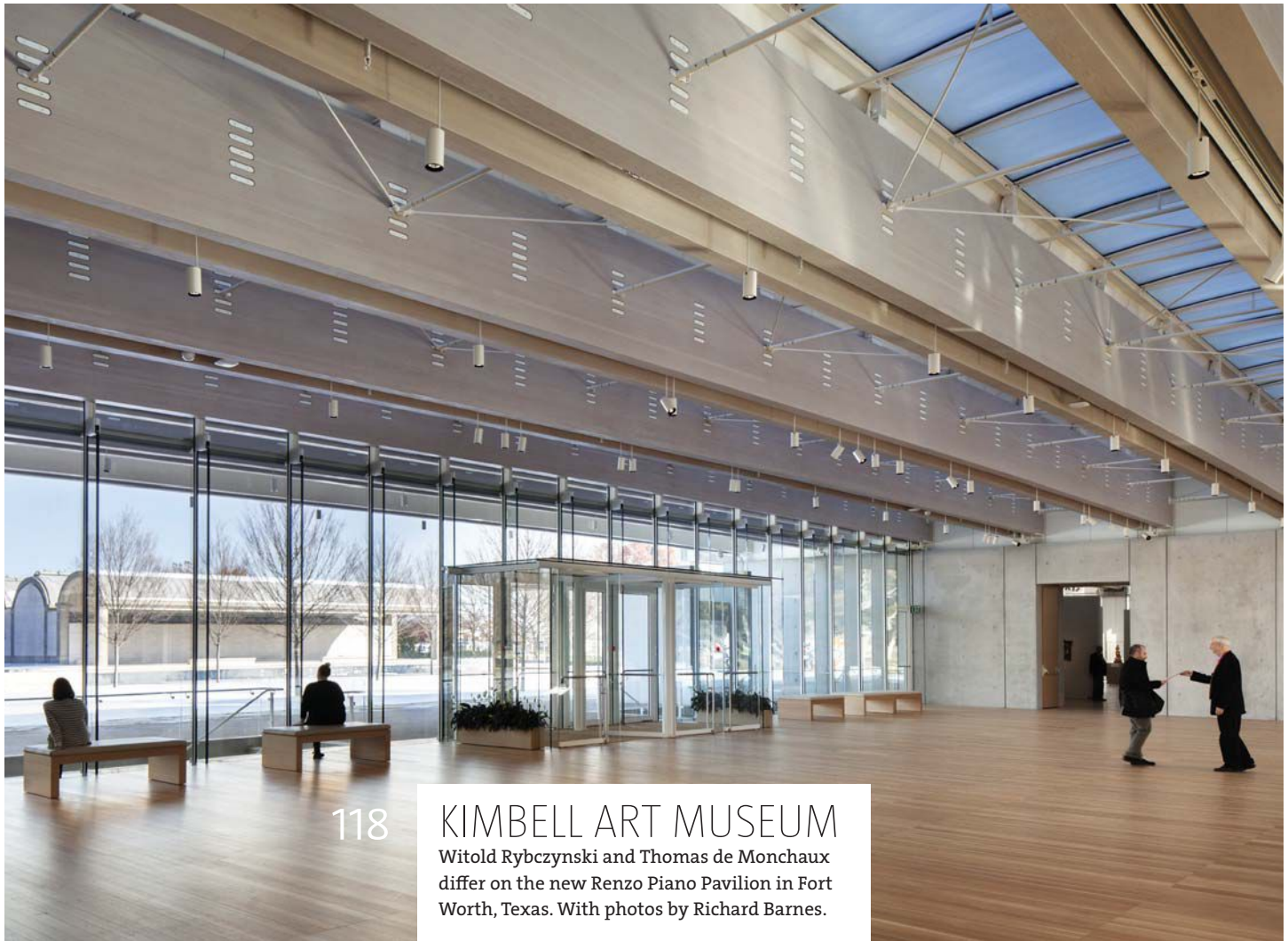


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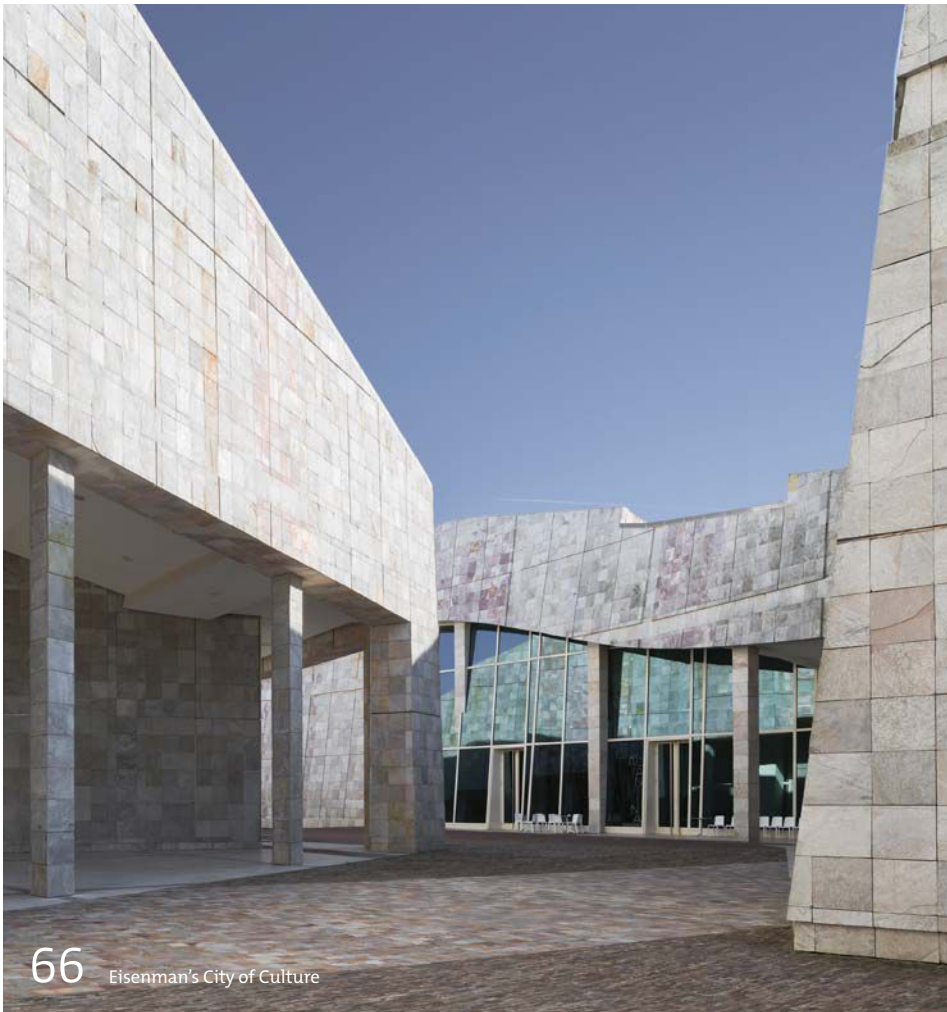
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SOME OLD-SCHOOL JOURNALISTS ROLL THEIR EYES AT THE LISTICLE, CONSIDER IT THE VELVEETA OF THEIR TRADE, A CHEAP-AND-EASY WAY TO GRAB EYEBALLS.

BEAR GIFS AND THE TEN COMMANDMENTS

WHEREIN NED CRAMER ATTEMPTS TO WRAP HIS BRAIN AROUND ONE OF THE HOTTEST—AND OLDEST—TRICKS IN WRITING: LIST-MAKING.

LISTICLES ARE EVERYWHERE these days. They are the stock-in-trade of popular websites like BuzzFeed, which on a recent Sunday evening offered up such gems as “12 Outdated Items Every Twentysomething Should Own” (a watch, board games), “The 40 Dumbest Things Drunk Men Have Ever Done” (shoot self in penis, attempt to ride crocodile), and “42 Bear GIFs That Will Give You Life in 2014” (grizzly cubs in hammock, panda on rocking horse).

Some old-school journalists roll their eyes at the listicle, consider it the Velveeta of their trade, a cheap-and-easy way to grab eyeballs. And some consumers dismiss the listicle as an Internet meme so ubiquitous that it’s a cliché. Still, in a funny send-up titled “Top Nine Things You Need to Know About ‘Listicles,’” *The Guardian* columnist Steven Poole gives the contentious article format a pass, citing antecedents as esteemed and far-ranging as the Ten Commandments and “Thirteen Ways of Looking at a Blackbird,” a poem by Pulitzer Prize-winner Wallace Stevens.

“Internet content-farmers and media corporations hungry for cheap clickbait didn’t invent the list as literary form,” Poole writes, and he’s right. The bottom line is that, snobbery and traditionalism notwithstanding, people really do love lists; we know this because Web-traffic patterns and behavioral studies tell us so. But *why* do we love lists? Let me count those ways.

A listicle’s title alone informs us just how much time and brainpower will be required (“12 Outdated Items” being far more quickly digestible than “42 Bear GIFs,” for instance) as well as what the reward will be for time and energy spent (LOLs, often enough, but also news analysis, self-help tips, or business insights). Every single paragraph offers an easily accessible nugget of insight.

Love it or hate it, the listicle is a perfect content format for a culture habituated to consuming information on the fly, via a 4-inch screen. Truth be told, I’m beginning to think that ARCHITECT doesn’t use lists enough. There’s a lot to absorb in both our print and online versions, especially in the big anchor issues,

like the one that coincides with the American Institute of Architects convention, and this, our annual What’s Next forecast. A listicle or two would grease the works, so to speak, and help ideas flow more smoothly from screen and page to brain.

My positive gut feeling about listicles was affirmed by Thomas Fisher’s very list-y opening essay for this month’s What’s Next package, “Architecture and the Third Industrial Revolution” (page 100). The What’s Next section is itself a listicle of nine ways that architecture is changing in the face of new economic, social, and technological realities. Fisher’s essay is among the most incisive writing that has appeared in ARCHITECT since our launch in 2006, neatly tying together many of the discrete trends that have begun to emerge, such as interdisciplinarity, 3D printing and mass customization, the consultative practice model, and open-source and public-interest design.

If you have time for just one article this month, make it Fisher’s. Naturally, there’s a ton of other good stuff (not that I’m biased or anything). For the reader in a rush, here’s a short and utterly unscientific list of other fun takeaways from the January 2014 issue—a “7 Things You Would Learn by Reading This Issue Cover to Cover,” if you will.

“Problematic” is not a noun (page 44).

It is now possible to pour concrete using 3D-printing technology (page 57).

Of the 27 directors at Kohn Pedersen Fox Associates, six are women (page 80).

A basilica and a cathedral are not necessarily the same thing (page 86).

Congress hasn’t passed a long-term transportation bill in nearly a decade (page 109).

Nondesign services account for about 10.2 percent of total firm billings (page 110).

Renzo Piano has designed 23 museums in his career (page 124).

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SARA JOHNSON

SARA JOHNSON is an assistant editor for ARCHITECT. Born and raised in the Bay Area, she moved to Washington, D.C., in 2012 for a fellowship at the Atlantic Cities, where she wrote and researched stories on urban affairs and demographics.

Prior to that, she worked on the fashion desk at *San Francisco*, which included covering everything from runway shows and parties to assisting with photo shoots, as well as writing for print and online. She holds a bachelor's

degree in English from the University of California, Berkeley.

In her work for ARCHITECT—which includes writing, reporting, and editing for the website, as well as fact-checking—Johnson has noted similarities between designing clothes and designing buildings. She is fond of a line about notable fashion designers by a character in the movie *The Devil Wears Prada*: “What they created was greater than art because you live your life in it.”

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CAROLINE MASSIE

CAROLINE MASSIE is an assistant editor at ARCHITECT. She received a bachelor's degree in American Studies and English from the University of Virginia in Charlottesville, Va., where she developed a love for all things Thomas Jefferson. At Virginia, Massie served as the features editor of the student newspaper, *The Cavalier Daily*, and wrote for several other local publications, including *Catalyst*, a magazine about global sustainability.

Before coming to ARCHITECT—where her

duties include writing, reporting, and editing for the website, as well as fact-checking—Massie served as a research assistant at the Papers of George Washington, a documentary editing project, by bringing 18th-century materials into a 21st-century context by developing an online search engine of literature about our Founding Father. A native Virginian, she furthered her love for the commonwealth's history through a fellowship with the Piedmont Environmental Council.

➔ Read stories by Johnson and Massie online at architectmagazine.com and each month in the Front section.

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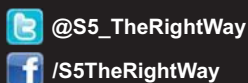
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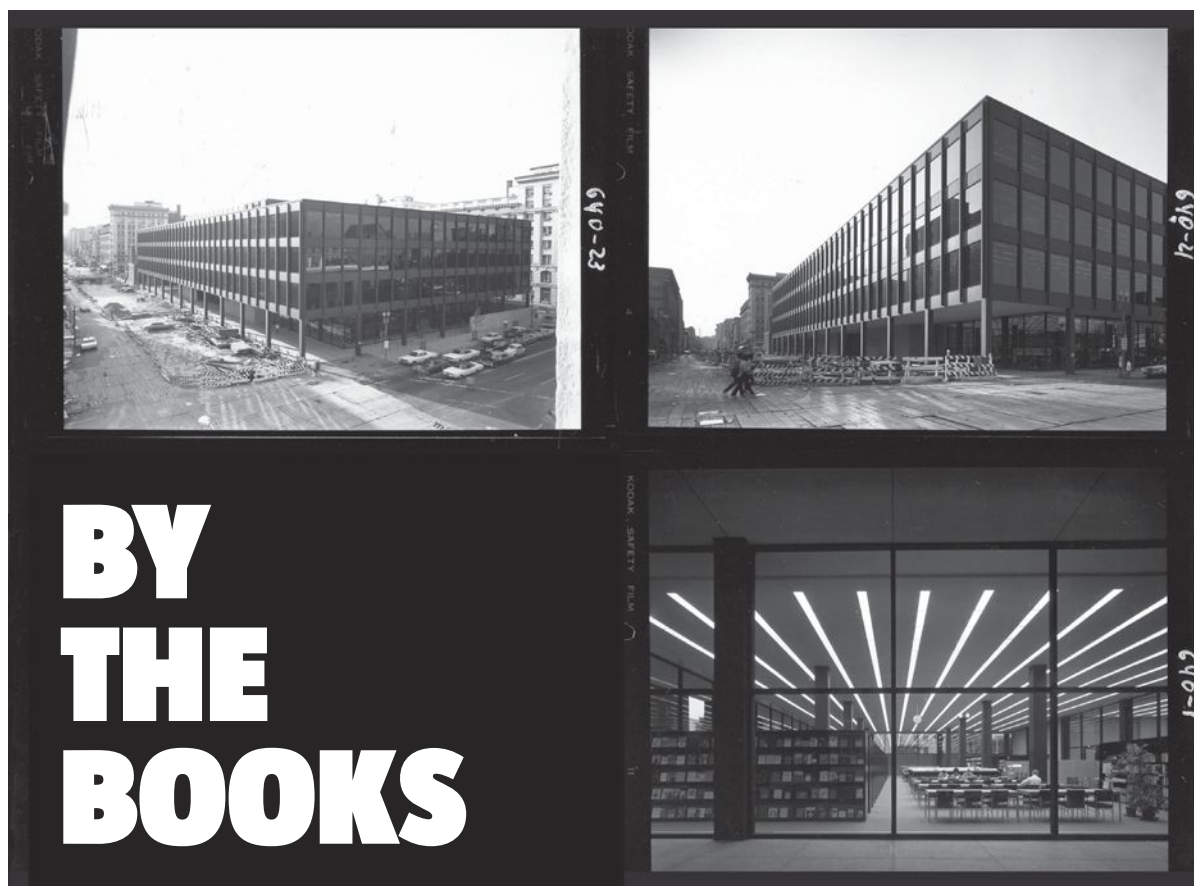
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FRONT



In the last few years, D.C. library authorities have moved to restore the Martin Luther King Jr. Memorial Library to its original, austere feel. Back in 2006, however, then-Mayor Anthony Williams had suggested painting it white or even selling it.

ONE OF THREE TEAMS WILL RESTORE OR RENOVATE THE MIES-DESIGNED MARTIN LUTHER KING JR. MEMORIAL LIBRARY IN WASHINGTON, D.C. WHAT THAT WORK WILL ENTAIL IS STILL AN OPEN QUESTION.

THE DISTRICT OF COLUMBIA PUBLIC LIBRARY system (DCPL) narrowed the list of competitors to renovate the Martin Luther King Jr. Memorial Library in the nation's capital to three architecture teams. The selection of the teams to proceed with preliminary plans for the much-needed renovation gives some hint about the future for the only library designed by Ludwig Mies van der Rohe—as do those firms that didn't make the cut.

The shortlisted architecture teams are: Vancouver-based Patkau Architects, Baltimore's Ayers Saint Gross, and Chicago's Krueck + Sexton Architects; the Dutch firm Mecanoo and D.C.-based Martinez and Johnson Architecture; and D.C.-based Studios Architecture and Durham, N.C.-based Freelon Group. DCPL picked the finalists from the 10 teams announced in October, elevating firms with library and renovation experience over higher-end competitors.

Next month, these teams will submit two preliminary design concepts to the review panel and the public: one for renovations to the library as a freestanding building, and the other for a mixed-used development that would add floors to the library to accommodate

other elements, potentially office or residential space.

Designed by Mies in 1966 and completed in 1972, three years after his death, the MLK Library is the long-neglected central hub of a system of spokes that has been transformed in recent years. Under chief librarian and executive director Ginnie Cooper, who retired at the end of 2013, the city has completed or is in the process of completing 17 renovations or major construction projects.

The Urban Land Institute set DCPL on its current path, suggesting in a 2011 report that the library consider two renovation strategies for the central library (single-purpose vs. multi-use). Asked to provide a feasibility study the following year, the Freelon Group turned heads with a design that added new floors and rooftop program space.

Now, as one of the finalists, the Freelon Group is "revisiting all ideas we previously had," says principal Derek Jones, AIA.

"The prior proposal focused on studying whether there was a potential to renovate with the building's restrictions," he says. "We want to re-investigate that proposal." CAROLINE MASSIE

ESKEW+DUMEZ+RIPPLE WINS THE AIA 2014 ARCHITECTURE FIRM AWARD



Allen Eskew, a founding partner of Eskew+Dumez+Ripple, died just two days before the Architecture Firm Award announcement. Steve Dumez, FAIA, says that many New Orleans architects think of Eskew (shown center left) as a mentor.

ESKEW+DUMEZ+RIPPLE, the 2014 winner of the Architecture Firm Award, has played a major role in shaping the New Orleans waterfront—both before and after Hurricane Katrina.

Since the firm's early days, Eskew+Dumez+Ripple has coupled modern design with sensitivity to New Orleans's unique history and ecology. In 1984, Eskew served as the studio director for the World's Fair in Louisiana, leading a team of architects who planned and designed work on the New Orleans waterfront. Twenty-one years later, after the Gulf Coast was devastated by Hurricane Katrina, the city tapped Eskew+Dumez+Ripple to master-plan the urban riverfront.

The 48-employee firm is currently redeveloping a 6.2-mile stretch of the city's riverfront—phase one in a master plan that won an AIA Honor Award for urban development in 2012.

Eskew+Dumez+Ripple has designed projects across Louisiana, but the one that stands tallest is 930 Poydras—a 21-story residential tower in New Orleans, a city not known for its high-rises. KRISTON CAPPS



Julia Morgan Posthumously Awarded the AIA 2014 Gold Medal

THE GOOD NEWS is that the AIA has, for the first time ever, awarded its Gold Medal, the profession's highest honor, to a woman: Julia Morgan (1872–1957). Clearly, Morgan, who was the first woman to attend the École des Beaux-Arts (she graduated in 1902) and who is best remembered as the architect of that eclectic behemoth, the Hearst Castle, was overdue for recognition. It's always a little jarring to realize that she's almost an exact contemporary of Frank Lloyd Wright (1867–1959). But while Wright still resides more or less in the present, Morgan has slipped into the past.

The AIA is to be commended for finally awarding its Gold Medal to a woman. Still, the timing of the prize may lead some critics to suggest that it has more to do with an architect who is among the living: Denise Scott Brown. Hopefully it's the first step towards honoring the significant design contributions women have made to the field. The fact that the AIA has begun the work of recognizing the women it has overlooked in the past suggests that soon, a female architect who is still alive and practicing will be similarly honored. KARRIE JACOBS

AIA/ASCA TOPAZ MEDALLION

HARRISON FRAKER, Assoc. AIA, was named by the AIA and Association of Collegiate Schools of Architecture as the 2014 Topaz Medallion for Excellence in Architectural Education. As the founder of the Center for Environmental Studies, Fraker has been a major part of the academic community since the late 1960s.

WHITNEY M. YOUNG JR. AWARD

IVENUE LOVE-STANLEY, a designer who has broken barriers as an advocate for underserved communities, has received the 2014 Whitney M. Young Jr. Award. The first black woman to become a licensed architect in the Southeast, she tightened the bonds between the AIA and National Organization of Minority Architects.

EDWARD C. KEMPER AWARD

FREDRIC BELL, FAIA, was named the winner of the 2014 Edward C. Kemper Award for his public service to the field. He became the executive director of AIA New York in June 2001, presiding over the opening of the New York Center for Architecture in 2003 and New York New Visions following the attacks of Sept. 11, 2001.

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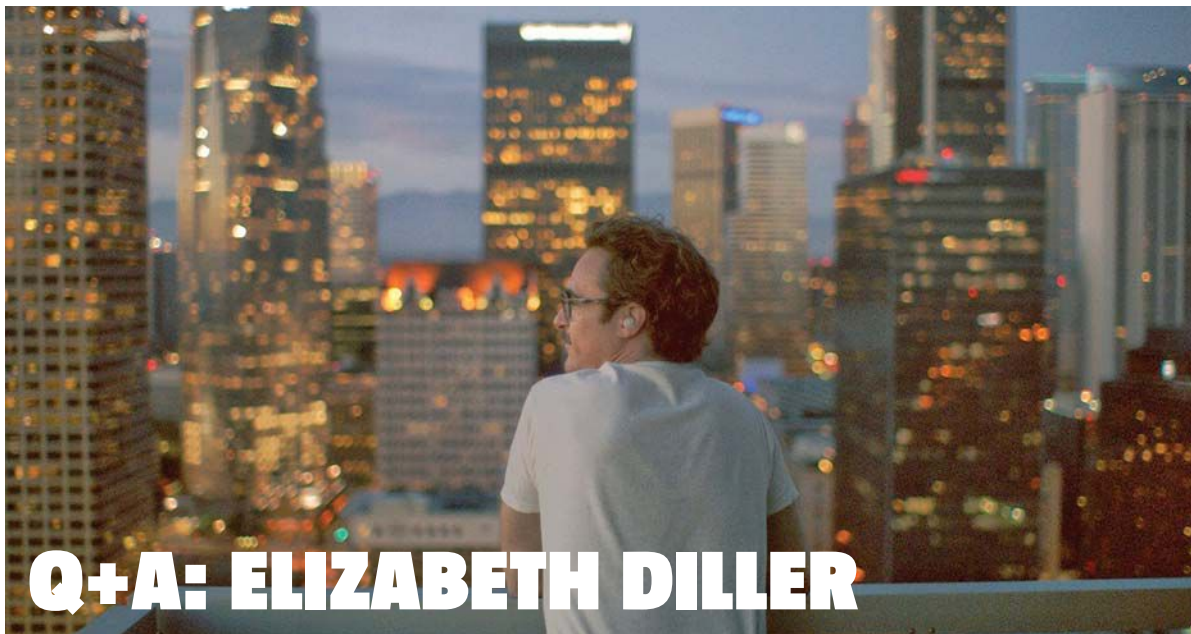
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Q+A: ELIZABETH DILLER



LIZ DILLER TALKS ABOUT THE LATEST SPIKE JONZE FILM, *HER*, WHICH IMAGINES THE FUTURE OF LOVE—AND LOS ANGELES.

IN THE MOVIE *Her*, director Spike Jonze tells the story of an awkward loner (Joaquin Phoenix) who falls in love with his artificially intelligent operating system (voiced by Scarlett Johansson). In theaters now, the film is set in the Los Angeles of the near-future—a city full of tall buildings and skybridges, where it is possible to take the train all the way to the beach. In doing press for the film, Jonze has repeatedly credited New York architects Elizabeth Diller and Ricardo Scofidio, AIA, founding principals of Diller Scofidio + Renfro, with helping him devise the feel of his settings. Diller chatted with ARCHITECT about the film, the uncanny qualities of the near-future, and why she generally prefers murder stories to sci-fi.

How did you end up becoming involved with Spike Jonze?

[Graphic designer] Stefan Sagmeister introduced me and Ric to Spike Jonze a couple of years ago. We decided that it'd be nice for him to come to our studio and learn a bit about our work. A short meeting turned into a four-hour discussion. Spike talked about a project he was planning, this movie about the near future. I asked him, "Was it going to be a utopian future or dystopian future?" I think that's when he really began to think about that. He was trying to find a place in between, that didn't have to be labeled in that kind of dualistic way.

Jonze has said that you and Ricardo Scofidio helped him conceive the future depicted in *Her*. What sort of things did you do?

That was all there was to it—that single meeting. We were really kind of shocked that he acknowledged us, because it was really a simple meeting. We'd loved his films before. He thinks in a very idiosyncratic way and I think there was an alignment there.

What do you think of the way Jonze has envisioned the future?

What he's done so incredibly well is that it's a story that takes places in the near future, but he doesn't make judgments about whether it's horrible or not. Most fictions of the future are usually technophobic—technology is destroying the world—or they're very utopian. That's why the film is interesting. It's not futuristic. It's set in the near future and it's almost believable that that could happen. It makes you slightly uncomfortable. The movie is set in Los Angeles—one with lots of skyscrapers and efficient public transport. To achieve this effect, Jonze used bits of Shanghai as stand-ins for Southern California.

What do you think of his sense of urbanism?

He did a really good job. It's kind of like, "Where is this? I think I know that skyline." For most people, who probably weren't paying that much

attention, it probably felt contiguous enough. But I think it said a lot about a kind of monocultural, globalized future, where buildings all more or less look the same. It's very generic space. In the end, though, it's not so much about a particular locale. It's about watching this central character doing what we do every day: talk to our devices in public space.

You've done art and theater installations. Did you ever consider going into film?

In college I'd had a fantasy of being a filmmaker. I'd taken film courses at Cooper Union and then somehow detoured into architecture. But the film bug never really left. If I could leave my life for five years, I would love to construct a film from scratch. But I have too much respect for the craft, so I'll spare the public that.

Do you typically spend a lot of time thinking about sci-fi cities of the future?

Not really. Ric, much more. It's a boy thing, I think. I like serial murderer stories. I'm very, very interested in when a mind snaps, someone very normal—usually the guy next door. It's a bit David Lynch-ian in terms of the dark side of the benign.

Maybe you could start an architects' book club devoted to serial killer books. [Laughs.] That itself is a great idea for a movie. CAROLINA MIRANDA



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AS 2013 CAME TO A CLOSE, Foster + Partners celebrated projects from as small as a pavilion (the Vieux Port in Marseille, France) to as large as a district redevelopment plan (the Thames Hub proposal for Britain). Partnerships with late Apple founder Steve Jobs produced a bespoke motor yacht and a new 176-acre campus that has been likened to a giant flying saucer landing in Cupertino, Calif. (It's a *torus*, to be precise.) More thrilling for fans of the intergalactic, however, are the London-based firm's explorations into architecture for new frontiers: A 3D-printed lunar base and Spaceport America in New Mexico. **DEANE MADSEN**



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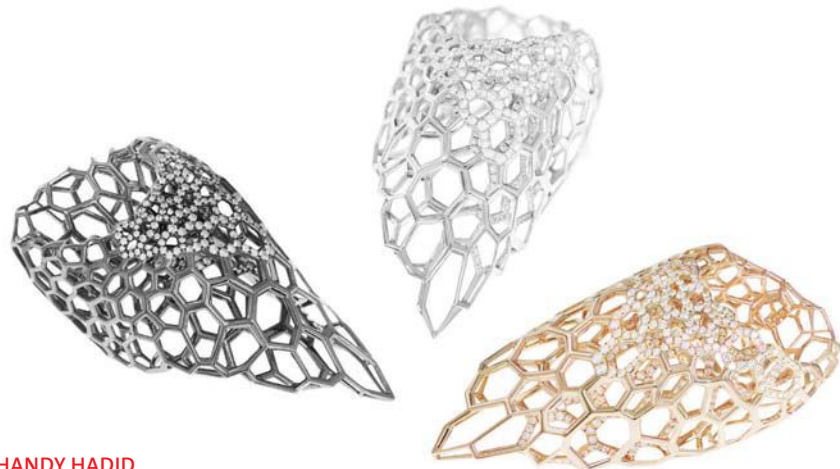
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HANDY HADID

Zaha Hadid, Hon. FAIA, is known best for her high-drama façades, but she has a reputation for dabbling outside buildings. Her "Skein" collection for jewelry brand Caspita doesn't disappoint. The bracelet and ring designs are available in four types of gold (diamonds are optional for the ring). Structural yet soft, these honeycomb fixtures are fit to grace a hand or a building. **SARA JOHNSON**

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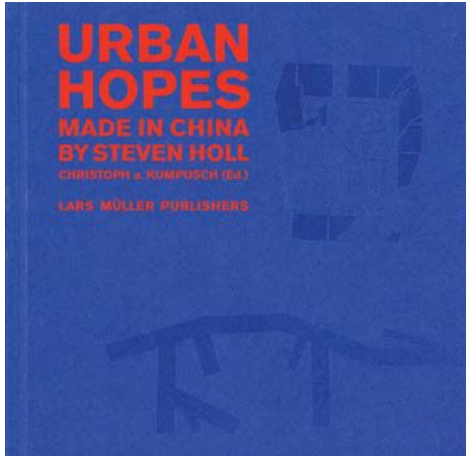
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FROM THE
CREATORS OF **AdvanTech**

Ten Years of Steven Holl Architects Projects for China Surveyed in New Book, Exhibit

URBAN HOPES SHOWS HOW THE ARCHITECT IS BUILDING A MANIFESTO THROUGH HIS BUILDING AND PLANNING PROJECTS IN THE FAR EAST.



FOR STEVEN HOLL, FAIA, phrases such as “Sliced Porosity Block” and “Linked Hybrid” aren’t merely the evocative titles for two of his projects—they are keys to a kind of personal design mantra. With *Urban Hopes: Made in China by Steven Holl* (Lars Müller Publishers, 2014), editor Christoph A. Kumpusch outlines the firm’s evolving approach to planning and design in China.

The book, along with an accompanying exhibit that opens at the MAK Center for Art and Architecture at the Schindler House in Los Angeles on Jan. 29, surveys 10 years of work—from the Nanjing Sifang Art Museum (begun in 2002) to the just-announced competition-winning entry for the Qingdao Culture and Art Center. Through photographs, drawings, and (of course) Holl’s watercolors, the survey illustrates his vocabulary in China.

The book goes further: With pavilions by Ai Weiwei and Lebbeus Woods, essays by Mark Morris and Ing-Tse Chen, images by El Lissitzky and Yona Friedman, poetry by Du Fu and Arthur Rimbaud, and more, *Urban Hopes* is ultimately a manifesto. **K.C.**

➔ Read an interview with Steven Holl at architectmagazine.com



ESTO GALLERY: GOLD MEDALISTS

Photographers from Esto share their favorite works by AIA Gold Medal winners over the last decade. This shot by Ezra Stoller captures the Reid House in Purchase, N.Y., designed by 2007 AIA Gold Medal winner Edward Larrabee Barnes, who—like this year’s Gold Medal winner Julia Morgan—received the honor posthumously. **D.M.**



WHAT WE’RE 3D PRINTING NOW: SPEAKERS

CORNELL RESEARCHERS ARE PRINTING SIMPLE ELECTRONICS.

SCIENTISTS REACHED A NEW MILESTONE in December by manufacturing a fully functioning loudspeaker. Researchers at Cornell University used an integrated system with multiple materials to print the electronic device.

“We’re trying to move the printing away from just printing passive parts made of plastic or metal, to printing integrated systems, active systems that can do something,” says associate professor of mechanical and aerospace engineering, Hod Lipson.

The loudspeaker is a relatively simple object, consisting of plastic for the housing, a conductive coil, and a magnet. Silver ink was used as the conductor and a viscous blend of strontium ferrite was used to create the magnet.

According to Apoorva Kiran, a graduate student who worked on the project team, the challenge was creating a design using the exact materials that can be assembled together into a functional shape. This breakthrough required two different printers performing two different functions. Most printers cannot handle multiple materials—but they may one day soon. **C.M.**

Corrections:

In the December article “In the InterBIM,” we misspelled the last name of Woods Bagot director of design technology Shane Burger.

In December’s Annual Design Review, the Louisiana Sports Hall of Fame and Northwest Louisiana History Museum won an award, not a citation, in the Bond category. The U.S. Land Port of Entry was designed by Julie Snow Architects and Robert Siegel Architects, and the Hunter’s Point South Waterfront Park was designed in a collaboration between Thomas Balsley Associates and Weiss/Manfredi.

We regret the errors.



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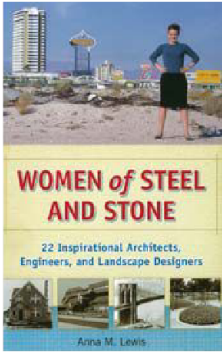
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Title
Women of Steel and Stone

AUTHOR
Anna M. Lewis

SUBJECT
Essays on 22 women architects, landscape architects, and engineers

SOME STARS
Marilyn Jordan Taylor, FAIA; Emily Roebling; Martha Schwartz; Kate Gleason; Beatrix Ferrand

BEST ZINGER
Norma Sklarek, on being the first black woman to be made a fellow: "It's a sexist title, but I'll take it."

GORDON BUNSHAFT, PRO AND CON
"He didn't seem to discriminate. He in no way treated me differently than he did anyone else. When he introduced me to the clients, he would say, 'This is my best designer and ... she's going to work on the project.' He wrote a book, Gordon Bunshaft. He didn't say a damn thing about me. I mean I didn't exist."
—NATALIE DE BLOIS, SOM

November 2013

Architecture Billings Index

49.8

↓ 1.8 pts

Institutional

47.7

↓ 2.5 pts

Mixed Practice

53.1

↓ 0.1 pts

Commercial

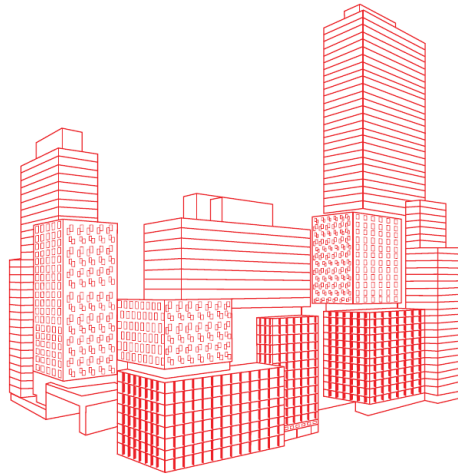
48.6

↓ 5.1 pts

Multifamily Residential

55.2

↓ 1.8 pts

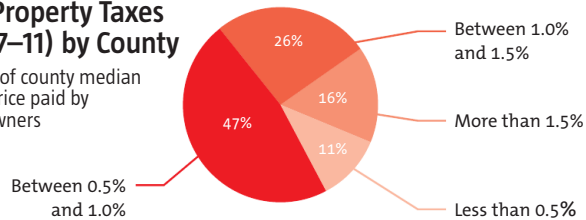


BUILDING BROOKLYN BETTER

When it is completed in late 2014, B2 will be the tallest modular building in the world—and a new lightning rod for debate in Brooklyn. The first of three new residential towers being assembled by SHoP Architects near the firm's Barclays Center, B2 might be the boldest example of the SHoPification of Brooklyn yet. And while SHoP's plans for the Domino Sugar Refinery development on the Brooklyn waterfront are nothing to sneeze at—they include at least one design for an O-shaped tower and other buildings with cavities—the modular towers for the \$4.9 billion, 22-acre Atlantic Yards project (and their 1,500 residential units) represent the changing face of the borough better than any other building in development. That's not necessarily a bad thing.

