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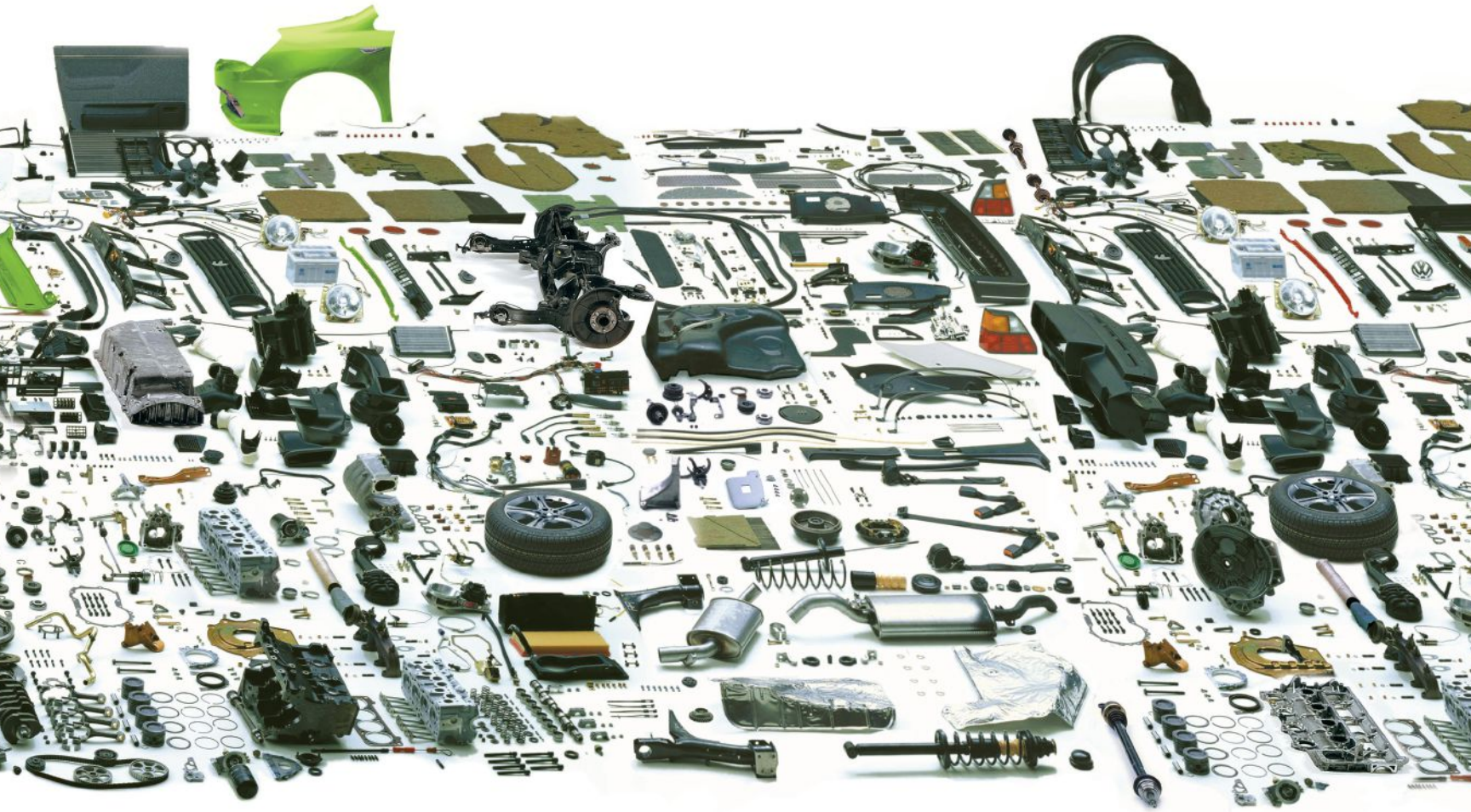

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ALEX FRADKIN

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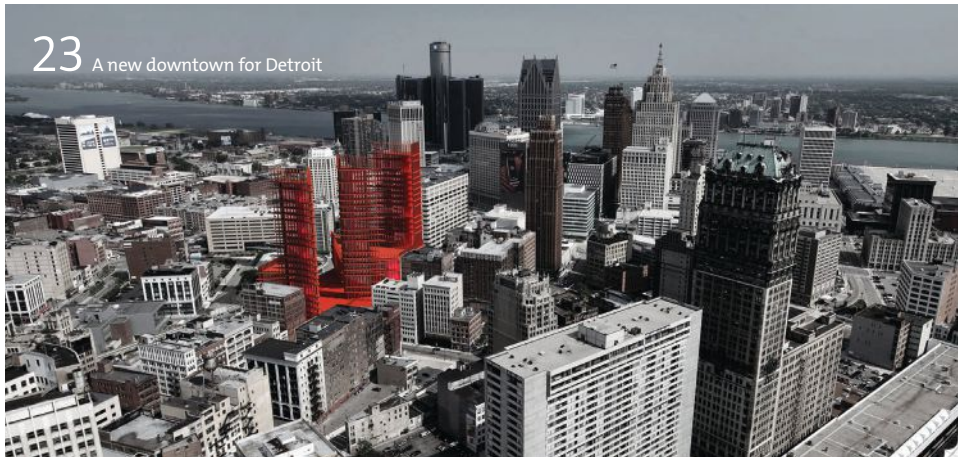

23 A new downtown for Detroit

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UP STAGED

Eero Saarinen is a tough act to follow. But when **Lincoln Center** sought space to build a home for its **LCT3** program by adding onto his 1965 **Vivian Beaumont** opus, it found **H3 Hardy Collaboration Architecture** right for the part. Opting to locate the new stage atop the existing theater—a design made possible by using lightweight steel trusses as exterior walls—the architects were able to create the long-span spaces needed for theatrical productions while giving theatergoers a fresh vantage point from which to view both emerging playwrights and Lincoln Center's exciting 21st-century encore.

Architect: H3 Hardy Collaboration Architecture
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HIPSTERS AND A BILLIONAIRE

WHILE THE CITY OF DETROIT STARES BANKRUPTCY IN THE FACE, ITS CENTRAL BUSINESS DISTRICT IS ENJOYING A RENAISSANCE.

MUCH OF THE REVIVAL CAN BE ATTRIBUTED TO NATIVE SON DAN GILBERT, THE CHAIRMAN AND FOUNDER OF QUICKEN LOANS.

MORE THAN A DECADE has passed since my last visit to downtown Detroit. I was meeting an architect in an Art Deco high-rise that had few—if any—other tenants. His office's setback terrace offered panoramic views of the surrounding blight. Equally cinematic, but on a discomfortingly intimate scale, was the walk to and from my rental car, through a post-apocalyptic gauntlet of abandoned and graffitied storefronts, bedraggled figures of indeterminate age and gender, and even—hand over heart—a fire in an oil drum.

Last month I returned to find the central business district transformed. Professionals and tourists were walking the streets well into the evening, past busy restaurants and shops. A streetcar line is in the works for the main drag, Woodward Avenue. Scaffolding and "Coming Soon" banners appear on seemingly every block, attesting to dramatically dropping vacancy rates. Without a doubt, downtown Detroit is making a comeback.

Much of the revival can be attributed to native son Dan Gilbert, the billionaire chairman and founder of Quicken Loans, who has relocated his businesses and thousands of employees to the downtown area. Gilbert's Rock Ventures group has acquired more than 7 million square feet of downtown commercial space and parking since 2011, including a vacant block along Woodward where the J.L. Hudson department store used to be. (I was in town to judge a competition, organized by Cranbrook Academy of Art director Reed Kroloff and funded by Rock Ventures, to explore design possibilities for development of the site.)

If downtown's future seems bright, much of the rest of the city remains in the shadow of high unemployment, predatory lending, and ineffective government. The state of Michigan recently handed over control of the municipality to an emergency manager, along with responsibility for retiring the city's $15 billion debt. This is no small task, given that 47 percent of the city's property owners didn't pay their taxes in 2011.

But don't rush to blame deadbeat homeowners. According to the Government Accountability Office, the Detroit metro area has the nation's highest rate of bank walk-aways, in which a lender begins foreclosure proceedings, but doesn't complete them, leaving the evicted unwittingly responsible for taxes and maintenance on their former homes. The question of what to do with all of the vacant lots and abandoned buildings is a procedural nightmare that must be addressed in order for the city to move forward.

Lately, the city has become something of a Gen Y paradise, the Brooklyn of the Midwest. "Recent census figures show that Detroit's overall population shrank by 25 percent in the last 10 years," *The New York Times* reports. "During the same time period, downtown Detroit experienced a 59 percent increase in the number of college-educated residents under the age of 35, nearly 30 percent more than two-thirds of the nation's 51 largest cities."

The media lionizes the young artists, designers, and urban farmers who—attracted by cheap rent, jobs (Gilbert hired more than 1,000 interns this summer), and an unlimited potential for do-goodery—are reclaiming the inner-city neighborhoods of Eastern Market and Corktown. Male-model-turned-restauranteur Phil Cooley is the most famous of the bunch—I can recommend the pork-butt sandwich at Slows Bar BQ, his place in Corktown. But still, with more than 70,000 abandoned buildings remaining, there simply aren't enough hipsters to get the job done.

In the meantime, Detroit's remaining 700,000 native residents go about their business, wondering to themselves whether the city is going to close the local middle school or will finally tear down that burnt-out shell of a house next door. Let's hope that downtown's spectacular resurgence has a trickle-down effect.

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Overexposed, Seattle Library, April 2013

This is the most thoughtful essay I've read in years. The Seattle library remains on my list of places to see, so it is presumptuous to critique it based on photos; and the city hall has been completely unknown to me until now, ignored by the press, as the author notes. The appeal of the library's exterior is a mystery. It, along with well-known projects by the architect in Chicago, Beijing, and elsewhere, flaunt a shameless got-away-with-it mentality. By contrast, Peter Bohlin is a national treasure—his firm's buildings, such as City Hall, consistently demonstrate a deft and clever humanism. KENNETH M. MOFFETT, AIA, KNOXVILLE, TENN.

Cover, June 2013

Thom Mayne's face on the cover of the June issue reminds me of an episode of *Night Gallery*, titled "Big Surprise." In it, a farmer challenges three boys to find a "big surprise" under an oak tree. They dig and dig until two give up. The third boy continues and hits something solid. He opens a wooden box as the camera pans over his shoulder; then the farmer rises up from the box and shouts "Surprise!" MICHAEL BIRKES, AIA, TULSA, OKLA.

May 2013

This issue's lack of judgment is embarrassing, especially in the selection of the projects. It's as if you unearthed an archived issue from the Reagan era and proudly and ignorantly displayed its egregious excess without any critical or historical awareness. KEVIN BAXTER, AIA, BROOKLYN, N.Y.

Denise Scott Brown, May 2013

I was struck by the juxtaposition of the fascinating interview with Denise Scott Brown around sexism in architecture, and the Bluebeam advertisement, "Collaborate in Bed," showing a woman in bed in a suggestive pose reviewing drawings on her iPad. MELISSA WEESE, AIA, SAN FRANCISCO

AIA will consider duos for Gold Medal. Glad to see positive changes from DSB @Change petition!! @architectmag http://bit.ly/11PgOY3

— **@artdesignlust**

Great to be working with Make It Right on better housing in U.S. Wonder if this ups my chances to make @GQMagazine list of hot NGO guys.

— **@casinclair**

Did y'all read the Thom Mayne profile? The aggrandizement of the opening grafs made me queasy.

— **@LangeAlexandra**

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GIDEON FINK SHAPIRO

GIDEON FINK SHAPIRO is an architectural researcher and writer. A contributor to ARCHITECT since 2007, he is currently a Ph.D. candidate and instructor in architecture at the University of Pennsylvania School of Design, where his research concerns the landscape architecture and engineering of public space in modern Paris.

Previously, he worked for four years in the offices of Gabellini Sheppard Associates, a New York–based design firm, and served as research assistant to curator and ARCHITECT contributor Aaron Betsky. Shapiro has collaborated in designing and building public art installations with Brooklyn, N.Y.–based Amorphic Robot Works as well as the composers Simon Fink and Peter Adams.

Shapiro is the author of a mobile phone–based guide to New York architecture published by *Domus*. His writing has also appeared in *Abitare*, *Clog*, *The Journal of the Society of Architectural Historians*, *The Architect's Newspaper*, and the Solomon R. Guggenheim Museum's Lab|log.

He has received numerous awards and fellowships from such institutions as the Mellon Foundation, Montalvo Arts Center, Buell Center for the Study of American Architecture, and Pennsylvania Council on the Art.

READ GIDEON FINK SHAPIRO'S COVERAGE OF THE 2013 R+D AWARDS, BEGINNING ON PAGE 96.

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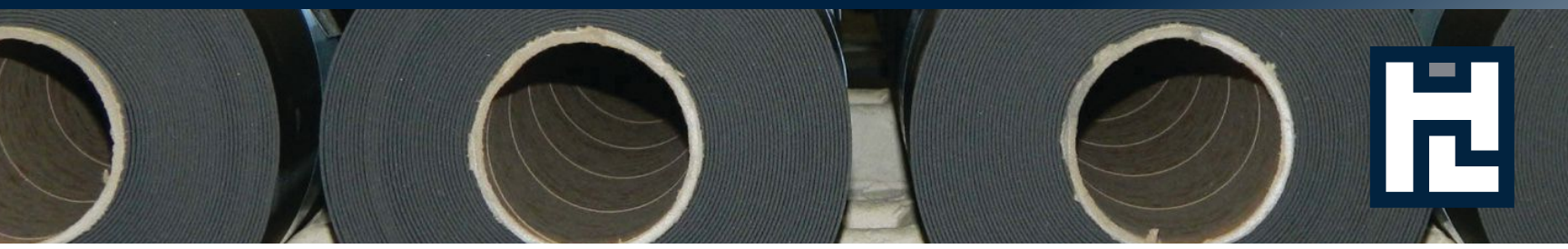

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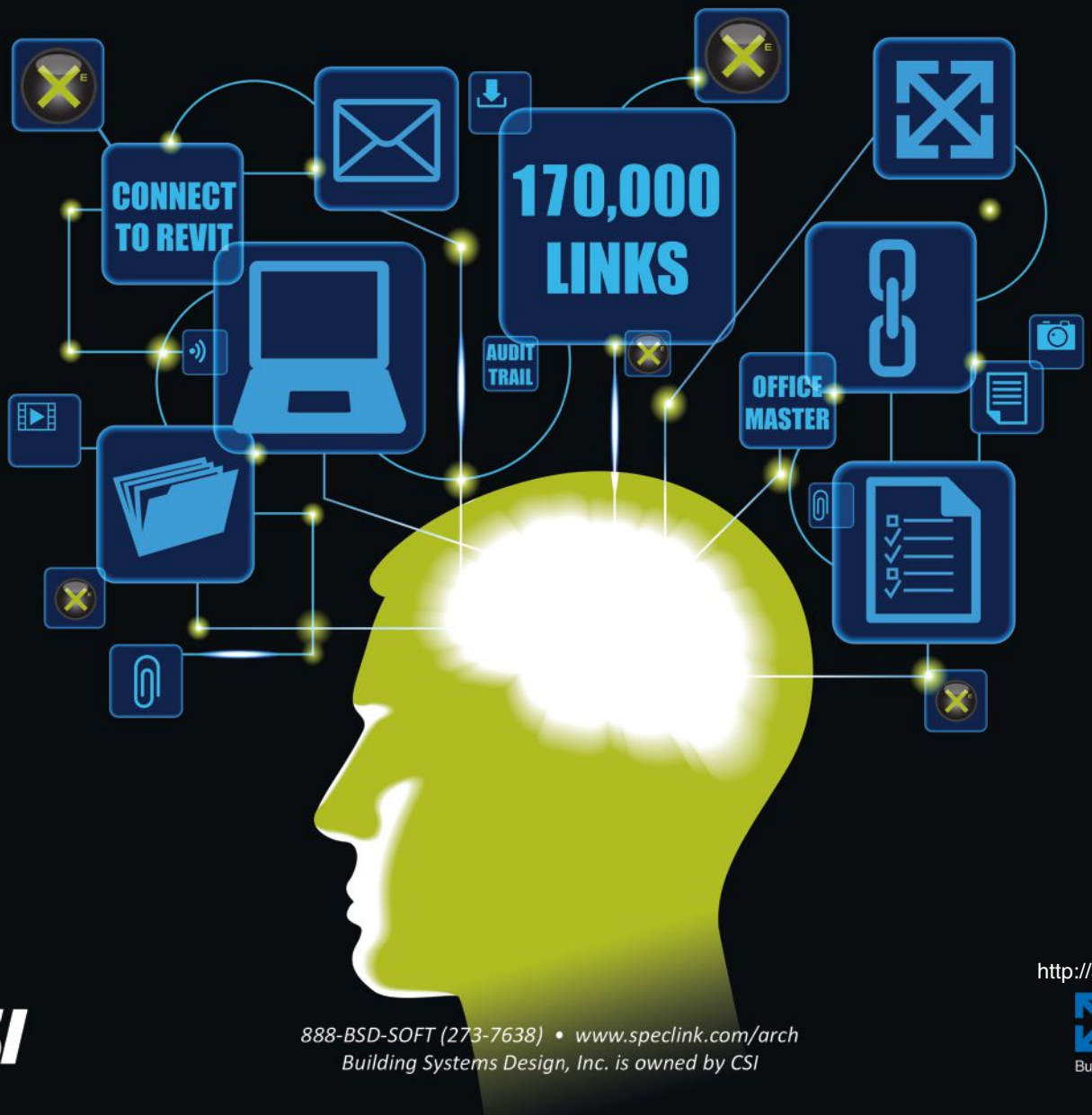

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FRONT

ZUMTHOR LANDS AT LACMA

THE PRITZKER PRIZE–WINNING ARCHITECT DELIVERS A VISION FOR LOS ANGELES THAT REINVENTS THE NOTION OF AN ENCYCLOPEDIC MUSEUM.

MUSEUM ASSOCIATES/LACMA

Peter Zumthor's proposed design for the new Los Angeles County Museum of Art (LACMA) is the ultimate architectural Rorschach test. Seen from above, the gray monolith bears an uncanny resemblance to the biomorphic collages produced by early surrealists. To the sci-fi set, it looks like an elegant reimagination of the Cylon Basestar from *Battlestar Galactica*. It has also been compared to an amoeba and a water lily—as well as an inky black tar pit.