U.S. Property Taxes (2007–11) by County

Percent of county median home price paid by homeowners



New Streetcar Lines Across America



- Salt Lake City**
Ridership fell short of predictions for December's opening.
- Cincinnati**
Politics nearly derailed plans for this 3.6-mile line.
- Washington, D.C.**
Service on the 2.4-mile line may begin this spring.
- Atlanta**
The city is building a 2.6-mile downtown loop.
- Dallas**
A 0.7-mile extension is already planned for the 1.6-mile track under construction.
- Tucson**
Service on the 3.9-mile line may begin this summer.

November Jobs Report

New construction jobs reported by the U.S. Department of Labor's Bureau of Labor Statistics



STEP UP

James T. Hanley

Executive director
Beverly Willis Architecture Foundation

When longtime executive director Wanda Bubriski stepped down in 2012, she was succeeded by Yvonne Thurman-Doğruer—who parted ways with the organization the following year. The Beverly Willis Architecture Foundation is starting over with Hanley, who previously held a senior director position at Barnard College.

Julia Kaganskiy

Director
Incubator for Art, Technology, and Design
New Museum

At 27, Kaganskiy is young to be so distinguished in both the art and tech worlds, yet the #ArtsTech Meetup founder and Creators Project editor is following in the footsteps of much more senior curators who are carving out cross-disciplinary museum practices. The New Museum's incubator—to be designed by SO-IL with Gensler in a former restaurant-supply building close to SANAA-designed museum—is bound to see architects working with artists and entrepreneurs on the Bowery.

Robert L. Newsom, FAIA

Managing principal
Leo A Daly

STEP DOWN

Michael Bloomberg

Mayor
New York City

Depending on your politics, the inauguration of Bill de Blasio as New York's new mayor signals either the end of corporate real-estate cronyism or the onset of soak-the-rich socialism for the Big Apple. New Yorkers of all stripes will agree that Bloomberg presided over a period of remarkable change—from the advent of the High Line to the creation of the Barclays Center to the eruption of new high-end luxury towers on 57th Street that has come to be known as Billionaires' Row. But what this change means continues to divide the city. The era of soda and trans fat bans may be over, but de Blasio's New York will bear the marks of Bloomberg's no-holds-barred, pro-growth urbanism for years to come.

Aaron Betsky

Director
Cincinnati Art Museum

Bill Brinkman, AIA

Executive vice president
HDR

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PHOTO: VINCENT RICARDEL

AIA VOICES

NEXT BEST PRACTICES | REDEFINING THE PROFIT CENTER

Gregory Kearley, AIA, is the executive director of Inscope Publico, a 501(c)(3) nonprofit design firm whose mission is to collaborate with other nonprofit clients to provide affordable concept design services for new construction, renovation, and adaptive reuse. Kearley's efforts are part of a growing trend among small- and medium-sized firms to diversify by offering different design services through separate business and legal entities. To that end, he is the principal of the architecture firm Inscope Studio and the prefabricated house kit manufacturer Inscope Modular.

IT'S IMPORTANT THAT EVERYONE HAS A VEHICLE TO CONTRIBUTE to the community. Whether you're a musician or a writer or a doctor, you need something. I happen to be an architect. Now you never like to think your parents influenced you, but I have to say the concept of giving was always present in our house growing up. There were always people living there for short periods of time that didn't have a place to live, and my parents consistently supported causes that had broader impacts outside of our home or our family. When I started practice, I made a conscious decision not to be a corporate architect. I happen to like smaller-scale projects and working closely with clients anyway, but design for the public good is something that has always been part of my mind-set.

Instead of running a design firm that completes one nonprofit project per year, I wanted to have a separate 501(c)(3) that was dedicated to other nonprofits like housing organizations, arts

centers, and so forth. And we've just launched Inscope Modular, which currently has two energy-efficient small-home prototypes right now—one at 1,400 square feet and another at 650 square feet. I have the same staff for the 501(c)(3), the architecture firm, and the modular company, so our design process, our rigor as a group, and our skill sets as individuals transfer automatically.

So many nonprofits have wonderful missions and great aspirations but lack the capacity to follow through with a capital campaign. And that's why we call our clients our "partners," because we're completely committed to seeing a project through to the end and we want our partners to do the same. I'm very excited today because we just signed a contract with the Children's Defense Fund to renovate their 48,000-square-foot building in Washington, D.C.—which is the largest project that Inscope Publico has acquired in terms of square footage.

A lot of people forget that *pro bono publico* is the full Latin term for what gets shortened to *pro bono* when referring to certain kinds of work. But it's the spirit of working together for some greater public good that matters. I purposely didn't use my own name when creating Inscope—I didn't want something that was top-down. The name reflects the fact that we work together in a dialogue and, as a result, Inscope is able to attract interesting and very talented people who have autonomy to grow as architects, professionally and personally.—As told to William Richards **AIA**

DO YOU DESIGN WITH PURPOSE?



**AIA Convention 2014
June 26-28, Chicago**

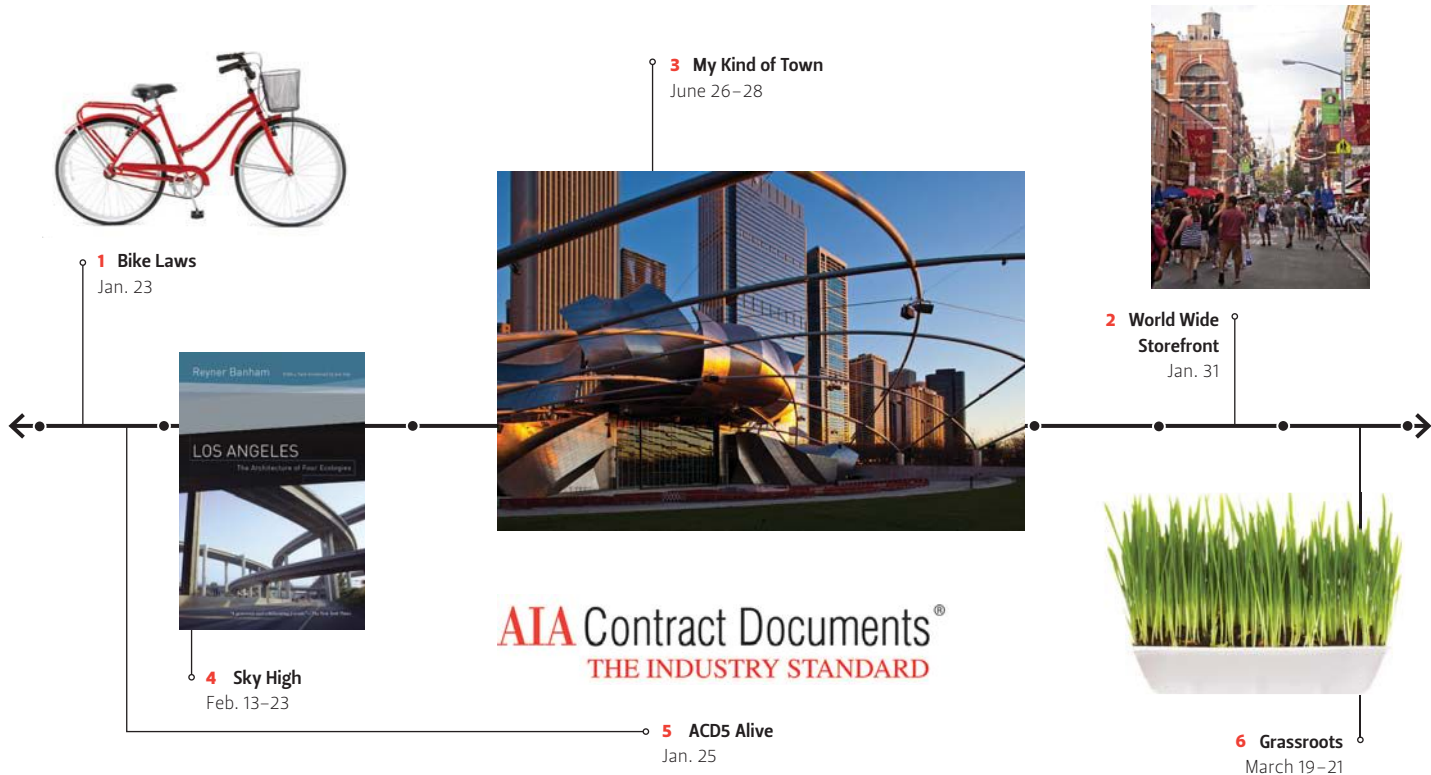
Registration opens soon
www.aia.org/convention

CHICAIAGO!

AIA NOW

ACROSS THE INSTITUTE

Compiled by William Richards



1 Bike Laws. The Boston Society of Architects (BSA) continues its Traffic Advisory Speaker Series this winter with Helle Søholt, founding partner and CEO of Gehl Architects, the firm that helped transform New York City's Times Square into a multimodal, pedestrian-friendly nexus. Søholt will identify ways to adapt the lessons of Times Square for other cities at BSA on Jan. 23, and discuss the urban imperative to strike a balance between biking, automobiles, and mass-transit systems.

➔ Learn more and register to attend at architects.org/programs-and-events.

2 World Wide Storefront. New York City's Storefront for Art and Architecture ends its call for proposals on Jan. 31 for World Wide Storefront, a competition to establish alternative art, design, and architecture exhibition spaces modeled after Storefront's successful Little Italy digs, designed by Vito Acconci and Steven Holl, FAIA. But the \$1,000 seed money prize isn't about encouraging your average pop-up shop; it's about encouraging multiple pop-up shops that will open their doors simultaneously from Sept. 19 to Nov. 21, all backed by a curatorial vision, compelling programming, and a digital strategy.

➔ Learn more and register before the deadline at wwstorefront.org.

3. My Kind of Town. Adler, Atwood, Barney, Beeby, Bofill, Booth, Burnham, Cohen, Coolidge, de Blois, Freed, Gang, Griffin, Hayden, Holabird, Hood, Howells, Jenney, Kerbis, Merrill, Mies van der Rohe, Nagle, Owings, Perkins, Rapp (x2), Richardson, Root, Rutan, Shepley, Skidmore, Sullivan, Tange, Tigerman, Viguier, Weese, Will, Wright. Sure, there are other architects who have made Chicago an extraordinary city, but we'd need this entire issue of ARCHITECT to list them.

➔ Learn more about the Chicago experience at the 2014 AIA National Convention on June 26–28, and register at aia.org/convention.

4 Sky High. The central theme of the 1972 BBC documentary *Reyner Banham Loves Los Angeles* is fairly clear. But if you're looking for a more nuanced take on L.A., seek out an old copy of the historian and critic's 1971 book *Los Angeles: The Architecture of Four Ecologies*, which centers on the beach, the freeways, the flatlands, and the foothills. Banham is not the first to observe that cities are composed of seen and unseen elements such as infrastructure, ecotomes, geology, and culture. He was, however, one of the most colorful proponents of a holistic view of urbanism. Skyline 2014, a free architecture, art, and technology exhibition (Feb. 13–23), will offer a spin on Banham's thesis with 16 installations in downtown Los Angeles, curated by L.A. mainstays Greg Lynn, Eric Owen Moss, FAIA, Francois Perrin, Intl. Assoc. AIA, and others.

➔ Learn more at lerata.org/upcoming-projects.

2 World Wide Storefront
Jan. 31

6 Grassroots
March 19–21

5 ACD5 Alive. The new AIA Contract Documents online service, ACD5, launches this month and offers convenient online access to over 160 time-tested AIA documents. ACD5 also has new features such as a personal clause library, custom templates, and easy contract collaboration. Plus, you can rock your administrative capabilities for multiple-user accounts. Compatible with Macs and PCs.

➔ Learn more at www.aia.org/contractdocs.

6 Grassroots. This year's AIA Grassroots Leadership and Legislative Conference experience will provide attendees the advocacy skills to better serve their AIA chapter and component constituents. It's also a chance to join members of the AIA Advocacy team for visits to Capitol Hill to speak with members of Congress and inspire a new generation of leaders. "In addition to making our voices heard on Capitol Hill, AIA Grassroots is an exceptional opportunity to network among component leaders," says Elizabeth Chu Richter, FAIA, 2014 AIA first vice president and 2015 president-elect. "It's a great time to learn from each other, share successes and challenges."

➔ Learn more at aia.org/conferences.



AIAFUTURE

WORD WARS

I beg your pardon. What?

BY WILLIAM RICHARDS

ASK AN ARCHITECT ABOUT A city's development and he or she might tell you: "Interrogating the hermeneutic potentiality of the urban fabric's boundary conditions is the key to intervening in the city's morphology. The phenomenological nature of a building and its neighborhood is enhanced by ludic acts of horizontality." Or, as one noted thinker once asked, "What do architects do when faced with the anthropocentric fabrication of the city?"

What a paradigmatic question, don't you think? Now, if you're scratching your head because these words present a so-called "problematic," you have every right. For one, problematic is an adjective (not a noun). And there seems to be a disconnection (not just a disconnect) between how some architects talk about architecture and what they mean to say.

Archispeak, archibabble, and talkitecture represent a language that nascent minds pick up in architecture school and carry around for some time. But it's a double-edged sword. On one hand, architects borrow words (and their concepts) from literary criticism, biology, the social sciences, and some other non-architectural disciplines to enrich their thinking about a design problem. On the other hand, those words may obscure the architect's meaning when they attempt to turn around and explain their solution to that problem to someone else.

"I think you can classify these kinds of words into two categories," says David Rifkind, an associate professor of architecture at Florida International University. "There are the concept words like 'parasite' or 'palimpsest,' which architects use to describe the project



itself. Then there are smarty-pants words that you'll hear in a design critique, like 'intangible' or 'resistance,' which critics will have heard a couple of times and throw out without ever explaining what they mean."

Rifkind is not a cranky anti-intellectual by any stretch. Besides being a designer who, with his wife and partner, Holly Zickler, just completed their own nearly net-zero home in Miami, he's a Graham Foundation grantee and award-winning author (of *The Battle for Modernism: Quadrante and the Politicization of Architectural Discourse in Fascist Italy*) who holds a doctorate in architectural history from Columbia University. He insists, however, that architects and students must be critical—as in analytical and judicious—about language fads if they're going to communicate effectively as designers.

"Today's big concept words are 'porosity,' which makes me look for the nearest operable window from which to throw myself when I hear it, and 'condition'—as in 'field condition.' I always wonder, 'Did that person mean to say flat?'" says Rifkind. "There are also variations on the theme, such as 'overhead condition.' And I want to say to them, 'You know that's a ceiling, right?'"

It's a problem of clarity, in other words, not a problem of intent. But if the meaning of what you're trying to convey is obfuscated, you might as well be speaking in tongues.

For example, let's look at a word like "dialectic," used to describe two ideas (or even building elements) that are opposed, but when considered together, achieve a synthesis. It's a word that's had a long run in architecture circles and schools from the early 1990s to the present day owing to its utility in elevating any design discussion. In fact, just by dropping dialectic into your analysis of, say, James Stirling's use of classical proportion in relation to architectural

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BORROWED TIME

FIRMS SHARING PEOPLE?
THAT'S ONE WAY TO RECOVER FROM A RECESSION.



WHEN THEY'RE SPELLED OUT AND FORMALIZED, JOINT VENTURES between two architecture firms mitigate risk for both sides (and for the client). They also offer an opportunity for the two firms to retain work when each offers expertise in some areas, but perhaps not others. It's a little like the city-states of Athens and Argos teaming up against the Spartans during the Peloponnesian War—and if you think the wartime analogy is a stretch, then you've never been in charge of an architecture firm during an economic recession and its aftermath.

Going beyond the joint venture, and to help each other in the bust (and boom) times over the last five years, some Portland, Ore.-based architecture firms—including Ankrom Moisan Architects, Boora Architects, GBD Architects, Opsis Architecture, SRG Partnership, THA Architecture, TVA Architects, and Yost Grube Hall Architecture—have opted to share architects.

It's pretty straightforward. If one firm has a substantial amount of work in the near term, and doesn't want to staff up internally, its principals can borrow architects from other firms for discreet periods of time. Both firms sign a contract that details the duration of the "loan," the compensation for the individual on loan, and the level of flexibility that individual can expect in their schedule. The contract also ensures that the firm receiving support from another firm won't actively recruit the individual in question.

"Of course, if someone wants to make a move and join another firm, they can," says Jeff Yrazabal, AIA, a principal at SRG Partnership, "but that process is initiated only by the individual and only outside of the loan agreement."

SRG has signed loan agreements with three other firms in the area—THA, Opsis, and GBD—and all were positive experiences, according to Yrazabal. "It's good for our staff to have an opportunity to work closely with others, and when there's all this activity between firms it feels like the architecture community here is advancing collective knowledge by elevating our respective skill sets," he says.

Like anything, however, there's a potential downside. "The loan idea is risky," Yrazabal admits, "but the benefits of sharing expertise are far greater than the risks involved." —William Richards **AIA**

regionalism, you can subtly indicate to your pitiable companion that you're totally down with Plato, Georg Hegel, and Kenneth Frampton in one fell swoop. Pretty great, right?

But neither Frampton nor Hegel (much less Plato) is going to help you pass your Architect Registration Exam.

And whether you're hanging a shingle or joining a firm, your clients will wonder if you're feeling feverish when you explain that your design for their new mixed-use development will exist in a dialectical relationship to the landscape. Or when you explain that your joint detail for their photovoltaic array is a dialectical moment that resolves a planar incommensurability.

"The biggest problem I think architects have when talking to civilians is that we use metaphorical terms to describe the quality of a project, such as saying that a building is 'dynamic' or that two objects are having a 'conversation' in space," Rifkind says.

"We take those ideas for granted, because they are useful to us in our design thinking sometimes, but they often strike regular people as odd, at least at first. Architects tend to see a bigger picture about how a project can transform the world outside the boundaries of a given site or program, but clients tend not to see that as valuable or desirable," Rifkind says.

Bob Borson, AIA, an architect and writer based in Texas, maintains a blog called "Life of an Architect," for which he's written several installments of "Architect Bingo," containing all of the words that come out of architects' mouths that, he says, could be replaced by "a simpler and more widely known word."

"I always thought that intentionally using overly specific and obscure words meant that you were a bad communicator," Borson says. "Unfortunately, I think most architects have come to the exact opposite conclusion—that somehow, through their ability to use difficult and unfamiliar trade-specific words, this makes them a better communicator."

Architect Bingo includes such oft-used terms as "datum," "fenestration," and "curvilinear." These are all—as Borson points out—more precise and trade-specific terms than others such as dialectic or morphology, which are not native to architecture at all.

But the effect of using words from either category is the same. Dropping a line like "Oh yes, well, the fenestration creates a datum along the façade against which we can pin the curvilinear Möbius strip that I've excavated from the original parti" won't help you achieve a level of clarity with non-architects.

"Your prime interlocutors are your professional peers," says Drew Armstrong, Assoc. AIA, "and communication is the most important aspect of a firm's daily operation."

Armstrong, who currently teaches architectural history and theory at the University of Pittsburgh, where he is director of the undergraduate architectural studies program, trains students to see that there are many paths into the profession and many more kinds of people in the design process than just architects—clients, certainly, but also engineers, investors, contractors, technicians, and community members.

"The process has multiple stakeholders—a fact that isn't new but one that everyone seems to recognize readily today, which is a good thing. Teaching students to be clear in their ideas will only help them be good communicators later," Armstrong says. "When students—and architects, generally—go off the rails and have trouble communicating through their specialized language is when they lose sight of the multilateral practice of architecture." **AIA**

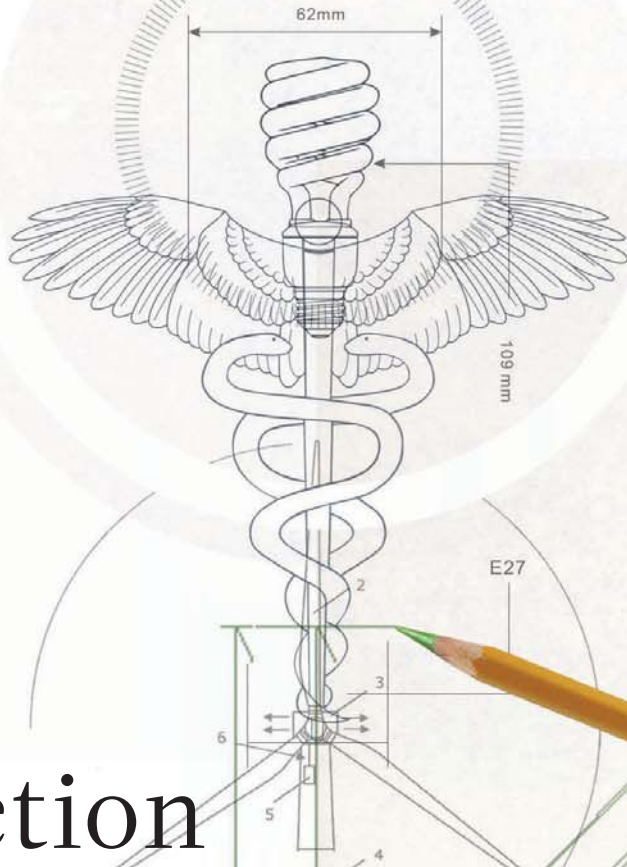
Action Plans

Energy, materials, health, resilience and the near future of architecture.

BY MIKE PLOTNICK

THESE DAYS, ONE OF THE DEFINITIONS OF THE VALUE OF DESIGN relates to how architects are uniquely positioned to positively impact ways in which people can live more sustainably. Yet, despite notable individual and collective progress, the profession hasn't fully leveraged its resources to advance enduring solutions for these global challenges.

Through the introduction of two linked design and practice action plans, the AIA is focusing its intellectual resources on the



AIA FEATURE

core issues of energy and materials, as well as the emerging issues of design's impact on health and resilience, by connecting chapter and component support, offering new and revised continuing education products, encouraging practice-based research, pursuing strategic partnerships, and refining its advocacy of the profession both legislatively and publicly.

Both energy and health emerged as priority issues in the "Sustainability Leadership Opportunity Scan" (published in October), a report commissioned by the AIA and undertaken by AIA Resident Fellow Mary Ann Lazarus, FAIA, to identify unique areas where the Institute can most effectively strengthen the sustainable leadership and influence of architects.

"Energy and health are two very tangible areas that help clarify the bottom-line impacts of sustainability," Lazarus says. "We're talking about real issues that affect how people live, work, relate to their communities, and thrive."

Although energy and health—as areas for architectural innovation—each face unique challenges and are at different places in their evolutions, both offer numerous opportunities to elevate architectural leadership.

"Architects can be the fulcrum for positive changes, and do so with purposefulness that comes out of the reason that many of us joined the profession," says Rick Bell, FAIA, executive director of AIA New York (and a member of ARCHITECT's editorial advisory committee).

Bell and others have observed that the continual growth of energy benchmarking regulations and performance-based codes has catalyzed a global industry shift from loose, aspirational sustainable goals to measured performance expectations and requirements. And the AIA Energy Action Plan will harness this important shift in order to set an agenda for the coming years.

"Optional rating systems, including LEED, helped set the stage for the recent transition to code-based and regulatory sustainable requirements like CalGreen and the International Green Construction Code, but requirements are quickly expanding to include actual performance and measured design outcomes," Lazarus says.

The upgrade of existing buildings represents the greatest design need and opportunity, with 57 percent of existing U.S. building stock—more than 40 billion square feet—constructed after 1945 and commonly burdened by insufficient urban design, poorly performing envelopes and systems, and large floor plates.

"From a sustainability and energy standpoint, the most important challenge for architects is to improve the performance of the existing building stock," says Carl Elefante, FAIA, principal of Quinn Evans Architects and a member of the AIA Board of Directors. "Our conundrum is that fascination with glossy photos on magazine covers of even the most innovative and imaginative new buildings misses the most important point: With only the rarest exceptions, new buildings add to the current carbon footprint. To reduce global warming potential, retrofitting existing structures offers the quickest, most reliable, and measurable opportunity. It is the best way for architects to have impact."

Market forces have driven architects to do just that. The recent economic downturn has compelled some sole practitioners and firms to target existing buildings. According to the 2012 AIA Firm Survey, 42 percent of small

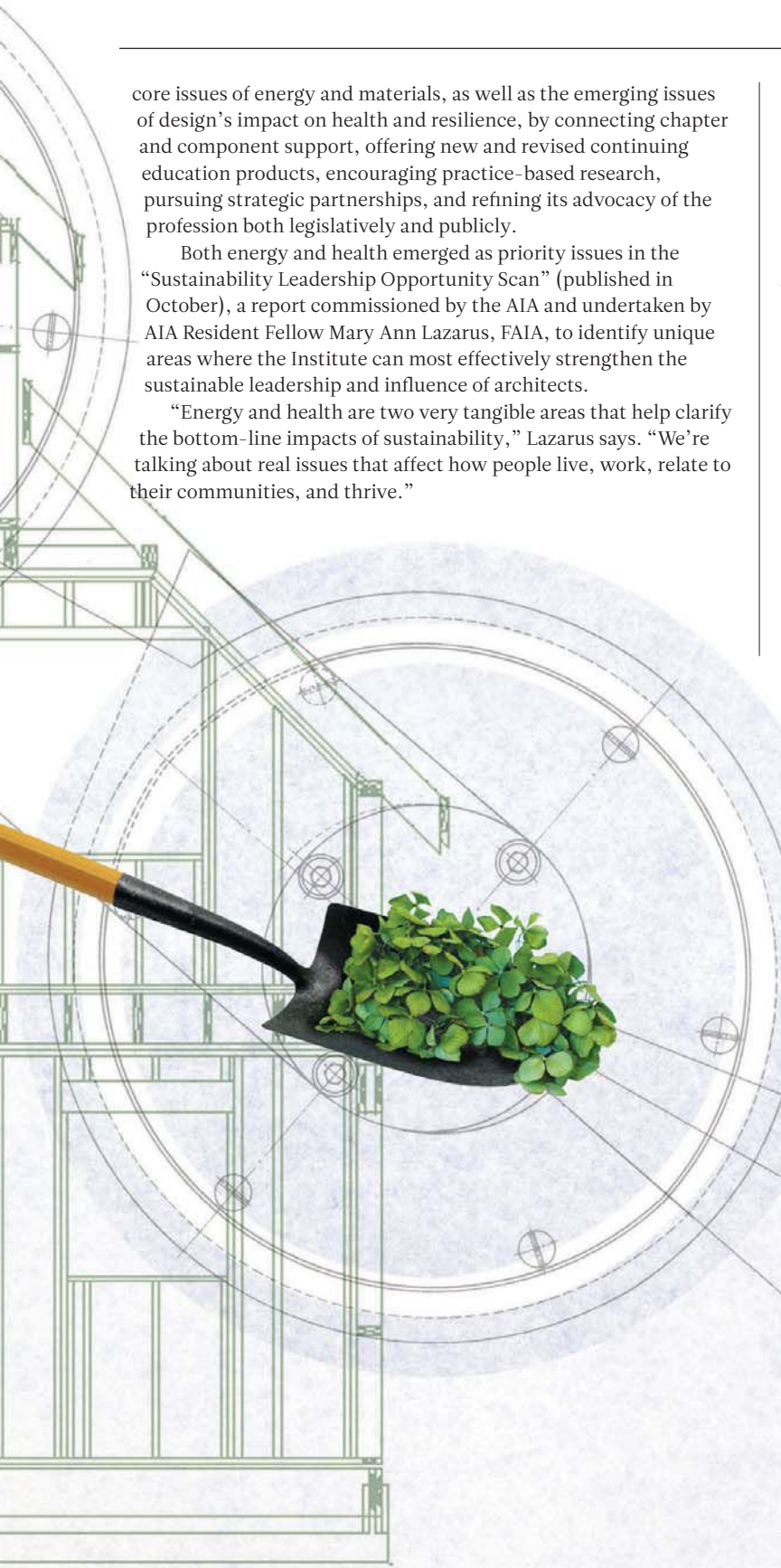


ILLUSTRATION: VIKTOR KOEN





projects today include renovation and rehabilitation work.

The AIA Health Action Plan recognizes perhaps the most important opportunities of our time: The built environment is a potential catalyst for addressing many of the nation's most pressing health and wellness challenges, including rising healthcare costs, an aging Baby Boomer population, and climbing obesity rates.

"I do believe we're in a collision of forces—a perfect storm of health issues," says Dr. Richard Jackson, Hon. AIA, a professor at the UCLA School of Public Health and host of the recent PBS series *Designing Healthy Communities*.

"We're looking at a 25-pound weight increase in adults since 1960 as well as a doubling of obesity rates and diabetes, not to mention an epidemic of depression."

Jackson attributes much of these alarming U.S. health trends to the chaotic American lifestyle, a lifestyle that has been enabled by the built environment.

"We have excessively engineered physical activity out of our daily lives," Jackson says. "I think architects need to create an America where the default option is the healthy option."

Fully engaging the profession around issues of design and health is going to require a shift in mind-set, according to Joyce Lee, FAIA, architect fellow at the National Leadership Academy for the Public's Health and co-author of *Active Design Guidelines for the City of New York*.

To illustrate the point, Lee compares the evolution of stairs and elevators in buildings to that of re-embracing natural ventilation in the age of air conditioning. "In many ways it's about bringing back and celebrating age-old design techniques that the profession has taken thousands of years to perfect, yet have fallen away over the last 50 years," she says. **AIA**

Two Paths Forward

The AIA Health Action Plan

- First, the AIA Leadership and the AIA Intern Development Program Advisory Committee have entered into discussions with the National Council of Architectural Registration Boards to explore opportunities to integrate public health concepts into the Intern Development Program, beginning in fiscal years 2014 and 2015.

- Second, a new Design and Health website (aia.org/practicing/designhealth) has gone live under Practicing Architecture, replacing the Center for Value of Design. The site serves as a social aggregator for individuals to self-select public health issues according to their interests. Other features include a discussion board and resource library populated by members.

- Third, with support from a \$20,000 matching grant from the National Endowment for the Arts, the AIA and the AIA Foundation will host a summit on Design & Health in April 2014. The event will organize and advance research that concerns the intersection of design and health measurement, convening practitioners from design, policy, and public health as well as leaders in government agencies, non-government organizations, universities, and the private sector.

In recognition of the efforts to measure health, the summit will seek to reconcile research and conversation around several focus areas.

The AIA Energy Action Plan

- First, the AIA 2030 Commitment Database will house project-level energy data provided by AIA 2030 Commitment signatory firms, with the ultimate goal of migrating current Excel-based reporting into an easy-to-use online database that draws on aggregated data to provide real-time feedback and benchmarking. "There is so much value to this kind of information and it's never existed before," says Rand Ekman, AIA, director of sustainability at Cannon Design. "Having access to a robust database will be useful on the ground in establishing energy targets on projects, and will help firms better understand how well our energy models are guiding us."

- Second, AIA advocacy for energy legislation, which dates back to the energy crisis of the 1970s, has increased with the growing recognition that architects play a vital role in helping buildings use less energy. The Institute's current advocacy efforts include supporting the Energy Savings and Industrial Competitiveness Act of 2013 (commonly known as the Shaheen-Portman bill), a bipartisan Senate bill that promotes energy efficiency within commercial and residential buildings. At the same time, the AIA has rallied support from nearly 1,000 small businesses to oppose a potential amendment to the bill, an amendment that will propose the repeal of a 2007 law that applies the 2030 energy target to federal buildings. "We are more than 80,000 members strong, and that collective voice helps amplify our message to policymakers at all levels of government," says Andrew Goldberg, Assoc. AIA, the AIA's managing director of government relations and outreach.

- Third, momentum is building for the AIA Awards Task Force recommendations to require each AIA Honor Awards submission to include predicted energy- and water-performance metrics, and a basic sustainable design integration narrative. Proposed to take effect with the 2015 awards program, the recommendations have gained broad national support from past AIA Firm Award recipients, AIA Knowledge Communities, and prominent firms. "We are quickly entering a new era of evidence-based design where the resource and carbon emissions reduction capabilities of our buildings can be reasonably predicted," says William Leddy, FAIA, chair of the AIA Committee on the Environment Advisory Group and a founding partner of Leddy Maytum Stacy Architects. "We feel this information should become an important part of our discussion of design excellence in the 21st century."

- And finally, responding to member demand for additional energy educational resources, the AIA is planning to develop a curriculum that addresses a range of energy design and energy modeling topics. Coursework will combine in-person workshops and online learning tools as well as a new generation of written guides that provide a deeper understanding on topics such as how to effectively work with energy modeling consultants and how to identify financing opportunities within the energy retrofit market. Materials will be informed by existing energy educational programs, most of which were developed primarily for engineers. **AIA**

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AIAPERSPPECTIVE

FORESIGHT FOR YEAR OF CHANGE



PHOTO: WILLIAM STEWART

IN THINKING ABOUT A QUOTATION TO OPEN WHAT WILL BE THE first of many conversations with ARCHITECT readers, I considered several possibilities: “The best of times, the worst of times,” “Everything starts somewhere,” and “Coming together is a beginning.” This last quote is from Henry Ford, who went on to say: “Keeping together is progress; working together is success.” I almost went with Ford. Yet, as much as his message speaks to me as a citizen and an architect, I took a different tack. Progress—and the consequences of inertia—nails why we need to embrace change.

Change can be unsettling. It pushes us out of our comfort zones. On the other hand, whether you’re a sole practitioner, a large firm, or even the AIA, limping along with the status quo is a sure ticket to being left in the dust. During my candidacy for AIA President, I spoke of the need for a vital transformation of our profession. In the face of a global economy, the impact of new technologies on doing business, the different social values of emerging professionals, and the pressing challenges of the 21st century, realigning our own professional culture is the best hope we have to build a preferred future, one in which we’re seen as relevant, even essential. And that means being open to change.

If there was any positive outcome of what has come to be called the Great Recession, it’s that the unrequested downtime forced many of us—including the AIA—to take a long, hard, and probably overdue look at what we were doing and how that squared with the challenges of a modern practice. Although not the only reason for a critical look in the mirror, it surely influenced the launching two years ago of the AIA’s Repositioning Initiative.

In the initial and comprehensive research phase, members were quite candid that the AIA of their parents was not the AIA that best

served the changing needs of today’s profession. Members want more attention paid to elevating public awareness of the value of their work in such areas as health, resiliency, productivity, and sustainability; more innovative and ahead-of-the-curve resources to foster successful business practices; more energy devoted to advocacy on behalf of the profession at every level of government; and more visionary leadership on behalf of the profession at large—all the while making the smartest and most cost-effective use of their investment in the AIA.

I begin my year as AIA President with the knowledge that real progress is being made on many fronts—new strategic partnerships with the likes of the Clinton Global Initiative, the Rockefeller Foundation, and MIT; new practice resources such as the *Foresight Report* (free to AIA members); and movement on the issue of how we govern ourselves toward the end of building a more nimble organization capable of making the best uses of member resources.

Our calling is to help make the world a better place. I’m eager to be your spokesperson, to carry that message into every arena in which decisions are made about the shape of our communities and the quality of life of those who live and work there. But I can’t be everywhere at once. That’s why I’m counting on each one of you, individually, collaboratively, and through the AIA, to elevate the public’s understanding and appreciation of the value of architects and architecture. Successfully communicating that message is essential to unleashing the full power of design. **AIA**

*Helene Combs Dreiling, FAIA,
2014 President*



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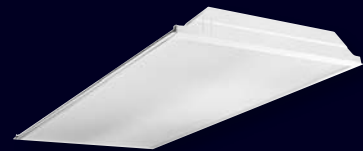
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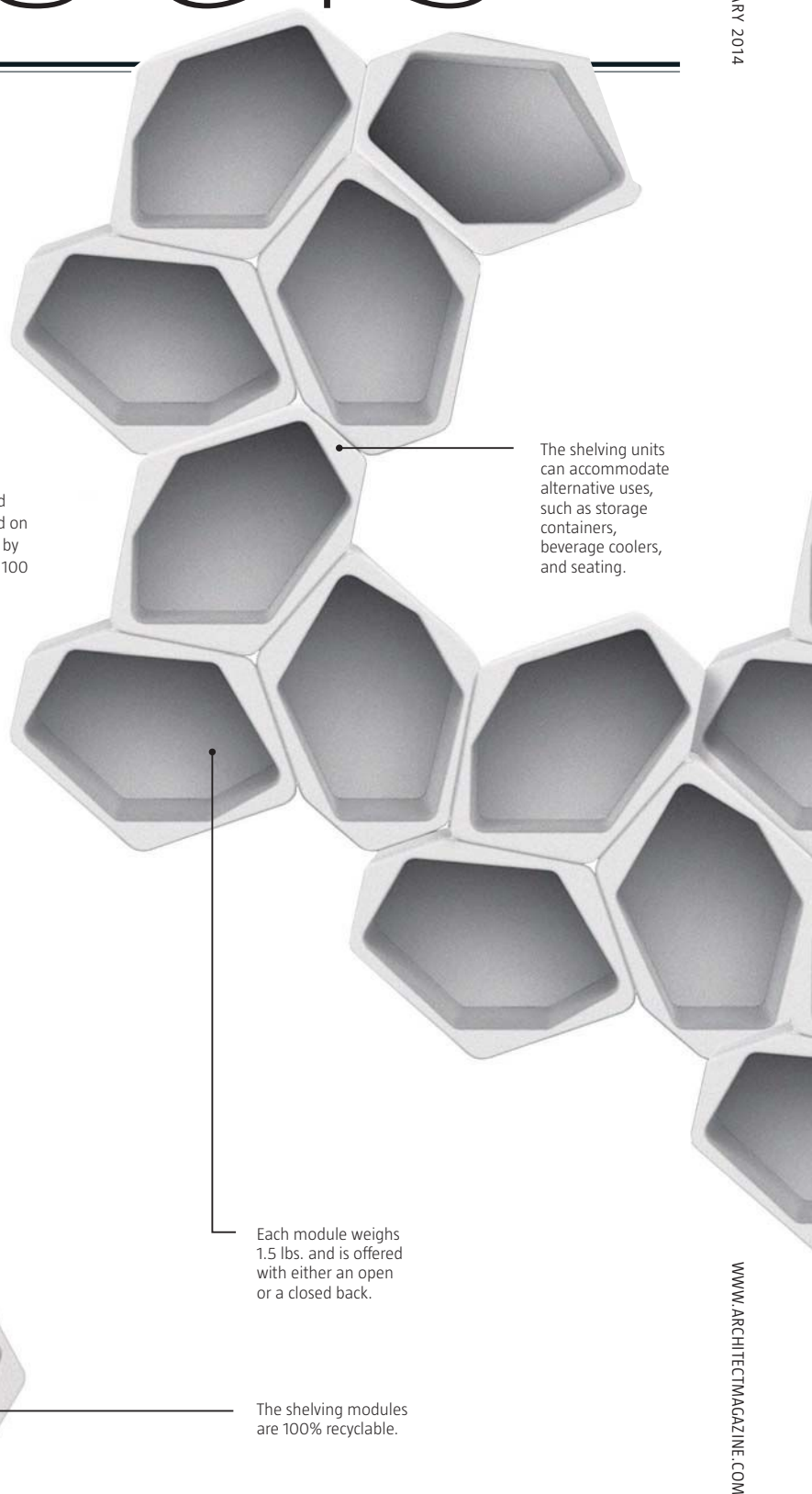
(Featured) LSER: Serrano® LED - LSER brings solid state technology into an architecturally styled luminaire.



PRODUCTS

BUILDING BLOCKS

Designed by German furniture maker **Movisi**, Build is a modular shelving system made of expanded polypropylene as a formaldehyde-free alternative to plywood, MDF, and fiberboard assemblies. Designed to be freestanding or wall-mounted, the identical units can be oriented on any of their peripheral surfaces and connect with posterior clips. Each cavity measures 20.5" by 15.15" at its widest points and is 11.8" deep. Available in black or white. hellobuild.com Circle 100



The shelving units can accommodate alternative uses, such as storage containers, beverage coolers, and seating.

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MATERIAL GOODS

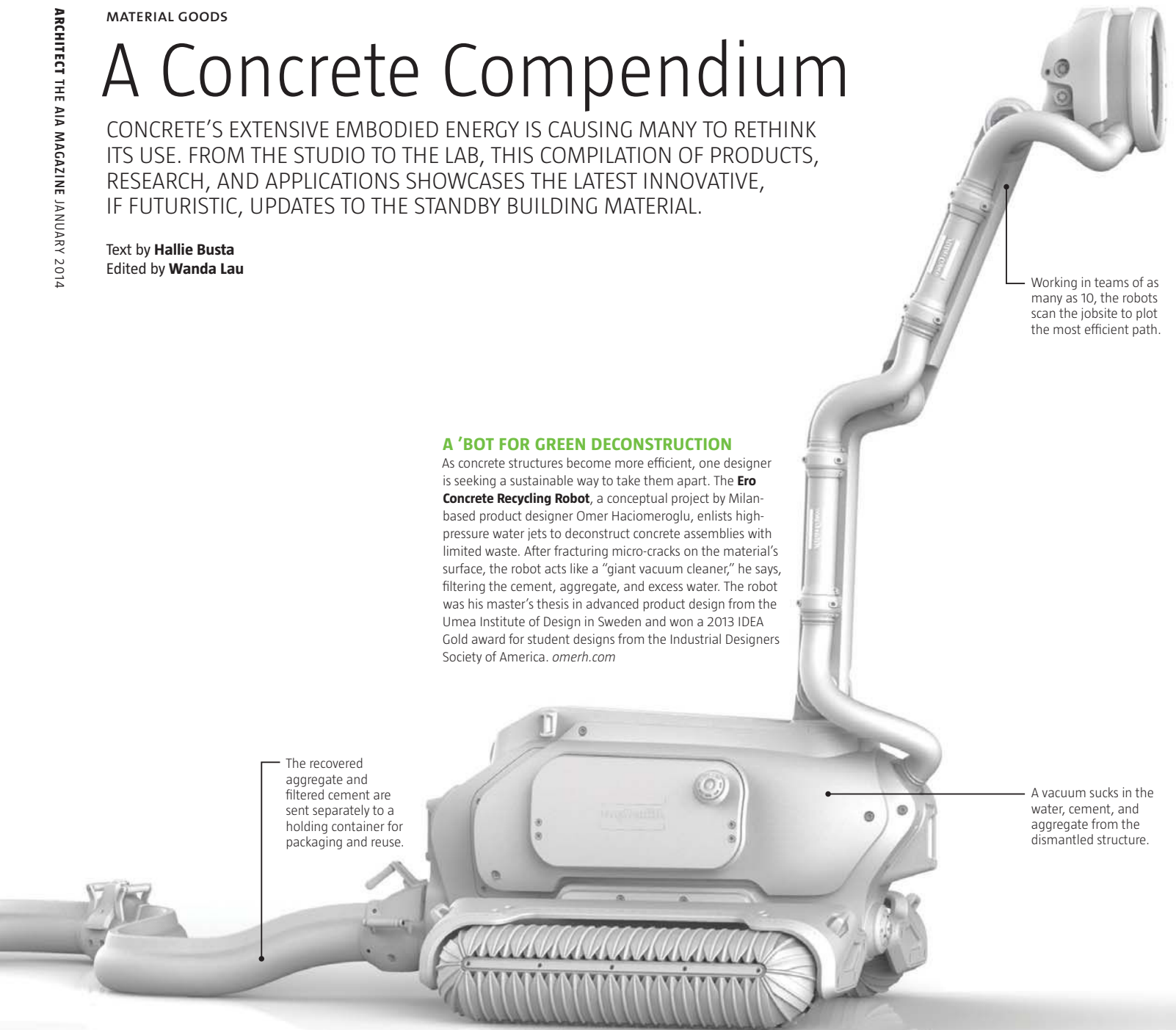
A Concrete Compendium

CONCRETE'S EXTENSIVE EMBODIED ENERGY IS CAUSING MANY TO RETHINK ITS USE. FROM THE STUDIO TO THE LAB, THIS COMPILATION OF PRODUCTS, RESEARCH, AND APPLICATIONS SHOWCASES THE LATEST INNOVATIVE, IF FUTURISTIC, UPDATES TO THE STANDBY BUILDING MATERIAL.

Text by **Hallie Busta**
 Edited by **Wanda Lau**

A 'BOT FOR GREEN DECONSTRUCTION

As concrete structures become more efficient, one designer is seeking a sustainable way to take them apart. The **Ero Concrete Recycling Robot**, a conceptual project by Milan-based product designer Omer Haciomeroglu, enlists high-pressure water jets to deconstruct concrete assemblies with limited waste. After fracturing micro-cracks on the material's surface, the robot acts like a "giant vacuum cleaner," he says, filtering the cement, aggregate, and excess water. The robot was his master's thesis in advanced product design from the Umea Institute of Design in Sweden and won a 2013 IDEA Gold award for student designs from the Industrial Designers Society of America. omerh.com



The recovered aggregate and filtered cement are sent separately to a holding container for packaging and reuse.

Working in teams of as many as 10, the robots scan the jobsite to plot the most efficient path.

A vacuum sucks in the water, cement, and aggregate from the dismantled structure.

IN THE LAB

Gorilla Cement

Scientists at MIT are taking a lesson from Corning's crack-resistant Gorilla Glass to reduce the effects of creep on concrete. Cement made with a higher amount of silica exhibits the glass's efficient molecular structure, leading to more durable concrete that needs fewer repairs. cee.mit.edu

Scrub Away

Lehigh University researchers have discovered that increasing the surface area of concrete cladding made with self-cleaning photocatalytic cement—which enables the panels to scrub pollutants from the air—does not affect the energy performance of the building envelope. brikbases.org

Corn in the Concrete

When Kansas State University researchers replaced 20 percent of cement with byproducts from the manufacture of cellulosic ethanol—which is made from inedible materials such as corn stover, wood chips, and wheat straw—they increased the strength of concrete by 32 percent. k-state.edu



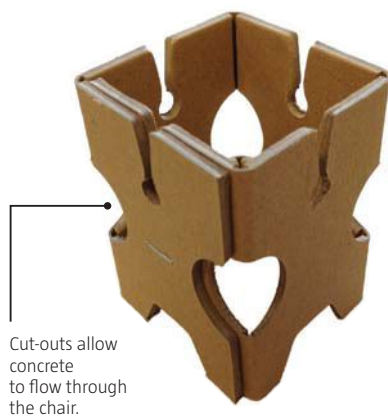
CONCRETE CONTRAST

U.K.-based designer Leigh Cameron crafts his practice on synthesizing material combinations. **Weight of Space**, a desk, contrasts concrete's man-made uniformity with wood's natural variation. theconcretefoundation.com Circle 101



SLEEK SEAT

Fiber cement's high strength-to-thickness ratio enables the minimal, rounded construction of this outdoor chair from Slovenian designer Tina Rugelj. **The Seater**, part of Rugelj's My Concrete Garden Collection, is made of fiber cement and weighs 81.6 lbs. An armrest on one side of the chair allows for a loveseat configuration when the chairs are paired. tinarugelj.com Circle 102



MINIATURE GREEN

Newark's **NewForm WireHolder** is a green alternative to standard rebar chairs for cast-in-place concrete. Made of recycled paperboard, it keeps mesh, cable, and reinforcing steel off formwork or the ground during pours. newarkgroup.com Circle 103



POURED WOOD

Not all floors that appear to be made of concrete actually are. The **Lath** collection of porcelain floor tiles by Milan-based designer Rodolfo Dordoni for Ann Sacks is one example, emulating concrete poured in wood molds in four colorways. annsacks.com Circle 104



FULL-SCALE PRINTING

Behrokh Khoshnevis is an engineering professor at the University of Southern California and the inventor of Contour Crafting technology, an automated fabrication process

that can rapidly prototype large-scale components in layers. Think robotic arms and extrusion nozzles that can 3D print entire buildings with cast-in-place concrete.

In your TED Talk on Contour Crafting, you say that the ideal material would be a cementitious mix with a 10,000-psi strength. That's one choice. We can use an array of cementitious materials, with different proportions of concrete, or polymers.

And this technology can build a 2,500-square-foot house in about 20 hours? That's right.

What impact will this have on architecture? This technology belongs in the CAD, CAM, and CIM [realms]—like 3D printing. You design something, and you just let the machine print it for you. As I understand it, architects have many intricate geometrical designs they aren't building because they're expensive to manage. With Contour Crafting, that will not be a concern.

What is the status of your work with NASA to develop Contour Crafting technology for building lunar and Martian structures? We have tested some approaches with a smaller machine. Now we are building a bigger robotics system to build a much larger structure. We are building landing pads, interlocking tiles, and blast-protection walls. We are not working on habitats or on pressurized structures at this point—that would be the next phase.

How far away is this technology from mainstream use here on Earth?

Early entry for small, low-income housing and emergency shelters could be as early as two years away from commercialization. It all depends on the funding situation. W.L.

➔ [Read the full Q+A at architectmagazine.com.](http://architectmagazine.com)





DETAIL

Cool Reliefs

FOR A LANDMARK BUILDING IN A CITY KNOWN FOR SWELTERING TEMPERATURES, CO ARCHITECTS HANDCRAFTED A COPPER HEAT SHIELD.

Text by **Logan Ward**

Photo by **Bill Timmerman**

The east façade of the Health Sciences Education Building rises like a desert mesa. “The building is essentially a rock, an earth form,” says CO Architects’ Arnold Swanborn, who worked with Ayers Saint Gross and German climate engineering firm Transsolar in choosing the most efficient building orientation and shape.

IN PHOENIX, temperatures can hover above 100 F for six months of the year. It seems natural then that for its project with the Arizona Board of Regents, Los Angeles–based CO Architects found inspiration for its design and cooling strategies in the surrounding desert and canyons. Located on the Phoenix Biomedical Campus, the six-story, 268,000-square-foot Health Sciences Education Building (HSEB) looks like an urban mesa, incised with self-shading fissures and a slot canyon courtyard topped by a polytetrafluoroethylene fabric roof, which blocks rain and diffuses sunlight, reducing courtyard temperatures by as much as 20 degrees on hot days.

The building’s faceted copper skin likewise serves a dual purpose, giving the HSEB its distinctive color and texture while improving energy

efficiency. During field trips to canyon country to study different desert microclimates, the designers were struck by the slot canyons’ aesthetics and noticeably cooler temperatures, says Arnold Swanborn, AIA, an associate principal at CO Architects and the project’s senior design architect.

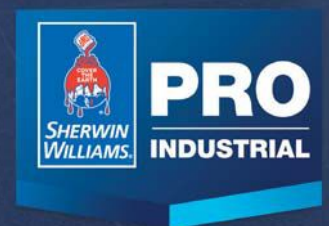
CO Architects thus designed a skin of custom-fabricated panels to reflect the colors and arrhythmic striations of the region’s canyons. Arizona is copper country, which made the metal a natural choice, though the team used recycled copper from Rome, N.Y., rather than local virgin copper. Horizontal pleats in the copper panels resemble the sedimentary striations seen in the canyon walls, but they also reduce direct sunlight much like the self-shading vertical ridges of the saguaro cactus.

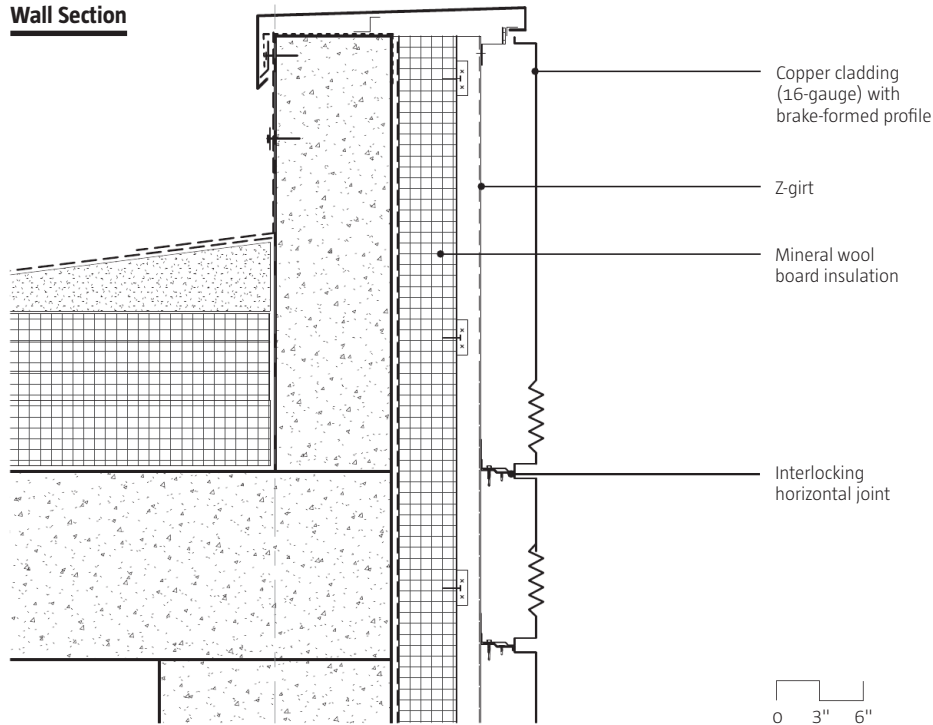


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Wall Section

Early in the design and development phase, CO Architects brought on Chandler, Ariz.-based fabricator Kovach Building Enclosures. “We wanted to use them as a resource,” Swanborn says. The collaboration allowed the team to optimize a skin design that uses 16-gauge copper coil in standard widths. Laid in a running bond pattern, the 11-foot-wide panels have 26 unique designs and vary in pleat size and heights of either 12, 18, or 30 inches tall. Thanks to modularity and a stroke of planning luck—the early purchase of 250,000 pounds of copper at a rock-bottom price—the team slashed 48 percent off the façade’s original estimate.

The nearly 6,000 panels took nine months to fabricate and seven months to install. Each panel was bent in a press brake, a punch-and-die machine tool. “The only part of the skin that wasn’t custom made was the screws,” Swanborn says. The cladding doubles as a solar chimney, reducing the building’s cooling loads by wicking hot air up and out of the envelope through a 4-inch air cavity behind the panels. Half-inch vertical joints between panels allow thermal movement in the vast field of copper.

DETAIL

Happening Above the Forum

Text by **Logan Ward**Photo by **Hufton + Crow**

WITH ITS DESIGN for an undulating geodesic dome roof, London-based Wilkinson Eyre Architects turned an underutilized infill space into the social and academic heart of the University of Exeter’s Streatham Campus. The 37,674-square-foot free-form timber grid shell—one of the largest in the United Kingdom—covers a 96,875-square-foot area called the Forum, which ties together the Great Hall, student guild, library, and other academic facilities with cafés, a shop, and a bank along a galleried “high street.” The soaring ceiling of oak-clad spruce timbers shelters the Forum from South West England’s wet climate and floods it with natural light, thanks to a mix of glass and ETFE (ethylene tetrafluoroethylene) panels.

Wilkinson Eyre director and project lead designer Stafford Critchlow and his team used wood for the roof to reference the tree-covered campus, which was once part of Reed Hall, a Victorian-era country house and botanical garden. A pure timber grid shell of woven wood would have taken too long to build. Working with engineering firm Buro Happold and subcontractor SH Structures, Wilkinson Eyre developed a hybrid grid of timbers linked by custom-fabricated steel nodes and fitch plates. Their success is clear: The iconic ceiling now appears on T-shirts, wayfinding signs, and event posters. “They used the grid-shell structure as a graphic, a kind of totem,” Critchlow says. “It’s become this sub-brand within the university.”



➔ Learn more about the timber grid shell at architectmagazine.com. The Detail series of innovative material-assembly solutions is proudly supported by reThink Wood.

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NEWLIGHT TECHNOLOGIES HAS DEVELOPED A PLASTIC THAT SEQUESTERS CARBON DIOXIDE AND REDUCES OUR NEED FOR PETROLEUM. IS IT TOO GOOD TO BE TRUE?

Text by **Blaine Brownell, AIA**

IF PLANTS CAN MAKE POLYESTER from air, why can't humans? That's the question California-based Newlight Technologies CEO Mark Herrema asked as his company embarked on a decade-long quest to develop the GHG-to-Plastic process, which isolates, polymerizes, and reassembles carbon and oxygen elements from greenhouse gases into a long-chain thermopolymer—essentially converting gases into solids. The resulting plastic resin, AirCarbon, can be used in lieu of petroleum-based plastics in formats ranging from films to injection-molded components.

Remarkably, AirCarbon is also economically competitive with conventional plastic. "As most sustainable solutions typically cost more and are not as strong as standard materials, the surprise here was just the opposite," says Norman Nance, vice president of marketing, architecture and design, and environmental initiatives at KI. The furniture manufacturer has an exclusive agreement with Newlight to use AirCarbon in the first industrially produced, carbon-negative chair lines.

A CHAIR FROM AIR

Using AirCarbon—which, for the most part, behaves like its petroleum-based counterpart—KI made its Strive (shown) and Grazie chairs with conventional tooling and minimal testing and adjustments to temperature and cure time. AirCarbon is also recyclable and biodegradable. KI is exploring the notion of a fully compostable chair, Norman Nance says, though it has no plans for one in the near future.

1:1

The weight of the KI chairs, including plastic and non-plastic parts, to the carbon dioxide equivalent of greenhouse gas sequestered.

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CENTER

Critique **Hawthorne on Eisenman's Conflicted Legacy 66** Next Progressives **Three Women Architects Who Just May Crack the Height Ceiling 78** Technology **Gaudi's Vision for the Sagrada Família Finally Gets Realized 86**



BSide6, a seven-story commercial building with ground-floor retail designed by Works Partnership Architecture. Turn to page 78 to learn more about the Portland, Ore.-based firm, which is led by Carrie Strickland and Bill Neburka.

CRITIQUE

CODA TO A CAREER

PETER EISENMAN'S CITY OF CULTURE WAS BORN DURING SPAIN'S BILBAO-INSPIRED ARCHITECTURAL BOOM. BUT AS THE PROJECT NOW LANGUISHES, WHAT DOES IT SAY ABOUT THE LEGACY OF ITS EMINENT DESIGNER?



The unfinished City of Culture complex looms high atop Mount Gaiás, about 2 miles from the historic center of Santiago de Compostela in Spain.

Text by **Christopher Hawthorne**
Photos by **Miguel de Guzmán**

IN 1985, the British architectural historian and critic Robin Evans wrote an essay for *AA Files*, the journal of the Architectural Association in London, called “Not To Be Used for Wrapping Purposes.” Ostensibly it was a review of a show of drawings and models by Peter Eisenman, FAIA, and of an accompanying catalog featuring essays by Nina Hofer and Jeffrey Kipnis. More accurately it could be described as a thoughtful but unrelenting and total dissection of Eisenman’s architecture, his writing, and his working method. Evans, who was 41 when the essay appeared and would die just eight years later, declared that the famously clotted and opaque prose in Eisenman’s many essays, far from explaining, justifying, or complementing his architecture, was in fact “an armored vehicle” protecting the built work from being understood; Eisenman’s ideas, Evans continued,

acted not so much as the theoretical basis of his buildings as “bodyguards” keeping them safe from jostling scrutiny.

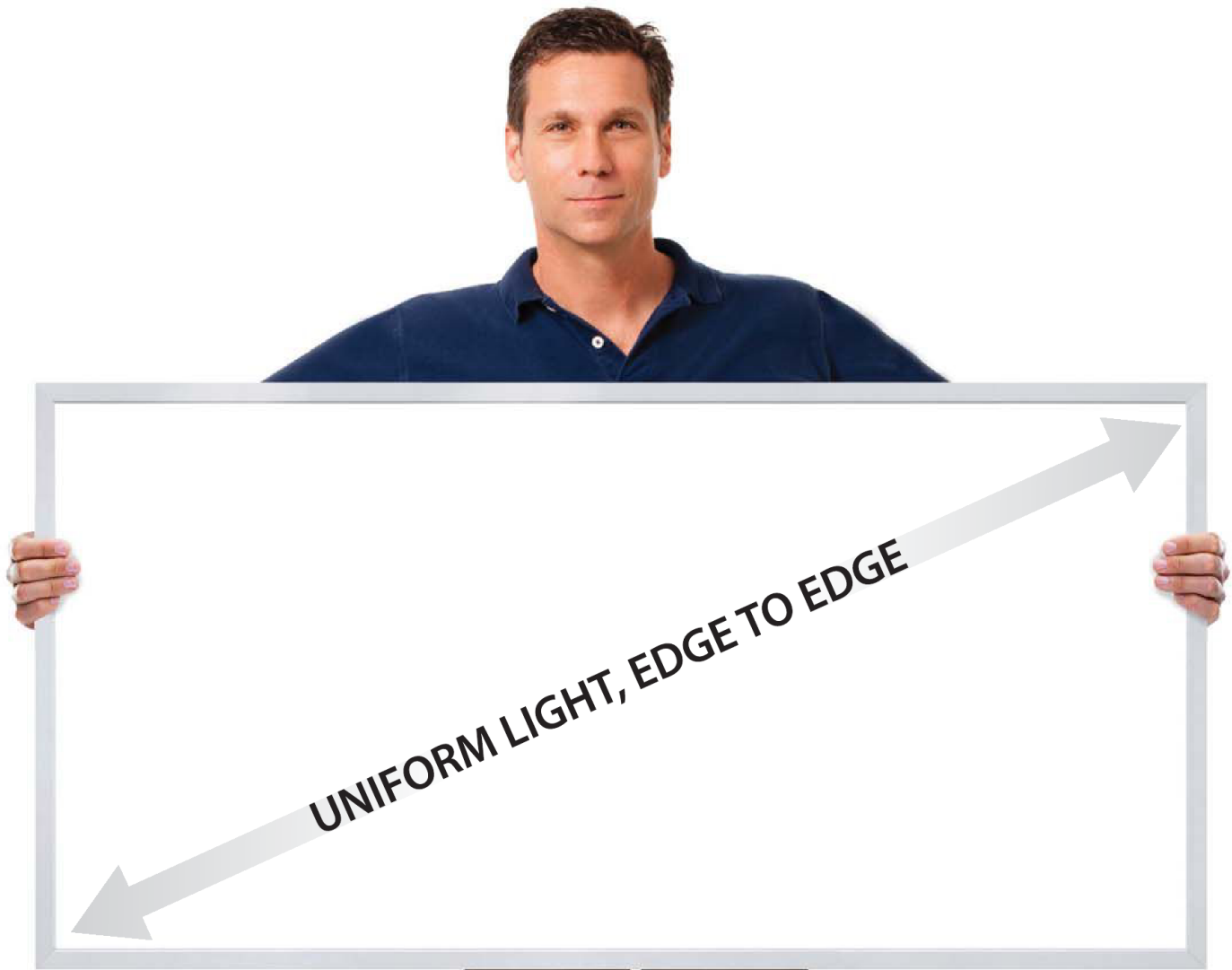
In addition, Evans argued, Eisenman was hardly the restless innovator he often proclaimed himself to be: “Eisenman is in fact a jealous guardian of the stable and fundamental features of architecture. He is radical in his fundamentalism, not in challenging fundamentals.” Evans called the architect’s work especially notable for its “changelessness”: “There is no question of ossification, since the architecture has never been in serious danger of development.”

There were a few glimmers of praise in the piece: Eisenman was well worth thinking and writing about, Evans assured his readers, as long as they kept in mind that the architect’s “projects are often much more interesting than their justification.” In fact, the critic went on, “Of all that well-established generation of well-known East Coast American architects

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perhaps he and [John] Hedjuk do not merit the dismissive gesture.”

Perhaps the strangest and most interesting quality of the essay is the fact that—although it reads in its earliest paragraphs like a classic take-down, on the order of Renata Adler’s infamous 1980 *New York Review of Books* piece on Pauline Kael—sections of it square quite neatly with the way Eisenman himself has described his approach and output over the years. This is particularly true when it comes to the question of how seriously we should be taking his buildings as buildings, as complete and self-sufficient works of architecture, given how much time and effort Eisenman has devoted to writing and public debate.

In fact, Eisenman has often been at pains to convince interviewers and critics that he cares deeply about building. It is “necessary to build,” he assured Iman Ansari in an interview last year. Though he was careful to make a distinction between drawing (“real architecture”) and construction (“real building”), he was straightforward about the value of seeing projects through to final form: “Manfredo Tafuri once said something very important to me. He said, ‘Peter, if you don’t build no one will take your ideas seriously.’ ... Architecture involves seeing whether those ideas can withstand the attack of building, of people, of time, of function, etc. Tafuri said history will not be interested in your work if you haven’t built anything. I think that’s absolutely correct. If I had built nothing, you and I wouldn’t be talking now.”

I THOUGHT ABOUT both that interview and about the Evans essay as I made my way late last summer to see the largest, and most deeply fraught, project of Eisenman’s career: the City of Culture complex in the city of Santiago de Compostela, in green and hilly northwest Spain. My goal, after all, was as wildly naïve as it was straightforward: to take the measure of Eisenman and his current place in architecture entirely on the basis of one of his built projects. And not one of the small houses in New England that helped make his reputation in the 1980s, but instead a huge connected complex of galleries, offices, reading rooms, and plazas that marks by far the biggest and most star-crossed efforts of his long and singular career.

Santiago de Compostela, the capital of Spain’s Galicia region, has been known since the Middle Ages as a pilgrimage site; today tens of thousands of Catholics, along with hikers looking for a picturesque route, come on foot across the Galicia region each month. Their destination is the city’s 1,000-year-old and riotously ornamented cathedral, which is said to hold the remains of the apostle St. James, brought to the city from Jerusalem in 44 A.D.

Yet as the 20th century neared a close, with Catholic Church membership declining across Western Europe, and Spain’s biggest cities—Barcelona and Madrid in particular—growing at the expense of its smaller ones, Santiago began to feel more and more isolated. After Frank Gehry, FAIA’s branch of the Guggenheim Museum opened to acclaim and giant crowds in Bilbao—less than 400 miles from Santiago—in 1997, the Galicians decided that they, too, needed a jolt of contemporary architecture.

The region’s president, Manuel Fraga Iribarne, who had been minister for tourism under Francisco Franco in the 1960s, decided to build an ambitious collection of cultural facilities, covering 173 acres, atop Mount Gaiás, about 2 miles removed from the cathedral. In 1999, he helped organize a high-wattage architecture competition. The finalists, along with Eisenman, included Steven Holl, FAIA; Rem Koolhaas, Hon. FAIA; Jean Nouvel, Hon. FAIA; Dominique Perrault, Hon. FAIA; and Daniel Libeskind, AIA; as well as the Spanish architects Ricardo Bofill, Juan Navarro Baldeweg, César Portela, and José Manuel Gallego Jorreto.

In its scale and ambition, in its timing and its inspiration, the project resembled a cross between Gehry’s Guggenheim Bilbao and Richard Meier, FAIA’s Getty Center in Los Angeles (1997). It also owed an obvious debt to Santiago Calatrava, AIA’s, white-on-white City of Sciences in Valencia, which was nearing completion around the time the Galicia campus was being planned. Spain was in the midst of boom-time optimism, producing a burst of new architecture that would be celebrated in the 2006 exhibition “On-Site” at the Museum of Modern Art in New York. The selection of Eisenman as the winner of the competition was therefore largely seen as the natural extension of Spain’s newfound architectural momentum, as well as a sign that regions around the country weren’t just going to take the Basque triumph at Bilbao sitting down.

That is not, of course, how the City of Culture is viewed today. Plagued by delays, controversy, and shifts in political leadership at various levels of the Spanish government, the project didn’t officially open until January 2011, and even that ribbon-cutting was a partial one. “It was born in the Spain of excess and is opening during an economic collapse, as a sort of monument to the construction bubble,” wrote one Spanish journalist; the British critic Oliver Wainwright called it “a bloated vanity project.”

Eisenman’s original scheme called for eight undulating buildings that seemed to emerge right out of the hilltop. Over time the plan was trimmed to six buildings, two of which—the library and archive—were ready in 2011.

By the time I visited, a large museum and central-services building had opened as well.





Visitors to the sprawling 173-acre City of Culture site arrive on the eastern end, where the parking lots are located (1). The library (2) and archive (3) rise on the southern edge of the campus. So do a pair of hollow towers (4), designed by John Hejduk, that were planned for another site in Santiago de Compostela but were installed here. The central-services building (7) and Museum of Galicia (8) stand apart from the other two completed buildings, separated by the unbuilt sites for the Music Theater and Performing Arts Center (5) and the Center for New Technology (6).



Visitors park in lots on the east end of the City of Culture complex and follow this red granite path that passes between the library and archive buildings, which opened in 2011.

The four completed Eisenman buildings cover a total of more than 600,000 square feet. The museum alone, opened to the public last year, is more than 220,000 square feet, substantially bigger on its own than Eisenman's best-known built projects, the Wexner Center for the Arts (1989) in Columbus, Ohio, and the Aronoff Center for Design and Art (1996) at the University of Cincinnati. The largest single building of Eisenman's career is the University of Phoenix Stadium, which opened in 2006; a collaboration with the firm HOK Sport (now Populous), it is very much an outlier in his body of work. He landed the commission in large part because he is a dedicated football fan, having held New York Giants season tickets since the 1950s.

The City of Culture, then, even as it awaits its final pair of buildings, is very much ripe for analysis as a measure of Eisenman's achievement as he nears his 82nd birthday later this year. That doesn't mean it feels anything like a finished product or an architectural whole; the missing buildings, which may never be constructed, keep the ensemble in a state of limbo. When I arrived by taxi one sunny, windy morning—there is no subway or light-rail service to the site—the campus was quiet. A lone jogger in a fluorescent green tracksuit made a loop around the wide, empty parking lot. (The lack of transit connection is one clue about how different this effort is from Gehry's Guggenheim; in Bilbao, the shiny new museum was just one part of a larger civic revival that included new transit lines, stations, bridges, and other infrastructure.)