The latter is no coincidence: LACMA shares a plot of parkland with the La Brea Tar Pits. Within sight of museum structures that house Rembrandts and Ruschas sits a lake of black tar. It was from this unusual geological phenomenon that the Pritzker Prize–winning architect—one known for his meticulous devotion to landscape—drew his inspiration. Like a lake, Zumthor's design seems to pour into the campus, where it laps at the edges of some of L.A.'s key sights.

"I was rooting myself in the ancient," he says. "A tar lake reacts to the topography. It is a free line."

In June, LACMA opened the doors to an exhibit devoted to the architect's proposal, which includes a 6-ton concrete model fabricated on site. "The Presence of the Past: Peter Zumthor Reconsiders LACMA" offers a first glimpse at what the noted Swiss architect has in mind for Los Angeles. How Angelenos—not to mention potential donors and the media—receive the plan is a crucial moment for LACMA director Michael Govan, who commissioned the project when he first joined the museum as director back in 2006.

Twice in the last dozen years, the museum has ordered grand campus redesigns by Pritzker Prize–winning architects—one by Rem Koolhaas, Hon. FAIA, in 2001, the other by Renzo Piano, Hon. FAIA, in 2003—only to have them wither due to a lack of fundraising or political will. To see the Zumthor project through to completion, LACMA will have to raise $650 million.

Certainly, Govan isn't asking for millions to build a prim little exhibition hall. Zumthor's proposal represents a radical departure from traditional museum design. The "black flower"—as the building is referred to by LACMA staffers—contains no grand staircase and no main entrance. Instead, a single story hovers 30 feet above the ground, on seven pods that lead visitors up to the galleries via staircases and elevators. Because there is no one entrance, it means no single type of art takes priority, thereby eliminating traditional art historical hierarchies. Zumthor seems to

"I THINK IT WILL BECOME KNOWN AS THE SAD OLD WHITE MEN'S AWARD."

—DENISE SCOTT BROWN, FAIA, IN RESPONSE TO THE PRITZKER ARCHITECTURE PRIZE COMMITTEE, WHICH IN JUNE REJECTED A PUBLIC PETITION TO HONOR HER FOR THE 1991 PRITZKER PRIZE RECEIVED BY HER HUSBAND AND PARTNER, ROBERT VENTURI, FAIA.

reject even the tropes about sunny Southern California: The building's frame comprises two austere, coal-colored concrete slabs.

Most notably—and perhaps most controversially—Zumthor's plan calls for the razing of a clutch of buildings on the east side of the LACMA campus, including a trio of modernist pavilions built by L.A. architect William Pereira for the museum's opening in 1965. This is not the first time someone has proposed tearing the place down and starting over. In 2001, Koolhaas famously suggested leveling much of the campus and replacing it with a single, tented structure: an idea that garnered plenty of support but ran aground financially during the post–Sept. 11 recession.

The plan, Govan says, will result in a gain of 70,000 square feet of exhibition space, without taking up any more land. The museum will be able to show twice as many objects in the same space. Zumthor's plan also creates a more cohesive public space. Some of the ground-level pods that support the building would be wrapped in glass, allowing for the display of art objects and other artifacts to the public for free at all hours.

Surely, there is a mountain of "ifs" that stand between the museum and the completion of this grand new design. The greatest is money: The $650 million price tag will require Herculean fundraising efforts on Govan's part. As Govan rallies the troops, the laconic Zumthor, an architect known for his quiet attention to detail, is further refining the building's program.

"It's a beautiful form," he says. "You can print it out like a Jean Arp and hang it on the wall." CAROLINA A. MIRANDA

May 2013
Architecture Billings Index

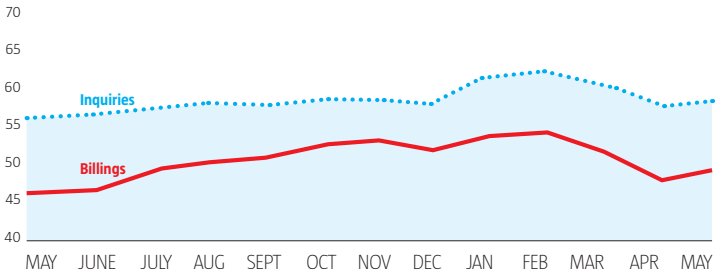
52.9
↑ 4.3 pts from April

47.5
Commercial ↓

52.2
Institutional ↑

51.0
Mixed Practice ↑

52.8
Multifamily Residential ↑



Architecture Billings Pick Back Up

AFTER APRIL'S SHOWERS, THE ABI FLOWERS.

In May, the American Institute of Architects' Architecture Billings Index marked a return to growth in the demand for architectural design services. April saw the first dip into negative territory for the index in nine months, which appears for now to have been an outlier. With a national score of 52.9, up more than four full points from April's score of 48.6, the architecture industry saw a significant reversal of fortune.

The score for project inquiries came in at 59.1, up from April's revised figure of 58.5. Inquiries are still growing, and have been each month since the design and construction industry bottomed out after the 2008 financial crisis. This score is also inching its way back toward 60.

For May, the ABI's data tracks well with the U.S. Department of Labor's Bureau of Labor Statistics' recent employment report. The BLS reported 175,000 jobs added to the economy in May, with the architectural and engineering services sector of the economy adding a sizable 4,900 jobs over the same period. This was the best result in all of 2013—almost twice the 2,700 architectural and engineering services jobs initially reported by the BLS in April. And prior to April, the industry had seen average growth of more than 2,000 jobs per month during each month except January.

Three of the nation's four regions and the industry's four sectors showed growth in May. Only the Midwest and the Commercial sector continued to demonstrate contraction. The scores for all the other sectors and half of the regions improved. GREIG O'BRIEN

UPWARD SPIRAL

Take note, record-keepers: There's a new tallest on the books. The Cayan Tower, the tallest twisting tower in the world, opened in Dubai in the United Arab Emirates on May 10. Designed by Skidmore, Owings & Merrill (SOM), the 1,010-foot-tall tower twists a full 90 degrees from its base to its apex. The 75-story building holds 495 luxury apartments. "One of the things that interests me in terms of design is sculptural form," says SOM design director Ross Wimer, FAIA. KATIE GERFEN

TOP: MUSEUM ASSOCIATES/LACMA; BOTTOM: TIM GRIFFITH

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64
Project cost, in millions of dollars

100
Square footage of museum expansion, in thousands

Heart of Glass

THOMAS PHIFER'S DESIGN FOR THE CORNING MUSEUM OF GLASS COMES INTO VIEW.

26
Square footage of gallery space, in thousands

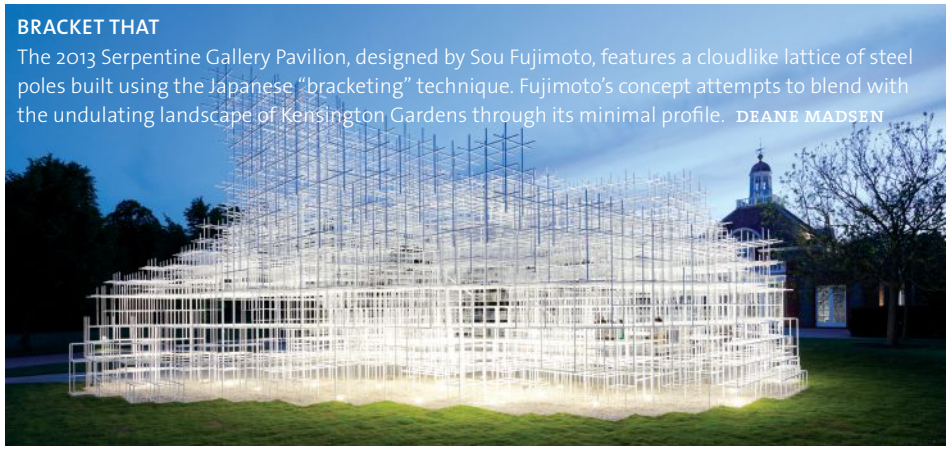
Thomas Phifer, FAIA, has unveiled the final design for the Corning Museum of Glass in Corning, N.Y., which will open late next year.

Reducing the exterior to "its bare essence," as Phifer puts it, the final design replaces white aluminum with glass panels separated by thin joints. A sheet interlayer renders the glass pure white. The interior is divided into "porch" areas that allow for views out to the surrounding campus, and galleries, where the only light comes from skylights.

In addition to the new north wing, Phifer is also renovating the adjacent former Steuben Glass factory building and Robertson Ventilator, stripping it down to its original structure and recladding it in "a 2013 skin"—a black metal to fend off upstate New York winters. K.G.

FULL STORY ONLINE AT ARCHITECTMAGAZINE.COM

BRACKET THAT
The 2013 Serpentine Gallery Pavilion, designed by Sou Fujimoto, features a cloudlike lattice of steel poles built using the Japanese "bracketing" technique. Fujimoto's concept attempts to blend with the undulating landscape of Kensington Gardens through its minimal profile. DEANE MADSEN



STEP UP, STEP DOWN

BIG MOVES ON THE CAREER LADDER

Caroline Baumann
Director
The Cooper-Hewitt, National Design Museum in New York

David Roberts
Board member
Aedas

Allison Williams, FAIA
Vice president and director of design
AECOM

Geoff Manaugh
Editor
Gizmodo

Jennifer Dunlop Fletcher
Associate curator
SFMOMA

The San Francisco Museum of Modern Art (SFMOMA) has named Jennifer Dunlop Fletcher as its department head and associate curator for architecture and design. Dunlop Fletcher succeeds Henry Urbach, who left the museum in 2011.

Dunlop Fletcher has already made her mark on the institution, which is currently closed as it undergoes a three-year project to build a 225,000-square-foot expansion by Snøhetta. With assistant curator of architecture and design Joseph Becker, she co-curated "Lebbeus Woods, Architect," the last new exhibit at the museum before it closed. She also curated a show of works by Buckminster Fuller and invited filmmaker Sam Green and indie-rock band Yo La Tengo to perform a special piece for the show.

It will be some time before viewers get the opportunity to see her work at SFMOMA. While the museum is closed for construction, Dunlop Fletcher is guest-curating a show for the Hammer Museum on the work of Los Angeles architect A. Quincy Jones and pursuing other outside curatorial collaborations.

She will also continue to add to the museum's collections, building upon recent acquisitions such as Ant Farm's Convention City model (1972) and Ron Arad's Concrete Stereo (1983). KRISTON CAPPS

Lisa Gould, FAIA
Director
Skidmore, Owings & Merrill

TOP: COURTESY THOMAS PHIFER & PARTNERS; BOTTOM: IWAN BAAN

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ANOTHER LOOK AT BUILDING COSTS FOR ONE OF THE WORLD'S MOST CELEBRATED DESIGNERS OF CULTURAL PROJECTS.

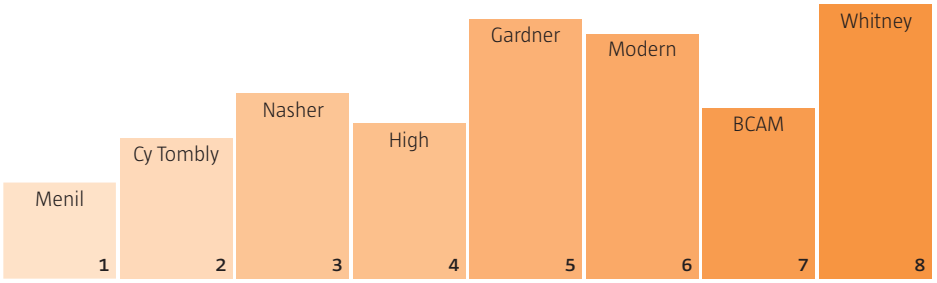
The June issue of ARCHITECT featured a series of infographics on the costs associated with the development of the Los Angeles County Museum of Art—its past, present, and future. For comparison's sake, one of those graphics highlighted building costs for cultural projects by Renzo Piano Building Workshop, the designer of several LACMA additions.

The price per square foot for one of those projects, the forthcoming Whitney Museum of American Art, was misleading. The overall project cost used for the comparison included an endowment campaign, leading to a cost of $3,400 per square foot. The correct cost, based on figures provided by the Whitney Museum, is $1,918 per square foot. ARCHITECT regrets the error.

Some readers objected to the use of overall or soft costs (including fees, specifications, etc.) as a basis for comparing cultural projects over time. Provided below, then, is a comparison between U.S. projects by Piano over time, restricted to construction costs. K.C.

Renzo Piano Building Workshop

Select Piano cultural projects: cost per square foot (in 2012 U.S. dollars)



1. $426/sq.ft. Menil Collection (1987); **2.** $602/sq.ft. Cy Twombly Gallery (1995); **3.** $809/sq.ft. Nasher Sculpture Center (2003); **4.** $629/sq.ft. High Museum of Art expansion (2005); **5.** $1,109/sq.ft. Isabella Stewart Gardner Museum expansion (2012); **6.** $1,052/sq.ft. Modern Wing at the Art Institute of Chicago (2009); **7.** $695/sq.ft. BCAM (2012); **8.** $1,130/sq.ft. Whitney Museum of Art (2015)

DREAMING IN DETROIT

Three entries were named as the winners of an open-call competition held by Opportunity Detroit to imagine a new development project for a 92,421-square-foot vacant lot in downtown Detroit. "Minicity Detroit" (pictured), a mixed-use development designed by Rome-based designers Davide Marchetti and Erin Pellegrino, took first place. Two other winning projects include an eco-friendly business incubator and a sail-shaped green high-rise. In addition to $22,500 in prizes given to contest winners, the three submissions that won the most public votes received a total of $4,000 in cash. ARCHITECT's Ned Cramer joined a jury of five design experts, organized by competition adviser and Cranbook Academy of Art director Reed Kroloff, Assoc. AIA. K.C.

ONLINE PORTFOLIO

ARO

The work of New York–based Architecture Research Office (ARO)—founded in 1993 and led by Stephen Cassell, AIA, Adam Yarinsky, FAIA, and Kim Yao, AIA—ranges from small-footprint housing prototypes to the scale of the city. The firm's proposals include the AIA Honor Award–winning Kayak Pavilion at Long Dock Park as well as the Market Park at Brooklyn-Battery Tunnel in New York, which caps a tunnel entrance with a park and marketplace connecting Battery Park with Greenwich South and the financial district. A recent commission for a dormitory block at Tulane University rounds out the firm's portfolio with a fresh take on the student-housing typology. D.M.

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TOP: COURTESY DAVIDE MARCHETTI & ERIN PELLEGRINO; BOTTOM: JAMES EWING

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A TALK WITH ...

BENTON JOHNSON, AN ASSOCIATE AT SOM WHO HELPED LEAD THE FIRM'S RECENT STUDY ON BUILDING TIMBER TOWERS THAT MEET CODE.

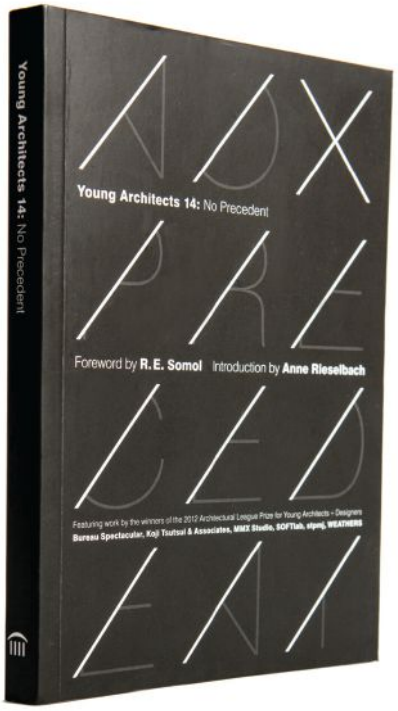
Why did Skidmore, Owings & Merrill become involved in this project?
The number of people living in cities is projected to double from 3.5 billion to 7 billion by 2050. We're going to have to add a lot of buildings to our cities, and we wanted to figure out the most sustainable way to do that. After some research, we found that wood is hands down the most sustainable material.

How does SOM's study differ from the work of others interested in tall timber structures, such as Vancouver's Michael Green?
SOM has done a fair amount of wood and timber construction, such as the Atlantico Pavilion in Lisbon and the Cathedral of Christ the Light in Oakland, Calif. We're coming from the perspective as tall building experts, while a lot of the other work that has been performed has been from wood experts who are trying to go tall.

What are some of the most notable findings in your study?
The thing that most people find interesting is the combination of materials in the system. A lot of people expected it would be a timber structure supplemented with structural steel. We chose reinforced concrete to supplement the timber instead.

What are the biggest selling points of a timber tower?
The first and foremost is that by choosing a timber structure, it shows that you're committed to sustainability. There will be challenges, because it hasn't been done yet. The second benefit is that in time, we hope, these buildings can be constructed quickly. The developer who chooses [a wood structure] now can become more comfortable with it. As the technology becomes mainstream, they're going to be more ahead of the game. WANDA LAU

FULL INTERVIEW AT ARCHITECTMAGAZINE.COM

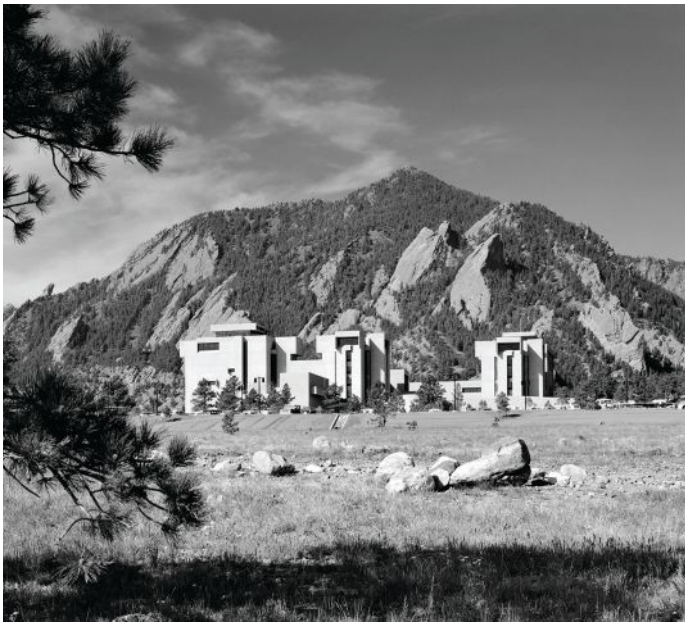


UNPRECEDENTED

The Architectural League of New York marked the 31st anniversary of its Architectural League Prize for Young Designers and Architects with the release of *Young Architects 14*, a compilation of projects and texts by the 2012 prize winners. The book—which is small enough to fit inside your purse—overflows with project schematics, renderings, and photographs. Built around the 2012 theme "No Precedent," the young architects' works explore the idea of building without reference to the past. K.C.

ESTO GALLERY: NCAR

The National Center for Atmospheric Research—designed by I.M. Pei and documented by Ezra Stoller—blends into its surroundings with vertical concrete forms composed of local sandstone aggregate. See ARCHITECT's website for a slide show of images of the 1967 building, whose 214,500-square-foot center's mass is set on a 28-acre mesa and framed by the Flatirons range of the Rocky Mountains. D.M.



BOTTOM: EZRA STOLLER/ESTO

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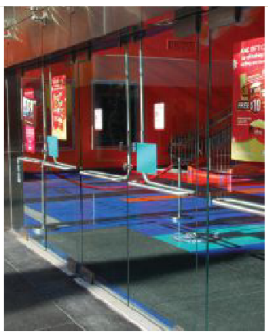

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AIAVOICES

THE URBANIST | ADOPTING GLOBAL GUIDELINES

Adèle Naudé Santos, FAIA, is the dean of the School of Architecture and Planning at the Massachusetts Institute of Technology (MIT) and a principal at San Francisco–based Santos Prescott and Associates, an award-winning firm focused on low-income housing, campus architecture, and socially conscious design. Santos helped negotiate a partnership between the newly launched Center for Advanced Urbanism at MIT and the AIA's Decade of Design initiative, which will seek to make design a catalyst within public health through research.

IT DOESN'T MATTER WHAT KIND OF ORGANIZATION WE REPRESENT, whether it's the AIA or MIT, as long as we all recognize that there are serious public health problems to be solved. There are no easy answers. We need research and interdisciplinary thinking to compare cities, which are all fundamentally different, and to take appropriate action within each city.

The word "city" is a slippery one. What defines a city? You could go by the numbers, say anything over 100,000 people, but then if you look at a country like China, the central government decides what should be categorized as a "city." I prefer the terms "urbanity" and "urbanism." They suggest density, as well as a more sophisticated method for analysis and way of thinking. The definition of urbanism also requires some flexibility given that cultural reflection is part of this, too. MIT is working with institutions in China, for instance, and they know that they want to engage something more tangible than algorithms to define urban form. The layers that are part and parcel of urban placemaking and order in the environment are complex. By order I don't mean roadways and transportation systems; I mean infrastructure, both physical and virtual at multiple scales.

Of course, the dense multilayer city is very attractive, but not for everybody. We have to be mindful of that in this partnership—or globally where a word such as "urbanism" might mean different things—in order to effectively serve a different population. I grew up in Africa and spent a lot of time dealing with sprawling settlements. My early career there was all in housing, dealing with the full spectrum of the haves and the have-nots, business districts and barrios, and cities that were, at times, completely out of control.

Great cities have a great deal of variation, and variation is beneficial to urbanism. A lot of architecture schools today say that they're "thinking about" urbanism, but at MIT we really wanted to focus on it, which is why we launched the Center for Advanced Urbanism this past January. When you're at a place like MIT, you can bring in interdisciplinary groups from architecture, planning, and engineering to collaborate on the design of infrastructure that is durable and environments that are sustainable, and make community health a major design and planning issue. *—As told to William Richards* AIA

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AIANOW

ACROSS THE INSTITUTE

Compiled by William Richards

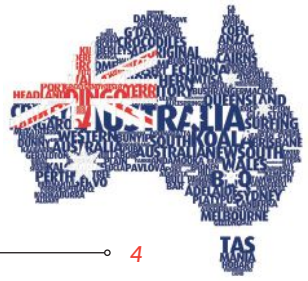
1. Two for One. Trade events: Lots of products, tons of promotional tsotchkes, and a chance to connect with the building industry. This year marks a decade for the U.S. Green Building Council Illinois chapter's "Greening the Heartland" conference and, as an added bonus, they have teamed up with AIA Chicago, Chicagoland Chamber of Commerce, and SGC Horizon to put on BUILDINGChicago, a new trade event for commercial building design and construction industry folks. Both take place at the Holiday Inn Chicago Mart Plaza on Sept. 9.

↗ To learn more, visit *buildingchicagoexpo.com* and *greeningtheheartland.org.*

2

3

1



4

5

2 Health Advocacy. With a lot of national attention focusing on the relationship between public health and design, AIA Academy of Architecture for Health members have their work cut out for them. Obesity rates are higher than ever, healthcare costs are skyrocketing, and the construction industry is just now emerging from the credit crisis—so improving public health has become a question of marshaling intellectual and financial resources to advocate for real change. "Healthcare Architecture in the Public Realm," the AAH annual conference, will be held at Clemson University, Aug. 22–23 in conjunction with the Clemson University School of Architecture Centennial Symposium entitled "Southern Roots + Global Reach."

↗ Learn more at *aia.org/aah* and *clemson.edu/caah/architecture.*

3 Head Space. If you've ever designed a house for a client, you'll know that the process is much more than a business transaction. It's a courtship that involves listening and—this part is far easier than it sounds—understanding what's at stake. "Psychology," according to the environmental psychologist Toby Israel, "is the principal design tool," whether you're an architect, a planner, or an interior designer. Join CRAN and Israel for "Elevating the Art of Residential Design & Practice," Aug. 22–25, in Santa Fe, N.M.

↗ Learn more at *aia.org/cran.*

4 Master Murcutt. Looking to get out of the country for a few weeks? Consider the Glenn Murcutt International Architecture Master Class, where you can rub shoulders with Australian Institute of Architects gold medalists, educators, practitioners, and Murcutt himself. On the docket for participants are lectures and a design studio, leading to a final critique, and excursions to see notable houses throughout New South Wales. The master class is sponsored by Architecture Foundation Australia and takes place Sept. 22–Oct. 6 at Riversdale, south of Sydney.

↗ Learn more at *ozetecture.org.*

5 A Whole Month of Architecture. Baltimore is a city of contrasts, where Permastone siding and quoining sits cheek by jowl next to Cockeysville marble slabs. Its moniker, "Charm City," is entirely accurate and deeply ironic. It's also a historic city that holds evidence of every era in American architecture as well as the thrum of a forward-looking design culture. AIA Baltimore will examine these contrasts in equal measures through tours, lectures, exhibitions, and events, during its annual Baltimore Architecture Month celebration, which runs Oct. 1–31.

↗ Learn more at *aiabalt.com.*

IMAGE 5: PHOTOGRAPHY COLLECTION, MIRIAM AND IRA D. WALLACH DIVISION OF ART, PRINTS AND PHOTOGRAPHS, THE NY PUBLIC LIBRARY, ASTOR, LENOX AND TILDEN FOUNDATIONS.

Newest Urbanism

Tactical urbanism has caught on in a big way. But is it big enough?

BY KIM A. O'CONNELL

IN 2005, ONE VERY SMALL ACT BLEW OPEN THE CONCEPT OF urban redevelopment, wrenching it out of the hands of big-city planners and handing it to artists, activists, and, yes, architects. The principals at Rebar, a San Francisco design firm, converted a solitary parking space into a tiny park, complete with sod and a bench (while someone fed the meter), and launched what has become the worldwide PARK(ing) Day phenomenon. By the time Boston city officials issued a request for proposals for similar "parklets" around the city last fall, the do-it-yourself movement known as "tactical urbanism" had moved squarely into the mainstream.

Tactical urbanism refers to temporary, cheap, and usually grassroots interventions—including so-called guerrilla gardens, pop-up parks, food carts, and "open streets" projects—that are designed to improve city life on a block-by-block, street-by-street basis. In the post-Occupy Wall Street era, these efforts give concerned citizens and creative thinkers ways to reclaim built environments, encourage pedestrian traffic and street life, and promote economic investment without being bogged down in big politics and strangled budgets.

"The rapid 'build, measure, learn' process used by software engineers can also be applied to our neighborhoods and cities," says Mike Lydon, founding principal of the Street Plans Collaborative, a research and urban planning firm, and a steering-committee member of the Next Generation of New Urbanists (Nextgen). "It turns the planning problem of endless studying on its head and heads right to building something, so that the results can be understood and communicated. It's a creative, effective, and exciting way to respond to some of the more pressing problems our communities face, but at the scale most nonexperts can understand: the block, the lot, the building."

These efforts also align with two major AIA initiatives now under way. First, AIA's Repositioning initiative is shifting the organization to better reflect and serve its diverse membership, particularly the growing number of emerging professionals who are eager to do and not just discuss. AIA's new Decade of Design initiative, in partnership with the Clinton Global Initiative and the Massachusetts Institute of Technology's Center for Advanced Urbanism, is also aligned with the idea that tomorrow's architects can benefit from focused research (in this case on public health) today.

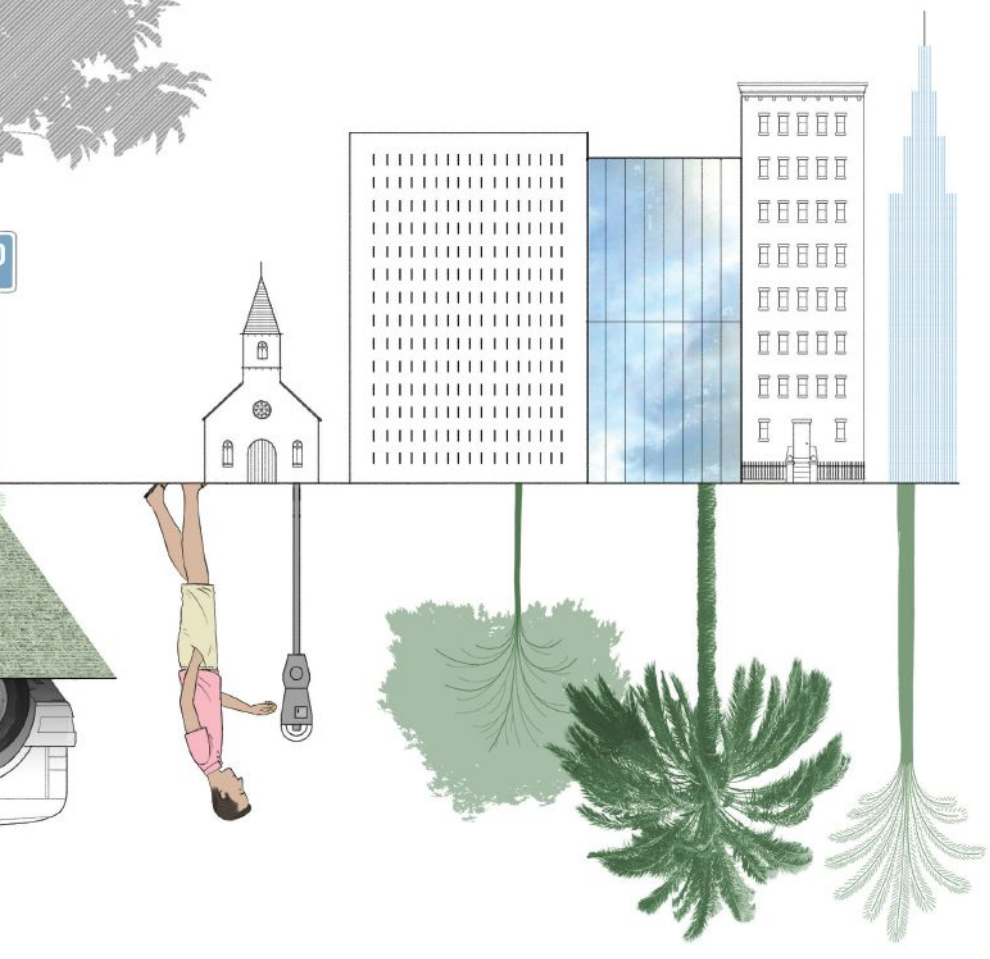
Since that first San Francisco parklet, PARK(ing) Day public spaces have been created in nearly 150 cities worldwide, according to the Street Plans Collaborative, which has coauthored two tactical urbanism guidebooks with Nextgen. In Dallas, the Better Block program added a bike lane, plants, and sidewalk furniture to a moribund city block. In New York City, pavement-to-

plaza projects have taken cars out of automobile lanes and put people there instead.

Injecting parkland into a small or underused urban area is not new. Situated on only one-tenth of an acre, Paley Park in Manhattan, with its 20-foot-tall waterfall backdrop, is widely considered one of the best urban parks in the world. Chestnut Park in Center City Philadelphia, which was recently restored and renamed for its designer, John F. Collins, is another well-known example. Tactical urbanism combines the ideals of these parks—exposure to beauty and nature, community connection, and efficient use of space—with less bureaucracy. The quick-turnaround, budget-conscious, easily adaptable techniques espoused by tactical urbanists are applicable to a variety of architecture projects, proponents say, and may be essential for recent graduates looking to compete in an ever-tighter job market.

"If any of the projects are to be sustained, they have to be adopted and championed in some way by institutions."

—Mike Lydon



"While the phrase and packaging of tactical urbanism might be new, the basic techniques have been used in various ways by the New Urbanists for decades," Lydon says, citing as one example the use of small market stands to incubate businesses at Seaside, Fla., long before buildings were in place. "Our current work is an extension of these ideas, but also applying it with a slightly new lens that is also focused on the implementation and funding challenges facing today's cities."

In Boston, for example, city officials have now chosen four parklet locations around the city, each no larger than two end-to-end parking spaces. Two sites will be designed by Interboro Partners, a New York City interdisciplinary design firm, with the other two going to Boston-based Kyle Zick Landscape Architecture. Funding for this pilot program will come from the city, but local business partners will pay for maintenance. If the program catches on, city officials hope that funding for future parklets will bubble up from the community itself. "Parklets are part of the Boston Complete Streets Initiative, taking Mayor Thomas M. Menino's directive that 'The car is no longer king,'" says Rachel Szakmary, a city transportation planner. "The pilot program aims to show communities what is possible with all types of public spaces, in this case parking spaces."

In San Antonio last year, three tactical urbanism projects following the Better Block model championed by community activists in Dallas have allowed city officials to see how redevelopment might work over the long term. One such project activated Alamo Plaza with music, food, additional seating, and a market, providing information that may guide future changes for the plaza for which funding has already been earmarked. "Proposed street closures and lane reductions in downtown areas are often controversial," says Colleen Swain, a redevelopment officer for the city. "But if you allow people to experience the impact, rather than just see a plan or drawing on paper, then they feel more sure of their support or dissent."

Similarly, the Street Plans Collaborative has documented a public art campaign in El Paso, Texas, that paved the way for a $90 million state investment in that city's streetcar system. In Memphis, a weekend-long Better Block project led to $8 million in private investment along four blocks in that city. And a formerly temporary plaza in New York City has been reconstructed for permanent use.

"If any of the projects are to be sustained, they have to be adopted and championed in some way by institutions," Lydon says. "So my goal is to use tactical urbanism to help transform what we call the 'project delivery process'—that is, how things get done at the municipal level. A few governments are way out in front on this, but the majority is still stuck in a system that hasn't evolved in 40 years."

Even a major citywide project like the Atlanta BeltLine, where members of a large consortium of public and private partners are transforming old railroad beds into a 22-mile loop of transit, parks, trails, and public space, has a relationship to tactical urbanism. The concept began with a 1999 master's thesis by Ryan Gravel, who is now a senior urban

designer with Perkins+Will's Atlanta office. Gravel, after studying abroad in Paris, began to value dense neighborhoods of street-level retail, parks, and transit that are defined by the totality of their *arrondissements*, or neighborhood districts, as much as they are defined by the character of individual blocks. He and others championed the BeltLine idea at the grassroots level until it eventually caught on with city officials and the mayor's office.

Now, with more than $300 million in public dollars invested, plus another $40 million in private funding, implementation is under way to connect 45 in-town neighborhoods with trails and transit, and create 1,300 acres of park space, while also fostering economic development in formerly industrial areas and adding affordable housing.

"It's like tactical urbanism on steroids," Gravel says. "We built this amazing groundswell of support, even though, over the years, there have been challenges to the direction of the project—its vision, funding, ownership, and so on. If the public feels as if a bad decision has been made, they come out in force. They feel an ownership and an entitlement to adding new ideas to the overall vision."

Recent grassroots ideas include building a swing on one section of the trail with a view of the skyline, installing guerilla public art projects, and creating a 22-mile "food forest" of locally grown produce along the route. Gravel, who says architects are uniquely skilled to work on this kind of creative, multilayered project, points to the in-studio work performed by Georgia Tech College of Architecture students on the BeltLine, under the professorship of David Green, AIA (a senior urban designer at Perkins+Will's Atlanta office, who received AIA Atlanta's Silver Medal in 2003 and Bronze Medal in 2008 for his contributions to community planning, citywide). The students' plans formed the basis of the Atlanta BeltLine Street Framework Plan that was adopted by the city.

"No city will build a bridge or a light-rail system with tactical urbanism alone," Lydon says. "But creative and smart interventions can build the social and political capital needed to push such projects forward from the study and proposal stage. Tactical urbanism looks physical, but often the best results are social, in building more capacity and ties to longer-term change within neighborhoods." AIA

↗ Learn more about urban placemaking through the AIA Regional and Urban Design Committee at *aia.org/rudc*.

ILLUSTRATIONS: MICHAEL KIRKHAM

Photo courtesy of Steve Powell, AIA

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AIAPERSPECTIVE

ENGAGING THE PUBLIC IN NEW WAYS

PHOTO: WILLIAM STEWART

IN A ROOM ON U STREET, N.W., IN OUR NATION'S CAPITAL, THE young men and women of Inscape Publico operate a small, nonprofit firm. Their mission is to provide concept design services at significantly reduced rates to nonprofit clients, many of whom serve the region's disadvantaged. With concept drawings, Inscape Publico's clients (who have to make every dollar count) can work up accurate construction costs, which puts them in a better position to set realistic fundraising goals for projects that foster design excellence.

At the same time (and 640 miles to the south), Atlanta is engaged in the most comprehensive revitalization project in the city's history. A master's thesis by Georgia Tech student Ryan Gravel was the catalyst for an emerald necklace of public parks, multiuse trails, and transit anchored by reusing 22 miles of existing but defunct railroad corridors that circle the city's downtown. When completed, the Atlanta BeltLine, reported by Kim A. O'Connell in the previous story, will realize the vision of an integrated approach to transportation, land use, greenspace, and sustainable growth.

Perhaps the most dramatic chapter of this ongoing story is that Gravel's vision caught the imagination of his community, sparking a truly inclusive grassroots movement of local citizens and community leaders. This was not a classic top-down plan imagined by "experts" in a closed room, the sort that Jane Jacobs railed against. Instead, design thinking empowered the public to take charge of its future.