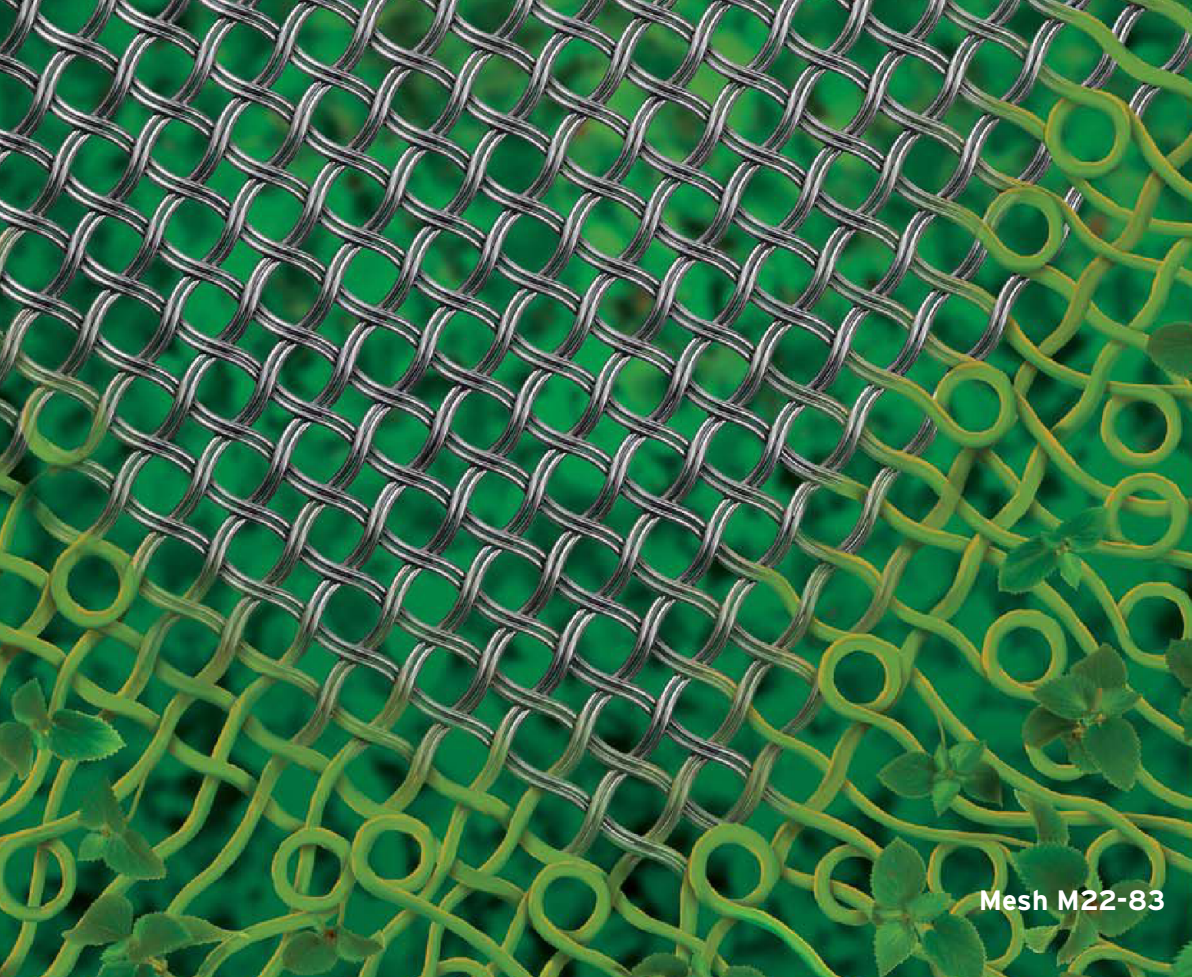
Still, the way the buildings were arranged on the hilltop, even as I viewed them from a distance of several hundred feet away, produced a visceral kind of architectural thrill. Like Thom Mayne, FAIA, Eisenman, whatever

you think of his philosophical stance or carefully tended persona, produces buildings with an undeniable physical power, even as they seem grandly aloof; the effect is almost paradoxical, a sort of standoffish charm.

My guide that morning was Antonio Maroño, who has been overseeing the project as its resident architect for a full decade. Before touring the buildings we met for a coffee in a café attached to the archives building. Talkative and sardonic at once, he was frank about the challenges that have plagued the City of Culture, and about their effect on Eisenman. "I think maybe he's afraid of dying before it's completed," Maroño told me.

After that chipper introduction, we set out to walk the campus. The City of Culture was conceived by Eisenman as an undulating piece of land art emerging from the hilltop; its heaving silhouette bears a strong resemblance to the architect's Memorial to the Murdered Jews of Europe in Berlin. In classic Eisenman style, its forms are derived by a series of clashing and deformed grids. There is hardly room in this magazine to describe each one of the deformations in detail. Eisenman began with the grid of the historic streets in the old center of Santiago; he combined that with a form meant to echo the scallop shells that Catholic pilgrims still carry with them on their way to the cathedral and then laid the distorted results atop the hillside. Inside the campus itself two more grids are at war. A larger one of 16 by 20 meters is marked by square columns, a smaller one of 8 by 8 meters by round columns. And over all of this Cartesian madness is laid a final filigree of "deformation lines" and "flow lines."

Eisenman's plan was to blanket nearly the entire hilltop with new structures. As it stands, the effect is discontinuous: the archive



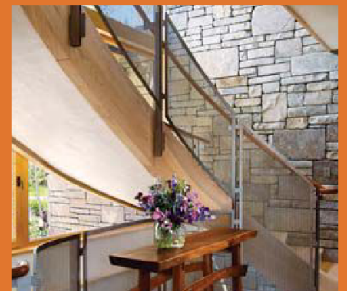
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Top: The central services building in the City of Culture has an especially vertical profile and houses administrative services, multipurpose rooms, and conference rooms. **Above:** The library features open stacks and a central core for rare books protected by ultraviolet-filtering glass.

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BUT WHAT STRUCK ME MORE THAN ANYTHING, AS ANTONIO MAROÑO AND I WRAPPED UP OUR TOUR, IS HOW PAINFULLY EXPOSED THE ARCHITECTURE OF THE WHOLE CITY OF CULTURE COMPLEX SEEMS.

and library huddle together on the south side of the site, while along the edge the two other facilities, the services building and museum, rise and fall like two parts of the same long tail. Because of the gap left in the middle of the complex where the theater is supposed to go, the disconnections that have always been a key element in Eisenman's formal language are redoubled by the sense of rupture in the construction schedule—and in the larger political culture that birthed the idea of building here, at this scale, in the first place. Façades that were supposed to be tucked into tight spaces, barely visible except in the narrow gaps between one building and the next, are now fully exposed, their mullions hardly robust enough to stand up to a long-distance view.

Each of the buildings, clad in large quartzite panels, seem to writhe and thrash as it attempts to break free of both the hilltop and Eisenman's confining grids. Both the floors and the walls are scored with lines and channels to mark the various ruling patterns. The effect is most impressive in the courtyards, plazas, and passageways paved with granite that snake between the humpbacked structures. Inside most of the overscaled buildings, it creates an odd combination of banality and disorientation, as if you'd wandered into an airport arrival hall designed by Seussian bureaucrats.

The museum building is the most extreme example of this quality. A massively inflated version of the Wexner, it adds layers of vertical complexity to the familiar Eisenman playbook of chaos and collision in plan. Dramatic as seen from the outside, rising and falling like a huge wave, the museum is fussily overwhelming inside, the product of an architect aiming vainly—in both senses of that word—to prove that he can take on the challenge of shaping large-scale interior space. It is hard to imagine any exhibition that could be seen to impressive effect in its galleries, except perhaps one on the upending power of architecture that is proudly sealed off from workaday concerns about function or natural light.

The campus is quite clearly, as other observers have pointed out, a product of boomtime thinking in Spain, the avant-garde

hilltop version of an abandoned suburban subdivision planned for hordes of home buyers who never arrived. Even if it is finished, the complex seems destined to seem a terrifically mannered time capsule from another era.

BUT WHAT STRUCK ME more than anything, as Antonio Maroño and I wrapped up our tour, and as the Robin Evans essay flashed back into my mind, is how painfully exposed the architecture of the whole City of Culture campus seems. Shorn of the protective rhetorical coat that Eisenman's essays and lectures about it have provided, the City of Culture, with its flesh-colored palette and stray limbs, looks, more than anything, vulnerable. Maroño told me that getting the campus built "has been a learning process for Eisenman and his team. He had to learn how to do a wall, how to do coping."

That might sound surprising given that Eisenman has been a practicing architect for a half-century. But there has always been something proudly naïve about his work, about its refusal to pay attention to craft and detail because they might stand in the way of architectural ideas in their purest and most powerful form. We tend to think of changelessness—of the kind that Evans discerned in Eisenman's work—as a sign of maturity, even wisdom, in an architect's approach. But it can also be a mark of arrested development, a kind of stubbornness. And therefore a kind of innocence. The layers of complexity in Eisenman's architecture have always marked not sophistication but intellectual bravado. After all, they appeared in his earliest, most developmental work and have never been stripped away.

At the City of Culture, this sense of vulnerability takes over the architectural experience to a degree that becomes almost unbearable. Even accounting for the delays and changes that have been out of Eisenman's control, this is not the late work of an architectural giant—as I'd expected it to be—but something far purer, more naked, more affecting, and less developed. Even now, incomplete and still politically controversial in Spain, the place is a tender ruin.

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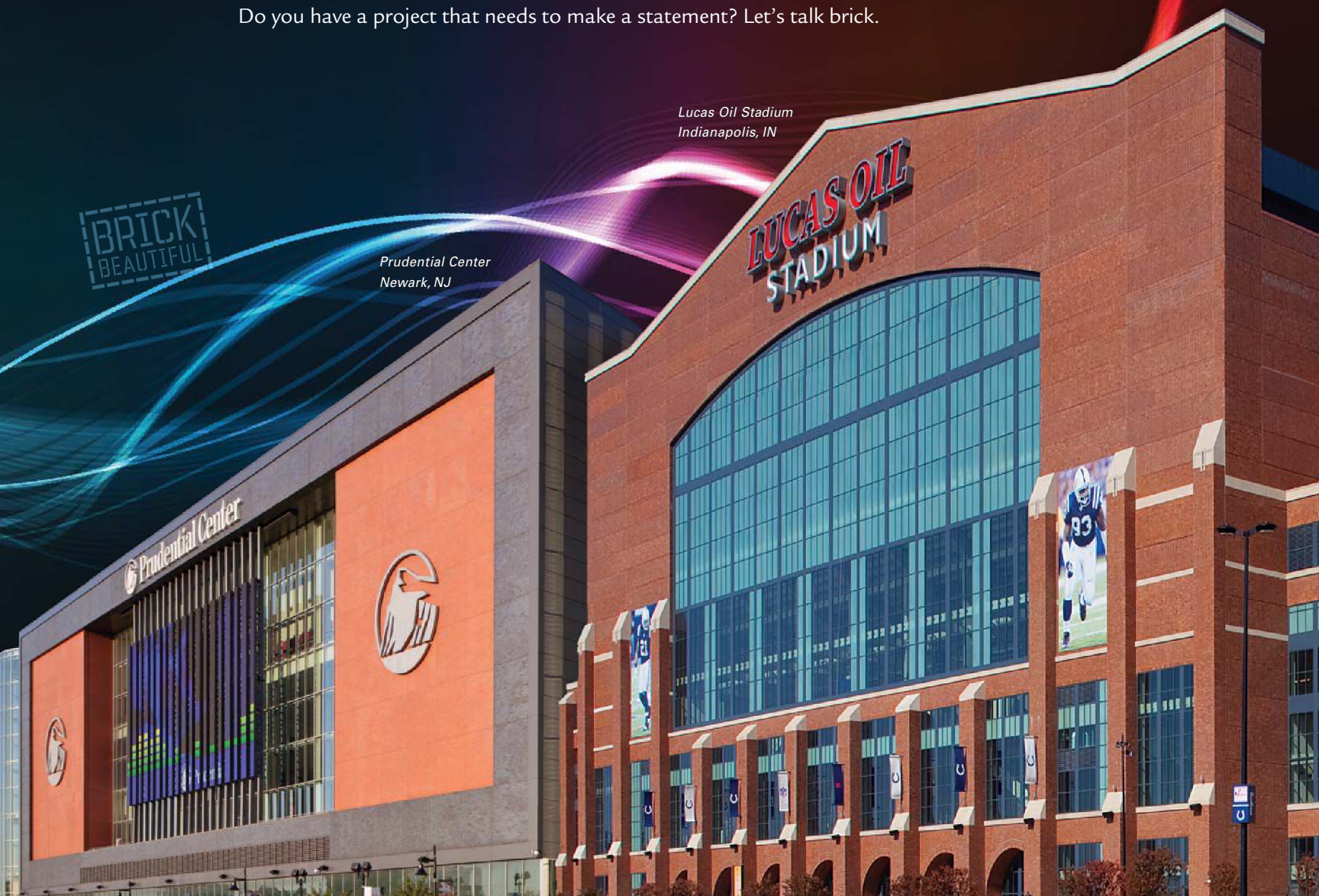
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NEXT PROGRESSIVES

A TALL ORDER

WHY AREN'T MORE WOMEN EMULATING JEANNE GANG AND BUILDING SKYWARD? HERE ARE THREE RISING ARCHITECTS WHO MAY JUST CRACK THAT CEILING.

Text by **Karrie Jacobs**Portraits by **Noah Kalina**

AT THE AIA WOMEN'S LEADERSHIP SUMMIT in Phoenix this past October, the Institute's third such gathering since 2009, I was struck by the amount of time spent discussing the obstacles that still impede the progress of women in the profession. I went to Phoenix expecting a showcase of accomplishment and innovation, but wound up hearing more about the need in this country—utterly undeniable—for paid parental leave. Sure, there were some impressive female practitioners showing their work: Marlene Imirzian, FAIA, who heads her own firm in Phoenix, and whose academic buildings have a wonderfully offbeat functionalism; and Johanna Hurme of 5468796 in Winnipeg, Manitoba, whose large scale residential projects are radically transforming what she describes as a “very beige city.” But I wanted more, not about how women were being held back, but how they are moving forward and leveling a playing field that should, logically, be less and less male dominated with every passing day.

My own incentive for being in Phoenix had a great deal to do with the wildfire campaign launched by Harvard Graduate School of Design students to force the Pritzker Prize committee to retroactively include Denise Scott Brown in the honor it had bestowed on her husband and professional partner, Robert Venturi, FAIA, in 1991, and with the subsequent refusal of the present-day committee to act. It seemed absurd, of course, for a prize to have been awarded to one half of a collaborative team while ignoring the other half. But the incident made me think hard about the whole business of awarding prizes to individual

architects. Given that anyone with even a passing familiarity with architectural practice knows how deeply collaborative it is, it's delusional that prizes are handed out as if Ayn Rand's Howard Roark represented a realistic professional model.

Just recently, in December, the AIA awarded its first Gold Medal to a woman, the formidable early-20th-century California architect Julia Morgan, who died in 1957. She was a pioneer, to be sure, the first female graduate of the École des Beaux-Arts. But it would have been so much more inspiring and courageous to have bestowed that Gold Medal on a living, practicing woman.

One possible choice might be Jeanne Gang, FAIA, who, in fact, presented Morgan's nomination to the AIA board. Gang is best known for Aqua Tower in Chicago, the residential and hotel high-rise completed in 2010. At 82 stories, it is considered the world's tallest building with a woman as lead designer. My assumption is that other women will soon follow in her footsteps and—never mind the prizes—a woman will someday design the world's tallest building, period.

I asked Gang what might prevent women from besting her 82 stories and, no surprise, she mentioned developers: “In the developer's world, there is, generally speaking, an unfamiliarity with women designing tall buildings. So in order for women to win more commercial projects, I wouldn't say that women architects need to change. The change has to be initiated from the other side of the table—that is, more enlightened developers are needed.”

While it's hard to argue with Gang's logic, it's worth pointing out that women have long been involved with the design of very noteworthy buildings. Natalie de Blois of Skidmore, Owings & Merrill (SOM), who died in July, worked hand-in-glove with Gordon Bunshaft on the iconic Lever House in New York. And Phyllis Lambert, Hon. FAIA, sitting on the client's side of the table, greatly influenced the design of New York's Seagram Building. But they get lost in a history that prefers its heroes to be solitary and male.

Once I began asking around, I realized that women today occupy pivotal design roles on some of our most significant—and tallest—buildings. Nicole Dosso, AIA, 38, for example, is the technical architect who leads the SOM team that oversees the construction of what is now considered the tallest building in the United States, One World Trade Center. David Childs, FAIA, is credited as the tower's designer, but Dosso is leading the day-to-day work of getting it built. The SOM publicist who told me about her boasted, “She's always the only woman at the table.”

Women, of course, tend to be superb collaborators, an essential attribute as the growing complexity of building structures and systems demands an ever-more-integrated team effort. But this collaborative tendency also tends to obscure women's contributions in a culture that puts a premium on stardom. While I'm not convinced that it matters who wins the medals, I think it's crucial to acknowledge those women who are slipping past whatever barriers remain and, in their drive to innovate and excel, are transforming the profession.



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A handwritten signature in black ink, appearing to read 'Doug Clausen'.

Doug Clausen
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Marianne Kwok has helped design numerous towers during her career at Kohn Pedersen Fox (KPF), including the 2.6-million-square-foot Samsung Seocho project in Seoul, South Korea (bottom).



MARIANNE KWOK

DIRECTOR, KOHN PEDERSEN FOX ASSOCIATES, NEW YORK

THE MOST STRIKING THING about Marianne Kwok, 50, the design team leader for the massive Hudson Yards project in Manhattan—KPF’s part of the job includes the master plan and two commercial towers rising 1,227 and 895 feet—is that she’s not the only woman at the table. “I try for a 50–50 mix,” she says of her team, and mentions that she’s also seeing more diversity on the client’s side: “It’s great to see more and more women at the table at these big development firms.” Note that the project is considered the baby of KPF founding design partner Bill Pedersen, FAIA. “He sets the design direction,” says Kwok, “but it’s very much a collaboration and a team dynamic.” Or, as Pedersen frames it, “Marianne is superb at getting everybody involved and allowing everybody to contribute in a way where they feel meaningful to the project.”

I ask Kwok, who has designed tall buildings all over the world, whether it bothers her that no one says, “That’s a Kwok tower.” She replies, “No, not at all. I’m not that kind of person.” At KPF, she adds, “I don’t think that any of us need that. There’s such satisfaction in seeing a contribution to the skyline. It doesn’t need to be a Marianne Kwok building.”

In her response, Kwok, who cuts a stylish figure in a slim black tunic and cropped pants, offers insight into one mystery about women in the profession: Why they are generally invisible when it comes to major architecture awards, even though they are increasingly pivotal within large firms. After nearly 20 years at KPF, Kwok has the skills and experience to oversee a hugely complex \$20 billion undertaking, a development erected on a deck over active railyards, without having the ego to claim it as her own.

After Kwok got her graduate degree from the Harvard University Graduate School of Design in the early 1990s, her story began like that of many young female architects: She took on small-scale projects with her architect husband, John Ostlund, in her hometown of Vancouver, British Columbia. But the city was too sleepy then for her ambitions, and she didn’t believe she and her husband could achieve the “balance” necessary for a stable professional partnership. Instead they moved to New York and, through friends at KPF, Kwok landed a job. Her first projects were modest ones, a three-story building in Wisconsin, an art gallery in South Korea.

“And then I started working in London, and the scale got bigger.” In school, she says, no one discussed the set of skills associated with the design of tall buildings. For example, no one taught her the art of configuring elevators. She theorizes that because they don’t learn how to design skyscrapers in school, “fewer women gravitate toward firms to do towers.” Kwok, for her part, finds the design of towers, like the 1,378-foot-tall Suzhou International Fortune Plaza tower she worked on in China, “exhilarating.”

“When I first started here, I never imagined it would be [for] so long,” she says. “But you start working on a project and it’s super interesting, and the next one comes along.” Kwok found mentors who helped her stay in the game while having two children. Today, she’s one of six female directors at KPF (out of a total of 27); 209 of the firm’s 629 employees worldwide are women. She argues that if you give women challenging work, they’ll be much more likely to return after childbirth: “You look at that little face. It’s impossible to tear yourself away,” she says, and pauses. “Unless there’s something really compelling to go back to.”

CARRIE STRICKLAND WORKS PARTNERSHIP ARCHITECTURE, PORTLAND, ORE.

TYPICALLY, WOMEN WHO OWN architecture firms do so in tandem with their architect husbands who they've been with since grad school. By contrast, Carrie Strickland, AIA, 39, met her business partner, William Neburka, 47, on what might be described as a professional blind date. A local developer named Brad Malsin thought they might be able to handle his adaptive reuse projects better than any existing team. "I had a project coming up that I thought would be potentially interesting for their collaboration," Malsin recalls.

Strickland, then 27, was working for a small firm and had proved adept at helping Malsin negotiate Portland's complex regulatory environment. "I barely knew [Malsin]," she says. "I barely knew the codes I was dealing with, but I just figured it out." Malsin kept urging her to quit her job and start her own firm. She kept saying she'd like to but couldn't do it alone. "He literally put his hand on my shoulder and said, 'I know another architect.'"

In September 2004, Strickland and Neburka met at a Portland bar, the Aalto Lounge. By the time they'd finished their drinks, they'd discovered a shared enthusiasm for doing great design on limited budgets, and had agreed to quit their respective jobs. With the promise of Malsin's commission as an incentive, they set up shop in 2005. "Then, of course, that big project that we left to start the office for—the client let it fall out of contract almost immediately after I'd given notice," Strickland says. The project, the Olympic Mills Commerce Center, an \$11 million refit of a 1920s cereal mill, soon came roaring back, however, and Works Partnership Architecture was born.

The firm has won myriad awards and has grown beyond what the two partners envisioned at the Aalto Lounge: "Bill and I had written on our bar napkin how many people we wanted to have in the office." The number was 15, and they're now up to 16 people. The pair works on every design together, Neburka says: "Our standard thing is that together we make one really good architect."

On the question of gender, Neburka says that with his male architect friends, "there's often a little bit of ego involved." He continues:



Carrie Strickland founded Works Partnership Architecture nine years ago, along with her partner Bill Neburka. The firm's projects include the Morrisson Street Apartments (left) in Portland, Ore.

"While I don't say our partnership is devoid of that, I think we have set all that stuff aside. I don't know if that could happen as easily with a man." When I ask Strickland if there's a challenge to being a woman architect, she replies, "It's kind of like being a left-handed boxer." Because most boxers are right-handed, she says, "you're going to be able to surprise somebody with a really great left hook." She notes that while she's feminine in appearance, favoring long hair and skirts, "I also drive a Ducati Monster and I curse a lot."

Today, the bulk of their built work is commercial or mixed use. Their aesthetic is

stripped down and industrial; they think of themselves as pragmatists. One of their most elegant buildings, BSide6, is a vastly updated version of the arcaded structures that gave one stretch of Portland's east side its unique character. Their use of post-tensioned concrete gave the building thin floor slabs, allowing them to squeeze seven stories into an envelope that would normally contain six. Strickland doesn't plan on designing the world's tallest building, but she does have dreams: "I want to do a true high-rise tower in Portland"—something about 500 feet tall, roughly 200 feet taller than the city's "squat" zoning envelope allows.

Jackilin Hah Bloom and Florencia Pita (far right) have collaborated on such projects as the Taichung City Cultural Center in Taiwan (below). They telecommute between Bloom's office in Culver City and Pita's in downtown L.A., often brainstorming via iChat or text.



FLORENCIA PITA AND JACKILIN HAH BLOOM PARTNERS, PITA & BLOOM, LOS ANGELES

THE PARTNERSHIP of Florencia Pita, 40, and Jackilin Hah Bloom, 43, is young and untested. The work featured on their website is entirely speculative, unbuilt, and, at first glance, has a dizzily biomorphic aesthetic. Both partners teach at the Southern California Institute of Architecture (SCI-Arc), a hothouse for experimentation, and have practical experience working for other architects, most notably Greg Lynn, himself something of a visionary. At Lynn's office, where Bloom spent nearly a decade and Pita several years, they collaborated on projects large and small, including flatware design and an entry to the 2002 World Trade Center competition. "We had this dynamic working relationship back then," Bloom says. "It seemed really natural for us to move into our own practice working together on large competition projects."

Look closely at their renderings of irregularly shaped buildings, distinguished by a color palette that is shockingly bright, and you'll notice something more subtle at play: "I think that ornament is at the core of the research that we work on," Pita says. "We do embrace ornament." Adds

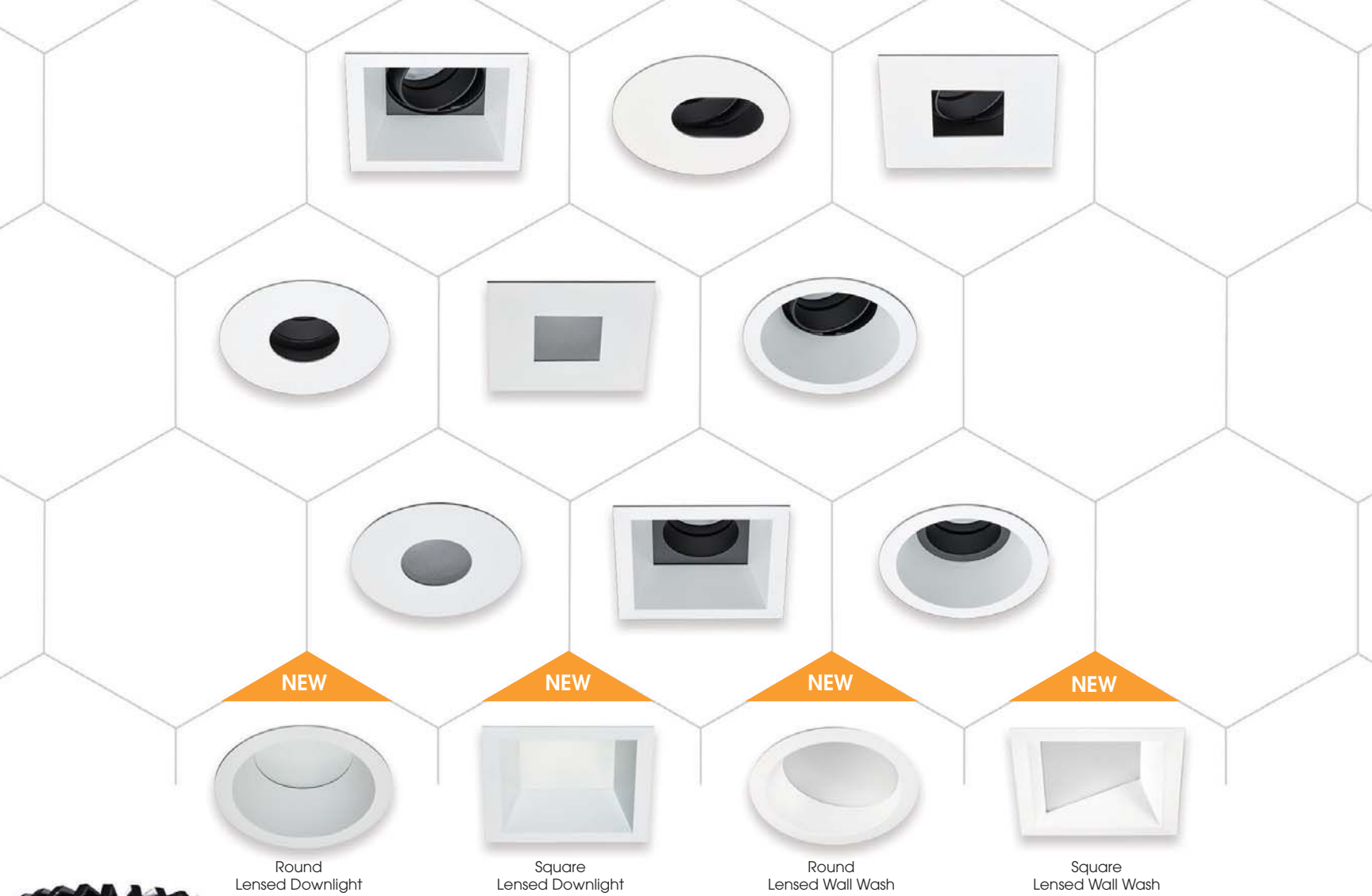
Bloom, "We're looking into printing, graphics, and super intense coloration on different types of panelized systems." According to Lynn, both women got a five-year jump on the current obsession with 3D printing and other computerized fabrication techniques at his office. "They're gearheads," he says, a compliment more commonly given to men. But Lynn argues that Pita and Bloom are of a generation in which enthusiasm for technology cuts across gender lines. "It's one of the really great things about them," he says. "They're really into rethinking the way things get made."

One of the things they're rethinking is ceramic tile. Pita and Bloom are interested in applying photographic images and patterns to tiles and other forms of cladding. In a Maribor, Slovenia-based housing proposal, they suggested turning printed tile into an ingenious roofing material, "where each tile is a pixel, completing a geological satellite image," as they describe it on their firm's website. In a competition entry for Taichung City Cultural Center in Taiwan, they clad a curvaceous exterior with a type of pattern that would normally be found on a traditional silk

cheongsam. "It happens to be quite floral and exuberant," Pita says. "There's no fear in using something floral just because we're women. Maybe in a different era we would have shied away from being inspired by that." She insists that they're post-feminist and post-fear. "Too girly," Pita adds, is no longer an issue.

What's striking about Pita & Bloom is that it's a partnership of two female visionaries—each with a pair of young children at home—reaching for the highest, riskiest ground in the profession. With their technical acumen, they may indeed herald a generational shift away from a whole menu of stereotypes. For example, Lynn points out that Pita made a conscious decision not to work with her architect husband, Hernan Diaz Alonso, another SCI-Arc progenitor of architectural spectacle. "I think she's very smart not to do it," Lynn says.

Pita & Bloom recently made the shortlist for the Young Architects Program at Museum of Modern Art PS1 in Long Island City, N.Y. A win there would surely help them to ground their practice and land some paying commissions. "Maybe a 2,000-square-foot scale" for starters, says Bloom, "not a 50,000-square-meter scale."



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TECHNOLOGY

END IN SIGHT

WITH NEWFOUND MODELING CAPABILITIES AND INSIGHT INTO ANTONI GAUDÍ'S VISION, THE CHIEF ARCHITECT OF THE BASÍLICA DE LA SAGRADA FAMÍLIA AIMS TO COMPLETE THE LONG-STALLED PROJECT BY 2026.



Text by **Ian Volner**

AS CONSTRUCTION DEADLINES GO, 130 years certainly seems like a generous allowance. But in cathedral years, that's almost a drop in the bucket. After all, Germany's Cologne Cathedral broke ground in 1248 and wrapped up centuries later in 1880. The still-rising Cathedral Church of Saint John the Divine in Manhattan is already 121 years old, with no completion date in sight. Other structures, such as England's Coventry Cathedral, were generations in the making, only to be destroyed by war, fire, or structural failure and then repaired or built anew. From the nave to the transept to the last finial of the westwork, creating a church fit for a bishop entails a long-term commitment.

The fact, then, that the *Basilica i Temple Expiatori de la Sagrada Família* in Barcelona, Spain, first got underway 13 decades ago would be almost unremarkable but for the particular character of the basilica itself, and of the man who designed it. The massive church—technically not a cathedral by Catholic law, the official seat or *cathedra* of the bishop being the nearby *Catedral de la Santa Creu*—is unlike any other house of worship in the world with its well-known, spiky, fanciful, mud-castle-like ensemble of swirling towers and twisting columns. Its architect, Catalan-born Antoni Gaudí, was among the giants of European architecture and a major transitional figure at the moment when 19th-century Beaux-Arts historicism was giving way to 20th-century

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In September 2013, the Sagrada Família Foundation released a video showing the construction phases that will lead up to the basilica's completion by 2026. **Top to bottom:** The basilica as it stands today; construction of the support structure and dome for the tower of Jesus Christ succeeds that of the tower of the Virgin Mary; the rise of the Apostle towers behind the Glory façade; and the completion of the tower of Jesus Christ.

Modernism. Sagrada Família is the fullest expression of his highly idiosyncratic vision.

Since its construction was first halted in 1936 amidst the tumult of the Spanish Civil War, the basilica's state of incompletion has become part and parcel of its very identity: The cranes, rubble, and half-finished sculptural friezes around the site seem like permanent fixtures of the streetscape. Funding holdups, strikes, and problems deciphering Gaudí's intentions have led to endless delays since construction resumed in 1939. Many have simply come to assume it will never be done. Toni García, a Barcelona native and culture writer for Spanish newspaper *El País*, joked that the state of affairs has entered the local patois: "When you want to say, 'Oh, that'll never happen,' you say, 'Sure—it'll happen when Sagrada Família is finished.'"

But now it seems that the proverbial pigs may be taking flight. In 2012, Barcelona-born architect Jordi Fauli assumed control of the project. The Construction Board of the Sagrada Família Foundation, the organization in charge of fundraising and advocacy for the project, could hardly have picked a more qualified candidate. Along with completing a doctoral thesis on the church's design, Fauli has spent more than 20 years as a junior architect on the team overseeing the church's construction.

Shortly after his appointment as the chief architect of Sagrada Família, Fauli surprised everyone by declaring that the project would be finished far sooner than previously thought. "We anticipate finishing the six central towers around 2020, and completing the overall architectural form of the project around 2026, a hundred years after Gaudí's death," he said, adding this not-insignificant caveat: "provided circumstances allow us to follow the current rhythm." However long it may last, Fauli and the project team, which has comprised as many as 300 workers, stonemasons, sculptors, bricklayers, and designers, have managed to achieve this accelerated pace by establishing a firmer idea of what the building should really be, and what tools they should use to make it possible.

Last fall, the Construction Board of the Sagrada Família Foundation released a new video showing a time-lapse projection of how construction will unfold over the next 13 years. The 76-second clip uses aerial photography and sophisticated digital imaging to show how new spires will spring up around the perimeter, how the masonry cladding will wrap around them, and how the pointed tympana will fill out the façade. The central dome will be topped by an enormous, apparently openwork, tower, completing the symbolic conceit that had been at the heart of Gaudí's scheme: 18 individual spires to represent the prime dramatis personae of the New Testament, 12 for the apostles, four

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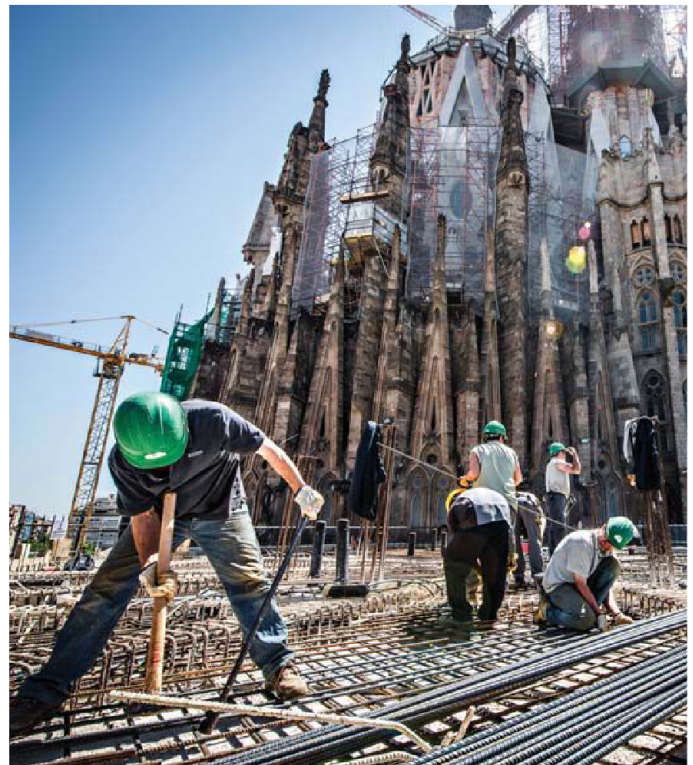
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CENTER

“BEFORE [WORKERS] BUILD [A] SECTION, WE’LL SEND THE MODEL TO A GROUP OF ARCHITECTS WHO CAN GIVE INSIGHT INTO WHAT GAUDÍ WOULD HAVE THOUGHT.”