O'Connell profiles a many-pronged movement whose ideas and actions have coalesced around the term "tactical urbanism." Instead of defaulting to single large design strokes in an effort to re-create the energy of the so-called "Bilbao Effect," cities, for a variety of reasons (tight budgets among them), are increasingly looking to upstart urban design firms like Rebar and the Street Plans Collaborative for innovative, actionable, and affordable ideas that use design to engage and build community.

What do these two examples have in common? They leverage the creativity, training, and the passionate leadership of diverse teams of young men and women collaborating with the public to make a positive difference. To be sure, the recession played some part in forcing or inspiring recent graduates to consider different and innovative ways to apply their training. But something larger is going on that's having a transformational effect on the profession and the AIA.

Commentators on the subject have written at length about the Millennials (that is, the generation born between 1984 and 2000, more or less). Although there is a fair amount of disagreement about the profile of the "average" Millennial, a broad consensus has emerged that this newest generation to enter the profession is civic-minded, and that they are using their familiarity with social media and digital technologies to drive new ways of appreciating the power of design in their communities and the profession.

In one sense, the AIA's Repositioning Initiative is a way of capitalizing on and supporting a new generation committed to broader, more nuanced engagement with the public. As our Repositioning research makes clear, the public admires the profession but really doesn't know why architects are relevant. But the passion and impetuousness of youth argue that community-building projects should be standard practice, not exceptional. It's this sense of urgency to enlist the public as partners in using design to shape more healthy, productive, and livable communities that carries the seeds of our renewal as a profession. We would be wise to nurture them. AIA

↗ Learn more about architecture's 21st-century challenges at *aia.org/repositioning*.

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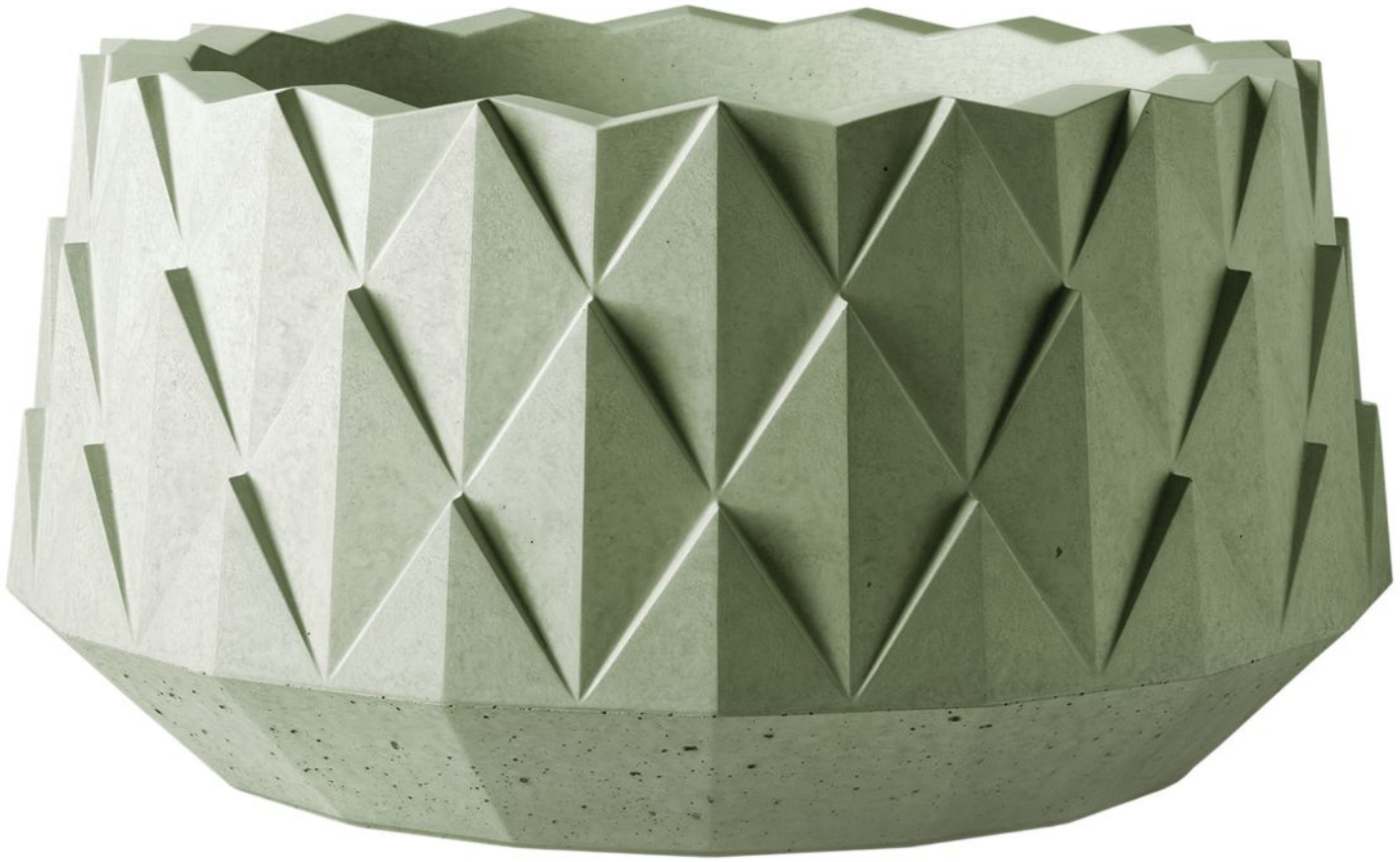

AGAVE SERIES

Artist Larry Kornegay has designed everything from architectural signage to theme parks. In 1997, he founded **Kornegay Design** in Phoenix to craft products that celebrate his love of cast concrete and other materials as sculptural mediums. His appreciation for gardening and geographic proximity to the Sonoran Desert led to the design of landscape containers, including the Agave Series. The collection comprises three planters ranging in diameter from 24" to 48" and 13.5" to 22.5" in height. The studio hand casts its planters and receptacles from dense concrete made almost exclusively with local materials. *kornegaydesign.com* Circle 100

Text by **Jennifer Brite**
Edited by **Wanda Lau**

BICILINEA

With a curved structural frame that allows cyclists to lock their mode of transportation at two points, Bicilinea from **Santa & Cole** is a modern and robust take on the bicycle rack. Designed by Barcelona-based designer and town planner Beth Gali, the stainless steel rack comes in two sizes: a 10'-long unit that holds up to eight bikes (shown), and a 20'-long unit that holds up to 16. *santacole.com* Circle 101

FASARA GLASS FINISHES

Etched and sandblasted glass enables offices to maintain privacy and transmit daylight to core spaces. But textured glass can be expensive. With four new patterns, Fasara window films by **3M Architectural Markets** provide an alternative way to customize interior glass surfaces. *3marchitecturalmarkets.com* Circle 102

LUNGO MARE

Originally designed for beachside public seating, Lungo Mare from **Escofet** mimics the form of rolling ocean waves and sand dunes while cleverly enabling relaxation in a variety of postures. Lungo Mare comes in two sizes: 158" long by 79" wide, and 79" square in plan. Made from soft, acid-treated cast stone, it is available in beige, black, gray, and white. *escofet.com* Circle 103

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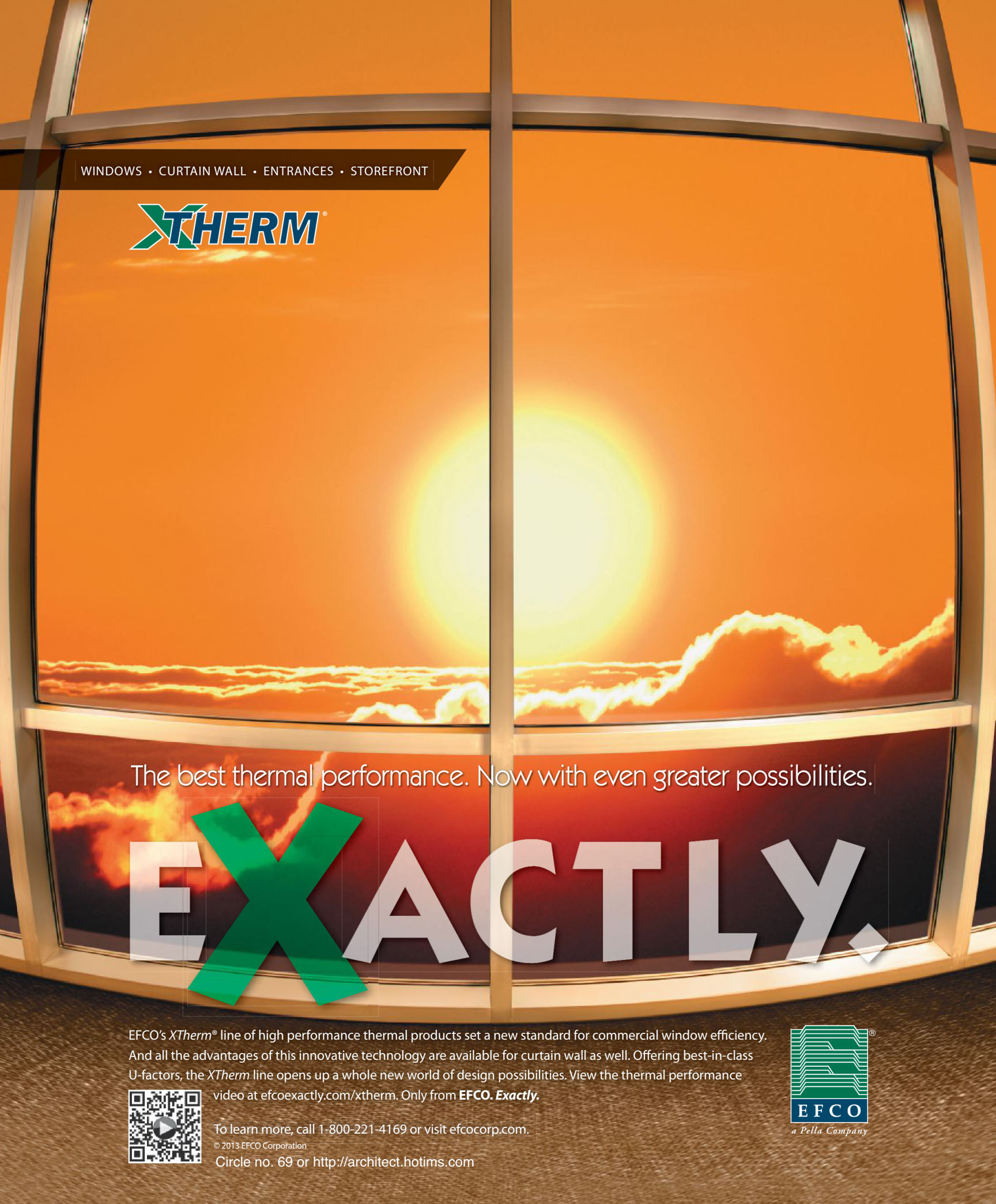
Curved paths and less-than-ideal site conditions can make the installation of outdoor seating a headache. **Forms+Surfaces**' Tangent Rail Seating can help. Its articulating rail can adapt to an inward angle of up to 20 degrees and outward angle of up to 45 degrees. A flexible connection enables a zigzag, curved, or linear layout. *forms-surfaces.com* Circle 104



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LA JOLLA LPL6

Proportioned for small pathways and intimate garden areas, **Auroralight**'s La Jolla LPL6 is made of solid copper and brass with stainless steel hardware. The 6"-diameter, 17"-tall landscape luminaire is lamped with a high-output LED. An internal diffusion option allows the fixture to offer a softer glow with no shadowing. La Jolla is designed for 10' to 18' spacing. *auroralight.com* Circle 105

EMU HEAVEN CHAIRS

The sweet hereafter comes down to earth in this outdoor chair collection designed by French designer Jean-Marie Massaud and offered by **Coalesse**. Available in three powdercoat finishes, the collection includes an armchair, side chair, and lounge chair, as well as tables, vases, and stools. The chairs are made of 34% recycled content. *coalesse.com* Circle 106

DUO AND TRIO

Inspired by the natural simplicity of undyed wool and linen, Duo and Trio can be laid out in several patterns, including herringbone and linear designs. The 25cm-by-1m plank tiles by **Interface** are made from nonvirgin yarn combined with reclaimed carpet fiber and salvaged fishing nets. Duo supplies the palette, pattern, and finish, while Trio injects the color accents. *interface.com* Circle 107

SCONCE

Ambient lighting can be hard to come across outdoors. Sconce, an outdoor, surface-mounted version of **Bocci**'s 14 Series chandelier, is an alternative to traditional architectural and landscape lighting. Made with a cast-glass hemisphere, the 4"-high-by-2"-deep luminaire brings mood lighting outside. It uses a 12V, 10W xenon lamp. *bocci.ca* Circle 108

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Text by **Brian Libby**
Illustrations by **Peter Arkle**

ARCHITECTURAL METAL PRODUCTS, BŌK MODERN

Russ Naylor, AIA, co-founder of San Francisco's NC2 Studio, entered product design to avoid value engineering. After a "beautiful woven-wood railing" on the balcony of a multifamily housing project was slotted for replacement by standard pipe railing, the architect designed a unitized panel that required virtually no fasteners or welding. "We could put this ornamental railing on the project for less than the cost of the pipe rail," Naylor says. The railing helped launch a separate company, Bōk Modern, which offers laser-cut, powdercoated steel panels in nearly any pattern. The panels can be used as railing, fencing, or cladding. A forthcoming line called Aigo! will apply the same technology to furniture. Naylor splits his time equally between NC2 and Bōk Modern, although his accountant has suggested focusing on the latter full-time, due to its success. "But at heart, we are architects and would never give that up," he says.

RUSS NAYLOR
Design Director,
Bōk Modern

KENA DIGITAL MICROSCOPE, KEM STUDIO

Kem Studio was founded based on the European model of firms that "combine architecture and industrial design in a more meaningful way," co-founder Brad Satterwhite, Assoc. AIA, says. "We all have our hands on everything." Having industrial design in-house has emphasized the role of human behavior and interaction. "Before we start any project, there's a complete understanding of the parameters," he says. "Not just program and budget, but … in the experience." Kem Studio has designed medical products such as the Cool Stretch foot splint and consumer items such as the Bushnell Voyager binoculars. The Kena Digital Microscope combines the usability of toy microscopes with the technology of advanced digital microscopes—"less technical and more approachable," Satterwhite says. With knob controls and real-time output on a monitor, the scope can be removed from its base for extra mobility.

BRAD SATTERWHITE
Principal, Kem Studio

FOSS PENDANT, FINNE ARCHITECTS

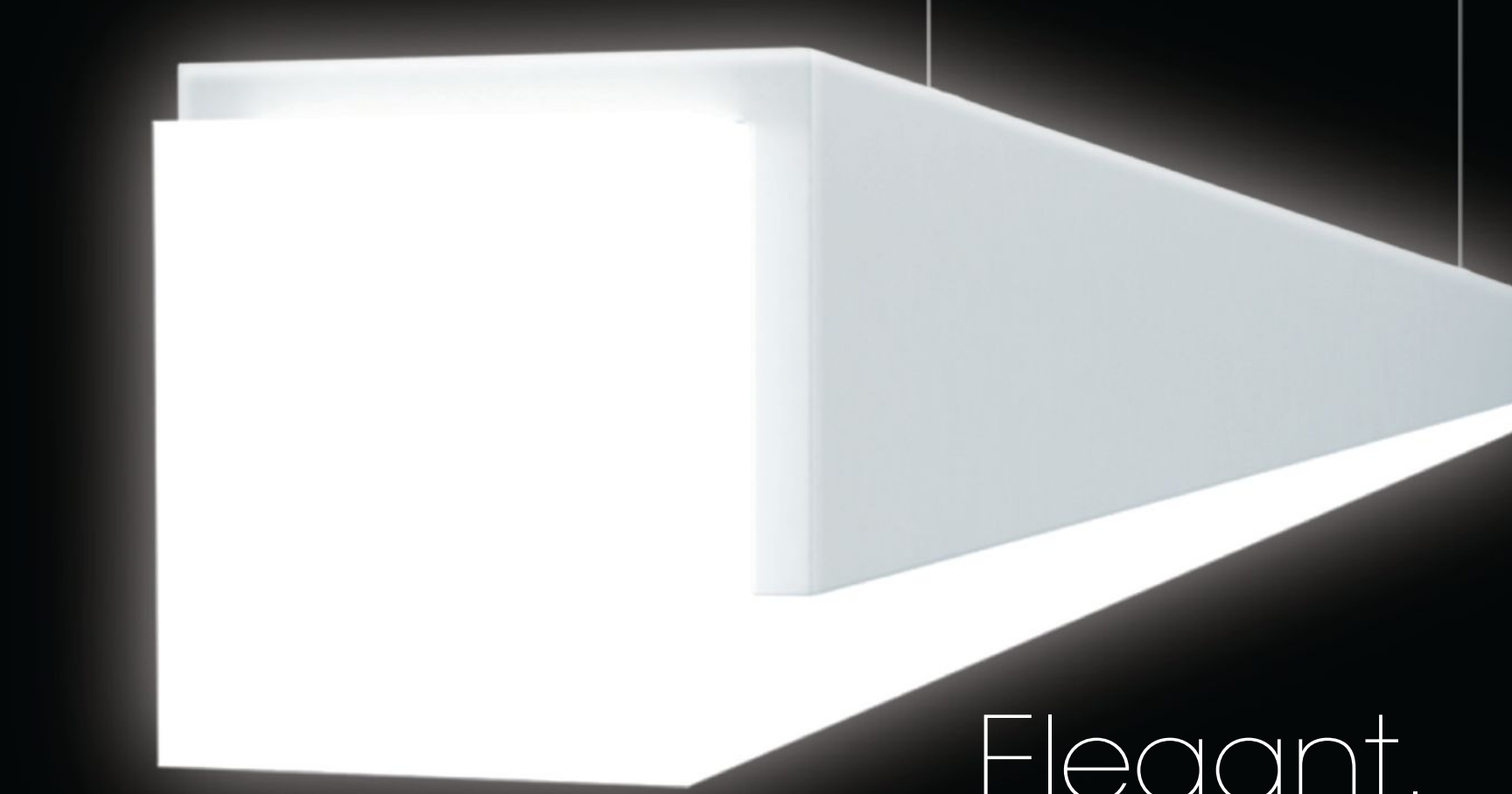
A professor once urged Nils Finne, AIA, to pursue furniture and lighting design rather than architecture. Finne's response: "Absolutely not." "I said I'd dream of architecture because that's a much larger scale design challenge than just objects." But 30 years later, Finne's custom furniture, which frequently appears in his Seattle firm's projects, is often how clients find him. "We live in a Crate-and-Barrel society," he says. "My clients seem to appreciate the highly personal touch [my designs] bring." Product design has also heightened his attention to detail. "An eighth of an inch can make a huge difference. You don't always experience [that kind of precision] in building design." Finne has begun selling his wares a la carte. The undulating glass diffuser of his Foss Pendant luminaire evokes flowing water. Hence, its name is Norwegian for waterfall.