— GRAHAM LINDSAY, EUROPEAN SALES DIRECTOR, 3D SYSTEMS



Top: An assortment of study models of the church and its components made over time by architects, modelmakers, and designers fill the model room in the basement of Sagrada Família.

Above: Workers reinforce the project site to accommodate the anticipated construction of new structures, such as the Glory façade at the project's south entrance, as well as towering additions to the existing structure.

COURTESY EXPIATORY TEMPLE OF THE SAGRADA FAMÍLIA

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for the evangelists, one for the Holy Virgin, and another for Christ himself in the middle.

The video is the definitive vision of the future church, the culmination of years of archival research—including the discovery of a trove of Gaudí documents in the Historic

Archives of the City of Barcelona several years ago—to determine Gaudí's intentions and to help the foundation make tough decisions about what could and couldn't be done. "We commissioned the video when we had almost completed the investigation of the remaining

parts of Gaudí's design," Faulí says. "For the first time, we had sufficient material to produce a virtual model."

The video also signals the vast technological leaps that have changed every aspect of the project, Faulí says. "This model couldn't be produced before, primarily for technical reasons—advances in computer power, precise 3D scanning of the existing building, and 3D prototyping allowed us to work at a scale and a level of detail hitherto impossible to achieve." Being able to model the building better goes hand in hand with completing it faster: the decorative details that once had to be hewn by skilled artisans are now done by fast-moving CNC (computer numeric control) cutters working from digital patterns; structural problems that would have daunted previous builders can now be solved with the click of a mouse.

Even more subjective design unknowns are now under the sway of the new computer-driven approach. Graham Lindsay, European sales director for advanced printing manufacturer and services provider 3D Systems, headquartered in Rock Hill, S.C., has been helping to develop prototype models of specific ornamental and structural units for Sagrada Família for several years. "One of the things that will happen is that we'll print off a part in three or four different styles," he says. "Then before they build that section, we'll send the model to a group of well-known, renowned architects who can give some insight into what Gaudí would have thought, and they'll discuss which part Gaudí might actually take." The process helps assuage the concern of those who worry the current band of builders is departing from the conception of their illustrious predecessor.

Such concerns do linger, however, and the project remains a contentious one. In particular, there is the tricky question of whether a building so long incomplete even should be finished, or whether Faulí and his collaborators are at risk of turning a beautiful semi-ruin into a half-baked mock-up of Gaudí's ideal. Or worse: They could fail again to finish on schedule, leaving a mock-up that is still only partially complete.

But Faulí, noting the mostly positive reaction of new visitors to the construction site, remains convinced that the final product will live up to expectations. Confidently, the architect is already looking ahead to what will follow after the 2026 deadline. "Although we aim to complete the structure in 13 years," he says, "there will remain a host of tasks for the many artists and sculptors completing the symbolic narrative that Gaudí set out to provide." Then, perhaps to hedge his bets, Faulí keenly muses: "Are the great cathedrals and basilicas of the world ever truly finished?"



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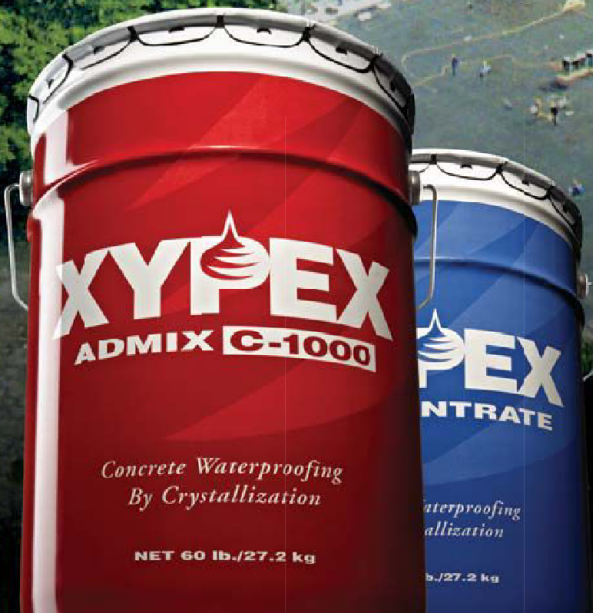
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WHAT ARCHITECTS NEED TO KNOW ABOUT WATER USE AND REUSE



San Diego Convention Center Expansion. The design team of Fentress Architects, Civitas Landscape Architects and Rana Creek is working collaboratively to solve a large-scale nuisance water problem. The convention center has to pay the local utility to continually pump this water directly into the San Diego sewer system. The new roof top park will feature salt marshes designed to filter some of the 400,000 gallons of brackish groundwater that leaks into the basement every day. At a minimum, the constructed wetlands will become a unique landscape feature on the roof that will provide habitat for local flora and fauna. And if all goes as planned the wetlands will help treat the water so it can be used for irrigation and other uses. **Source:** Fentress Architects and Civitas Landscape Architects and Rana Creek Living Architecture.

By Bill Worthen, FAIA, LEED AP BD+C, Founding Principal, Urban Fabrick, Inc.

This may come as a surprise but every drop of water you have ever consumed, bathed with, or purchased in a shiny plastic bottle at the grocery store has been recycled many times before. Water is a finite resource. The amount of water on our planet has not changed for millennia. What has changed is our need for it. Our increase in the use of fresh water resources is quickly outstripping our ability to channel the amount of fresh water we need, where we need it, when we want it. Sound like a design problem? It is.

As the global population continues to grow, so do the challenges of scaling our water systems. Across the United States, our aging water infrastructure, prolonged droughts and extreme weather events, and a changing climate are making it harder for water agencies and water districts in many regions to guarantee the sustainability of our existing water infrastructure. It is already getting harder to find water in many of the same

places that we have depended on for decades. Many communities and designers have responded by trying to think differently about water. We are starting to get creative in both water policy and practice across the United States and around the world because we need to.

PERCEPTION VERSUS REALITY

If you have always lived in a home where fresh, hot, and cold water has consistently just “come out of the tap” for generations then water may be more of an expectation than something you think about as a precious resource in your daily life.

If, however, you have been asked to design a project with water conservation in mind, or achieve LEED credits related to water, irrigation, or storm water, your first thoughts as an architect may have been to call your plumbing, landscape, or civil engineer. You may also believe that the key to water conservation during the design process

LEARNING OBJECTIVES

- List three ways to integrate water as a design topic in your project work.
- Explain how on-site alternative water sources including gray and blackwater technology work.
- Identify what a design professional can do to address water conservation, use and reuse.
- Describe the challenges of water scarcity and the water-energy nexus.

CONTINUING EDUCATION

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is to simply specify the lowest flush (toilets and urinals) and flow rate (sinks, showers, and bathtubs) fixtures possible. The desire to achieve LEED points may have taken priority over your concern for fixture performance and the satisfaction of the homeowner or end-user.

Have you experienced a prolonged water shortage or lived somewhere with diminishing access to fresh, clean water? Have you worked on a one of the growing number of projects that are designing and operating some form of on-site alternative water supply? If not, your behavior, education, and professional experience with integrating water, wastewater, and storm water design decisions (and even knowing what questions to ask) is limited.

The challenge for most architects is to understand how to better engage in a water discussion much earlier in the design process. If the first time you seriously discuss water with your client and

plumbing engineer is at the time of bathroom and kitchen fixture selection, or when running the calculations to confirm how many LEED credits you get, you are very likely missing some interesting opportunities to collaborate and engage with your client and project team on the subject of water.

WHERE DOES OUR WATER COME FROM?

For many Americans the most common response to this seemingly simple question is the tap. The reality however is that across the United States we have a patchwork of watersheds, water districts, and a diversity of natural water sources. The water that comes out of your tap may have started its journey to you from hundreds of miles away. Where your water comes from (and its quality) has a lot to do with the geology and condition of the watersheds in the region where you live.

When we talk about our public water supply and waste water system, we are typically talking about massive, highly engineered and centralized water and waste water systems. Unlike ancient Rome, we don't have architecturally beautiful aqueducts crossing the landscape. We have buried our water infrastructure and discounted the cost of water for so long, many of us have forgotten how precious water really is. Cities like New York, Las Vegas, Atlanta, and San Francisco have quite ingenious and very different water supply and waste water systems. With few exceptions, all water systems rely on some form of natural watershed to capture and store millions of gallons each day. How that water is moved and pumped over, under, and through mountains, valleys, and plains to get to you, can be an interesting story. And depending on where you are located in your watershed, the water you drink may also be wastewater from your neighbors upstream. We are also starting to recognize the limits of scale. Many of our largest and oldest centralized water systems are starting to show signs of stress.

"Water is always going to be here, it's what we do with it that limits its usefulness" says Gunnar Baldwin, Water Efficiency Specialist at TOTO, USA Inc. We have been led to believe that using less water (and buying bottled water for drinking) is better than simply using the water you have around you and in more sustainable ways.

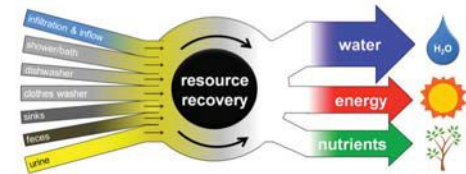
Over the last 25 years, we have seen indoor plumbing flush and flow rates go from unlimited quantities to about one gallon a flush for toilets, two gallons a minute for showers and one-eighth of a gallon per flush for urinals. We are fighting our own inertia and decades-old perceptions that low-flow water fixtures simply don't do the



San Francisco Public Utilities Commission Interactive Digital Arts Wall in the lobby of their new headquarters at 525 Golden Gate Avenue, San Francisco. *Snowfall to Outfall* tells the story of San Francisco's public water supply from Hetch Hetchy Reservoir to the taps of San Francisco. Source: San Francisco Public Utilities Commission

job they were intended to do. Industry has gone about as far as it can go in water conservation but there is a lot of R&D going on right now about how to do less with more.

For the vast majority of architects, landscape architects, designers, civil engineers, and plumbing engineers, to engage in any meaningful discussion about alternative water sources is far out of their professional comfort zone. Not many of us have had a great deal of experience designing alternative water systems in practice. It's just not what we were trained to do in school and rarely is alternative water supply system design a topic covered by professional education curriculum. Understanding water use, reuse, and the potential for resource recovery, at the building scale is a new concept in most design firms.



Wastewater contains valuable resources—including water, energy, and nutrients—worthy of recovering. By shifting focus from what must be removed to a new paradigm of what can be recovered, we can transform wastewater systems to resource recovery systems that are more economically and environmentally sustainable. Source: J.S. Guest

THE YUCK FACTOR

Most wastewater technology has a perception problem. Graywater, blackwater and terms like low-flow and waterless are all engineering terms that might accurately describe the subject matter at hand, but were never run by any PR department prior to writing the marketing plan. When you label something blackwater or graywater no matter how slick the technology may be, unless you are a wastewater engineer, your first reaction is probably not to consider the newest systems and technology—even if you need the LEED points. Wastewater technology has never been sexy. With names like these, it is no wonder that many A&D professionals have been slow to celebrate the benefits of alternative water sources.

One place that is bucking this trend is Singapore. They have been making high-grade recycled water that is safe to drink for quite some time. They continue to expand their water re-use infrastructure. Singapore has no natural aquifers and no natural water resources. They really had no choice. Necessity, as they say, is the mother of invention. But they don't call it blackwater, or even recycled water. They call it NEWater. It might sound like a sales pitch, but when talking alternative water source and wastewater technology to non-technical people, the words you choose really do matter. <http://www.pub.gov.sg/water/newater>

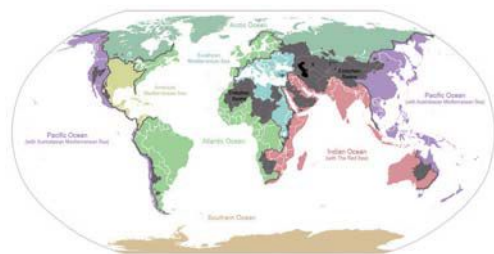
A recurring phrase used quite often in the wastewater industry to justify new forms of onsite gray and blackwater technology is "it's all been dinosaur poop." The statement refers to the fact that the water in your tap has literally been through the bowels of dinosaurs and many other species of flora and fauna before it ever got to you. And while this colorful factoid may be technically accurate, it doesn't help sell innovative and alternative water technologies and the merits of decentralized infrastructure. No matter how well we present waste water as a resource in the United States, we are still fighting the yuck factor.

THE NEED FOR EDUCATION

Most water utilities are interested in helping their customers reduce and conserve the consumption of potable water. Many water utilities already have a number of programs in place to assist their customers with rebates for replacement of faucets, toilets, and showerheads to save water and lower their water bill. Some utilities also offer free on-site water audits to help their ratepayers better understand their water consumption and help eliminate waste. But what has largely been missed to date by most utilities, incentive programs, professional education, and green building credit requirements is the opportunity to look at how buildings are designed to reimagine how water is used and can be re-used in the built environment. Almost 50 percent of all the potable water used in a typical residential building is for non-potable uses, like washing your clothes or flushing the toilet. In commercial buildings, that percentage increases to around 95 percent.

WE ALL LIVE IN A WATERSHED

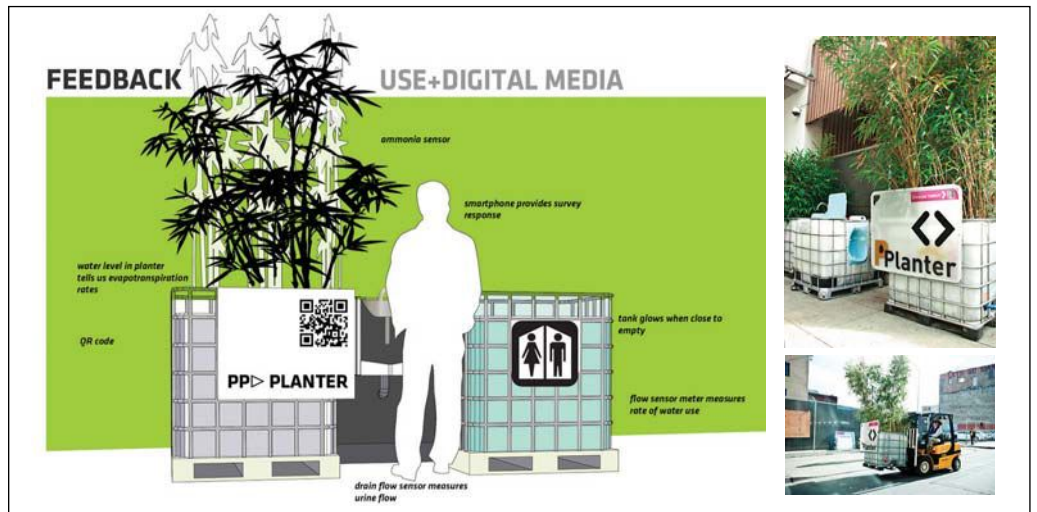
A watershed is the bowl you live in. A watershed is an area of land surrounded by a ridge or elevation, forming a basin. All water in a given watershed drains to the same place. Watersheds come in all shapes and sizes. They cross state, county, and national boundaries. In the continental United States, there are 2,110 watersheds. If you would like to find out more about the watershed



where you live, visit the EPA's searchable watershed database at: <http://water.epa.gov/type/watersheds/>
Source: water.epa.gov

The map above shows the major watersheds (aka drainage basins) around the world. Each watershed typically contains multiple hydraulic units that are nested into the multi-level drainage system (i.e., the watershed of the Ohio River is part of part of the greater Mississippi River drainage basin). Gray areas represent closed basins that do not drain to the ocean.

When it comes to low-flow fixture selection, performance really does matter.



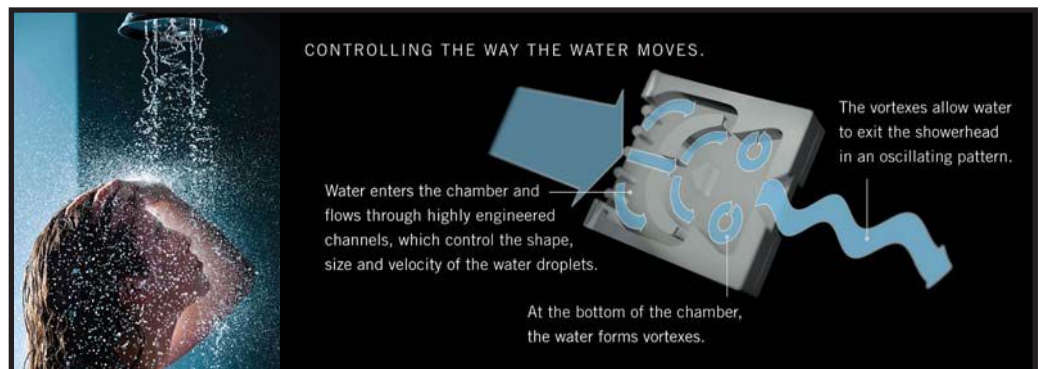
The PPlanter is a mobile, rapidly deployable public urinal that processes blackwater onsite. A human powered foot pump connected to a freshwater supply tank operates the sink. The graywater from the sink, along with soap residue, flushes and cleans the urinal, keeping odor to a minimum. The graywater, soap, and urine (blackwater) from the urinal are funneled to a sealed storage tank. The combined blackwater is then pumped into an adjacent planter that houses bamboo plants set in a lightweight mixture of soil and recycled styrofoam coated in pectin. The water from the urinal and sink is evapotranspired by the bamboo and released into the air as distilled, purified water. The bamboo harnesses the incredible amount of nitrogen and phosphorus found in the urine and uses it to produce more bamboo. With high traffic, urinals and additional planters can be added to the system in series. PPlanter is an evolving project. PPlanter 1.0, pictured here, was first tested at the SF Urban Prototyping Festival in 2012. Source: Hyphae Design Lab

POINTS VERSUS PERFORMANCE

Another perception problem with water use reduction is that many of the earliest green buildings had clients that elected to go-green because of their mission or because there was a large tax incentive available. Many of these projects also had a desire to distinguish themselves in their market. At the time, water use reduction credits looked easy compared to many of the other options available to garner LEED points. Selecting low-flow fixtures seemed pretty straightforward. The simplicity of the water credit calculations empowered many design teams to engage in water use reduction discussions that very likely had never happened

before. That was great, but not all plumbing fixtures (especially low-flow water fixtures) are created equal. Proper fixture selection means much more than the just adding a restrictor to get to the desired flush or flow rate. When it comes to low-flow fixture selection, performance really does matter.

Even today however, some manufactures will gladly insert the restrictor needed to get your favorite fixture down to the flow rate you need for LEED. But what value does your client receive for your services if a month or two into building operation the fixture you specified ends up getting replaced because the performance simply does meet the end user's needs?



H2O-kinetic showerheads push water through a series of fluidic chips that contain specially designed channels to control the water's speed, movement, and droplet size—all without moving parts—to create the feeling of up to 40 percent more water. Each showerhead and hand shower contains an internal system that sculpts the water into a unique wave pattern, creating a consumer-proven feeling of more water, all without using more water. Source: Delta Faucet Company



WaterSense is an EPA program that aims to save water by making it easy for consumers to find water-efficient products and by providing information about how to use water more efficiently. Like EnergyStar, WaterSense labels plumbing fixtures that meet EPA published standards. Look for the WaterSense logo and specify fixtures with the WaterSense labels in your next project.

<http://www.epa.gov/watersense/index.html>

The WaterSense label offers architects, designers, and your clients an easy way to identify more efficient products within the specific product category. And to be clear, WaterSense labels are available on fixtures at every possible price point and style. Water Fixtures do not have to be expensive or unattractive to be water efficient and an enjoyable to experience or use. It is hard to measure market penetration of the WaterSense label since its introduction in 2006. As of November 2013, WaterSense has labeled: 1,951 tank-type toilets, 6,799 bathroom sink faucets, 264 flushing urinals, 1,651 shower-heads, and 173 different types of weather-based irrigation controllers. You should be able to find something you like in nearly any style and at any price point. If not, ask your sales representative or go online. WaterSense also recently released criteria to label commercial kitchen pre-rinse spray valves and is currently working on a label for flush-valve toilets and soil moisture-based irrigation control technologies.



This article continues at <http://go.hw.net/AR0114Course1>. Go online to read the rest of the article and complete the corresponding quiz for credit.

QUIZ

- Water is
 - something to waste
 - a finite resource
 - easy to make
 - something you can boil
- Everyone lives in a
 - house
 - city
 - school district
 - watershed
- We are starting to realize that our centralized water systems are
 - starting to show signs of stress
 - hitting the limits of scale
 - can be supplemented with decentralized water systems
 - all of the above
- An example of nuisance water is
 - drinking water
 - spray irrigation
 - foundation drainage
 - bottled Water
- Alternative water systems are currently most cost effective in locations where
 - there is a drought
 - water and sewer rates are high
 - there is a rainy season
 - the climate is dry
- The EPA's WaterSense label gives A&D professionals an easy way to
 - identify water efficient fixtures that also meet performance criteria
 - increase water usage
 - design better bathrooms
 - resell used plumbing fixtures
- The term "water wars" refers to
 - the battle between plumbing engineers and designers
 - the potential scarcity and fight for control of water sources in the future
 - a new movie
 - the battle over who gets to shower first
- The term blackwater refers to
 - the color of a lake after a strong rain
 - remote areas of the countryside
 - a new swanky cocktail
 - the most contaminated source of water on site
- All of the following are alternative water sources for on-site water treatment systems except
 - potable water
 - graywater
 - rainwater
 - storm water
- All wastewater contains valuable resources including everything except
 - water
 - energy
 - milk
 - nutrients

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THE MARKET

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ARCHITECTURE
AND THE



RD

INDUSTRIAL
REVOLUTION

Text by **Thomas Fisher, Assoc. AIA**

Ready for the next revolution? The profession changed dramatically thanks to mechanization and mass production, and the next massive shift will be no less disruptive. In this era of small-scale, bottom-up design, say hello to 3D-printed houses, digicities, and curriculums that teach future architects about far more than just building.

THE GREAT RECESSION, in some ways, signaled the end of the Second Industrial Revolution and the beginning of what economist Jeremy Rifkin has called the “Third Industrial Revolution” in his book by the same title. This is good news for the architectural profession, which suffered greatly in the last downturn and has yet to recover fully. Industrial revolutions require the redesign of almost everything, and if our profession can cast aside some of our old practices and assumptions about what architecture entails and recognize the vast array of design opportunities that the new economy has created, we will see no end to the work we have to do.

Although Rifkin pays relative little attention to architecture in his book, his argument has profound implications for the profession’s future: how we will plan cities, design buildings, practice architecture, and educate architects. The Third Industrial Revolution “will fundamentally change every aspect of the way we work and live,” Rifkin writes. Small-scale, crowd-funded fabrication will gradually replace large-scale, capital-intensive manufacturing; nimble, networked organizations will steadily prevail over big, hierarchical companies; and the global movement of digital files will increasingly supplant the global trade of goods. If the steam engine became the iconic technology of the First Industrial Revolution and the assembly line that of the second, 3D printing may well become the icon of the third.

The field of architecture has experienced such massive economic disruptions before. The modern profession emerged during the First Industrial Revolution in the 19th century, as the mechanization of manual labor led to the need for new types of buildings, and as technology allowed us to build larger and taller. The profession as we still largely practice it today arose in the 20th century, as the mass

production and consumption of the Second Industrial Revolution inspired the rise of specialized architectural firms able to mass produce big buildings, as well as star architects able to create signature structures suitable for mass media consumption.

Although the Second Industrial Revolution isn’t over yet, it has entered what Rifkin calls its “end game,” with an unsustainable dependence on fossil fuels and unsupportable levels of debt. Meanwhile, the Third Industrial Revolution has emerged at a staggering pace: Consider how quickly social media has transformed the news business, iTunes has upended the music industry, and Google has become the third most valuable company in the world in just 15 years.

WIKI ARCHITECTURE

Adrian Smith + Gordon Gill Architecture’s recently announced design for the World Expo 2017 in Kazakhstan represents one of the first architectural explorations of Rifkin’s ideas. Comprising a globe-like national pavilion surrounded by streamlined structures for exhibits, meetings, and performances, the Expo will have features that Rifkin sees as “pillars” of the new economy: renewable energy, hydrogen fuels, smart grids, and electric vehicles.

Expo 2017 will broadcast the idea of a Third Industrial Revolution to an international audience. But the real impact of this revolution on architecture will happen as we shift from an economy of mass production and consumption to an economy based on mass customization. That may not seem like a threat to architecture; our field knows how to customize design to meet client needs. The challenge will come in learning how to mass customize architecture in an economy in which everyone may become a producer as well as a consumer of design.

Alastair Parvin, a U.K.-based designer, has shown how this might happen. He and his

team have developed an open-source design of a small, extremely low-cost “WikiHouse” and demonstrated how ordinary people can download the file, cut out the parts on a CNC machine, and erect the rectangular, gable-roofed structure themselves, without the need of tools or construction skills. If the 20th century “democratized consumption,” Parvin says, the 21st century will “democratize production,” with mass customization efforts like his.

DIGICITIES

Think of what this might mean for cities. Most of us still inhabit the unsustainable model of the Second Industrial Revolution: living in residential areas, commuting to work in commercial districts, and buying goods often produced at a large scale in distant places. The Third Industrial Revolution may flip that equation. Consider the many software and digital fabrication companies that have sprung up in cities all over the U.S.: their staffs increasingly live, work, and make things—even grow things—all in close proximity.

Fostering such economic activity may require a rethinking of public policies that still largely support the old economy of mass production and consumption. The separation of residential, commercial, and industrial zones, for example, has become a barrier to innovation, which increasingly depends upon maximizing the interactions among diverse people and enterprises. This may, in turn, cast New Urbanism in a new light. More walkable communities and denser, mixed-use,

and mixed-income neighborhoods will now have economic benefits as well as social and environmental ones.

CUSTOMIZABLE BUILDINGS

The Third Industrial Revolution, much like the previous two, may also lead to new kinds of buildings. Just as we separated cities in the 20th century into single-use zones, we have constructed a lot of buildings for singular purposes, full of special-use spaces. That made sense in the old economy based on disaggregation and specialization, but in the new economy—characterized by a fluidity between living, working, and making—purpose-built structures will quickly become obsolete.

To see the future, we might look at where many businesses at the vanguard of the Third Industrial Revolution have gone: to the warehouse districts of cities. They have done so not because entrepreneurs like exposed brick, but because older warehouses often have the spatial flexibility and structural capacity to accommodate a wide variety of uses. This suggests that the buildings that will thrive in the new economy will have a switchable character, with high ceilings, hefty construction, and open plans that allow people to mass customize their own space.

Developers like Artspace have shown how to do this in new and old buildings, working with architects in several cities. Their projects accommodate a wide range of creative business and artistic practices, with residential, commercial, and production

activities occurring in the same building and on the same floors.

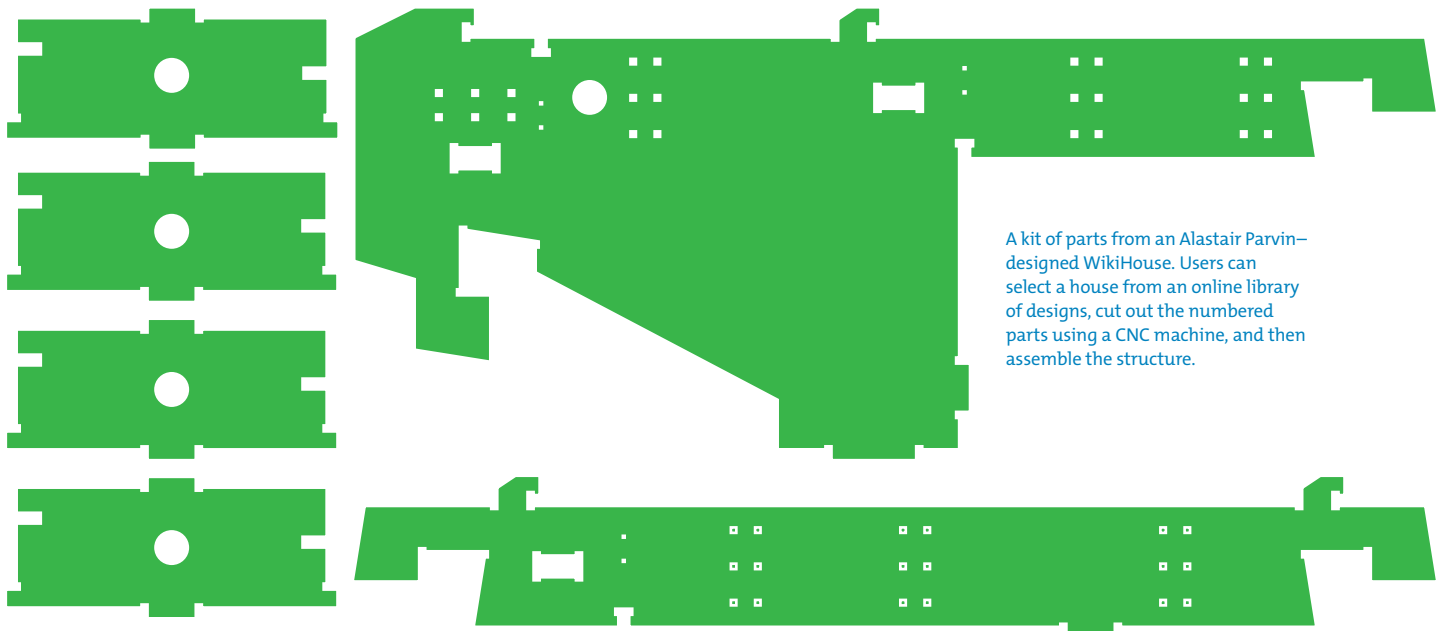
THE RISE OF PUBLIC-INTEREST

Architectural practice may also change in dramatic ways. For example, public-interest design, now a marginal practice in the profession, seems likely to grow and thrive in the Third Industrial Revolution. That stems partly from the mass customization that becomes necessary when we view the planet’s 7 billion-plus people as potential “clients.” Many of them will require extremely inexpensive, easily fabricated systems (much like Parvin’s project) that they can download and adapt to their particular needs.

But public-interest design also prompts a type of practice ideally suited to what Rifkin sees as the collaborative and distributed nature of the new economy. The need to develop low-cost, culturally appropriate solutions has led public-interest designers to form nonprofit firms like Mass Design Group, teaming with NGOs like Partners in Health. In contrast to the medical profession’s model of practice long followed by the design community—providing custom responses to individual needs—public-interest firms have begun to evolve a public-health model of practice, mass customizing architecture like the FlatPak House by Lazor Office, or the Wee House by Alchemy Architects.

NON-INVASIVE ARCHITECTURE

Rifkin also sees companies morphing in the Third Industrial Revolution “from primary producers and distributors to aggregators,”



A kit of parts from an Alastair Parvin-designed WikiHouse. Users can select a house from an online library of designs, cut out the numbered parts using a CNC machine, and then assemble the structure.

able to “manage the multiple networks that move commerce and trade.” Architects in the Second Industrial Revolution became the primary producers and distributors of building designs. But in the Third Industrial Revolution, this specialization has started to marginalize architects, at least in the minds of many clients, who face all sorts of design problems that do not involve the construction or renovation of buildings.

While a growing human population will still need a lot of buildings, architecture firms may morph along with the rest of the business world to become more the managers of networks and aggregators of expertise, with building design becoming just one of many services. Indeed, given the expense and impact that buildings have on the planet, they may also become a solution of last resort, after architects have explored every other alternative to meet clients’ needs. And construction, when it occurs, may have to become, like modern surgery, more non-invasive and minimally disruptive, many examples of which are featured on websites like [Inhabitat](#) and [PublicInterestDesign.org](#).

POLY CULTURE PRACTICES

This may, in turn, change the composition of firms. As Rifkin suggests, the Second Industrial Revolution encouraged monocultures in everything from how we grow food to how we organize businesses. While monocultures create efficiency and predictability, they also make it hard, in the case of architecture, for clients to tell the difference between one firm and another, with each offering similar services, standard practices, and—at least to some clients—indistinguishable results.

Rifkin sees the Third Industrial Revolution rewarding those who create polycultures instead of monocultures. That may lead architecture firms, long dominated by the design disciplines, to cultivate a richer and more diverse ecology of staff and consultants from a wider range of backgrounds and fields, able to embrace what Rifkin describes as the dominant value of the new economy: a “biosphere consciousness” of the impact of every decision on the planet.

Polyculture design firms have begun to emerge, like McDonough Braungart Design Chemistry, which is devising new recyclable and biodegradable products, and [Ideo.org](#), led by a designer and by an anthropologist (Patrice Martin and Jocelyn Wyatt) who strive to understand the beliefs and behavior of people in different cultures. Such firms may serve niche markets, but they also have very little competition and, in a globally connected world, a large number of potential clients.



Adrian Smith + Gordon Gill Architecture's winning design for Expo 2017 in Astana, Kazakhstan. The series of pavilions, retail, and residential spaces will be powered by renewable energy sources and linked to a smart grid.

BEYOND ASSEMBLY-LINE EDUCATION

The Third Industrial Revolution may have equally dramatic effects on higher education. Like the modern professions, universities have changed with the economy. The public land-grant universities of the mid-19th century responded to the needs of the First Industrial Revolution, educating students in the “mechanical arts,” and the large, research-oriented universities of the 20th century reflected the demands of the Second Industrial Revolution, molding graduates able to participate in the mass production and consumption of goods and services.

Universities, though, have struggled to adapt to the Third Industrial Revolution. Most recognize the value of interdisciplinary, collaborative education and embrace ideas like empathy and inclusivity that Rifkin views as essential in the new economy. But academic structures and accreditation standards still seem mired in the past. Academic departments, for example, represent a kind of disciplinary monoculture, and standardized curriculums remain a mass-production approach to educating students.

Likewise, accrediting bodies tend to reinforce the assumptions of the Second Industrial Revolution: the focus on building design in our accreditation standards for architecture, for instance. While architects will continue to need to know how to design and detail buildings, the accreditation process gives scant attention to the increasing demand

in the Third Industrial Revolution for design thinking applied to a client's and community's organizational and spatial problems, which may or may not require a building.

LATERAL LEARNING

Nevertheless, design studios offer one possible model of what education in the Third Industrial Revolution might look like. Rifkin argues that schools must create a more “distributed and collaborative educational experience,” in which student acquire not only disciplinary depth, but also interdisciplinary breadth in how to apply knowledge to the grand challenges we face.

While studio education has reflected some of the bad habits of the old economy, with overworked students pulling all-nighters and overly packed curriculums preventing them from taking many courses in other disciplines, the exploratory, synthesizing nature of the design studio seems like an ideal setting to learn the creative and collaborative skills needed in the new economy.

DEEP PLAY

Of all the skills that architects have to offer in the Third Industrial Revolution, maybe the most important constitutes what Rifkin calls “deep play.” In the previous two revolutions, he says, “we lived to work.” In the third one, success—and happiness—will come to those who value creativity and connectivity, those who “live to play.”

W H A
T' S N
E X T

DEVELOPMENT

INSTEAD OF SUBURBIA

Text by **Reed Karaim**
Photos by **Mark Peterman**



The suburbs are dead. That was the rallying cry after the housing crash, when subdivisions turned into ghost towns. The alternative? Transit-oriented development near urban centers. Welcome to Phoenix, the home of megasprawl, which is putting TOD to the test.

FIVE LONG YEARS AGO, when the housing market was booming, no city was booming more than Phoenix. At least that was the common perception. In truth, what was booming was the Arizona desert, as developers threw square mile upon square mile of new homes into undeveloped land on the edge—or out beyond the edge—of a metropolitan area already synonymous with sprawl. At the peak, greater Phoenix was averaging 60,000 new homes per year, according to Michael Traylor, director of the Arizona Department of Housing.

Then, as everyone knows, the bubble burst. Home values in the Phoenix area fell by 55 to 60 percent. Some far-flung developments went from grand opening to near ghost town in a matter of months, entire blocks of vacant, earth-tone homes looking as if they would soon melt back into the desert. At the worst, around 100,000 homes stood empty in the Phoenix metroplex.

Phoenix may have been an extreme case, but a similar narrative was playing out in suburban areas around the country, which were disproportionately affected by the bust. Analysts declared that the age of sprawl and exurban development was largely over. Such predictions seemed reasonable at the time, but what would happen once the market recovered and developers started building again?

Today, the Phoenix real estate market is bouncing back hard. Prices have risen by as much as 35 percent in the last year, and sales have picked up significantly. New home developments are once again sprouting out on the fringe where greater Phoenix bleeds into the Sonoran Desert landscape.

Something else is going on, however. As they emerge from the Great Recession, Phoenix and the adjoining cities of Mesa and Tempe are focusing development efforts on their urban cores, with projects concentrated in the corridor around the regional light rail system, which

runs from Tempe into downtown Phoenix. Political leaders and several local developers have embraced the virtues of transit-oriented development, walkable neighborhoods, and higher-density building. “The character (of Phoenix) has changed tremendously over the past year or so,” says Craig Randock, AIA, president of AIA Arizona and design studio leader at HDR in Phoenix. “You’re really seeing the interest in development here in the city, and there are some very smart, young developers involved in that.”

The same is true in Tempe and Mesa, smaller but still sizable communities with their own city centers. The move had been underway before 2007, but Bonnie Richardson, AIA, principal planner for the city of Tempe, believes the economic downturn gave political leaders and some developers a chance to reflect. “Our modus operandi was that we just kept widening freeways, widening freeways, and building farther out. Things were happening very fast, and it was easy just to keep doing what we’d always done,” she says. “It seems that people got more time to think about it as things slowed down, and they started thinking about doing more with less, so they were more in tune with what we’re talking about in terms of development.”

A metroplex long celebrated as a bastion of uncontrolled sprawl, Phoenix is a surprising test case for the challenges city officials and designers face in promoting urban infill and transit-oriented development. How much will the city’s longstanding model of exurban development change now that the Great Recession is over?

ON A BALMY AFTERNOON last December, the four partners of Mesa Housing Associates stood proudly in front of Encore on First, the first major privately financed development in downtown Mesa in more than 25 years. With Mayor Scott

The view from the Portland Place Condominiums in downtown Phoenix.

Smith, city council members, and Traylor all lined up, they cut the ribbon to the 81-unit, independent living multi-occupant building designed by SERA Architects of Portland, Ore.

The five-story neomodern building incorporates solar panels sufficient to offset 50 percent of the energy load from common areas, as well as roof and wall materials designed to reduce the urban heat island effect—important in a city with an average daily high in July of 106 degrees. But the building's significance lies not in its energy features, but in the role local officials hope it plays in revitalizing Mesa's center. "This truly is a transformative project," said Mayor Smith. "It changes the way we think about our downtown, our city."

The nearest light rail station, located only a couple of blocks away, isn't scheduled to open for another year or two. Still, Smith said, "Light rail sets the stage." At least four other residential projects are already planned near the line in Mesa, and demand for housing along the entire 20-mile light rail system and its scheduled extensions appears to be strong.

A study by the consulting firm BAE Urban Economics found an unmet demand in 2010 for about 61,000 new housing units within a half-mile of the light rail in Phoenix, with demand for an additional 70,000 units by 2040. "There's not even enough dirt to build that many housing units, but it shows that the demand is really there," says Shannon Scutari, director and co-founder of the Sustainable Communities Collaborative, a nonprofit organization set up by the three cities and other groups to promote development along the light rail.

Higher density infill development has been encouraged by financial incentives. The Arizona Department of Housing awards bonus points for transit-oriented projects seeking to qualify for federal tax credit financing, which states direct, if the projects are located within a half-mile of the light rail corridor. The Phoenix-based Raza Development Fund and New York-based Local Initiatives Support Corporation (LISC), two lenders that provide credit for low-income housing and underserved areas, have committed \$20 million to a financing fund to assist development along the corridor. "We have 15 projects since we launched the fund two-and-a-half years ago that the fund's partners helped to provide support to get off the ground," Scutari says.

Encore on First received pre-development financing through LISC, which Mesa Housing Associates has since repaid, and also qualified for federal tax credit financing. The tax credits provided a solid financial underpinning to the project, but Charles Huellmantel, a local attorney and partner in Mesa Housing Associates, says the motivating force was a

conviction among the partners to bring new life to the downtowns of cities like Mesa or Tempe, where a similar project, Encore on Farmer, opened in 2011. "We don't do the suburban thing. We do the urban thing," he says. "That's what we're excited about."

After the press and dignitaries had departed the ribbon-cutting, Huellmantel and Todd Marshall, another of Encore on First's developers, were eager to show me around the project and talk about how they had integrated the building into the neighborhood. They were able to narrow the street (although not as much as they had hoped) and widen the sidewalk to create a more inviting streetscape for pedestrians. The sidewalks in front of the building were segmented and laid in a textured concrete, aesthetically more pleasing than the flat industrial concrete commonly used. In both the building and its courtyard, the design incorporates sheets of colored glass that echo the Mesa Arts Center about a block away. The glass walls in the public areas on the ground floor and a terrace on the second floor both open up the building to the street, promoting a sense of connection with the neighborhood.

Encore on First may be intended for older residents, but Huellmantel and Marshall both believe they're helping to define a new urban landscape. "There will still be people heading out to Sun City," Marshall says of the famous retirement community about a 30-minute drive from downtown Phoenix. "But there's a big cultural shift and it's coming with the next generation. We hope to be part of that future."

PHOENIX IS NOT ALONE in trying to build urban density around mass transit as the country emerges from the recession. "Denver is trying to do it; Dallas is trying to do it. The older cities in the Midwest and West are trying to do it. And it's working," says Stephen Melman, director of economic services at the National Association of Home Builders (NAHB). Still, he cautions, the shift shouldn't be overstated. The NAHB's most recent national consumer survey shows that the largest share of Americans still desire a single family home in the suburbs.

But for the next generation that Marshall referred to, the attractions of city living are growing. "In certain parts of the country we're seeing, especially among younger households, a move toward gentrification—more inner city, industrial-style design, more condos," Melman says. Multifamily construction was a bright spot coming out of the recession, he adds, largely because of the demand for rental property. "Young Millennials are mostly renting," he says. "They haven't jumped into purchasing yet, but they're tending toward the urban landscape when they do."

As significant as the public attitude, at least in Phoenix, is the recognition among community and state leaders that old patterns of development are becoming unsustainable. "For 70 years, we've been building farther out, through orchards and agricultural fields and out into the desert," Traylor says. "The fringe has changed. Today, people are having to drive an hour to get to work. Some people are spending 60 percent of their income on housing and transportation costs." Noting projections that show the Phoenix metro population nearly doubling in the next 30 years, he asks, "Are we just going to double the number of freeways? Double the number of cars?"

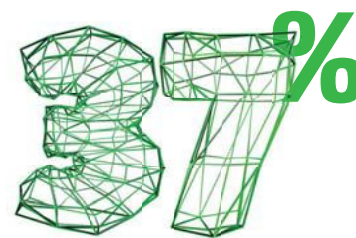
Living closer in can bring the combined cost of transportation and housing down to about 45 percent, Traylor says. He also noted that a study found that property values fell 37 percent less during the crash for real estate located within the light rail corridor and that default rates were significantly lower. Traylor has worked in development, in and out of government, for 30 years, and believes numbers like that indicate the importance of the mass transit effort. He calls construction of the Black Canyon Freeway, the first major superhighway in the area (which eventually became part of the interstate system) the most significant transportation project in its history, because it set the pattern for urban expansion that persisted for decades. "The next most significant transportation infrastructure development was light rail," Traylor says.

Developers who have built around the light rail, however, have found that new attitudes do not necessarily sweep aside longstanding challenges to building in existing neighborhoods.

"BACK IN THE DAY, Portland Street was the place to live," says Timothy Sprague, standing along the avenue in downtown Phoenix on a sun-filled afternoon. "Around the turn of the century, this was a prosperous neighborhood with doctors and people like that living here. Then later, this area fell on hard times and it really got dangerous."

Sprague provided his capsule history in front of Portland Place Condominiums, his high-end residential project completed in 2007. It includes 54 units, 46 condos in a six-story tower and eight brownstone flats on the street front. Most are about 1,500 square feet and went for \$400 a square foot. All but two units were sold before Portland Place was finished. The light rail station, right at the end of the block, opened in 2008. "We were here first," Sprague says smiling.

A laid-back type who plays in a local rock band when he's not heading multi-million-dollar projects, Sprague has been in development for 30 years in Phoenix. "Prior



The percentage that properties located within the light rail corridor in Phoenix better retained their value during the real estate crash

SOURCE: NATIONAL ASSOCIATION OF REALTORS AND AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

Mesa Mayor Scott Smith (left) and developer Todd Marshall at the Encore at First project.

to 2003, most of my development was out on the periphery of town," he says. But in the late '80s and '90s, Sprague and his partner, John Hill, were involved in two projects in the Portland, Ore., area as that city was establishing its MAX Light Rail system. "It was just really an education for us to see what could happen when you get good light rail transportation."

In 2003, Sprague and Hill responded to a request by the city of Phoenix for transit-oriented development in the city's Roosevelt Historic District, which included Portland Street. "All my development friends said, 'Are you nuts going downtown?'" he remembers. In the beginning, Sprague and Hill had reasons to wonder if their friends weren't right. They had to get 14 variances from zoning requirements to build, including a local height and density restrictions. The project eventually required special use zoning: urban residential.

Curt Upton, a Phoenix city planner, says the problems Portland Place faced are not unusual. Upton heads Reinvent PHX, a partnership between the city, the U.S. Department of Housing and Urban Development, Arizona State University, and other local groups, to plan and promote transit-oriented development without displacing local residents or destroying the character of historic neighborhoods.

Reinvent PHX has a plan for five walking districts along the rail. Each has different

challenges, but zoning is an overarching issue. "The basic zoning is not supportive of a lot of things the market is demanding, particularly along our light rail system," Upton says. "It might sound like a no-brainer, but it's a very difficult and complicated thing to change zoning regulations."

In part that's because residents are often wary of any change. "When you do infill development, you are really changing somebody's neighborhood," Sprague says. "As a result of that, you have to listen. You really have to listen." Portland Place originally faced a skeptical reception from the local neighborhood homeowners association, and Sprague says the project was modified to address some of their concerns. "It was very important to them that the building not be sealed off from the street," he says "One of the first things you'll see is that it's not fenced in at all."

Mesa Housing Associates also faced public doubts about the impact of narrowing First Avenue and the fact they were replacing some parking for the building site. Working carefully with city officials to make sure the public understood the reasons behind design decisions was a key to bringing the project to life, Huellmantel and Marshall say.

Sprague attended homeowner association meetings to build a relationship with local community leaders, even volunteering to

serve as a bartender at one of their events. Eventually he was elected to the association board. Portland Street also sought to embrace the character of its location, the Phoenix arts district. When the project began "we opened up an art gallery that doubled as a sales office," Sprague says. "We literally had a curator."

The view from Portland Place's rooftop pool is of Phoenix's central city skyline. Arizona State University has taken advantage of the light rail to open a downtown campus that includes a biotech center, connected to its main campus in Tempe by the rail system. Downtown has seen an influx of jobs and residents as a result. Sprague is now planning two larger residential buildings on vacant land right next to Portland Place, 12- and 14-story towers that will also include restaurants along the street.

As the economy heats up, he expects that exurban development in the area will once again accelerate, especially if gas prices remain relatively stable. But Sprague believes the recession was one factor that did cause many developers to think more deeply about the future of their community, and he thinks the results are already apparent. "What has happened is we are reurbanizing the country's largest suburb, if you will," he says. "Downtown is alive here. It really is ... I do this very selfishly. I want to live in a place that's fun."

The image features a large, stylized wireframe graphic of the year '2014' in white lines against a blue background. A green horizontal bar is overlaid across the middle of the '0', containing the word 'AGENDA' in white, uppercase letters.

AGENDA

Text by **Nate Berg**

Student debt. Small business tax reform. Fannie and Freddie. Given the current economy, lobbying has never been more important for architecture. Legislative liaisons from the AIA, the NAHB, and other organizations share their top issues for the coming year.

THE DESIGN-BUILD EFFICIENCY AND JOBS ACT OF 2013

Competing to win federal design/build projects can be expensive. The AIA's Large Firm Roundtable recently conducted a study that found the median cost is roughly \$260,000. "If you're a small firm, that's your profit for the year, potentially," says Andrew Goldberg, managing director of government relations and outreach at AIA. If you're one of eight to 10 finalists for a project, there's a pretty small chance your investment will pay off. In an effort to reduce the risk, Sam Graves (R-Mo.) introduced this act in July. The bill would cut down on the number of finalists at the second stage of these competitions to between three and five. Currently moving through the House's Committee on Oversight and Government Reform, the bill could come up for a full vote in early 2014. If enacted, it would lessen the risk for architects to enter such competitions. "The government is losing out at having the best talent, and architects are really losing out on the chance to compete for this kind of work," Goldberg says.

THE NATIONAL DESIGN SERVICES ACT

Architecture students are graduating with higher student loan debt than almost every other profession. Just for undergraduates, the average debt is more than \$40,000. And while the recession may technically be over, architecture jobs for recent grads aren't exactly abundant. "A lot of emerging professionals are leaving the profession because they have huge debt and trouble getting work," Goldberg says. "We really run the risk of losing an entire generation of young architects." The AIA has drafted the National Design Services Act—modeled on similar programs for doctors and nurses—to allow graduates to work for nonprofit community design centers in underserved communities in exchange for student-loan relief. Goldberg says the benefit is threefold: It gives architects work, it reduces their loan debt, and it provides design services to communities who might not otherwise get them. Goldberg is hopeful that the idea will get a formal introduction in Congress in 2014. Students and recent grads are already supportive. Evan Litvin, a recent architecture grad in Philadelphia, started a petition on Change.org in support of the idea and has collected nearly 2,000 signatures.

EXPIRING TAX CREDITS

The end of 2013 was also the end of a fleet of tax incentives—55 temporary tax provisions in total. Most notable for designers is the tax break in Section 179D of the Internal Revenue Code, which incentivizes energy efficiency in commercial buildings. Architects, engineers, and contractors can deduct up to \$1.80 per square foot for projects that achieve a 50 percent reduction in energy costs compared to those built to ASHRAE standards. This exemption has saved architecture firms hundreds of thousands of dollars. The AIA is now working to convince Congress to renew and retroactively apply this tax break, as is the National Association of Home Builders (NAHB). Lake Coulson, the NAHB's vice president of federal government affairs, is confident that 179D will be extended. He's also hoping to expand its scope beyond just new commercial buildings to retrofits of existing buildings. "Some of these older buildings that were built before there was an energy code, to bring them up to code—let alone put them 50 percent above code—would be quite challenging," Coulson says. "Now there's a reform effort to look at new models and create a sliding scale."

TRANSPORTATION BILL

It was almost a decade ago that Congress last passed a long-term transportation authorization bill. Ever since that bill expired in 2009, the House and Senate have kicked the can down the road with a series of short-term extensions. The latest is set to expire in September 2014, and prospects for a long-term bill are not promising. "Nobody expects that next year Congress is going to be able to get a long-term bill," Goldberg says. But even if it's just a short-term extension, Goldberg says there's room to improve the bill. "It's not just about highways, and it's not even just about highways and rail. It's also about how transportation connects communities, how it creates economic prosperity, how it can be more sustainable and promote safety," he says. Jeff Shoaf, senior executive director of government and public affairs at the Associated General Contractors of America (AGC), says that a new, more robust transportation bill is critical, especially with the gas tax contributing less and less to the Highway Trust Fund. "We could get a situation where we potentially have a 100 percent cut in transportation funding in fiscal 2015," Shoaf says. "It really needs a solution sooner rather than later."

FANNIE AND FREDDIE

For architects and others in the building industry, there's no work without clients. And for those clients, there's often no ability to commission projects without financing. In the wake of the economic recession, the credit market has been slow to right itself. Some in Congress are looking at the federal government's mortgage system—Fannie Mae and Freddie Mac—as part of the problem. The Protecting American Taxpayers and Homeowners Act of 2013, currently under consideration in the House, would dramatically shake up the way the federal government participates in the secondary mortgage market. The Republican-sponsored bill would wind down Fannie and Freddie over the course of five years and leave no federal guarantee supporting loans. NAHB's Coulson argues that without the federal guarantee, home building will dwindle. The bill's passage could negatively impact architects, Coulson warns, especially those working in the multifamily housing sector.

TAX REFORM

The call to revise the tax code has grown louder in recent years, and many analysts say Congress is getting closer to tackling this complex subject. For the building industry—from architects to contractors to engineers to home builders—the biggest hope is for better treatment of small businesses. The vast majority of architecture firms are small businesses, as are about 80 percent of the AGC's constituency. Most of these companies are organized as S corporations, a distinction meaning that the owners or shareholders themselves are taxed instead of having the company pay a corporate rate. But many of the tax reform ideas being pushed right now offer more benefits on the corporate tax side, according to Goldberg. There's still time to work things out, however. "We don't expect tax reform to pass in 2014, but what happens is these bills get drafted and things get baked into them early, so we have to be at the table early on," Goldberg says. He says it's a lot like the design process: "You have to be part of the process from the very beginning to make sure that these good design principles are part of the project."

GETTING CONGRESS BACK TO WORK

If there's only one thing the building industry really wants to see happen in Congress, it's more actual work. In late 2013, the AIA released its annual Call for Issues survey, which asks members to share their concerns and objectives for the industry. One question asked what Congress could do to help the profession and the industry. "The way a lot of people answered is they want Congress to stop bickering and do its job," Goldberg says. "Architects are working in a world where they have to actually get things done. They can't filibuster, they can't shut things down if they get mad." AGC's Shoaf says that his organization's members just want Congress to work on a normal, predictable schedule on things like authorizations and appropriations to add some clarity to what's been a chaotic system in recent years. "It'll make the market mature, it'll help companies attract and retain workers, and it'll help the government get a better deal because they have a logical process that they're following," Shoaf says. The recently passed two-year budget agreement helps get closer to that goal, but Shoaf and Goldberg agree that what Congress needs most is a return to normal operating procedures.

W H A
T' S N ABI
E X T

53.3
January 1996

60.6
September 2005
Height of the boom

THE FORECAST

It's easy to forget just how devastating the Great Recession was for the profession. As the market slowly recovers, firms will adopt a host of strategies to help offset the losses they suffered during the decline.

Text by **Kermit Baker, Hon. AIA, and Jennifer Riskus**

TO UNDERSTAND the market conditions that architecture firms can expect in 2014, it's best to start by looking back at how the Great Recession affected the profession. During the downturn, architecture firms had to adapt to survive. Firms have always tended to be small, with the majority typically having fewer than 20 employees. But data from the 2012 AIA Firm Survey report shows that the share of architectural firms that are very large—those with 100 or more employees—declined by half from 2008 to 2011. Perhaps even more telling is that a larger share of firm billings shifted to the smaller firms in that same time period. Mid-size and large firms continued to generate the lion's share of billings, but firms with fewer than 20 employees were responsible for more than one-third of total firm billings in 2011, compared to one quarter of billings three years earlier. It's likely that a number of larger firms had to close due to the downturn, leading their architects to scatter and open their own small practices. Of the larger firms that did survive, many shrank, and are now classified in a smaller size category.

The types of projects that architecture firms worked on also changed because of the downturn. The share of firm billings from

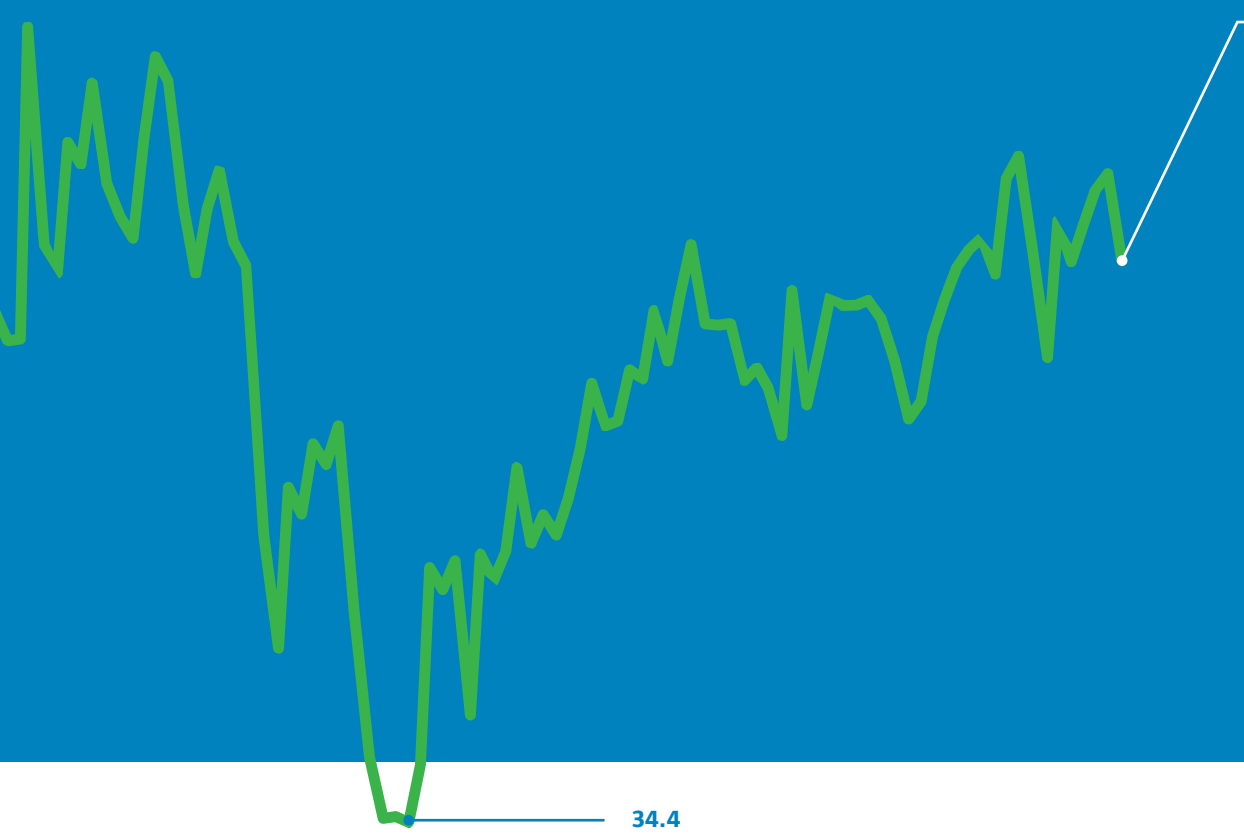
both residential and institutional projects was higher in 2011 than in 2008, when the recession was just beginning, while the share of billings from commercial or industrial projects declined during that same time period. While the housing sector was hardest hit at the beginning of the downturn, it began to show modest signs of improvement as the recovery began. Commercial and industrial projects, on the other hand, suffered as credit remained difficult to obtain and companies were hesitant to commit, fearing a double-dip recession (see page 116). Data from the ABI has shown that billings at firms with a residential specialization have continued to improve since the 2012 AIA Firm Survey report was published, while firms with an institutional specialization have experienced little growth in 2013, and firms with commercial or industrial specializations have seen relatively modest increases in billings.

The economic downturn has, moreover, influenced the typical length of the project design phase at firms: Recent projects have tended to be smaller and simpler than those prior to the downturn. In a recent AIA survey, firms reported that the design phase for almost half of their projects by revenue was

six months or less (design phase is defined as lasting from authorization to proceed on design activity through the construction contract award). Responding firms reported that just 21 percent of projects currently have a design phase lasting a year or longer.

Architecture firms have also seen some of their revenue sources change. Some firms branched out into the international arena because domestic projects were limited. In a recent AIA survey, a sizable share of firms reported that they had billings from an international project in the last year; nevertheless, these projects account for a relatively minor portion of their billings. Firms also reported modest firm billings from nondesign revenue sources, such as construction or building operations and maintenance services. In the 2012 AIA Firm Survey, firms reported that these nondesign services accounted for an average of 10.2 percent of their firm billings.

The need for nonresidential facilities in our economy remains a moving target. Economic conditions aside, other developments influence the longer-term demand for buildings. Will e-commerce reduce the need for retail space? Will telecommuting and



51.6
October 2013

THE ROAD TO RECOVERY

The AIA's Architecture Billings Index (ABI) illustrates how bad the Great Recession really was. Fortunately, the ABI began reflecting an improvement in design activity around mid-year 2012, and the monthly numbers since then—while still volatile—have been routinely positive. The modest improvement in business conditions has helped firms recover a portion of their losses. On the revenue front, gross billings at U.S. architecture firms have increased by \$8.6 billion from their 2012 low, or over half of what firms lost during the downturn. Firms are reporting that backlogs—the amount of project work in-house and under contract—have been steadily improving. Currently averaging about five months nationally, project backlogs have increased by about one month on average since late 2010.

➤ [More charts and analysis at architectmagazine.com](http://architectmagazine.com)

34.4
January 2009
Depth of the recession

more flexible workspaces reduce the need for office space? How will the implementation of the Affordable Care Act change the need for healthcare facilities?

One thing is clear: We are currently well below our current construction potential. Over the past decade, we have averaged almost \$400 billion in spending annually on nonresidential buildings in the U.S., ranging from about \$310 billion in 2003 at that recessionary low, up to almost \$500 billion in 2008 at the expansionary high. Over the past four years—even with a growing economy, a growing population, and increases in construction costs—we've averaged only about \$350 billion in spending on these facilities, so clearly some significant catch-up is inevitable.

Apart from the ABI, two other indicators suggest that a recovery in building activity is underway. The first of these is home building activity, a traditional leading indicator of nonresidential building activity. In 2012, housing starts nationally increased by almost 30 percent, to 780,000 homes. This past year they are estimated to have increased another 20 percent. New homes create the need for retail and other commercial facilities, and eventually lead to increased demand for schools, healthcare

facilities, and other institutional structures.

And second, more design work is already in progress. The AIA is poised to launch a new indicator of future design and construction activity that looks at trends in signed design contracts at architecture firms. A signed design contract, or an authorization to proceed on the design of a project, means that design activity is slated to occur in the coming months. Since late 2010, when the AIA began collecting information on the change in design contracts, there has been considerable volatility in the direction of this indicator. Beginning in early 2013, the direction has been more consistently positive, strongly suggesting that design billings will grow in the coming months.

As the construction markets continue to expand, architecture firms will look to regain some of the losses incurred during the downturn. While some of this growth can come from increasing project workloads in a firm's current niche, many firms will look to diversification as a rebuilding strategy.

One strategy is to increase their service area, potentially by establishing a satellite office. Another is to expand the building sectors that they serve. A third is to look offshore for work, a strategy with increasing appeal

as growth in the U.S. economy is expected to remain modest compared to developing countries. A fourth is to expand firm services, such as interior design, landscape architecture, planning, engineering, or even construction.

While internal expansion may be a method to achieve firm growth, mergers and acquisitions are often seen as a quicker and safer strategy. In a December 2013 survey of architecture firms, about a quarter of respondents indicated that over the past year they had actively considered either acquiring another firm, merging with one, or being acquired by one. A majority of architecture firms think that merger and acquisition activity will increase over the coming year.

The major reason motivating the increase in merger and acquisition activity is project diversification: giving the firm the ability to add new markets, serve a broader area, or develop an international presence. The second and third most important considerations for firms are closely related to the first: allowing them to compete more effectively, and adding skills and credentials. Still, it will take several years of growth—either internal or through mergers and acquisitions—for architecture firms to fully regain losses from the recession.

W H A
T' S N
E X T

PROFITABILITY

A BETTER VALUE

Text by Elizabeth Evitts Dickinson

Two infamous Justice Department consent decrees, from 1971 and 1990, prohibit architects from setting fees. Afraid of straying into illegal territory, practitioners have largely avoided shop talk ever since. But now, a growing movement of architects is finding legal ground to reshape the profession's business model and clearly define value for clients.



IN DECEMBER 1971, the Justice Department made a decision that forever influenced the way architects in the United States approach business. The government chose to pursue a case against the AIA for what it believed to be violations of Section 1 of the Act of Congress of July 2, 1890, commonly known as the Sherman Antitrust Act. The law, which had been established to prohibit monopolies and to maintain fair competition in our free-market society, prompted the Justice Department to investigate the AIA and other professional societies and trade associations that had crafted fee structures for members. The antitrust lawyers claimed that the AIA's fee schedules were tantamount to price fixing.

Indeed, in a similar case brought against a bar association, the U.S. Supreme Court ultimately validated that stance, says Jay A. Stephens, Hon. AIA, senior vice president and general counsel of the AIA. "If competitors in an industry get together and decide not to compete on price, that violates the Sherman Act," he says. "It doesn't matter if you have good intentions or not, anything that you do that tampers with competition on fees or payments is going to be a violation of that law."

In June 1972, the AIA settled the case with the Justice Department by entering into a consent judgment outlining what the AIA and its members could and could not legally do when it came to pricing. But in 1985, a document distributed by the Chicago Chapter of the AIA discussing fees prompted a second Justice Department probe that resulted in a nearly five-year-long nationwide investigation into the pricing practices of architects. The AIA entered into a second consent decree,

the upshot of which is this: The AIA and its members can in no way, directly or indirectly, restrain the way architects charge for services.

That second decree was issued in 1990 on Halloween—a fitting date given how the specter of the Justice Department probe has created considerable fear among architects about the subject of fees. It's not hard to see why: Simply gathering with fellow architects to discuss how to charge for a certain building type or what to pay staff could be seen as a violation of the law.

In reality, though, the Justice Department probe targeted conduct that was in no way characteristic of the profession as a whole. Raymond L. Gaio, AIA, president of the Los Angeles AIA chapter when the second consent decree was announced, told the *Los Angeles Times* after the settlement that it would have little effect on architectural business: "I don't think it [the lawsuit] really dealt with anything the profession was actually doing," he was quoted as saying.

In fact, the most lasting effect of the antitrust litigation may well be the silence that ensued. Architects have been afraid to talk shop, in part because they don't fully understand the scope of the law as it relates to fees. "We know that we shouldn't be talking about fees, so nobody talks about it" says Peggy Deamer, principal of her eponymous New York firm and an assistant dean at Yale University's School of Architecture. "The Justice Department going after the AIA—that has cast a very long shadow."

THE FIRST RULE of architecture fees is that you don't talk about architecture fees. At least that's how it seems to many in the wake of The United

States of America v. The American Institute of Architects. So what, exactly, constitutes a violation of the Sherman Act? The 1990 consent decree stipulates that nothing "shall prohibit any individual architect or architectural firm, acting alone," from expressing an opinion about architectural prices or competition. This reflects well-established precedent that the Sherman Act doesn't bar an individual architect or a firm from setting prices any way they want, so long as the architect or firm acts entirely on its own, says Stephens.

It's when architects act in unison that things get tricky. "You have three areas of concern," Stephens says. "The first happens when competitors get together and actively fix prices. The second is when they attempt to fix prices, which is also a violation. Or in the third instance, they might simply talk about prices in a way that could be construed as part of a conspiracy to fix prices, and that is also a violation of the antitrust laws."

Architects can also get into trouble for banding together to say "no" to what they perceive to be unfair pricing practices. Take, for example, a private design competition. Individual firms have every right to decide not to participate if they believe a competition fails to reward bidders appropriately. "If it's not worth it, they don't have to compete," Stephens says. "The danger comes if architects get together with their potential competitors and decide not to participate in the competition. That's called a joint boycott, and it's also illegal."

There are some arenas, though, where advocating for better fees is not a violation of the law. State and local governments are not bound by the Sherman Act and are free to set

fee schedules and impose those on architects for government-funded projects. “The reasoning is that it’s a states’ rights issue,” Stephens says. “For most purposes under the Sherman Act, every state is sovereign and has the power to decide what it does within its own borders.”

Moreover, the First Amendment has a provision allowing people to “petition the government for redress of grievances,” making it legal for architects to join forces and lobby state or federal government officials to change the way they seek bids for architectural jobs. Stephens says the nuances of such exceptions to the law are often difficult to grasp, particularly in a slow economy. “If you talk to architects today, they will tell you that there is a tremendous pressure to lower fees,” he says. “The dilemma is that the courts are going to say that’s exactly what the law is meant to do. From the antitrust law perspective, the system is working.”

TO BLAME the current state of architecture fees solely on the Justice Department case fails to recognize a larger truth. A quick look back at the history of fees shows that architects have often struggled with valuing their work.

In the early 1860s, the influential architect (and co-founder of the AIA) Richard Morris Hunt inadvertently established a standard working rate when he sued a client for non-payment of his 5 percent architectural fee. Hunt won and the 5 percent fee quickly became the norm, as outlined in a schedule of charges document issued by the AIA a few years after Hunt’s lawsuit.

Additional litigation throughout the 19th century created various precedents that saddled the profession with additional liability. In an 1888 case, the court concluded that the architect—and not the tradesmen—was accountable for an improperly sized boiler chimney installed in a building. For architects, shouldering the additional risk of such structural flaws, and having to keep pace with rapid advances in building design and technology, did little to change what they were paid. That flat 5 percent fee barely went up—to 6 percent—by the early 1900s.

Even with a flat rate, architects still felt pressure from clients to lower fees. Charging a set percentage was an advocated norm, but it was by no means the rule, and firms often undercut what they charged to earn a job. The AIA responded, and by the 1950s, individual AIA chapters had a (frequently convoluted) fee schedule for a variety of jobs. Even still, architects saw their profit margins continue to shrink. An AIA-commissioned study of firm economics in the 1960s concluded that many firms had no clue how to budget actual costs or maintain accurate records. Worse, one out of

four jobs lost money, in spite of the complex fee schedules. Well before the Justice Department cracked down and ended fee schedules in favor of cost-based competition, architects struggled to define and defend their value. “We have never resolved our compensation model,” says Deamer.

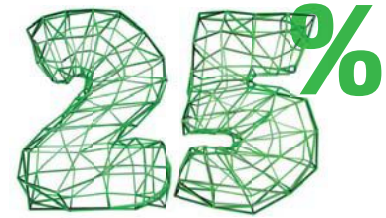
Deamer is a founding member of a new and informal group of about 36 architects, firm owners, academics, and others calling themselves the Architecture Lobby. The Lobby began as a series of salons to discuss the state of architecture and evolved into a group with several advocacy goals, according to Deamer. Topping the list is a desire to change the way the profession values its labor.

Whether it’s reverse auction bidding that rewards the lowest rate; design competitions that require substantial outlays of resources with no guaranteed return on investment; firms low-balling fees just to get a gig; or a generation of hopeful architects clamoring for staff positions by accepting low salaries, long hours, and poor benefits—it is, Deamer says, essential that the profession overhaul its business model. “We haven’t gotten it together like other professions,” Deamer says. “There’s all this lip service to the architecture profession needing to be more entrepreneurial, but when we get right down to it, we aren’t at all creative about our business model.”