NILS FINNE
Principal, Finne Architects

DOCKR AND DOCKR 2, INNUEVO

For Marshall Moya Design (MMD) co-founder Paola Moya, Assoc. AIA, objects can be as complex to design as buildings. "You're thinking about the amount of users who can touch this object," she says. Though MMD was established as an architecture and product design firm, Moya and co-founder Michael Marshall, AIA, formed a separate company for products, InNuevo. "I wanted to make sure the architecture remains a service business," Moya says. InNuevo's first release, the DOCKr, is a carrying case and tablet docking station that can rotate 140 degrees. Its successor, the DOCKr 2, comes with wireless speakers and a battery to extend the life of the computer and other devices. InNuevo is funding and marketing DOCKr itself. "We wanted to take control of the opportunities," Moya says. "Sometimes it's hard to go to big companies and say, 'I have a design,' and be taken seriously. So we said, 'Let's do everything on our own.'"

PAOLA MOYA
Co-founder, InNuevo



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David Chipperfield Architects' new East Wing of the St. Louis Art Museum is an addition to the Beaux-Arts original designed by Cass Gilbert for the 1904 Louisiana Purchase Exhibition.

DETAIL

Between the Lines

THE CONCRETE GRID TOPPING THE ST. LOUIS ART MUSEUM'S NEW EAST WING IS A WORK OF ART IN AND OF ITSELF.

Text by **Katie Gerfen**

WHEN CASS GILBERT designed the Palace of Fine Arts, a classical limestone edifice, for the 1904 World's Fair in St. Louis, it was the only structure intended to remain once that centennial celebration of the Louisiana Purchase ended. It still stands today as home to another palace of the arts: the St. Louis Art Museum.

After nearly a century in its historic home, the museum, needing more space, decided to expand on its Art Hill site in Forest Park. The museum board turned to London-based architect David Chipperfield, Hon. FAIA, to create a new wing that would "not compete with, nor take away from, the historic stature of the main building," says Roger McFarland, AIA, group vice president at St. Louis–based HOK, which served as the associate architect.

The result is a 200,000-square-foot addition that hides parking for 300 cars underneath a single level incorporating 21 new galleries and a new café. The structure is largely composed of polished concrete with local river aggregate. The material continues in the building's unifying formal element: a 40,000-square-foot concrete-grid ceiling canopy.

As one would expect of Chipperfield, the geometry of the grid slab is rigorous: 5-foot-by-10-foot voids, dubbed coffers, are partitioned by 1-foot-thick concrete ribs. The 4-foot-tall slab was poured on site after the vertical structure of columnar supports and concrete exterior walls (which serve as shear walls) was already in place. To execute what would essentially be an aerial pour, the team built a temporary plywood platform, which it called "the dance floor," 18 feet above the floor slab. Disrupted only by the column caps that would connect with the ceiling slab, the platform formed the base for the formwork.

While the addition's exterior walls would undergo polishing to achieve the final finish, the design team wanted the "materiality of the coffers to be as natural as possible," McFarland says. A series of small- and full-scale mock-ups of the coffers (more than 40 were created over the course of the project) helped the designers determine which mix of concrete would work best. After testing, the decision was made to use self-compacting concrete, which, when mixed, had "the consistency of pancake batter,"

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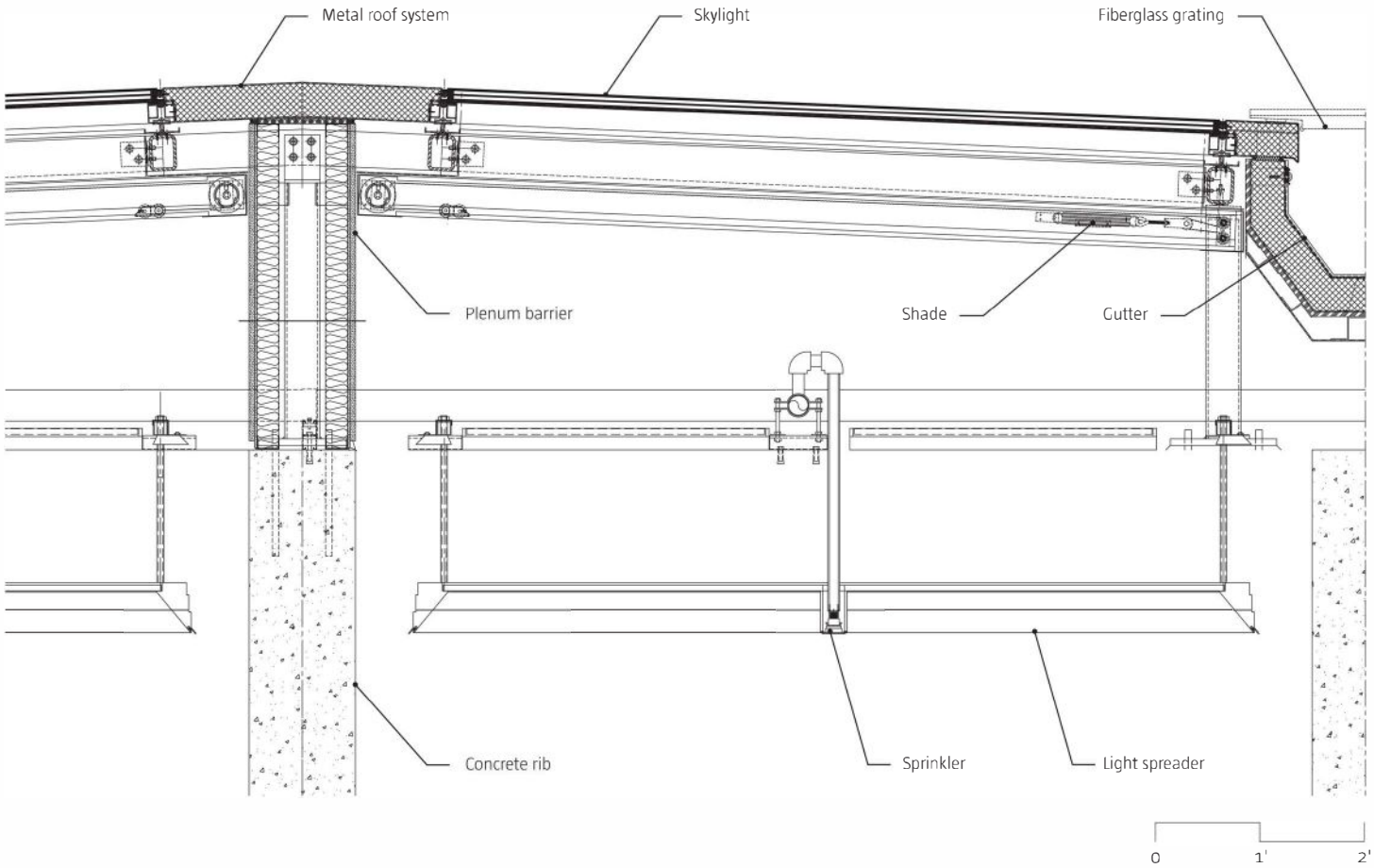

The rectilinear geometry of the concrete ceiling grid determines the position of gallery partitions and air distribution grilles in the floor.

McFarland says, but would result in a smooth surface and sharp corners—important details for the largely exposed final result.

Millwork-quality boxes, each the dimension of a single coffer and filled with Styrofoam, served as formwork. Once the pour was complete, the tops of the boxes were removed and the walls broken out from inside to leave only the pristine concrete structure behind.

The concrete for the slab—all 1,600 cubic yards of it—was poured in 11 sections, each consisting of up to 28 truckloads of concrete. First, the construction team tied together the grids of rebar (assembled above the formwork for the slab) and dropped them into the gridded voids. When the concrete trucks arrived site, "it was a ballet," McFarland says."It was fun to watch these things come and go." The longest pour was the first, which lasted two hours.

The final result was a continuous structure that was left to cure in the elements for several months while the rest of the building was constructed; UV exposure lightened the concrete to its final, pale color. To enclose the addition, a metal roof system was installed roughly 3 feet above the coffers, leaving room for air returns, plenum barriers, lighting systems, and other infrastructure. While many areas, including the café and temporary exhibition galleries, have an opaque ceiling over the coffers, the permanent exhibition galleries and the public spaces have skylights that allow natural daylight to filter in.

The grid slab is expressed throughout the interior, with gallery walls mimicking the 1-foot thickness of the ribs and concealing the structural columns. Air distribution grilles in the floor run the length of the galleries and mimic the geometry of the grid above. "It sets up the rhythm of the building," McFarland says. "Every wall is tied to it. Every mechanical grille is tied to it."

McFarland says that, overall, the ceiling system contributed to a *trompe l'oeil* effect, in which the addition can appear deceptively small next to Gilbert's limestone pile and the wooded surroundings of Forest Park. "Visitors are going to be amazed by how large the galleries feel on the inside after their perception of the size of the building on the outside," he says. "This system of coffers removes scale. You want to look up, yet you're drawn to the simplicity of the structure."

J.J. LANE

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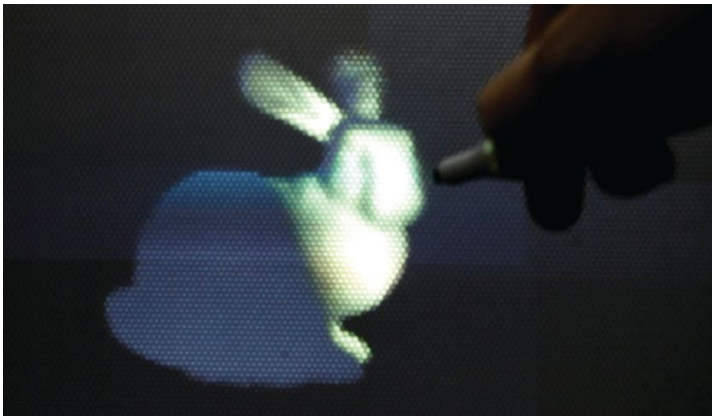

Developed by a team of collaborators, including Disney Research, Interactive Light Field Painting allows users to a create three-dimensional drawings with a light pen, which is tracked by a near-infrared camera.

WHEN IT COMES to the art of drawing, the question of analog versus digital inevitably arises. Michael Graves, FAIA, bemoaned the profession's increasing reliance on the latter in his *New York Times* op-ed, "Architecture and the Lost Art of Drawing": "What has happened to our profession, and our art, to cause the supposed end of our most powerful means of conceptualizing and representing architecture?"

Though computer-aided design is widespread, the emergence of several manual technologies suggests that hand-drawing is far from dead. Instead, it is evolving as a vital and experimental means of creative production.

The NeoLucida, for one, has breathed new life into a long-standing drawing technology. Media scholars Pablo Garcia and Golan Levin modeled the device after the camera lucida, an early 19th-century tool. This optical instrument projects an artist's subject onto a drawing surface via a prism, enabling highly accurate hand-drawn representations. According to the developers, the camera lucida was made obsolete by photography; a working original today costs several hundred dollars.

However, Garcia and Levin's efforts to manufacture an updated version of the technology has quickly generated buzz—and lots of it. Their Kickstarter offering of the NeoLucida sold out twice, with more than $400,000 pledged beyond the $15,000 initial goal.

Meanwhile, the 3Doodler is a hand stylus that creates three-dimensional wireframe models without turning on a computer. Garnering more than $2.3 million more than its initial funding request of $30,000 through Kickstarter, the 3Doodler uses 3-millimeter-diameter ABS or PLA plastic rods to create skeletal "sketches" on a flat surface or in mid-air.

Its inventors, who hail from the Boston-based toy and robotics company WobbleWorks, have not only united drawing and modeling in a fresh way, but also offer the most inexpensive 3D printing method to date.

Many tablets and touchscreen interfaces seek to make digital drawing more hands on. Interactive Light Field Painting is similar to these approaches but, like the 3Doodler, it allows the user to draw in space. Developed by Disney Research, Adobe Systems, University College London, Technische Universität Berlin, and the Massachusetts Institute of Technology, the experimental project enables one to paint with light using a physical stylus. Sensors detect the location of the 3D light pen, and an autostereoscopic display allows users to see and edit freehand and parametric drawings in three-dimensional space.

Although the crude interfaces of early computer technologies distanced the users from their drawings, today's wealth of tools enable architects to brainstorm ideas by hand freely, and with minimal disruption. Thus the debate between analog and digital drawing should not be reduced to a black-and-white comparison. Rather, we should explore what, in reality, is a rich and varied field of experimentation in hand-based media.

8,500

The number of NeoLucida units ordered through its creators' Kickstarter campaign.
SOURCE: NEOLUCIDA.COM

Text by **Blaine Brownell, AIA**
Illustration by **Peter Arkle**

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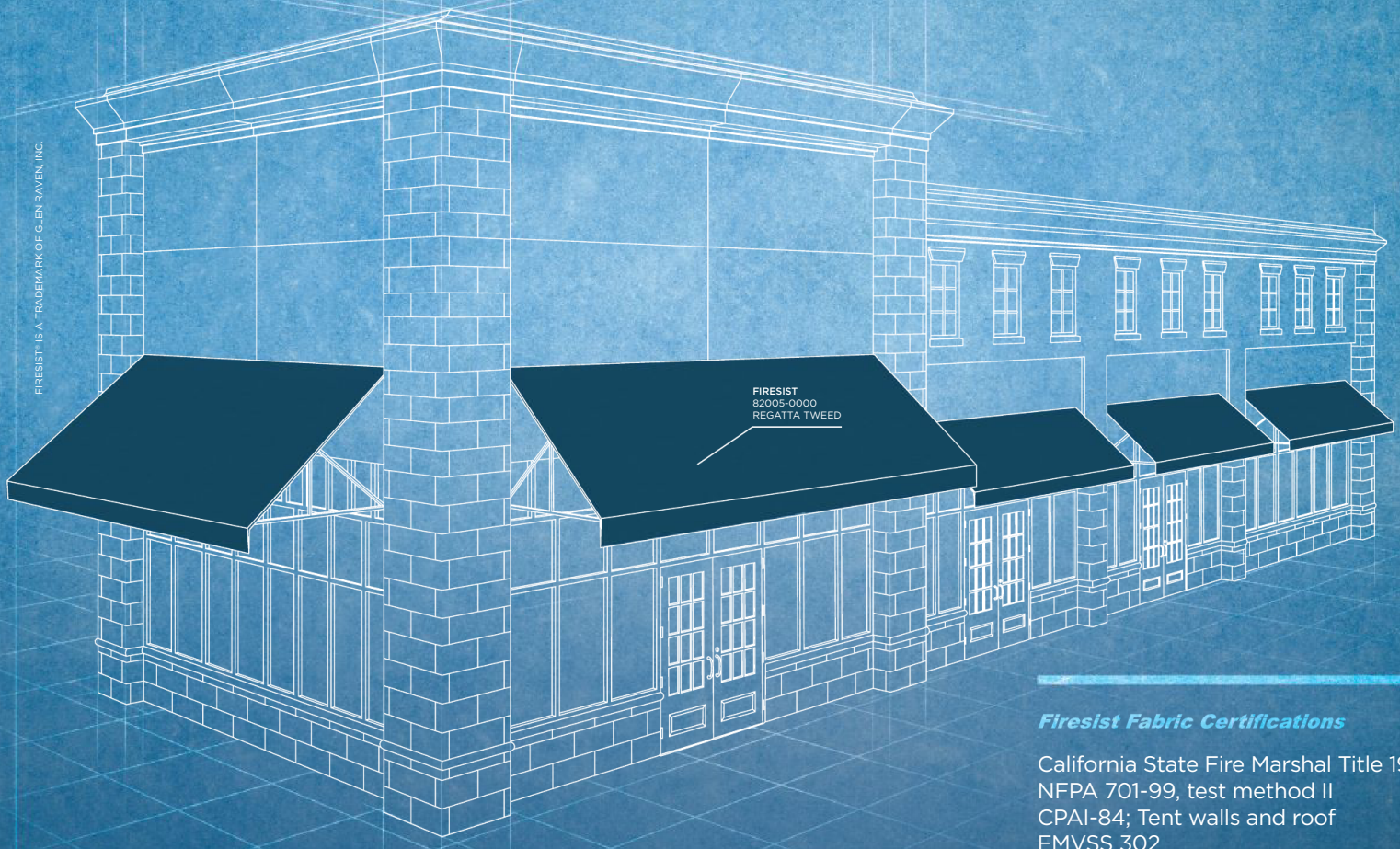

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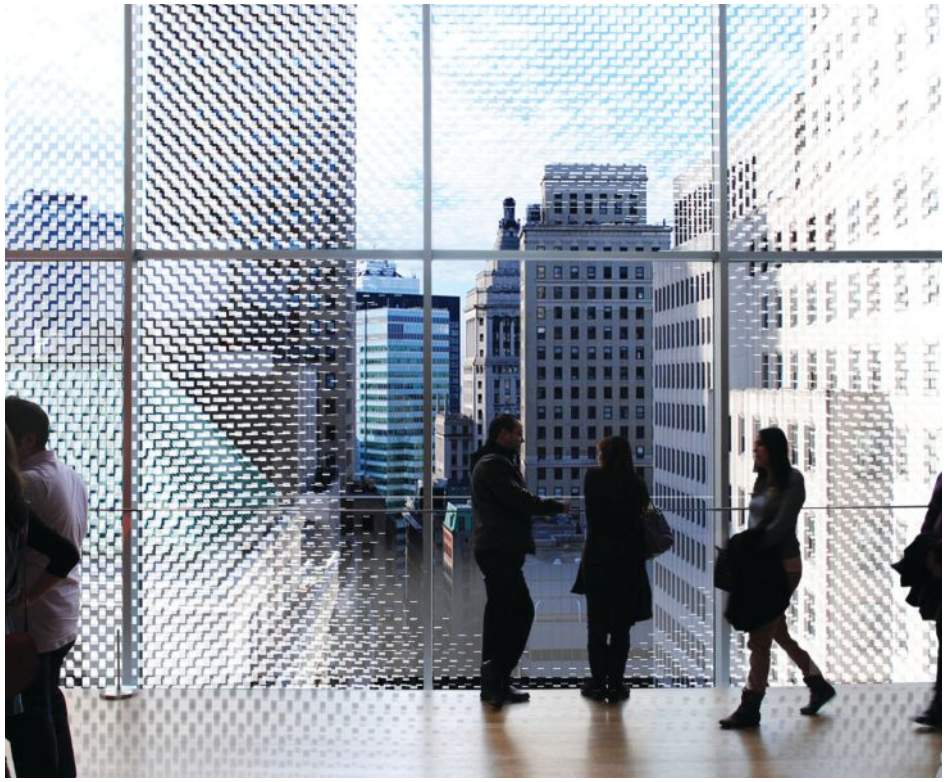
CONTINUING EDUCATION

CURTAIN UP

Curtain wall technology has advanced in recent years, while basics of good design and delivery remain unchanged.

By: C.C. Sullivan



Under development by the Center for Architecture Science and Ecology, this electropolymeric dynamic daylighting system (EDDS) will apply geometric and spectral selectivity through the building membrane in order to meet the lighting and thermal requirements of occupied spaces. Photo © CASE/Rensselaer

LEARNING OBJECTIVES

1. Describe sustainability and performance considerations related to curtain wall design.
2. Discuss project delivery techniques and design/construction phase coordination issues that can affect curtain wall performance and building sustainability.
3. Explain key technical advances that have affected curtain wall design recently to improve energy performance, durability and the like.
4. List several issues related to curtain wall performance, including glazing type framing, framing design and codes/standards.

CONTINUING EDUCATION

Credit: 1 LU

Use the learning objectives above to focus your study as you read this article.

To earn credit and obtain a certificate of completion, visit (http://hanleywooduniversity.com/files/upload/Architect_Mag/July 2013/CurtainWalls_Article_ARCH.pdf) and complete the corresponding quiz. If you are new to ArchitectCEUniversity, create a free learner account; returning users log in as usual.

Are we glazing over too much? A few architecture critics have said so recently, including one who contends that using glass enclosures in parts of certain U.S. cities risks "annihilating context." "Shiny surfaces offer nothing but reflections," he wrote.

Nothing could be farther from the truth: Glass curtain walls are likely to remain a mainstay of urban architecture for the foreseeable future, for reasons ranging from aesthetic expression and end-user preferences to operational performance and long-term durability. Certainly architects should not ignore context when designing a façade system, but a well-crafted curtain wall is often perfectly at home in our major metropolitan areas. And a curtain wall can deliver high performance along with an architectural ideal – transparency – with its visual appeal as well as proven health and productivity benefits.

Happily, those who share the critic's concerns may soon find that curtain wall design is trending in new directions. For example, while some all-glass façades have had performance issues, recently there has been valuable experimentation with mixed-material solutions and new building technologies such as transparent insulation and high-efficiency glazing. Building codes, green standards such as LEED and new energy codes are driving some of these innovations. Unique design approaches, such as double-wall construction, offer novel ways to meet the budget, satisfy client goals, improve performance, reduce operating costs, increase user satisfaction and align the project with sustainability criteria.

The separate camps – glass-box minimalism versus proponents of punched openings – may soon find that compromise is possible. Costs are coming down, and the performance of new technologies is swiftly rising. The National Fenestration Rating Council (NFRC) has stated that it is now possible to build glass curtain wall systems with an overall U-value of .30, or less, with an investment of time and budget that previously would have achieved a much lower .45 U-value. And though design-and-construction teams must always balance performance with cost, the results of this balancing act are trending in a positive direction.

1. The basics – and emerging design ideas

Curtain wall systems generally fall into two major categories: Unitized and stick-built. According to Jessie Peterman, founder of the Oklahoma-based glazing contractor American Glass, unitized curtain walls entail factory fabrication and assembly of panels and may include factory glazing. These completed units are hung on the building structure to form the building enclosure.

Described by SOM's Nick Holt, the integrated concentrating solar facade (ICSF) technology being developed by the Center for Architecture Science and Ecology can be incorporated architecturally into facades and atria, harvesting solar energy, providing outside views and diffuse daylight, as well as valuable energy resources and reduced interior solar gain loads. Photo © CASE

The Aire, a luxury residential tower on Manhattan's Upper West side, features a glass curtain wall facade that can seem to disappear at certain angles. Photo: William Ward

"Unitized curtain wall construction has the advantages of speed, lower field installation costs and quality control within a climate-controlled environment," according to the contractor. "The economic benefits are typically realized on large projects."

Stick-built curtain wall assembly largely takes place in the field where extruded aluminum mullions arrive on site as not-yet-assembled components, or "sticks" colloquially. "The mullions are then installed onto the building face to create a frame for the glass," says Peterman. "Economical, off-the-shelf stick curtain wall products are available from various manufacturers. If the project is on a fast-track schedule, stick-built curtain wall can be assembled at the project site and large framing sections craned into place on the building."

On large projects, a unitized system can realize overall cost savings even though the product itself, being preassembled, tends to be more expensive. Stick-built systems are not only economical for many projects, but often offer useful flexibility for system customization or scheduling. The main challenge with stick-built curtain walls is the level of tolerance control required.

Recent advances in envelope technology and design have led to realizing curtain wall systems that do not properly fit into either of these categories. These hybrid systems bear similarities to both curtain wall and window-wall systems. Structural glazing, on the other hand, describes a range of curtain wall-type facades that utilize silicone sealants and point supports, among other techniques, to transfer structural and wind loads among numerous panels of glazing. This method often employs mullions located inboard of the glazing layer and in some cases eliminates them, as with point-support systems.

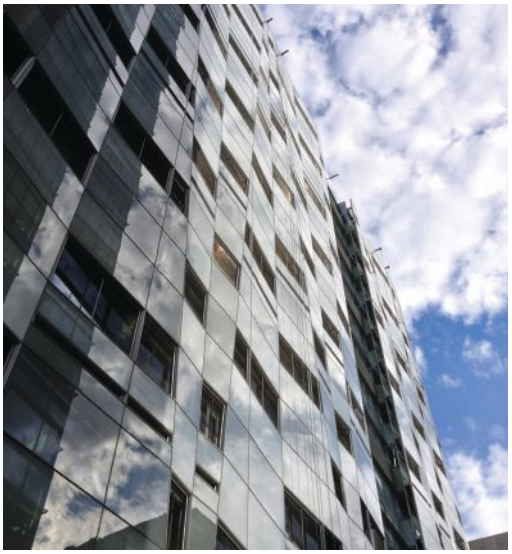
Novel systems

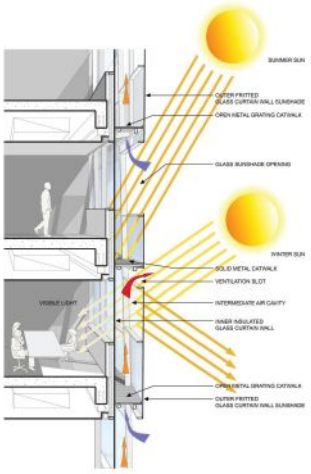
Project designers are adopting these and other glass façade system technologies in part from advances originating in Europe, say leading architecture firms. Nick Holt, AIA, LEED AP BD+C, technical director for Skidmore, Owings and Merrill in New York, sees advances in envelope design including some that have yet to enter the U.S. market. "High-performance framing has been in use in Europe for some time, and in other markets where energy costs are higher than in the U.S. We're beginning to see these systems more often in North American construction.

"The same is true for double-wall construction," continues Holt, referring to systems that employ a ventilated plenum between the inner and outer walls, often called double-skin curtain walls. "It's been rare in U.S. projects – but the costs associated with this system type are coming down. Plus, the performance achieved by tying the space between the skins to the HVAC system to mediate the thermal properties of the wall is creating an incentive for clients to consider making the investment."

Other experts note that the enclosure industry is becoming more ambitious, with an "escalation of geometric and technical complexity," says Mic Patterson, LEED AP BD+C, director of strategic development for Enclos, a Los Angeles-based design-build façade company. Patterson points to the expanding palette of materials and methods being employed in façades, including fiber-reinforced plastic (FRP), cast stainless steel, cast aluminum and architecturally exposed structural steel (AESS). Other newer materials include metal meshes and cold-formed glass.

"Every new project seems to incorporate some novel material or process," says Patterson, including a recent glass specification with low-emissivity (low-E) coatings on "the number 10 surface" – meaning the system was effectively quintuple-glazed. (Until very recently, even triple-glazing has been rare in the United States.) Even as project teams continue to work with conventional curtain walls, more are "also involved with double-skin systems, dynamic facade elements, opaque rain-screen facades, integrated shading assemblies and structural glass façades," he says.





Designed to maximize energy efficiency, the building envelope designed by Ennead Architects for Weill Cornell Medical College's Belfer Research Building features a high-performance double-skinned fritted glass curtain wall. Photo: Courtesy Ennead Architects

Coping with glazing

Many of the innovations affecting curtain wall relate to new glass products, says Craig McIlhenny, AIA, associate partner in Ennead Architects, New York City. "It seems possible that coatings for glazing could evolve to become indistinct and unnoticeable while still providing all thermal and solar benefits, and greater design freedom due to maximum visibility and transparency," he says.

The fact that current low-E coatings add a visible tint, continues McIlhenny, does not dissuade designers and client stakeholders from striving for all-glass facades. "Envelope experts continue to push for less glass, but it seems daylight and views prevail," he explains.

Instead, notes McIlhenny, more architects are mitigating the glass expanses with exterior shade structures, a striking parallel with mid-twentieth century design when architects were responding to the weaknesses of single-pane curtain wall with thermal bridging in the frames and other inefficiencies. The solutions then included concrete brise-soleil elements, which would also work well today. "Today's designs allow for the creation of façades that are distinctly textural, with shading elements overlaid on the rhythm of a glazed curtain-wall grid, creating great visual interest," says McIlhenny, adding that even building owners are getting on board.

"Similarly, we are seeing a greater use of fritted glass for the purpose of sun shading to meet current energy codes, as well as internal louvers to better control daylighting and heat gain," says Jay Brotman, AIA, a partner with the firm Svigals + Partners in New Haven, CT. Others, including Holt and McIlhenny also confirm increased use of fritting. Holt mentions ceramic frit in particular and McIlhenny points to two recent projects from Ennead that have specified fritted glass. One project used fritted glass in a fixed system of vertical fins, as exterior shading.

More innovations

The field of curtain wall design seems to be enjoying a kind of renaissance with other innovations:

- Cladding with novel materials: Examples include ceramic, engineered wood and high-pressure laminates.
- New coatings and films: Examples include the glazings used in a recent retrofit of the Empire State Building and now applied to curtain wall. In these, a film is suspended between two glass panels to simulate a triple-glazed insulating glass unit (IGU) in a double-glazed system.
- Achieving monolithic appearance: This aesthetic trend is supported by innovations in obscuring and hiding the façade system's joints.

- Integrated renewable power: Building integrated photovoltaic (BIPV) panels in the curtain wall is becoming more cost-effective as the technology evolves and designs become more robust.
- Automation and motorized control: Although a tough sell for owners because of the up-front cost – and the perceived cost associated with operations – novel motorized shade systems are frequently shown to deliver the highest thermal performance and user comfort from an all-glass wall, while preserving the transparency and exterior views.
- Smart glass: Certain glazing types and coatings can alter their color and visible light transmittance (VLT) depending on environmental conditions or user needs. Passive types include photochromic and thermochromic glazings, which respond to light and heat, and electrochromic, the active type which requires an electric current to change. Some active types can become nearly opaque.
- Dynamic facades: This category includes a number of new systems that employ moving parts in the curtain wall to respond to environmental conditions for optimized performance. Some of the more exotic new types include curtain wall designs that can become effective double-skin facades on demand, says SOM's Holt.

This article continues on http://hanleywooduniversity.com/files/upload/Architect_Mag/July 2013/CurtainWalls_Article_ARCH.pdf. Go online to read the rest of the article and complete the corresponding quiz for credit.

RESOURCES

ASTM International, www.astm.org

National Fenestration Rating Council, www.nfrc.org/Windowratings/The-NFRC-Label.html

Jessie Peterman, American Glass, Inc., Tulsa, OK. www.glassandmetal.com/curtain_wall.html

Whole Building Design Guide, "Building Envelope Design Guide - Curtain Walls," by Nik Vigener, PE, and Mark A. Brown. www.wbdg.org/design/env_fenestration_cw.php

"BIM watch: Bringing building information modeling into the glazing industry," By Will Ikerd. http://www.glassmagazine.com/article/commercial/bim-watch

http://www.enclos.com/news-page/high_performance_facades_part_four_getting_there_metrics_best_practices/

Thomas Bell-Wright International Consultants, Tom Bell-Wright, owner. www.bell-wright.com/the-testing-standards-curtain-wall-testing

TEST

1. According to the National Fenestration Rating Council (NFRC), it is now possible to build glass curtain wall systems with an overall U-value of:
   A. .30 or lower.
   B. No less than .45.
   C. No less than .60.
   D. .15 or lower.

2. Structural glazing is similar to curtain wall assemblies but instead can use what types of façade technologies to hold glass panels in place?
   A. Silicone sealants.
   B. Point supports.
   C. Mullions inboard of the glass layer.
   D. All of the above.

3. Which of the following is NOT an example of a passive type of smart glass and must have user input to change its opacity or color?
   A. Photochromic glass.
   B. Electrochromic glass.
   C. Thermochromic glass.
   D. All of these are passive types.

4. In design-assist (DA) project delivery, the architect works with contractors, subcontractors and manufacturers during the design phase, but the building owner buys the curtain wall based on the scoping documents:
   A. In the construction administration phase.
   B. At the time of bidding, similar to design-bid-build delivery.
   C. Following production of construction documents.
   D. During the design phase.

5. True or False: The highest-performing and most expensive windows cannot nearly match the insulative values of reasonably well-insulated opaque walls.
   A. True.
   B. False.

6. A lack of interior air adjacent to opaque portions of the curtain wall can create highly variable humidity and temperature conditions, leading to:
   A. Increased R-value.
   B. Reduced light transmission.
   C. Forming of condensation.
   D. None of the above.

7. National Fenestration Ratings Council (NFRC) product ratings for U-values, for example, may not be correct once products are combined into a curtain wall assembly. For example, the U-value can be reduced by a framing system with:
   A. Poor thermal breaks or condensation issues.
   B. Gutters and perimeter drains.
   C. Sunshading or brise-soleil.
   D. None of the above.

8. In deciding whether to integrate light shelves and external shading into curtain wall, which of the following design variables should be considered to determine whether light shelves are truly applicable and desirable?
   A. Building orientation and program.
   B. Occupant behavior.
   C. Life-cycle analysis.
   D. All of the above.

9. Architectural glass products for curtain walls often are subject to processing that can:
   A. Render them not recyclable.
   B. Increase their lifespan.
   C. Make them easy to recycle.
   D. Allow reuse of the glass panels.

10. Which of the following is an example of a dynamic or active façade?
    A. Water-managed curtain wall.
    B. Automated motorized sunshades.
    C. BIPV panels.
    D. All of the above.

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American Standard

Presents:

The Flawless Guest Experience

Why High-Performing Plumbing Fixtures Matter As Much as Conservation in the Hospitality Industry.

By: Kathy Price-Robinson

A luxurious hotel room must not only look superior, it must function flawlessly. Customers may care deeply about water conservation, but that concern will evaporate if the fixtures falter or fail.

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Credit: 1 LU/HSW

Use the learning objectives to the right to focus your study as you read this article.

To earn credit and obtain a certificate of completion, visit **http://hanleywooduniversity.com/files/upload/Architect_Mag/July 2013/AmericanStandard_Article_ARCH.pdf** and complete the quiz for free as you read this article. If you are new to Hanley Wood University, create a free learner account; returning users log in as usual.

LEARNING **OBJECTIVES**

By the end of this educational unit, you will be able to:

1. Describe why performance of fixtures must be considered along with water conservation in the hospitality industry.
2. Explain at least three initiatives that are driving changes in plumbing products and water conservation.
3. Discuss the difference between high-performing fixtures and standard fixtures.
4. List LEED points available for water conserving fixtures.
5. Discuss future solutions for performance and water conservation.

When specifying bathroom fixtures, is water conservation your overriding concern?

If your clients are in the hospitality industry – including hotels, restaurants, bars, theme parks and more – that priority may deserve serious reconsideration.

Foul toilets and urinals in classy hotels or restaurants generate a lot of press and embarrass the entire industry.

Take the case of clogged toilets at the three luxury Loews Hotels at Universal Orlando. Those clogged toilets got mentioned in The Economist, USA Today, AOL News and other media outlets.

The story began when the Regional Director of Engineering Tony Rodrigues did the math on the 120 clogs per month in the hotels. He determined that 12 guests per day were inconvenienced with toilet clogs, guests that probably weren't impressed at that point with the fixtures' water conservation ratings.

"The root of the problem was the mandated low-flow toilets, which clogged often," Rodrigues said. "

"Often, the guest would clog a toilet and they would be embarrassed and delayed in their plans," Rodrigues continued. "In other instances, guests would use the restroom just before checking out and it was only after several hours of overflowing water before we discovered something was wrong."

Researching the matter, Rodrigues discovered a commercially available toilet that uses the desired 1.6 gallons per flush, but which, due to superior engineering, has the documented capacity to flush 18 golf balls or 40 feet of toilet paper. It has a quieter, more powerful flush that can move a 70 percent larger mass than the industry standard.

Even though the hotels were not scheduled for fixture upgrades for about six more years, Rodrigues requisitioned the change-out of several toilets in each hotel and monitored the outcome for three months.

Today's hotel guests are picky, empowered and outspoken about their discomforts. The Internet has made complaining about hotels a fine art. Badly performing plumbing certainly gets its share of comments.

To his surprise, complaints for these test toilets dropped to a good number: Zero. That was motivation enough for him to persuade management to include toilet replacement in a decorating upgrade at Loews Portofino Bay Hotel. Result: Maintenance calls plunged 80 percent.

That spurred Rodrigues to schedule similar upgrades at the Hard Rock Hotel and Loews Royal Pacific Resort. In all, more than 2,400 guest rooms were upgraded with the high-performing toilet.

These high-performing, water-conserving toilets are also in Loews' 439-room Coronado Bay Resort in San Diego, a 403-room Atlanta property and 353-room Regency Hotel in New York City. Plans call for this toilet to be installed at most of the corporation's hotels during the normal course of renovation.

This story has a happy ending. But the whole problem could have been avoided with the right toilet specified and installed at the start.