Rather than being paid for expertise, as some doctors or lawyers are, Deamer says architects are paid for an object. “We don’t know what fiscal model to follow: Are we a trade? An art? A service? Because we don’t know the financial model that we fit into, we adopt the worst of all of them.”

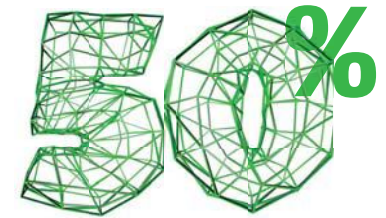
In an unscientific SurveyMonkey poll conducted last month by ARCHITECT, half of the more than 800 designers in the magazine’s email database who responded said that their firms had implemented business strategies to offset plummeting architectural fees. Respondents said they had tried cutting staff and overhead, slashing the time spent on design and working drawings (using hourly rates instead of fixed fees), pursuing new sectors with better profit margins, and taking on more related work for a client to justify higher stipends, among other strategies.

It amounts, however, to the Dutch boy and the dike dilemma: As market pressure mounts, there seem to be more holes than fingers, and the dam seems ready to burst. What is so counterintuitive, then, is why architects—who are such savvy designers, such creative problem solvers—often struggle to adjust to the 21st century marketplace. Deamer points to other industries, like tech, which have figured out how to fund research and development and continue to innovate products through a mix of profit and



Percentage of projects undertaken by architects in the early 1960s that actually lost money.

SOURCE: AIA-COMMISSIONED STUDY



Percentage of firms that said in a December SurveyMonkey poll that they had pursued business strategies to offset the downward pressure on architecture fees.

SOURCE: ARCHITECT

venture capital investment. “How do we really set up a structure so that we can do research and development, pay our staff well, and charge what we’re [really] worth?” Deamer says.

Given our lukewarm economy, it’s more vital than ever for a firm to understand and articulate its worth and influence client opinion about architectural value. But with fees being such a nuanced and legally thorny issue, the result is that architects often don’t talk business at all. Stephens says that the AIA would never enable discussions—particularly about fees—that would cause problems under the antitrust laws. But, he says, “if we present to people the different ways they could add value to a business, do a better job with basic business preparation, then we could help people without getting anybody into trouble.”

IN 2005, Bradley Samuels and four classmates in the architecture program at the Cooper Union decided to buck what they saw as indentured servitude at an existing firm and start their own practice, Situ Studio. They chose to create a different kind of business, one that supported their collective interests in design, research, and fabrication. “We built a practice model around combining different parts of the discipline in order to pursue the type of work we’re interested in,” Samuels says. “The fact is that compensation for doing design work isn’t what it needs to be. We knew, coming right out of college, that we couldn’t make it on design fees alone.”

The partners created three distinct departments—design, fabrication, and research—and gave each its own fiscal objectives. “They all have different marketing strategies, different revenue goals, and they need to be thought about discretely, even though they all feed off one another,” he says. “We wanted an alternate model of practice, and that’s why we structured the studio this way.” For instance, Situ pursues grants for the research arm while using the fabrication portion of the business to build for other people—architects and artists—which then helps fund the studio’s original design projects.

Today, Situ Studio employs 34 and continues to refine its business model to remain viable in the changing marketplace. (Samuels is quick to note that the path they chose did not lend itself to becoming a licensed architecture firm, but that licensure is something they are now discussing.) Samuels began attending Architecture Lobby gatherings because “we all agreed that the culture of the architecture firm was problematic, and these were important conversations to have,” he says.

“There’s a lot of discussion about the value of an architect,” he continues. “That’s not as big

of an issue for our studio because we come at it another way. There’s a lot of downward pressure on fees, sure, but I don’t see that changing. There’s always pressure, and it’s not specific to architecture. There’s market pressure in general.”

In many ways, Situ mimics a tech start-up more than a traditional architecture firm. While grants currently fund research, the long-term goal is to monetize the department. For example, Situ used grant funding to design and patent a digital imaging instrument called the Giri, and they are about to spin the product off into its own company. “It’s a hard model to apply to architecture as traditionally defined,” Samuels says, “but it fits what we do.”

The studio also fosters a startup culture by keeping staff involved in important discussions, intellectual and otherwise. “We’re not hierarchical the way that many firms are. There’s an agility with the expectation of growing collectively,” Samuels says. “We remain small and agile, and we continually re-evaluate and adjust.”

REMAINING AGILE and willing to move with the marketplace is equally important to large firms, according to Charles Dalluge, Assoc. AIA, executive vice president at Leo A Daly, one of the largest architecture firms in the country. When he began at the firm two decades ago, Dalluge was in the design department. Now, he says, he applies those design-thinking skills to business. “We all went to architecture school to be designers, and we were trained as problem solvers,” says Dalluge. “I’m still a problem solver, but I’m solving the problems of our business as opposed to [coming up with] a client solution.”

Dalluge says that one way to combat diminishing fees is to make sure your firm can advocate its value to a client. “We’ve had situations where we’ve said: If we had more time to look at this particular issue, we could come up with a better solution for you. So don’t reduce our fee, increase our fee,” Dalluge says. “The client has to believe that you are a value-added [proposition] and not just a commodity.”

Leo A Daly uses proof statements—a growing body of evidenced-based design results—to support this argument, such as providing fact sheets from a past hospital project to a new healthcare client in order to show how design choices increased the efficacy of a building and its occupants. Dalluge also says his firm customizes fees. “No two hospitals are alike, no two schools, so it makes little sense to base fees on a percentage of construction costs,” he says.

The firm works at the front end to understand the scope of a project in order to create a fee that makes the most sense for the project. “We try to get to the core of the issue—not just how many square feet, or how many



The standard fee in the early 1900s.

SOURCE: AIA

stories or rooms. Once we feel like we have that ‘Aha!’ moment, and we have a genuine understanding of the scope of the work, at that point, we handpick the best people for that assignment and create a custom fee.”

Leo A Daly employs a “go/no-go” strategy in assessing a project: Do you take the project in the first place? “We look at where the risk is,” Dalluge says. “Is it in the terms and conditions of the contract? Is it a client that doesn’t pay on time? Do they have the money, or are we going to help attract financing? Today, as a profession, we have a much better handle on where the risk is in the opportunities. We are able to make sure that compensation is aligned with risk.”

Dalluge also says his firm has become savvier about saying “no” to design competitions. They won’t participate if there isn’t enough access to the client, and they scrutinize return on investment. “We’ve seen competitions where what the client is asking for in terms of deliverables—animation, video, documentation—means the cost of pursuit is more than the potential profit if you win it.”

Dalluge recently went to D.C. to help lobby with the AIA for improving the way the federal government invites bids for building projects. “While that wasn’t affecting the fee, per se, what we were trying to do was affect the way the government procures services to better benefit the architects.”

Better business models, smarter approaches to compensation, and lobbying government where possible—are all important strategies. For Deamer, though, simply lifting the taboo of talking about business and having a conversation about compensation may be the first and most valuable step in bolstering the perceived value of the architectural profession. She hopes that the Architecture Lobby can eventually spark a public discourse around the topic. “Really public,” she says, “so that all of the architects in the U.S. would know about this and the public would join the conversation, too.”

THE RETURN OF LENDING

Text by Julie Satow



The market for commercial mortgage bonds was on fire until the recession hit. Now, after five long and lean years, the market is clawing its way back to pre-bubble levels, signaling that banks are loosening their lending standards. The upshot? More work for architects.

LATE LAST YEAR, bankers began marketing the largest issuance of commercial mortgage bonds since the start of the financial crisis. Hilton Worldwide, the massive hotel chain that recently went public, marketed \$3.5 billion in these structured bonds in November as part of a larger debt-financing package. The deal represents a star turn for a market that was completely frozen just a handful of years ago.

Commercial mortgage bonds, officially known as commercial mortgage-backed securities, or CMBS for short, are bonds that are backed by pools of commercial mortgages. Real estate insiders closely monitor these bonds' performance, since they are an indicator of the industry's access to financing.

"It is a barometer for the health of the overall market," said Shawn Rosenthal, an executive vice president at the mortgage brokerage firm CBRE. "When it is doing well it means that lenders have to be more competitive, investors are buying the bonds, and we are in a healthy environment."

The CMBS market was a darling of the real estate bubble, with some \$230 billion in bonds issued at the peak in 2007. But by 2009, investors had fled the market and lenders had mostly closed up shop, so not a single bond was issued. Since plummeting to its nadir, however, the CMBS market has been slowly clawing its way back to pre-crash levels.

Dubbed CMBS 2.0, some \$90 billion worth of these commercial mortgage bonds is expected to be issued this year, a nearly 100 percent increase over last year, according to research from Trepp, a market analysis firm. Next year, Trepp estimates that CMBS issuance could reach \$100 billion, while others say that figure could top \$120 billion.

The bankers who are creating CMBS issuances include diverse loans in the bond pools as a way of mitigating risk. So a single bond may include mortgages for office buildings, hotels, multifamily properties, and retail stores, in a variety of locations, including major cities and smaller markets. Real estate insiders, including developers and architects, keep close tabs on CMBS: As investor demand for these bonds grows, bankers can include increasingly diversified—and often riskier—properties in the pools of loans. So it may be

easier to obtain a mortgage on a skyscraper in New York City or a rental building in a prime Chicago neighborhood. And as the CMBS market expands even further, owners of less prestigious properties—an Arkansas mall, say—will also have an easier time getting a loan.

"There is no question that 2014 is going to be a big year," says Douglas Harmon, an investment sales broker at Eastdil Secured. "In New York and other gateway markets, there are a lot of lenders that cannot seem to get enough real estate exposure. Look how many projects are on the docket," he adds, noting the Hudson Yards office project in Manhattan and numerous condominiums under construction along West 57th Street. "There are more projects that are in the planning stages than there has been in a decade."

As demand for CMBS grows, more lenders are entering the market and competing with one another to make loans. "Three years ago, banks were hoarding money," said Dan E. Gorczycki, a managing director with real estate brokerage firm Savills, "and 18 months ago, they had the money, but they were reserving it for existing clients. These days, they have money for new clients, but it has to be a high-quality deal, and they want them to become customers as quid pro quo for doing the loan."

One recent example that shows how lenders are taking on more risk is Spain-based Banco Santander's \$117 million loan to Ares Management, Tucker Companies, and Kushner Real Estate Group for a low-rise residential-and-retail complex that the three partners are building in Fort Lee, N.J. "It is a rare case where you can get a loan for a retail and multifamily development that is still under construction and hasn't yet been leased," says Gorczycki, whose firm coordinated the loan. "But the reality is, this is a high-quality borrower, it is a bulletproof market, and there is very little risk that it won't lease up."

NEVERTHELESS, THERE ARE some red flags in the CMBS market. A chief concern is the wave of bonds that are set to mature over the next several years. There is \$110 billion worth of 10-year CMBS bonds expected to mature in both 2016 and in 2017, according to Trepp. These loans were underwritten at the height

of the real estate bubble when standards were often at their riskiest. As a result, many of the underlying real estate assets in the bonds are highly leveraged and are located in smaller markets that are still struggling.

Despite concerns over this wave of impending maturities, "the hope is that by the time we get there, the economy will have continued to grow, and the fundamental performance of these properties will have improved," says Joe McBride, a research analyst at Trepp. If the market is stronger by then, credit should be available and borrowers should be able to pay off the debt or refinance the loans, he says.

Another factor that will be closely watched in the coming year is underwriting standards. As more lenders get into the game and competition continues to intensify, some experts say that standards may start to slip. This is a major worry, because it was loose underwriting standards last time around that drove many investors from the CMBS market.

In particular, because CMBS is made up of several different property types, the market is keeping an eye on whether some bonds may have a heavier weighting toward riskier properties. And they are also keeping an eye on how much leverage is on these properties. Before the crisis, many properties were as much as 85 percent or even 90 percent leveraged. That fell precipitously after the market crash, when loans were harder to come by, and even high-quality borrowers had a hard time obtaining more than 60 percent financing for a project. Now some deals are as much as 75 percent leveraged. "Lenders are getting more aggressive, they are looking the other way at things that used to be scrutinized," Gorczycki says.

"CMBS underwriting is fair; they aren't pushing the envelope like in 2005, 2006, and 2007," Rosenthal says. Still, competition can quickly devolve into loosening of standards. "That is how it happens—one guy does something at one bank to win a loan and then all of a sudden that becomes the new market norm," he says. "So that competitive nature is definitely something to think about in 2014: what banks are willing to do to win those loans and how to keep the standards as strong as they have been."

KIMBELL ART MUSEUM

WHEN THE RENZO PIANO PAVILION (NAMED AFTER ITS DESIGNER) OPENED AT THE KIMBELL ART MUSEUM IN FORT WORTH, TEXAS, ARCHITECT SENT TWO CRITICS, A PHOTOGRAPHER, AND A TEAM OF VIDEOGRAPHERS TO CAPTURE DIFFERING PERSPECTIVES OF THE NEW BUILDING. WITOLD RYBCZYNSKI AND THOMAS DE MONCHAUX HAD VASTLY DIFFERENT REACTIONS TO THE MUSEUM MAESTRO'S APPROACH TO A STRUCTURE THAT SITS, IN EVERY WAY, IN THE SHADOW OF LOUIS KAHN.

Photos by **Richard Barnes**





A STUDY IN DEFERENCE.

Text by **Witold Rybczynski, Hon. FAIA**

IN 2006, the Kimbell Art Museum in Fort Worth, Texas, approached Renzo Piano to design an addition to Louis Kahn's masterpiece. Piano, Hon. FAIA, was a logical choice. He had to his credit two Texas museums—the Menil Collection and the Nasher Sculpture Center—that were themselves acknowledged masterpieces. And he had plenty of experience working on expansion projects for respected cultural institutions: the High Museum of Art in Atlanta, the Los Angeles County Museum of Art, the Art Institute of Chicago, and the Isabella Stewart Gardner Museum in Boston. By all accounts, though, Piano was at first reluctant. It was a risky commission. In 1989, the first architect who accepted it, Romaldo Giurgola, FAIA, was publicly excoriated for his proposal to duplicate Kahn's design at each end. "Why ruin the masterwork of Kahn's life with such an ill-considered extension?" asked a letter to *The New York Times*, whose signatories included Philip Johnson, Richard Meier, FAIA, Frank Gehry, FAIA, and James Stirling. The expansion was canceled, and Giurgola retreated to Australia.

At that point, the preference of the Kimbell trustees, stung by this episode, was to build nothing at all. But in subsequent years, it became evident that the museum had outgrown its original home: It needed gallery space for temporary exhibits, classrooms for its educational programs, a more commodious library, a larger auditorium, and more parking. Eventually, the museum acquired land for expansion across the street from its rear entrance, a site that faced the Modern Art Museum of Fort Worth, designed by Tadao Ando, Hon. FAIA. This location had the

Piano: View of the main (east) entrance.

➞ *Continued on page 124*



DEFERENTIAL, OR DEFLATING?

Text by **Thomas de Monchaux**

PITY THE MUSEUM that finds itself in possession of a masterpiece. Not an artwork—those are great: works like a Duccio and a Michelangelo, the Cézannes and the Picassos, the divine Bohdisattvas and the Ganeshas, all of which can be found in the galleries of the Kimbell Museum of Art in Fort Worth, Texas. No, the problem is when the masterwork is a work of architecture.

Between 1966 and 1972, the Kimbell got the right man at the right time at the right place. Louis Kahn—despite his brief career and with due deference to Frank Lloyd Wright, Louis Sullivan, and Thomas Jefferson—is America's greatest architect. Beyond any measure of taste or style, Kahn's best buildings combine, in enduring and astonishing ways, methods and virtues that confound commonplace distinctions—between ancient and modern, natural and artificial, practical and poetical—all with a palpable feeling for the dignities and liberties of their inhabitants. An entire city of this particular perfection, lacking the stimulating misfits of everyday life, would pall. Yet each of Kahn's few works is a glimpse into an unbroken world.

Kahn's Kimbell is iconic: Those rolling cycloid vaults, those porticoes and courts and pools, those hidden skylights and suspended reflectors, and all that silvery daylight they steal from the gods. Those divine proportions and overlaid rhythm of 20-foot vaults and 10-foot service bays, with all their built-in devices and services as integrated and resolved as watchworks, and the travertine and concrete that bring together gloss and grit, intimacy and monumentality, in a way that is just right for a

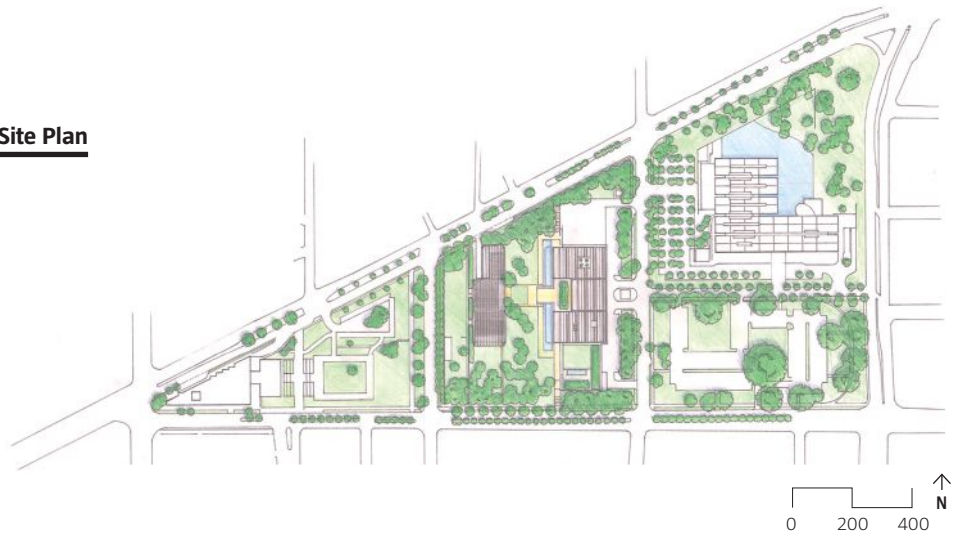
➔ *Continued on page 129*

Kahn: View of the main (west) entrance.



Aerial view of the campus from the northwest.

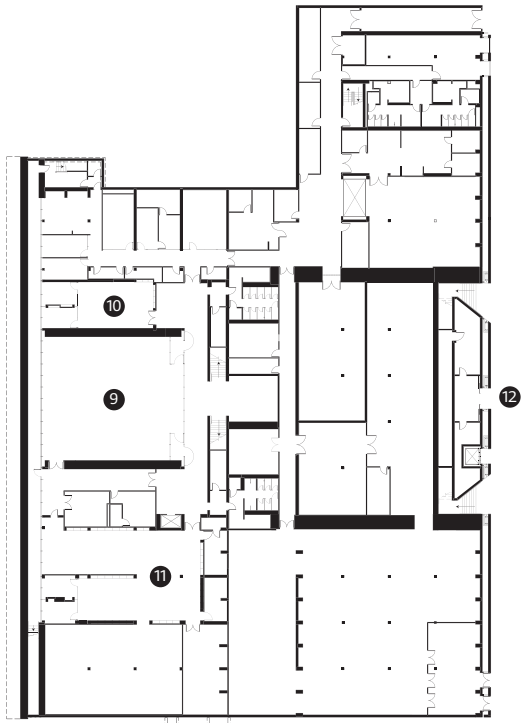
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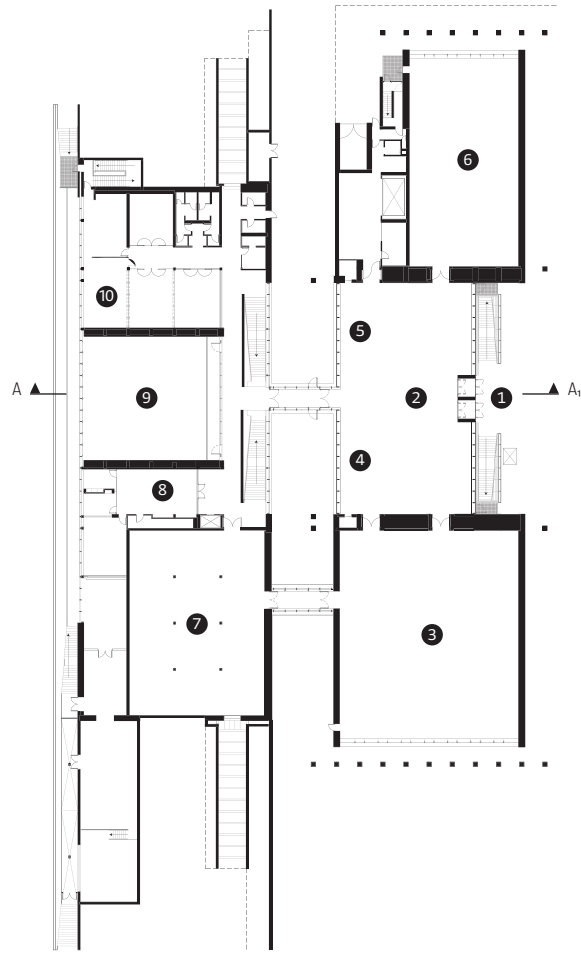
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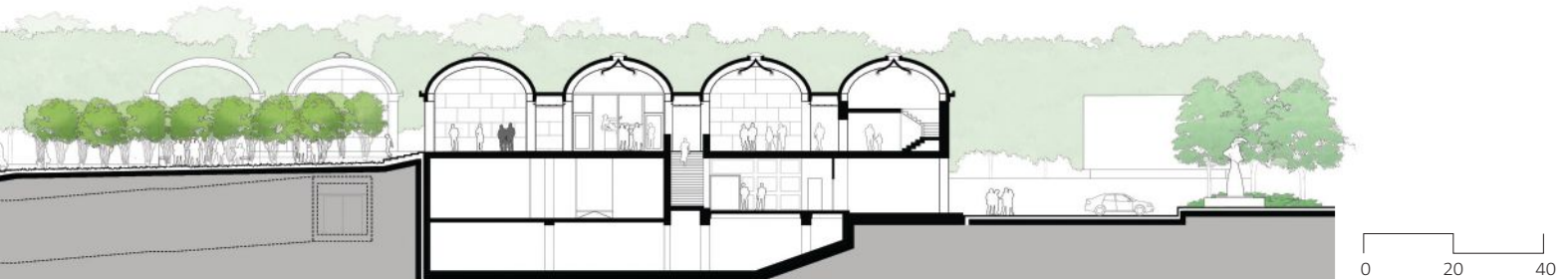
**Piano Pavilion
Lower-Level Plan**



**Piano Pavilion
Ground-Floor Plan**



- | | |
|------------------|-----------------|
| 1. Entrance | 7. West gallery |
| 2. Lobby | 8. Membership |
| 3. South gallery | 9. Auditorium |
| 4. Shop | 10. Education |
| 5. Café | 11. Library |
| 6. North gallery | 12. Parking |



➤ *Rybczynski, continued from page 120*

advantage of entirely removing the addition from the immediate vicinity of the Kahn building.

Piano eventually accepted the commission, and spent several months working on a preliminary design. As the project developed, however, it soon became clear that the site was simply too disconnected from the museum, both functionally and symbolically. When someone suggested that the lawn facing the front of Kahn's building might be a better location, Piano immediately endorsed the option.

In 2008, when Piano had just completed his California Academy of Sciences project in San Francisco's Golden Gate Park, he was asked whether he took Herzog & de Meuron's de Young Museum, which stands opposite, into account. His tactful answer was that he didn't think much about it. "This is what you get when you are yourself and they are themselves," he said. The two contrasting museums barely acknowledge each other since they are more than 600 feet apart. But in Fort Worth, Piano and Kahn's buildings would be much closer—less than a third that distance. That's close enough for a real architectural conversation. But what do you say to a masterpiece? "Make room for the new kid on the block" or "Don't mind me"?

THE LONG, LOW FAÇADE of Piano's addition exactly mirrors Kahn's tripartite design—two solid walls flanking a glazed entrance—but the overall effect is much more low key than its celebrated neighbor. There are no curved vaults, no reflecting pools or waterfalls, no grove of delicate yaupon holly trees as in Kahn's entry court. Piano yields pride of place to the master.

In the 1960s, Piano worked briefly in Kahn's office, and though his architecture is generally lighter and favors steel rather than concrete, he is in many ways following in Kahn's footsteps. The Nasher, for example, with its series of bearing walls spanned by vaulted roofs, is distinctly Kahn-like. In the Kimbell addition, however, Piano goes further and actually echoes many details from Kahn's building: not only the tripartite plan but also the double stair, the deep light well illuminating the basement, the strip of glass separating the roof structure from the walls, the same floor patterns reflecting the structure above, the same-size concrete columns. There are some important differences: the exterior walls are concrete instead of travertine; the end walls are transparent rather than solid; and the galleries are spanned by bleached, laminated Douglas fir beams instead of concrete cycloid vaults, though Piano did keep the same 104-foot length. The wooden beams are a masterful touch—Piano had earlier considered glass beams—as they give the building a primeval quality, related to, but different from, Kahn's vaults.

The addition consists of two parts. The front section, which faces the Kahn building, is glass-roofed and contains a lobby/reception space, flanked by galleries. The rear section, separated by a landscaped slot that recalls the courtyards in Kahn's building, is bermed with an accessible sod roof. Within are a largely windowless gallery for works that require extreme light control, teaching spaces, the library, and an auditorium. Thus, although the addition is almost as large as the original building (100,000 square feet versus 120,000 square feet), it seems much smaller. The parking garage is located beneath the lawn that separates the Piano pavilion from the Kahn building.

Ever since Piano was commissioned to design the Menil (a project initially undertaken by Kahn but curtailed by his death in 1974), he has excelled at art galleries, and the top-lit ones in his Kimbell pavilion do not disappoint. Roofed entirely in fritted glass shaded by adjustable louvers (which have embedded photovoltaic cells), the galleries receive natural light that is further diffused by a fabric scrim. The design of Piano's gallery roofs has grown increasingly discreet since the Menil, and this one makes no grand architectural statement. In that sense, it resembles 19th-century galleries whose flat glass ceilings give no hint of the greenhouse structures above.

As in the Kahn building, the 104-foot clear spans allow great flexibility in display arrangement. Eleven-foot-tall movable panels are covered in the

same ivory-colored cotton fabric. Unlike Kahn's vaulted galleries, however, which offer a strong architectural frame for exhibitions, the Piano galleries are more neutral. The art was being installed the day I visited, and such works as four of François Boucher's monumental mythologies fairly sparkled against the pale concrete. Just as the ultimate test of a concert hall is how the music sounds, a gallery only comes into its own once the art is hung. Museum director Eric Lee sounded gleeful as he described his pleasure at seeing the familiar paintings in their new surroundings.

The interior of the addition is very much the architect "being himself." The Kimbell is Piano's 23rd completed art museum, and many familiar motifs are in evidence: the all-glass roof; carefully wrought structural details, glass balustrades with wooden handrails, and "Renzo red" seating in the auditorium. Mechanical services are discreetly integrated: a space beneath the gallery floor serves as an air-conditioning plenum, and air is diffused into the room via open joints in the wood strip flooring. One of the most theatrical spaces in the building is a pair of stairs leading down to the auditorium—since the flanking concrete wall is canted, the stair narrows as it descends, creating a forced perspective. The exposed cast-in-place concrete in the building deserves mention: It is as smooth as silk and has an unusually light color (the engineered mix is 2 percent titanium by volume). Another detail: the form ties are generally left exposed, as in the Kahn building, except in the galleries, where they would have been a distraction. There, the walls were cast without any ties, using special structural formwork.

KAHN WAS 71 when the Kimbell opened in 1972; Piano is 76 now. In Fort Worth, we witness both architects at the top of their games. In the intervening 40 years, however, building technology has evolved. Piano's building has more sophisticated environmental systems, the details are more refined, the hardware more precisely engineered. In the Kahn galleries, natural light is controlled by placing black felt strips inside the light diffusers to reduce reflection, or by spreading a tarpaulin over the skylights on the roof; in the Piano building, if you want less light in the galleries, you press a button.

Yet technology exacts a price. There is something endearing about Kahn's sometimes crude details: the rough, uneven surface of his concrete, the sturdy solidity of the white oak cabinetwork—and, of course, the uneven, ever-changing light. The vaults, especially, give the building an archaic, timeless quality. Like Kahn, Piano is a humanist, but his architecture is more precise, cooler, and feels less tolerant of human frailty. The Piano pavilion demonstrates how far we have come, but also what we have lost in the process.

Those who feared that any addition to Kahn's museum would compromise his masterpiece should feel reassured. In fact, the Piano pavilion enhances our experience of the Kimbell in two important ways. Standing in the lobby of the new building, we have a panoramic view of Kahn's magnificent porticos that most visitors did not previously experience. Especially at night, when Kahn's travertine glows, his modernist palazzo is a revelation. The entry sequence is different now, too. With his design, Kahn—who was not a driver—imagined that visitors would walk around the building from the parking lot and enter from the front; in fact, most people used the rear entrance. Today, visitors who park in the underground garage will climb the stairs or take the elevator and, when they emerge in the portico of the Piano pavilion, their attention will immediately be drawn to the entrance of the Kahn building. When they then cross the lawn they will enter the building through the grove of holly trees, just as Kahn intended.

Not many architects would have had the confidence to take Piano's self-effacing approach. His careful deference should only increase our admiration for his not-inconsiderable achievement: to create a much-needed expansion that neither upstages nor in any way diminishes the original, and subtly enhances the visitor's experience. No longer alone, the Kahn building is now in conversation with an admiring successor.



Piano: Exterior view of the east façade and entrance, from the northeast.

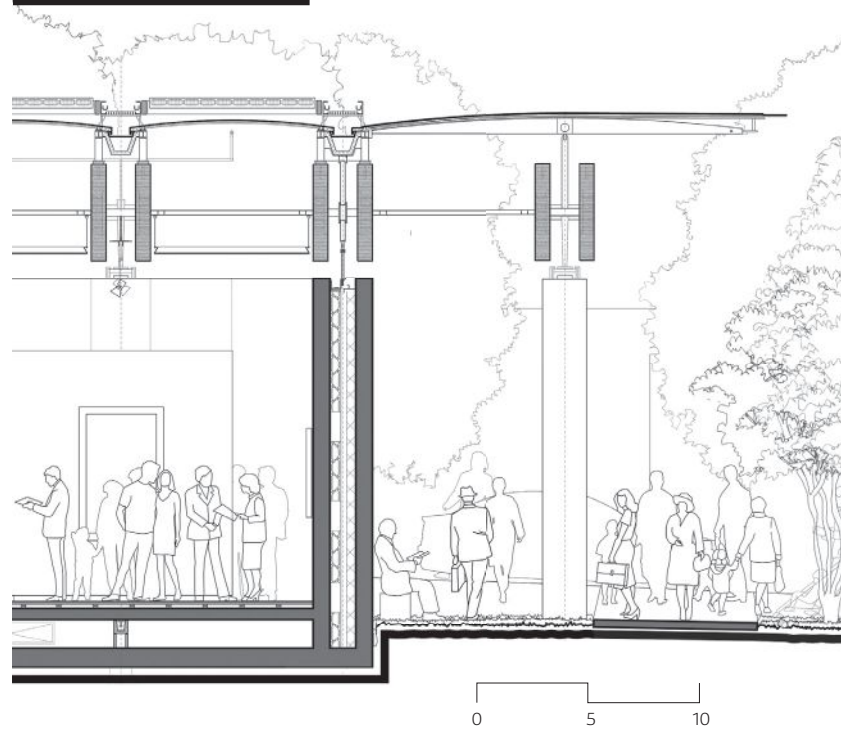
Kahn: Exterior view of the west façade and entrance, from the southwest.







South Gallery Façade Section



Exterior view of the south gallery of the Piano pavilion (left), at night. The lobby of the Piano pavilion (below), looking south.





Piano: South gallery, view from the north, showing the ceiling assembly and clerestory.

Kahn: Gallery, showing the concrete vaults and light scoop.



➤ *de Monchaux, continued from page 121*

Texas treasure palace whose founding fortune was wrought from live-stock feed and oil.

Inseparable from that architectural design, Kahn's landscape design (developed with George Patton and Kahn paramour Harriet Pattison, now well-known as the mother of *My Architect* filmmaker Nathaniel Kahn) incorporated century-old trees that had lined a street formerly on the site, mingling in red oaks and elms and aligning grids of crepe myrtles and yaupon hollies with the multilevel platforms and courts and pools that brought together building and plantings—all making, for this car-bound and desert-dusted city, a dappled garden. In a June 1969 letter to patron Kay Kimbell, Kahn described the villa-in-a-garden concept of the building, calling its west garden-facing façade and porticoes the “entrance of the trees.”

The last project Kahn saw completed, that building and its grounds are as much an essential record of a human nature, and of a humanist mission, as the Michelangelo artwork it shelters. And like that painting it should be stewarded in such a way that another 500 years of humankind can fully experience its original effects. If the Kimbell Museum were an insurance company or a car wash, it would face the same ethical duty, but as an institution explicitly concerned with the propagation of aesthetic experience, and with the long durations of conservation and curation, the assignment is closer to home.

IT'S NOT AN EASY THING, to have greatness thrust upon you. A little Kahn goes a long way. Familiarity breeds, if not contempt, then a certain situational blindness. Forty years come and go, and a museum's collection and mission grows. It finds itself in need of additional gallery space. And an education center. And a bigger auditorium. And even more parking. What then? First, a fiasco. Then, Renzo Piano, Hon. FAIA. The fiasco was an aborted 1989 expansion plan, designed by Kahn office veteran Romaldo Giurgola, FAIA, that suggested extruding Kahn's iconic vaults to the north and south like so much toothpaste—a not-unsupportable proposal given that Kahn's early schemes for the original building had not dissimilar features, yet one that drew an arts-pages firestorm, and was unceremoniously withdrawn.

In 2007, without the usual competitions and consultations, the Kimbell announced a new addition to be designed by Piano. He had done well with small Texas museums, like Houston's 1986 Menil Collection and Dallas's 2003 Nasher Sculpture Center—establishing, with his signature louvers and skylights, a reputation for knowing how to daylight a gallery, and for directing the busy traffic of high-end institutions. A formerly prodigious practice that is now merely prolific, Piano's Building Workshop has produced many buildings of notable efficacy, applying architecturally scaled technology to the programmatic essentials and perfecting an aesthetic of apparent systematicity. New York's Whitney Museum and the Los Angeles County Museum of Art, after their own failed additions, found in Piano a kind of fixer and controversy-cooler—a signifier of good taste and seeming guarantor of critical approbation, if not unalloyed praise.

Reviews since the November opening of Piano's addition have been dutiful, mostly of the “two masters meet at the top of their game” variety; or even more decorously, they have followed a narrative of “today's masterpiece joins yesterday's and shows admirable deference.” But neither of those tales is especially true. Somewhere between commission and construction, the site of Piano's freestanding addition got moved from an unimpeachably deferential position across the street from the Kahn's building's east entrance, up and over into the garden itself. Piano's 100,000-square-foot, \$132 million building now goes head-to-head against Kahn's 120,000-square-foot original across less than 200 feet of parking-garage-capping lawn. Kahn's “entrance of the trees” now faces not old oaks and elms, but the blind concrete wall and antic overhanging canopy that are the main features of the new structure's front façade.