While "green building" and "water conservation" are certainly buzzwords in the hospitality industry, poor-performing fixtures push all other accolades for that property aside.

As veteran green designers and builders will attest, comfort and convenience must come first or green strategies will be rejected.

In the hospitality industry, fixture performance is as important as conservation. And architects, designers and other specifiers should know how to achieve both.

DOES PLUMBING PERFORMANCE MATTER?

While customers are generally satisfied with their hotel experiences, the hotel industry's ratings have fallen to their lowest levels in seven years. This is according to the market research company J.D. Power, which surveyed more than 61,700 North American hotel guests between August 2011 and May 2012.

Among the biggest complaints: Noise and shoddy equipment.

Today guests are picky, empowered and outspoken about their discomforts. The Internet (another thing hotel guests complain about when the connection is weak) has made complaining about hotels a fine art. Badly performing plumbing certainly gets its share of comments.

"Our major concern was that the toilet plugged up," wrote a hotel customer on Trip Advisor. "We informed the front desk who didn't seem to know what to do. We asked for a plunger, which was eventually found. We got the toilet working however it seemed to always be on the verge of blocking up."

Here's another complaint on Trip Advisor:

"Water flow in shower is barely a trickle."

In each of these cases, the fixtures may well have been conserving water. And surveys indicate that hotel guests care about that. But when the toilet won't flush right or the shower flow suffers, conservation matters little if at all.

On the other hand, excellent plumbing in hotels also warrants notice. Travel + Leisure magazine lists the "World's Sexiest Hotel Showers," and New York developer and hotelier André Balazs states that:

SUSTAINABILITY PERFORMANCE INDEX
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Hoteliers Strive for Sustainability

Hoteliers and specifiers striving for sustainability must constantly ask the question: Which product is truly sustainable?

To help guide those choices and specifications, a consortium of interested partners, including the U.S. Green Building Council, created the Hospitality Sustainability Performance Index (HSP Index). This online centralized portal gives purchasing decision makers a way to understand and compare the sustainability performance of vendors based on measures of most importance to the hospitality industry.

According to the Index: "The Index serves to guide the supply chain in implementing and promoting solutions which support the building, furnishing and operations of hotels in ways that benefit guest health, comfort and well-being, help reduce energy use, ghg (greenhouse gas) emissions, minimize waste and conserve water and positively contribute to the community.

More info: http://www.hspindex.com

"I don't think you can possibly overstate [a bathroom's] importance."

PLUMBING PERFORMANCE VS. WATER CONSERVATION

The tendency to elevate water conservation over performance in the hospitality industry is well-established.

In April, TripAdvisor launched its new GreenLeaders program, developed in partnership with Energy Star, the U.S. Green Building Council, and the United Nations Environmental Programme. Participating hotels and bed-and-breakfast inns can achieve one of four levels: Bronze, silver, gold and platinum.

Travelocity offers a Green Hotel Directory and a Green Guarantee. A recent Mashable article on "30 Gorgeous Eco-Friendly Hotels" got shared nearly 4,000 times on social media outlets like Twitter and Facebook.

Hotels, restaurants and other places that welcome, feed and shelter masses of people can conserve great amounts of water, plus the energy it costs to clean, transport and heat the water.

In the hospitality industry, the savings from efficient fixtures are significant. According to one online calculator , a 200-room hotel using the most efficient toilets, faucets, urinals and showerheads can save $16,392 and 2.7 million gallons of water each year.

However, other important factors can get overlooked when water conservation is the only consideration. Good questions to ask:

- What is the lifecycle impact of the fixture?
- Does it contain lead?
- What are the maintenance implications?
- What is the cleaning burden on the staff as a result of this specification?
- What are the long-term financial implications for the building owner?

Another question: How does restricting the flow of water into fixtures affect the duration of use? It's a catch-22, to be sure. In some cases, the lesser the flow, the longer the use. How much water is saved, for instance, when a toilet has to be flushed twice? Or when the shower is used twice as long?

And to restate the most important question: How does this specification affect the all-important aspect of customer satisfaction?

WATER USE AND DRAINLINE FUNCTION:

A drain-line test conducted by the Plumbing Efficiency Research Coalition (PERC). Studies show that the reduced amount of water used in modern toilets can negatively impact the ability of the water to move waste along the drain line.

HOW MUCH IS TOO LITTLE?

When you consider the massive amount of water piped into a large hotel and the massive amount of waste leaving the facility, thought must be given to whether or not water-saving fixtures use enough water to move the waste all the way along the drain line to avoid blockages. While drain line blockages are a hassle at home, they are a major disaster when hundreds or thousands of rooms and people are affected.

The Plumbing Efficiency Research Coalition (PERC) was formed in 2009 to study the issue of water use and drain line function. The members are the Alliance for Water Efficiency, the American Society of Plumbing Engineers, the International Association of Plumbing & Mechanical Officials, the International Code Council, the Plumbing-Heating-Cooling Contractors Association and the Plumbing Manufacturers International.

Last year, PERC released results of a study titled "The Drainline Transport of Solid Waste in Buildings." The report noted that after the Energy Act of 1992 reduced the amount of water used in toilets, "a significant number of consumers reported poor flush performance." Since then, manufacturers have made great strides in improving flushing performance and some now offer models that flush with 1 gallon or even .8 gallon per flush.

However, the elephant in the middle of the room was not addressed: Do these reduced amounts of water transport the waste through drainline systems using common designs and materials?

"Many plumbing experts have questioned whether these reduced flush volumes are approaching a 'tipping point,'" the study reported, "where some sanitary waste systems would be unable to function properly. Of particular concern are larger commercial systems that have long horizontal runs to the sewer."

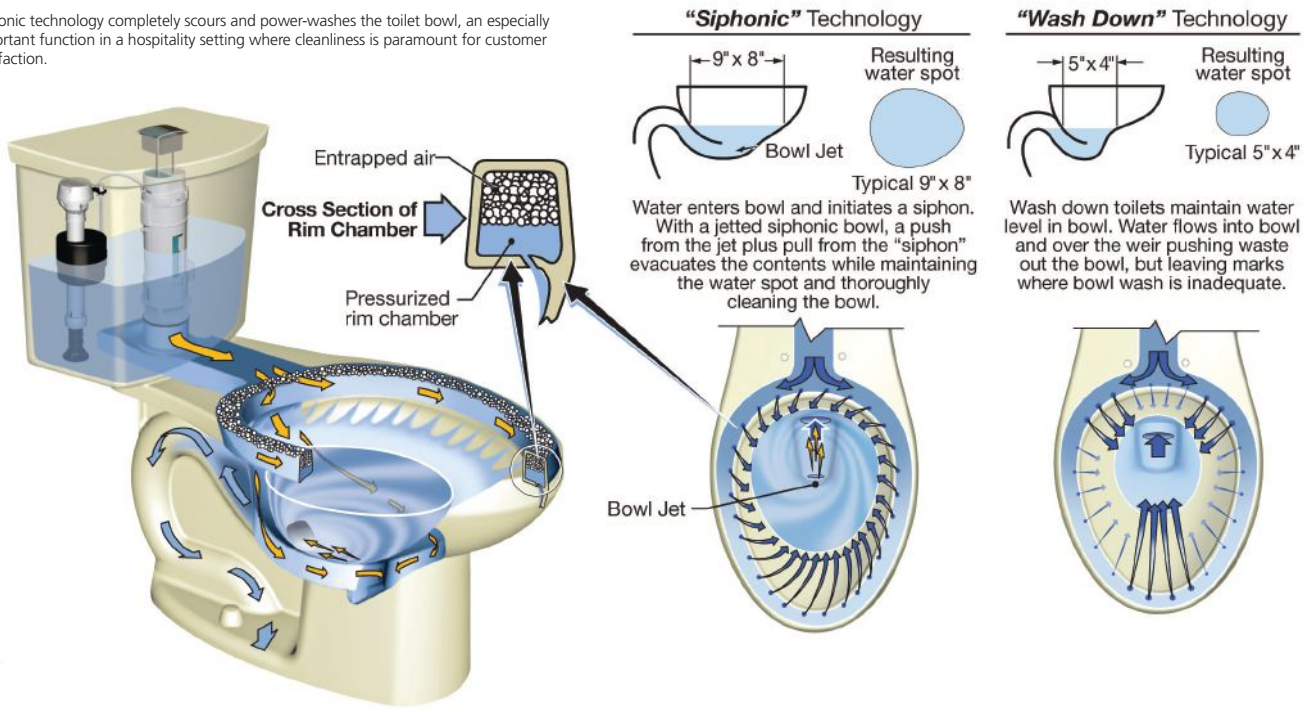
In particular, the testing showed a remarkable failure of toilets using 0.8 gallons per flush to clear waste from the lines. The results state:

"Observation of waste movement within the Test Apparatus during the 0.8 gallon test runs clearly demonstrated a major difference in performance when compared to the other volume levels (1.28 gallons and 1.6 gallons). In five (5) of the sixteen (16) test runs conducted by the 0.8 gpf volume, the test media in the test apparatus compressed together to form large plugs in the drain line that resulted in full-pipe or near full-pipe conditions."

What these tests indicate is conserving water cannot be the only consideration for fixture specification, and that is especially true in hospitality where guest satisfaction is a concern.

WHAT DRIVES CHANGES IN PLUMBING PRODUCTS AND WATER CONSERVATION?

Siphonic technology completely scours and power-washes the toilet bowl, an especially important function in a hospitality setting where cleanliness is paramount for customer satisfaction.



Finding the right balance between water conservation and fixture performance is an ongoing process.

The main push toward water conservation began with the enactment of the Energy Policy Act of 1992, where all toilets manufactured or imported into the United States were required to flush no more than a maximum average of 1.6 gallons, effective Jan. 1, 1994 for residential models and Jan. 1, 1997 for all other models.

This was in stark contrast to the prior standard of 3.5 gallons per flush. And while there were complaints early on about clogged toilets, the manufacturers used innovation and technology to solve those issues.

In June of 2006, the Environmental Protection Agency launched the voluntary WaterSense labeling program to further conserve water. The EPA estimates 3.8 billion gallons a day saved by 2015 (1.387 trillion gallons a year). As Americans currently use 1.2 trillion gallons/year for showering in this country, that means all of our showering use will be offset by the savings in this program.

There are requirements for fixtures to be WaterSense labeled:

This article continues on http://hanleywooduniversity.com/files/upload/Architect_Mag/July 2013/AmericanStandard_Article_ARCH.pdf Go online to read the rest of the article and complete the corresponding quiz for credit.

WaterSense Meets EPA Criteria
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CENTER

A Barcelona high-rise designed by Bruce Graham of Skidmore, Owings & Merrill, which housed athletes during the 1992 Games, is now adapted as the Hotel Arts Barcelona. See page 88 for more photos from Gary Hustwit and Jon Pack's Olympic City Project.

JON PACK

EXHIBITION

LE CORBUSIER, AT LAST

WITH AN ENCYCLOPEDIC COLLECTION OF ANALOG ARTIFACTS, CURATORS HAVE ACCOMPLISHED WHAT PHILIP JOHNSON HIMSELF COULD NOT: THE FRANCO-SWISS ARCHITECT'S FIRST MAJOR RETROSPECTIVE AT THE MUSEUM OF MODERN ART.

The Museum of Modern Art's exhibition "Le Corbusier: An Atlas of Modern Landscapes," on view through Sept. 23, provides a thorough chronicling of the architect's work, via paintings, sketches, models, and video clips.

JONATHAN MUZIKAR

SEE MORE IMAGES FROM THE EXHIBITION AT ARCHITECTMAGAZINE.COM

Text by **Joseph Giovannini**

THE APPARENTLY INCURABLE flaw of the Museum of Modern Art (MoMA)'s design and architecture department is that, for its major monographic shows, it recycles the architects already banked in its DNA, especially the architects canonized by the International Style Exhibition of 1932. At last count, there have been 10 MoMA shows on Ludwig Mies van der Rohe and nearly as many on Frank Lloyd Wright but not one, for example, on the brilliant R.M. Schindler or Claude Parent or any of the pre- or post-War II Italians. The Franco-Swiss architect Le Corbusier, who was in the 1932 show, has been conspicuous by his near-absence even though Philip Johnson did pursue him for a show in the 1950s: Corb himself, resentful of perceived slights by MoMA and Johnson and of his treatment in the United States, rebuffed Johnson by making excessive demands.

MoMA has just corrected the omission with a major exhibition, "Le Corbusier: An Atlas of Modern Landscapes," stunning for its generous array of original artifacts, a few even dating from the architect's teens. If, true to form, MoMA is still exhibiting one of its DNA architects, at least Corb has not been already over-exhibited, and at least the show is comprehensive—it's the largest Corb exhibition ever produced in New York, with a wide range of projects in a variety of media. The show was organized by architectural historian Jean-Louis Cohen and art historian Sheldon

H. Solow, a board of trustees member of New York University and the Institute of Fine Arts, with Barry Bergdoll, MoMA's Philip Johnson Chief Curator of Architecture and Design. MoMA commissioned the English architectural photographer, Richard Pare, to photograph several seminal buildings as they exist today—his panoramic shots of Le Corbusier's buildings within atmospheric landscapes document the fact that his buildings endure: They are not inventions of fashion.

THOUGH A COMPARABLE SHOW might have been done 50 years ago, "Le Corbusier: An Atlas of Modern Landscapes" is especially eye-catching for today's architects because the copious and diverse materials are all analog rather than digital, a near novelty nowadays, including vintage movie clips from the '20s. Besides showing how and what Le Corbusier thought in a clear, evenly distributed chronology, it exhibits how architects not long ago used analog tools, especially drawing and painting, to evolve and promote their thinking. The show is both biographical and archaeological. The aura of tattered and yellowed drawings and models whose woods have mellowed to glowing—not to mention the flickering film footage—adds a sense of authenticity to the show via patina.

Drawing is the thread that ties together both the protean architect's several phases of development, as well as the organization of the exhibition itself, as one Le Corbusier slides into the next. Corb was born before easy-to-use hand-held cameras, when architects drew and traveled, sketching their voyages, and those images chronicling the advancement of his career and aesthetic are on display.

His career as a draftsman started in a particularly Swiss way when he learned how to engrave watchcases (think patterns like palm trees) in a local craft school linked to the watch industry, which combined industrial and craft methods. A professor directed his talent more towards architecture, but with an emphasis on symbolic ornaments inspired by the Jura landscape and the writings of John Ruskin. Early on, Corb showed his ambitions and aspirations by briefly working for Auguste Perret in Paris and Peter Behrens in Berlin, but he was basically a self-taught architect who acquired his training through the osmosis of itinerant apprenticeships and architectural history absorbed through pencil and watercolor brushes.

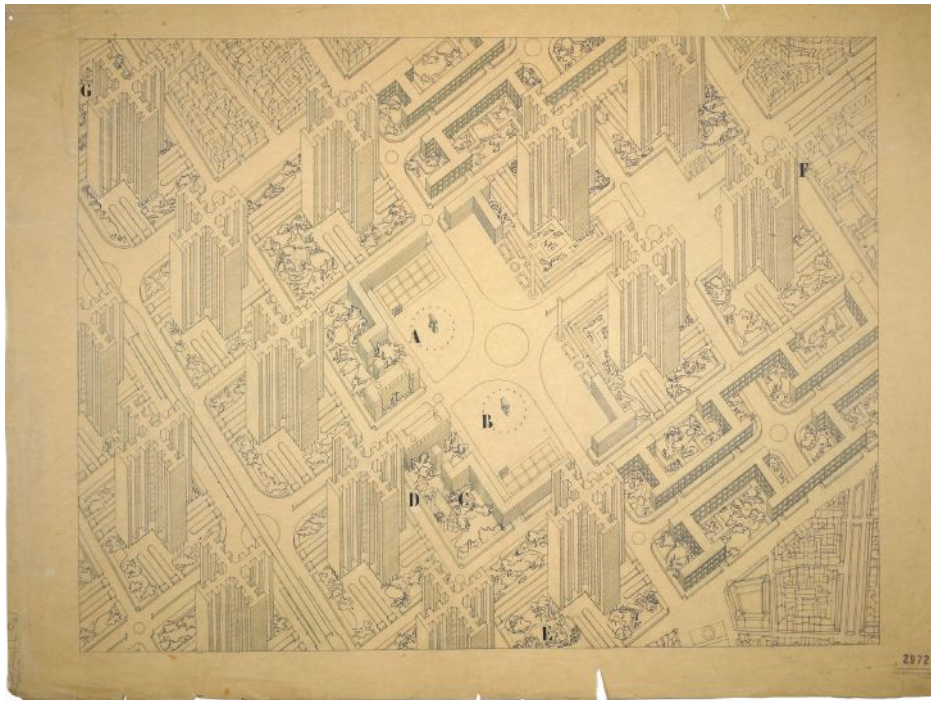
At a time of transition between tradition and Modernism, he had little to unlearn, and certainly not the daunting edifice of a formal Beaux-Arts training. Pare's pictures of Corb's first buildings show poised but quintessentially Swiss chalets and villas with charming roofs, a purposely regional architecture which then ceded to more classicized villas. The language of his design was Swiss and Germanic, though during the Great War, he started to theorize what a modern architecture might be, famously proposing the Maison Dom-Ino (1914–15), with its thin columns supporting concrete floor slabs, and a staircase connecting floors.

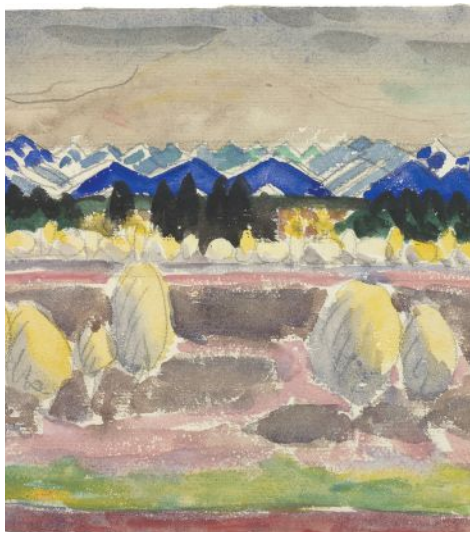
CHARLES-ÉDOUARD JEANNERET, as Corb was born, moved to Paris after the war, and though the section of the exhibition chronicling this period is titled "The Conquest of Paris," it was really Paris that conquered Jeanneret. The architect plunged into the intellectual and artistic foment, and emerged a theoretician, a counter-revolutionary challenging no less than Cubism in his manifesto *After Cubism*, which he co-authored with the painter, Amédée Ozenfant. They issued their own manifesto on Purism, putting back together the cube that had been shattered by Pablo Picasso and Georges Braque, proposing instead the Platonic solids that characterize his later works (many of which are on display in the MoMA show), and a world of permanence rather than change.