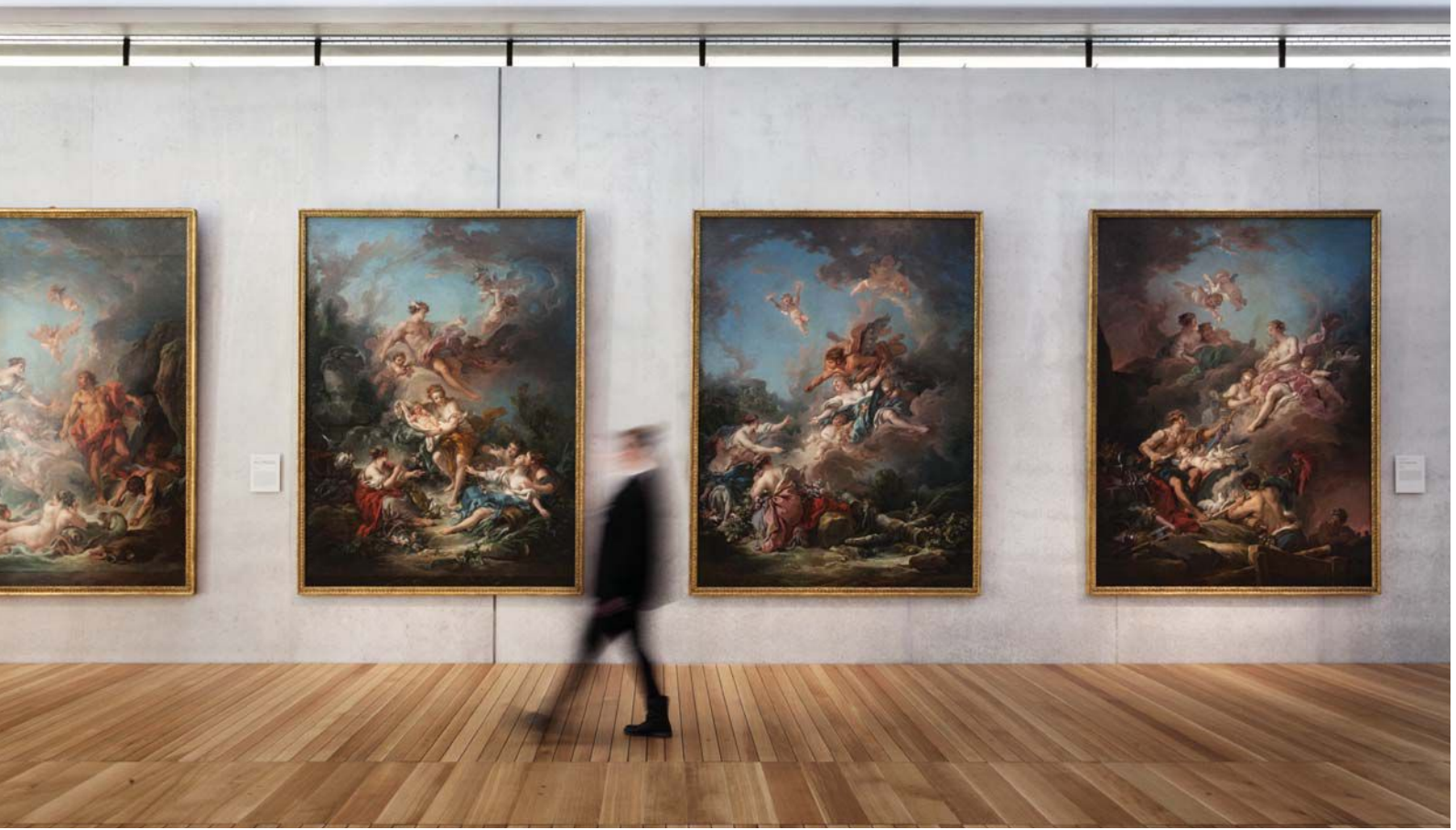
Building in Kahn's garden, next to his villa, one might incline towards two possibilities: A diaphanous architecture of steel and glass that complements-by-contrast with its substantial concrete antecedent, or a grassy berm that, like Piano's green roof for San Francisco's California Academy of Sciences or his Paul Klee Center in Bern, Switzerland, becomes part of the garden itself. Piano's new building does a bit of both, while fully committing to neither.

A partially glazed pavilion in front houses a very big lobby (which presumably will be primarily an event space), and some smaller-than-expected temporary exhibition galleries (one sharing space with a generously scaled gift shop) featuring 11-foot-tall reconfigurable partitions and clever air vents in the gaps between the widely spaced floorboards. There's a berm-like barrow to the back that houses a 300-seat auditorium along with education and support spaces and a low-light gallery. But the barrow, much-incised with loading docks and light wells and parapets, isn't all that buried.

And the pavilion isn't all that glassy. It features a familiar catalog of Piano details: As at the Art Institute of Chicago, there are structural columns that sneak outside the enclosing walls, supporting a thin but deeply overhanging roof; and as at the Nasher, there's an insistent striation of walls and beams (this time, 10 feet on center, running north-south) that sets up the finer grain above of the glass roof and associated gadgets (this time, operable louvers with solar panels over fritted glass over fabric scrims). The beams are 104 feet long, 4 feet deep, and made from laminated Douglas fir, although their bleached grayish color renders them—especially from that critical 200-foot distance to the Kahn—virtually indistinguishable from the concrete walls below. On the building's south and north façades, this results in a massive and deeply articulated top for what is, at 23-feet tall, a low-slung building—its miniature monumentality and rusticated modernism reminiscent of a Hugh Stubbins Jr., or a Harry Weese, or a Kevin Roche, FAIA.

To his own signature features, Piano appears to have added several direct references to Kahn's. The two buildings share a tripartite plan, with the meter of Piano's beams paralleling and equaling the length of Kahn's vaults, whose profile is distantly referenced by the very slight convex curve of Piano's skylights. A strip window between the base of those Douglas fir beams and the top of the perimeter concrete wall recalls the similar reveals between Kahn's vaults and end walls. Paired staircases down to the auditorium and the under-lawn parking vaguely parallel the twinned staircases that famously slip visitors up from the deliberately unpromising east entrance of Kahn's Kimbell, to the astonishing plenum of gallery and garden above. For some reason, however, one concrete side wall of both sets of Piano's stairs, and a retaining wall elsewhere, are canted by about 10 degrees. A case could be made that these quasi-Kahnisms pay tribute to their originals next door. But the opposite may also be true: By placing not-quite-duplicates nearby, Piano lessens the effect, in memory and anticipation, of the originals—a kind of distant defacement.

THE “UNCANNY VALLEY” is that famous zone of experience in which a copy's approximation of an original is so close and yet so far, so that the distinctions between the two become acutely visible, and causes the whole to be repulsive. It is into this valley that much of Piano's pseudo-Kahn falls, especially in the significant management of the many mechanical and structural elements—pipes, tubes, beams, frames, reveals, channels, panels, brackets, spacers, sealants—that in Kahn's building reliably converge into resolved assemblies far greater than the sum of their parts. In Piano's building, many of these same components complacently compound—clips on clips, tubes on tubes—but by Kahn's standards they are more coincident than truly convergent: adding and adding, without ever quite adding up. In this, the 23rd museum produced by an admirably busy practice, the resulting quietude may be less the result of restraint than of a finite capacity



Piano: Paintings hung on concrete wall in the south gallery.

Kahn: Paintings hung on travertine wall.





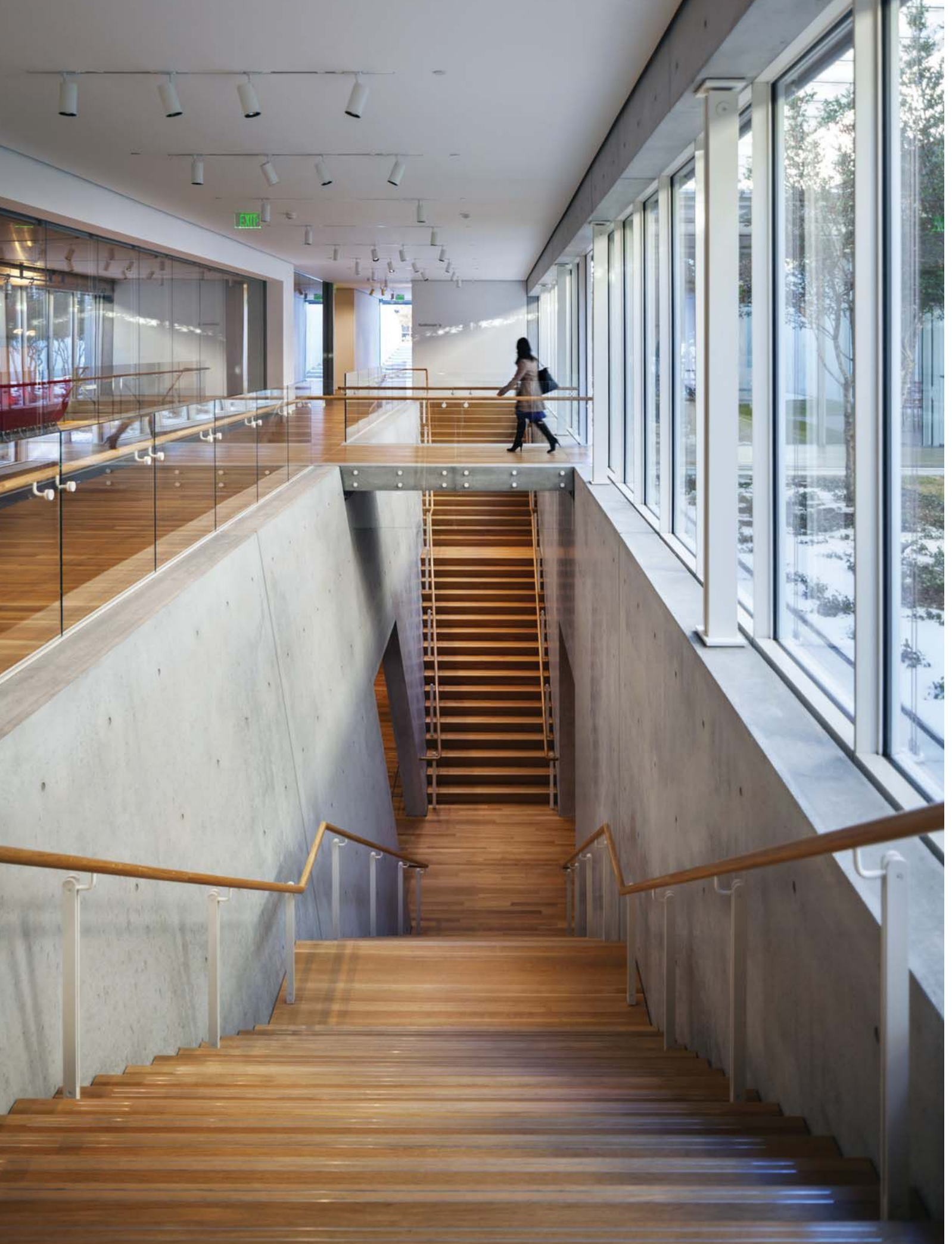
Courtyard in the Piano pavilion (above), with view to the glazed passage connecting the south and west galleries.

for taking pains—suggesting less the humility with which Piano’s building has been credited, than a kind of smarm.

Perhaps the closest analogy to what has happened at the Kimbell is Cabell Hall at the University of Virginia, with which, in 1899, Stanford White closed off the view from the famous Lawn to the distant mountains and Western Frontier at which Jefferson had deliberately directed it—turning a Founding Father’s “architectural commandment” into a mere quadrangle. Kahn’s garden was far more modest, but there’s a lesson in how White’s Beaux-Arts bowdlerizing of Jefferson’s Georgian classicism took much of the thrill and the enlightened strangeness out of its neighboring originals.

When asked at a November lecture in Fort Worth what he thought of his work at the Kimbell, Piano replied, “We need the trees to grow.” He elaborated, wisely and touchingly, that even the greatest new buildings take time for their rough edges, flaws and features both, to be worn smooth by use, “to become part of the day-to-day life of the city. It needs a patina. ... Architecture relies on a long time, it is made real only in time, like forests are.” Yaupon hollies are tolerant and hardy and evergreen. They grow fast. Soon, they and other new plantings may restore something of the proportions and conversations Pattison and Kahn imagined between branches and arches: between museum and garden and city. They may someday moderate the dire tuba-in-the-strings-section presence of the neighboring University of North Texas Health Science Center that, absent big trees, looms over what’s left of the garden.

But for now, those yaupons perform a different kind of miracle: Currently head-height when viewed from the sunlit forecourt at the heart of Kahn’s Kimbell, the trees’ delicate-yet-dense canopies blend seamlessly into the remaining garden landscape, and in a perspectival trick worthy of Duccio or Michelangelo, perfectly align with the elevation of the new building to the west—erasing it, as if it had never come to pass, from view.



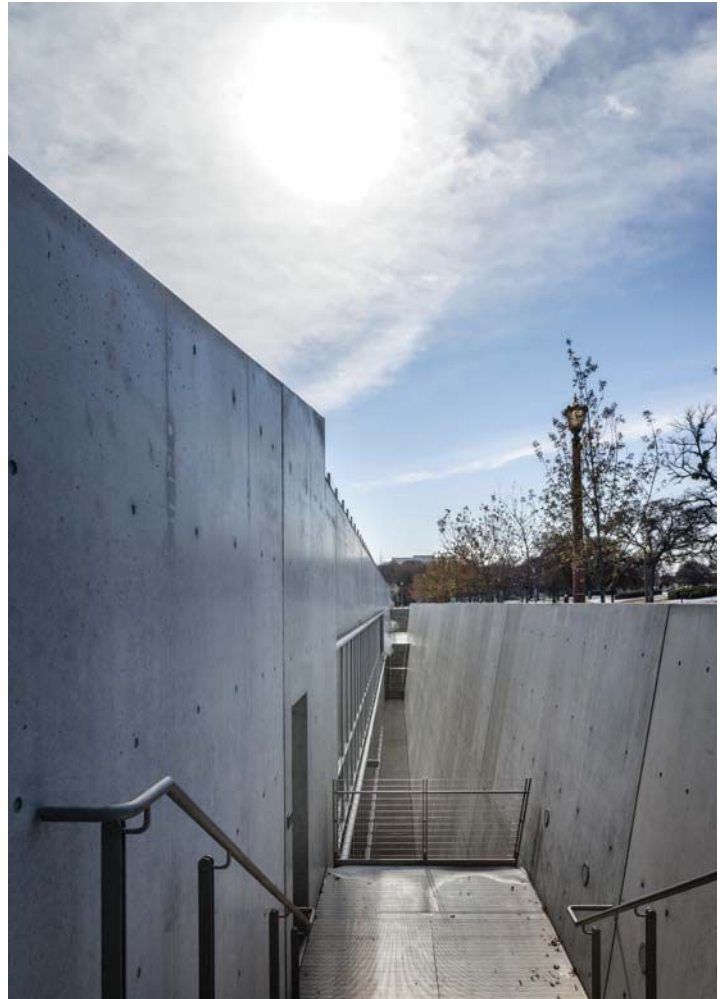
EXIT



Piano: Double staircase leading to auditorium (opposite).

Kahn: Double staircase leading from the east entrance to the gallery level (left).

Auditorium in the Piano pavilion, view from the southwest (below, top left); view from the southeast (below, bottom left), looking into the light well; light well behind (below, right), view from the north.





View, from the east, of the passage to main lobby of the Piano pavilion and to the Kahn building beyond.



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House in Tousuien

A POLYCARBONATE-CLAD HOUSE BY SUPPOSE DESIGN OFFICE ACHIEVES AN UNEXPECTED BALANCE OF MAXIMUM DAYLIGHT AND MAXIMUM PRIVACY FOR A FAMILY OF FIVE ON AN INFILL SITE IN HIROSHIMA, JAPAN.

Text by **Katie Gerfen**

POLYCARBONATE IS ONE of those materials that can be found in just about anything, be it a golf cart, CD, or blender. And while the construction industry is one of the largest consumers of the polymer, it is rare to find a project that showcases it more thoroughly than the House in Tousuien in Hiroshima, Japan. Usually an accent panel, or the stuff of skylights, in this house for a couple and their three children on an infill lot, polycarbonate essentially *is* the house—forming the entirety of the exterior cladding for the three-story structure.

The architects at Suppose Design Office turned to the material because “we tried find the best materials within the budget, while keeping it fun and creative,” says project architect Makoto Tanijiri, who founded the Hiroshima- and Tokyo-based firm in 2000. The material was cost effective, but also addressed other concerns that were important to the clients—in part, because “it softens natural light while providing a sense of privacy,” Tanijiri says.

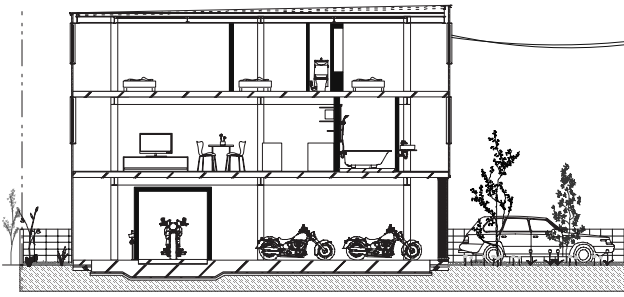
The translucent walls allow the minimalist interior—the steel structure is lined with warm wood floors—to be flooded with ambient light, all while screening the surrounding neighborhood from view, and shielding activities within the house from prying eyes.

Daylight even reaches what would normally be considered back-of-house spaces: A pocket garage and front door on the ground floor open to reveal an amply lit eight-motorcycle garage and maintenance room, and a stairway to the main living floors above. On each of the three levels, there is one fully enclosed room: a maintenance room in the garage, the bathroom on the second level, and a child’s bedroom and bathroom on the third. Aside from that, the plan is left largely open to maximize the light that pours through the translucent walls.

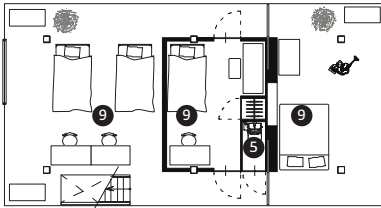
For all its benefits, the novel wall assembly did not come without its challenges—in this case, the installation of operable windows (outfitted with more polycarbonate, rather than vision glass). “We had to make sure that the window frame was properly sealed to the polycarbonate exterior wall in order to prevent water from coming into the interior, and from leaking to the hollow centers of the polycarbonate boards,” Tanijiri says.

So what did the neighbors think of a polycarbonate box coming into their quiet enclave of pitched roofs and pastel stucco? Tanijiri and his team gave the neighbors plenty of notice, so they were prepared to “see something different,” he says. Upside? With a glowing, translucent house on their block, no one will lose their way home again.

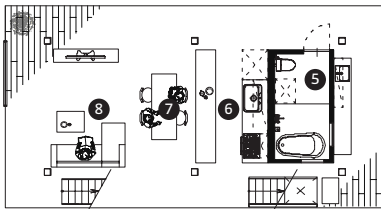
A-A, Section



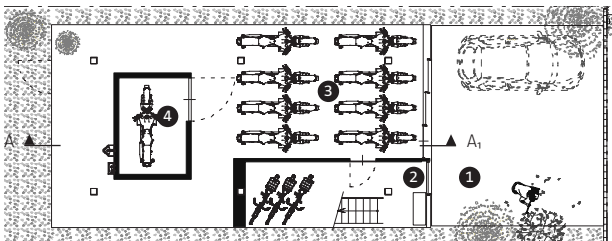
Third-Floor Plan



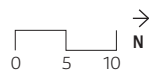
Second-Floor Plan



Ground-Floor Plan



- 1. Parking
- 2. Entrance
- 3. Garage
- 4. Maintenance room
- 5. Bathroom
- 6. Kitchen
- 7. Dining room
- 8. Living room
- 9. Bedroom





Previous spread: Seen here at dusk, the interior lights in the House in Tousuien make the polycarbonate-clad structure glow amid the quiet Hiroshima neighborhood. **Opposite top:** Only 20 feet wide, the narrow structure makes the most of its infill site. **Above:** The pocket garage door and sliding front door open the façade at the ground level, revealing the stairway to the main living area and space for up to eight motorcycles. **Left:** The open kitchen, dining, and living area takes up the majority of the second floor. While views out are obstructed by the translucent walls, the windows can be opened for more direct light and views.

Right: The concrete-lined bathroom is situated just behind the kitchen on the second floor—polycarbonate windows harvest diffuse light from the house's interior to bring into the minimal space. **Bottom:** Diffuse light in the third-floor master bedroom showcases the private, yet daylit, quality that was so important to the clients.



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Kimbell Art Museum, Page 118

Project Renzo Piano Pavilion, Fort Worth, Texas

Client Kimbell Art Museum

Architect Renzo Piano Building Workshop, Genoa, Italy—Mark Carroll (partner-in-charge); Onur Teke (associate-in-charge); Shunji Ishida (partner); Daniel Hammerman, Shunta Ishida, Emily Moore, Alberto Morselli, Marco Orlandi, Daniele Piano, Sara Polotti, Danielle Reimers, Etien Santiago, Federico Spadini, Fausto Capellini (team); Francesco Terranova (models)
Architect of Record Kendall/Heaton Associates, Houston—Laurence C. Burns Jr., FAIA, Nobuhiko Shoga, AIA, Daniel Dupuis, AIA, Saman Ahmadi, AIA, Michael Ta, Jing Gu, Jaime Alvarez, Assoc. AIA, Ai Kawashima

Project Manager Paratus Group

Structural Engineer Guy Nordenson and Associates; Brockette, Davis, Drake (consultant to construction manager)

M/E/P Engineers Arup

Civil Engineer Huitt-Zollars

Landscape Michael Morgan Landscape Architecture, Pond & Co.

Lighting Arup Lighting

Acoustical Harvey Marshall Berling Associates

Façade Consultant Front

Construction Manager The Beck Group

Size 101,130 gross square feet

Cost \$135 million

Material and Sources

Acoustical Ceilings Sadi Poliarchitettura (suspension grid) *sadi.it*; Baswaphon (plaster) *baswaphon.com*

Air Devices Halton *halton.com*; Titus *titus-hvac.com*

Art Hanging System Takiya *takiya.com*

Auditorium Seating Poltrona Frau
www.poltronafrau.com

Bridge Bearing Connections Mageba *magebausa.com*

Building Graphics DCL

Chairs Bernhardt *bernhardt.com*; Knoll *knoll.com*;
Stylex *stylexseating.com*

Compact Shelving Spacesaver *spacesaver.com*

Concrete Capform *capforminc.com*; Dottor Group
dottorgroup.it

Curtainwall System and Skylights Seele *seele.com*

Custom Steel Components Tripyramid *tripyramid.com*

Dimming System Philips Strand Lighting
strandlighting.com

Door Hardware Blumcraft *crl-arch.com*; Sargent
sargentlock.com; Von Duprin *allegion.com*

Elevators/Escalators C. Lindsey Designs
clindseydesigns.com; EMR Elevator *emrelevator.com*

Faucets Toto *totousa.com*; Vola *vola.com*

Fire Door Won-Door *wondoors.com*

Floor Boxes FSR *fsrinc.com*; Legrand *legrand.us*

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Glulam Beams Structurlam *structurlam.com*

Grating Ohio Gratings *ohiogratings.com*; Hendrick
Architectural Products *hendrickarchproducts.com*

Green Roof Hydrotech *hydrotechusa.com*

Interior Glass DGB Glass *dgbglass.com*

Insulation Dow Chemical *building.dow.com*;

Owens Corning *owenscorning.com*; Roxul *roxul.com*

Lighting Bega (exterior) *bega-us.com*; iGuzzini (exterior,
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ambient) *cooperindustries.com*; Lighting Services
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Operable Partitions Modernfold *www.modernfold.com*

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Structural Thermal Break Schoeck *schoeck.com*

Tables Davis *davisfurniture.com*; Herman Miller
hermannmiller.com; Knoll *knoll.com*; Riva 1920
riva1920.com

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Toilet Partitions Global Partitions *globalpartitions.com*

Upholstery Knoll *knoll.com*

Waterproofing W.R. Grace *graceconstruction.com*

Wood Flooring Woodwright *woodwright.net*

House in Tousuien, Page 137

Project House in Tousuien, Hiroshima, Japan

Client Withheld

Architect Suppose Design Office, Hiroshima and
Toyko, Japan—Makoto Tanijiri, Nagano Hajime
(project architects)

Structural Engineer A.S. Associates—Suzuki Akira

Size 135.09 square meters (1,454.10 square feet), site area;
69.36 square meters (746.58 square feet), building area

Cost Withheld

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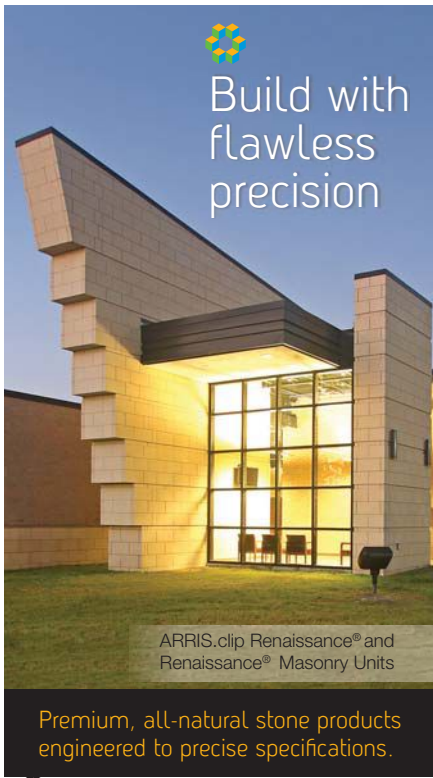
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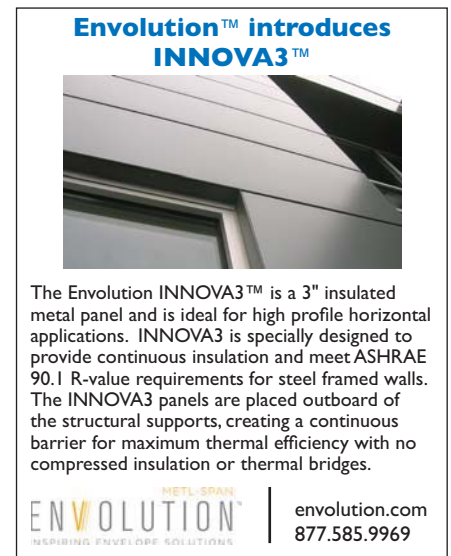


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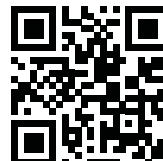
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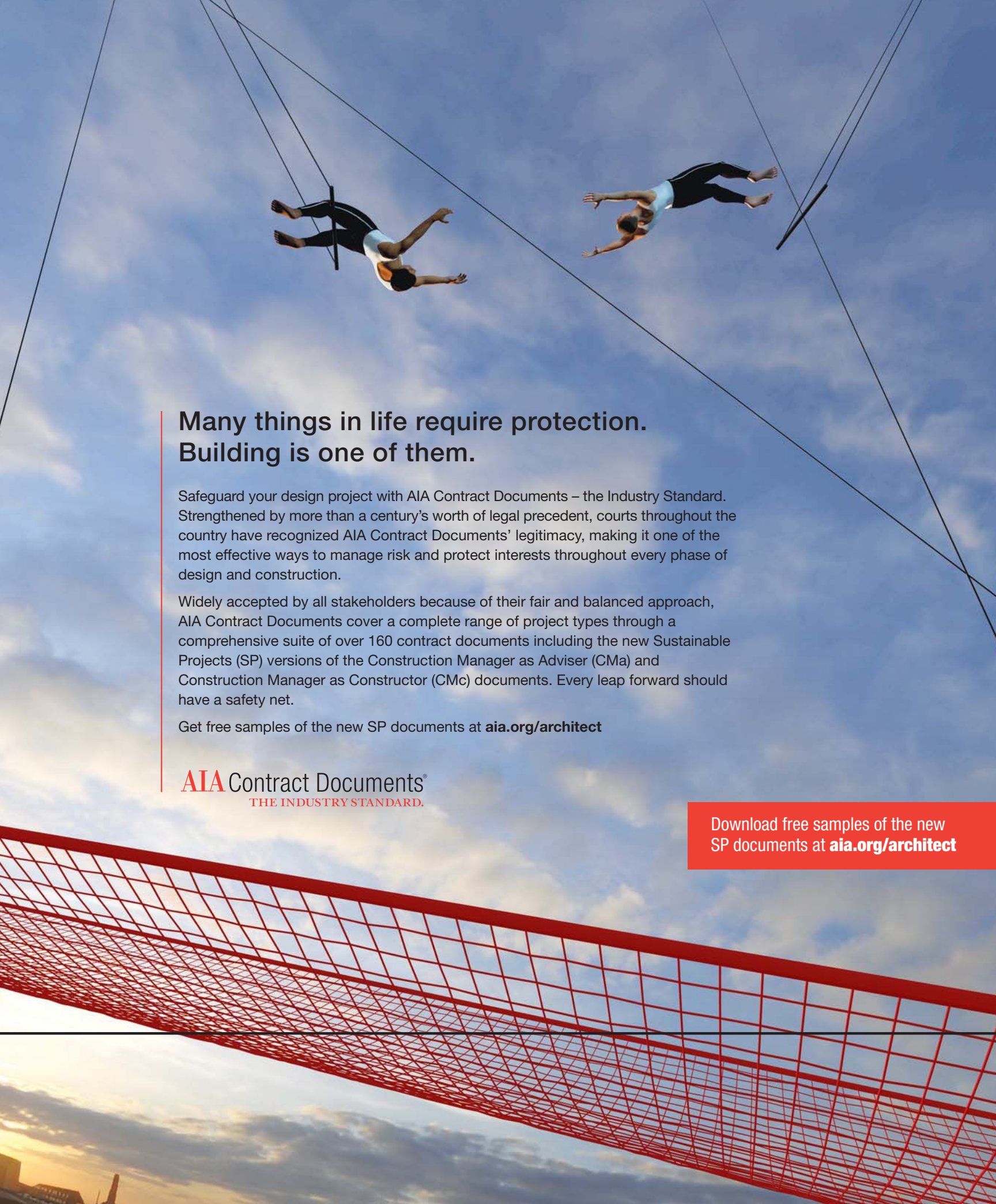
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PAST PROGRESSIVES



1961 P/A AWARD

Philadelphia Resurgent

THE SOCIETY HILL TOWERS BY I.M. PEI & ASSOCIATES EXEMPLIFIES THE INTEGRATION OF URBAN RENEWAL INTO THE CITY FABRIC.

Text by **John Morris Dixon, FAIA**

THE SOCIETY HILL area near the Philadelphia waterfront had been a thriving residential and commercial area during the 1700s and 1800s. But by 1961, it had become an area that that year's P/A Awards issue of *Progressive Architecture* identified as "badly deteriorated," though still "important because of the presence of structures of historical and architectural significance."

The three apartment towers of the Society Hill Towers project remain its identifying features, but the development carried out under the plan by the eponymous firm of I.M. Pei, FAIA (which is now as Pei Cobb Freed & Partners) covers several city blocks and blends sensitively into the pre-existing urban pattern. Dozens of new townhouses designed by Pei echo in both scale and materials the many historic houses that were also restored under the plan. The gaps between these preserved structures became infill sites for sympathetic new construction. For example, architect Louis Sauer, FAIA, won recognition in the 1964 and 1965 P/A Awards for infill houses in the area.

It is unclear whether the 1961 jury appreciated the Society Hill plan's effort to fit into its urban context: "[The] jurors focused attention on the tower buildings specifically," the awards issue explained, because "only this portion of the renewal plan is shown in detail." The towers are in fact notable for their elegantly detailed exteriors, with floor-to-ceiling windows set within an exposed concrete structural grid—its modules keyed to interior room dimensions.

Built as a rental apartment project, the towers themselves have now become a condominium complex. Its 624 apartments, 15,000 square feet of retail and recreational facilities, and 350-car underground garage continue to serve as a prime inner-city residential environment, with the appealing urban setting envisioned in the award-winning plan.

JURY

1961 P/A Awards Jury

Charles R. Colbert
O'Neil Ford
Philip C. Johnson
Walter A. Netsch
Chloethiel Woodard Smith

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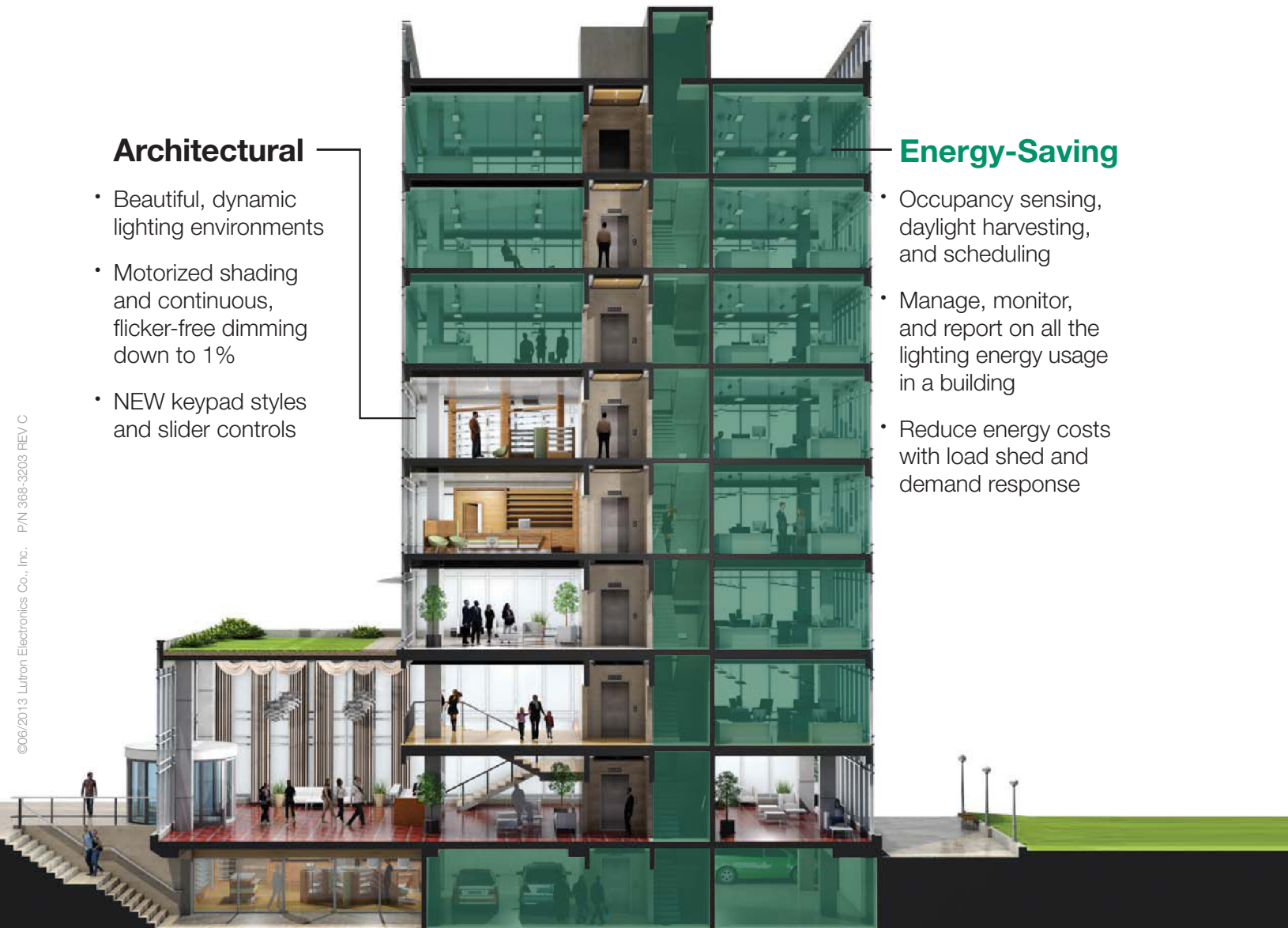
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