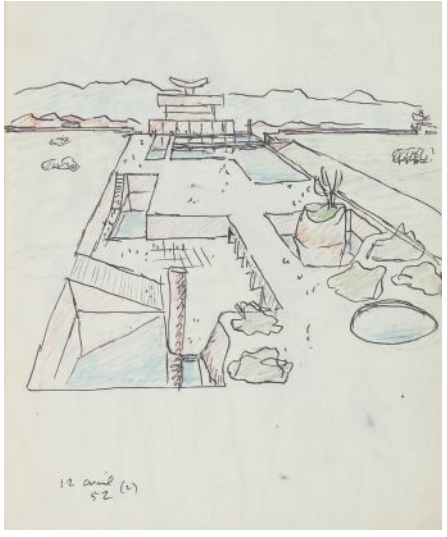
Following the fashion of the time and no doubt his own instincts for self-promotion—which the show doesn't hesitate to point out—it was at this point that Jeanneret adopted a single moniker, changing his name to Le Corbusier. He proceeded to paint his theories. A collection of deft and serious paintings in MoMA's exhibition from this period of his career explains the Purist idea by example, with objects shaped as simple, sometimes transparent volumes, juxtaposed and layered to form virtual tablescapes. Like the cubists he had dismissed, Corb avoided perspective and constructed the space of his paintings instead with overlapping elementary shapes that anticipate architectural designs characterized by an articulation of elementary parts. Under the influence of his friend Fernand Léger, Corb's purist paintings shift to highly modeled organic forms inspired by "objects of poetic reaction"—nudes, ropes, snakes, skies, the sea—which exhibit a plasticity achieved through shading that he translated to his architectural designs.

Two further long walls of paintings at MoMA represent what is effectively an aesthetic subconscious motivating the architect, the deep well from which he draws architectural ideas. This section of the show is particularly well developed because Cohen has carried over the energy and insights from a previous show in Stockholm earlier this year, "Le Corbusier's Secret Laboratory," into this exhibition, forming a show within a show. As Corb depicts his architectural designs from above, we see the influence of the painting in the

THOUGH A COMPARABLE SHOW MIGHT HAVE BEEN DONE 50 YEARS AGO, "LE CORBUSIER: AN ATLAS OF MODERN LANDSCAPES" IS ESPECIALLY EYE-CATCHING FOR TODAY'S ARCHITECTS BECAUSE THE COPIOUS AND DIVERSE MATERIALS ARE ALL ANALOG RATHER THAN DIGITAL.







Top: Le Corbusier's iconic ink-and-pencil-on-paper, axonometric view of his Plan Voisin for Paris (1925). **Above left:** The exhibition follows the parallel development of Le Corbusier's architecture and art, as in an early watercolor, entitled *Blue Mountains* (1910). **Above right:** A garden study in pencil and ink on paper of the Governor's Palace at Chandigarh (1951–1965).

many axonometric drawings that portray his buildings like tablescapes, the building sections articulated into juxtaposed or overlapping parts. What becomes evident is that painting has a clear impact on how he conceives architecture. Yet the reverse is not true: Architecture does not appear to architecturalize the painting.

Although he criticized Cubism for its abstraction, Corb proves the most abstract of architects, creating pure white, apparently immaterial prisms spotted with anecdotal cylinders, cubes, cones, and other prisms. Incandescent in their beauty, the famous white houses of the 1920s—the villas Savoye, Stein, and Church, among others, all of which make an appearance here—establish his reputation. But after the Léger period, during which he also looks at the objects of "poetic reaction," he grafts rounded forms onto and within his buildings and sculpts façades with three-dimensionally rich brise-soleils. He tends to "see" his buildings from the outside and above, in the same way he paints his tablescapes. Without dividing the show into clean breaks, the curators nonetheless pace Corb's shifts in interests and even idioms evenly, not dwelling on any one period at the expense of another.

EVER THE POLEMICIST during a period when architects wore their manifestos on their sleeves, Corb bases his designs on health principles, cultivating roofs for greenery and ribbon windows for light. But when he pivots the same logic to very large apartment buildings—such as those proposed in his Plan Voisin (1925)—to propose healthy living environments to replace the unhealthy slums surrounding French cities, the resulting housing blocks trade one problem for another: They liberate the land for open space, but they create inhumane environments that, as the show points out, Jane Jacobs would later criticize as breeding grounds for alienation and anomie.

As the audio guide notes, the result of Corb's proposals to invent entire cities is to transform him into a public figure. Grainy films running on loop in the galleries show him lecturing, talking about the necessity of sun, air, and trees, while he draws on large sketch pads, making the case for the tabula rasa planning that derives, ultimately, from his painted tablescapes. With the show's strong documentation of his Villes Radieuses, it's impossible to look past the weaknesses that will incite Jacobs, including the borderline megalomania: The totalizing urban visions of so many crushing megablocks keep the show from being an exercise in adoration. Corb is on exhibit as a self-incriminating witness in his own posthumous urban trial.

The problems go back to the paintings, which are the source of both his weaknesses and strengths. Corb learned articulation, composition, differentiation, and plasticity from his paintings, but his approach prejudiced the architect to view land as a flat table on which to arrange the compositions. Tellingly, in one film he says that it is necessary to raise the building above the "wet" ground on pilotis, to aerate the building for dryness, as though the ground were an agent of infection.

In hindsight, the arguments are simplistic and arrogant: He is building his career on thin logic, proposing self-serving, faintly demagogic arguments to lay claim as a prophet of Modernism. The buildings remain objects on the landscape, and as a rule the Platonic solids remain largely closed to the environment.

ARCHITECT

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hanleywood

MoMA tapped architectural photographer Richard Pare to make new photos of Le Corbusier's buildings, including this image of the roof terrace at the Unité d'Habitation in Marseille, France.

Though he perforates the box, he does not break it.

In a beautifully crafted model of Chandigarh, he treats the ground as a bas relief composition. In the model of the Marseille Unité d'Habitation (1946–52), the roof is a tablescape of forms—amphitheater, running track, pool—planted on a prismatic solid with the detachment of a toupée. In all the renderings of his interiors in the show, he proposes "landscapes" that are, again, like tablescapes, perhaps with some wiggly walls, but always sandwiched between flat, oppressive floors: Corb only visualizes the landscape through a window, or through framed architectural compositions in a pictorial relationship—like a painting. His own rather pathetic summer cabin on the Côte d'Azur, Le Cabanon (1951–52), painstakingly rebuilt at the museum, has a single, rather mean window capturing the view of the bay. The wooden cabin does not open to the environment. The re-creation makes evident that he strangely abandoned the principle of Maison Dom-Ino in a site that demanded exposure to the outside.

THE PAINTINGS ON DISPLAY prove a rich but limiting source of ideas, which leads Corb to sculpt form rather than shape space, and to visualize the landscape without participating in it physically. He kept his forms self-contained, and they remain formal, sculptural and detached.

RICHARD PARE

But even given the limitations of painting as the generator, the design process yields masterpieces, even among the large buildings. The complex Palace of the League of Nations in Geneva (1927), depicted and shaded from above in axonometric like his purist paintings, concatenates across its site in blocks with sculpturally articulated sections and components. Cohen shows a constructivist-inspired work, the Palace of the Soviets (1931–32), that was highlighted in another exhibition that he curated at the Pushkin Museum in Moscow, which had a special section on Corb's experiences in Russia. As in his paintings, the design articulates the building into programmatic segments which are then subdivided into architectonic components, with a heroic superstructure from which roofs are suspended. Corb's design for a high-rise apartment tower in Algiers (1933) proposes a deeply sculpted, highly differentiated brise-soleil façade that articulates and advertises the diversity of apartments inside.

Then there is the famous Unité d'Habitation in Marseille, his thesis proposal for large apartment complexes, which anticipates his sculptural masterpiece, the capital buildings in Chandigarh in India, a summary of Corb's thinking. And, of course, there is the sublime, out-of-the-blue Ronchamp, inspired by organic shapes of his "objects of poetic reaction" on display—a vitrine of shells

CENTER

TOP AND MIDDLE: JONATHAN MUZIKAR; BOTTOM: ARTISTS RIGHTS SOCIETY/ADAGP

and rocks—and by mud-packed towns in Central Algeria. Corb cultivates a masterful play of light inside its cave-like interior.

This is a voluptuous show, rich in visually tactile material. But there are trade-offs. Maison Dom-Ino, so revolutionary in its time but very well known, hardly makes an appearance. The curators make room instead for such relatively unknown and revealing works as the unbuilt Villa Chimanbhai (1951–54) in India, a small concrete cube of a building whose brise-soleil façades open to a highly porous interior of honeycombed spaces, configured like a snail and designed to circulate air. While the choice of projects is nearly encyclopedic, the weight the curators give to certain phases, such as the urban planning and of course the paintings, gives the show an interpretative thrust. The emphasis on painting provokes an enticing thought: What if Le Corbusier hadn't dispatched Cubism in oedipal fashion, but had applied his genius to develop Cubism in architecture, opening form and space, creating simultaneities? This avenue would have yielded a vastly different, perhaps even more compelling, Le Corbusier. We can only wonder at its untapped potential.

The weight the show gives to the megaprojects also gives insight into the disconnect between the machine that was shaping Corb's vision for a standardized architectural future and the hand that was painting the seminal visions. The marriage of the two, as in the sculpturally purist roofscapes of the Unité d'Habitation and the cool, prismatic apartment block below, was uncomfortable, more a juxtaposition of differences than a merger or hybrid. The conflict between the hand and the machine is not resolved, especially given the evidence of the magisterial works like Ronchamp, where the machine is completely absent. Corb's machine has a chilling effect on his designs.

But the show does exhibit the material trail of a mind and a talent searching through the century from an Arts & Crafts beginning into the Machine Age. Like others of his generation, Corb sought to create an architecture that would harness the machine as a positive social force, thereby creating a new habitat for a deeply transformed human condition. The effort was heroic, and so were his proposals for architectural rescue. If Jane Jacobs critiqued his buildings, his buildings stand as a critique of Jacobs: The village was not enough. He speculated on a bigger scale.

Top: Several interiors from Corb's buildings were reconstructed for the exhibition, including this living room from the Unité d'Habitation in Marseille. **Middle:** Le Corbusier's own summer cabin in Roquebrune-Cap-Martin, France, was re-created by Italian furniture company Cassina. **Bottom:** *Nature Mort (Still Life)*, an oil painting from 1920, just before Charles-Édouard Jeanneret reinvented himself as Le Corbusier.

NEXT PROGRESSIVES

COASTAL RESURGENCE

WITH A RESILIENT FOCUS, JOHN AND ALLISON ANDERSON HELPED MISSISSIPPI TOWNS REBUILD POST-KATRINA.

The Andersons in the Bay St. Louis, Miss., office of their firm Unabridged Architecture.

Text by **Karrie Jacobs**
Photo by **Daymon Gardner**

IN OCTOBER 2005, six weeks after Hurricane Katrina ravaged the Gulf Coast, I met Allison and John Anderson for the first time, at the Mississippi Renewal Forum. Organized by New Urbanism's leading light, Andres Duany, this mega-charrette had brought some 200 planners, engineers, and architects to the ballroom of the Isle of Capri, a Biloxi, Miss., hotel-casino that had weathered the storm. The plan was to re-imagine the historic towns that Katrina had destroyed. Unlike most of the participants, the Andersons were locals: They had come from a mere 30 miles up the coast, from the hard-hit town of Bay St. Louis, Miss.

I started a conversation with John because he was sketching a streetscape of oversized, modern-looking sheds—standouts in a ballroom littered with fanciful drawings of Cajun cottages and antebellum Walmarts. He told me that before the storm, Bay St. Louis "was almost okay." He explained: "Downtown there was a quaintness, a realness. It was a real historic place, not a manufactured one." He was speaking in the past tense because all that was gone. Waterfront restaurants, banks and churches, and antebellum mansions and ordinary homes had been crushed by a 20-foot-high wall of water.

John directed me to the other side of a tall bulletin board where I found a second Modernist-leaning member of the charrette's architecture team: his wife, Allison. She told me about the house she'd designed in Bay St. Louis for her family, with her husband serving as critic: "We moved in one month before the hurricane," she said.

Originally, the house was intended to be a showplace of green building practices, a way to test out ideas that Allison hoped would bring clients to Unabridged Architecture, the firm that she had founded and that John would later join. "We wanted it to be evidence of how you could live very simply without

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1. The Bay St. Louis office of Unabridged Architecture. **2.** The Andersons' own house, which survived Katrina in large part because of its green roof. **3.** Firehouse No. 1 in Bay St. Louis. **4.** The station doubles as a storm shelter and operations center. **5.** The Longfellow Civic Center in Bay St. Louis features Gulf views. **6.** The civic center sits on top of a parking garage.

1: ALLISON ANDERSON; 2: CHARLES PUNZO; 3, 4: SANDRA RUSSELL CLARK; 5, 6: EUGENIA UHL

redundant materials in a hot, humid climate," she said. As it turned out, the strategies that made it emblematic of one buzzword—"sustainable"—also made it representative of another: "resilient." While the neighboring houses that stood between the Anderson home and the Gulf were washed away, theirs survived.

Eight years later, in May, I returned to Bay St. Louis (current population 9,400, about 2,000 less than before Katrina) and found that it has rebounded nicely. There are, once again, restaurants on Beach Boulevard and an impressive range of restored or newly built civic amenities, including sidewalks, which the town hadn't bothered with prior to the storm. And I learned that Unabridged—which had seven employees at its peak, and is now down to five—was responsible for some 27 built projects since Katrina.

The disaster became something of a bonanza for Mississippi, which received $9 billion in recovery funds from the Federal Emergency Management Agency and another $5.5 billion in Community Development Block Grants from the U.S. Department of Housing and Urban Development. As the recovery money poured into the Gulf Coast, Unabridged flourished. The firm oversaw the restoration of numerous historic buildings, designed a series of new civic institutions, and managed streetscape improvements. Even now, as the federal funds are being used up, Unabridged still has projects under way with a total construction budget of $25 million.

THE ANDERSONS, married 25 years with three children—the youngest just graduated high school—have been together since they met at the University of Southern California in 1980. Allison, 52, grew up in Hawaii and is the firm's designated talker. John, 51, originally from Las Vegas, is quieter, always calculating the right moment for careful, often humorous, interjections.

They attended architecture school together at the University of Texas. Prior to Katrina, Allison taught at Louisiana State and Tulane universities, and also devoted herself to educating local community and political leaders about sustainability. John spent 13 years working at Eskew+Dumez+Ripple in New Orleans before leaving in 2007 to help Allison with an "onslaught of recovery work." In the view of Bay St. Louis Mayor Les Fillingame, the Andersons "were in the right place at the right time. They had the right skill set and the right vision to take full advantage of that [need]."

The story of how the Andersons hit their stride starts with their house—assertively modern, with two large shed-like structures facing off, and a small rectangular wing (with a green roof) projecting forward. "FEMA came and did a case study," Allison told me. The federal engineers concluded that several factors helped harden the house against Katrina's storm surge: As the newest building in town, it was designed to the most rigorous code. Also, the Andersons had opted to frame it with 2 x 6s for extra insulation value instead of the more typical 2 x 4s. "And the third one was, the really big 'wow' feature of the house, the green roof," Allison said. "The weight of the assembly of the grass roof acted as an anchor for the entire structure."

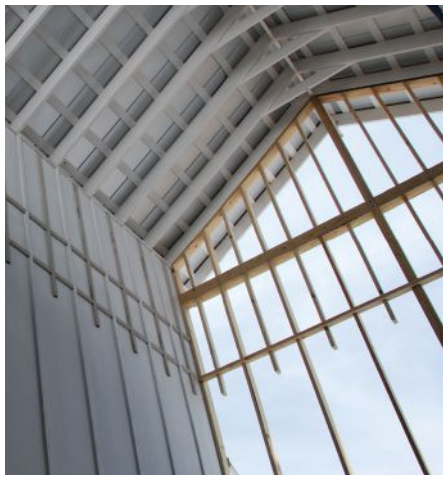
Allison had intended the house to be her calling card, and it became one, but not in the way she'd envisioned. Instead of attracting clients who wanted sleek, green beach homes, her house brought her clients who needed armored buildings. And the post-Katrina building boom was an opportunity for the Andersons to propagate an approach, in a region that much prefers traditional-looking buildings, that might be considered Mississippi Modern.

"Our first project after the storm was to build a bunker," Allison recalls. "But it was at the very head of Main Street, the gateway to downtown, and it couldn't look like a bunker." Completed in 2010, Firehouse No. 1 is an ordinary fire station—think firemen hanging out, munching on pork rinds, and watching TV—that doubles as an emergency operations center and shelter. The first lesson the Andersons learned about resilience is that designing a building to be impervious to wind isn't so very hard. "But the big thing down here was the debris impact," Allison says. "We very quickly learned that debris impact was very similar to blast resistance." And blast-resistant materials, like windows with an inner layer of Lexan, were budget busters.

The solution was to build two buildings. They enclosed the fire engine bays, constructed to less stringent Miami-Dade standards for hurricane resistance—tough but not blast proof—in an airy, sunlit enclosure with big lipstick red doors. It's a gorgeous space, an art gallery for trucks. The bunker, with an exterior of locally made brick, features 12-inch and 16-inch concrete blocks on the inside, says Allison, "reinforced in every cell—horizontally, vertically, steel like crazy." The firehouse is designed to be self-sufficient for three days, with a generator, auxiliary water supplies that are potable, and a rainwater collection system that stores 10,000 gallons for the trucks.

The Andersons went on to design five storm shelters, which are built well inland, in Hancock County's more rural north end. They are more or less what you'd expect: big halls, low to the ground, partially protected by earthen berms (which double as bleachers for nearby ball fields). They feature heavy construction and redundant systems: a backup generator if the power fails, and a ventilation tower and louvers

ALLISON HAD INTENDED THE HOUSE TO BE HER CALLING CARD, AND IT BECAME ONE, BUT NOT IN THE WAY SHE'D ENVISIONED. INSTEAD OF ATTRACTING CLIENTS WHO WANTED SLEEK, GREEN BEACH HOMES, HER HOUSE BROUGHT CLIENTS WHO NEEDED ARMORED BUILDINGS.



The 2010 St. Patrick's Episcopal Church features a tall wall of windows behind the altar that gives parishioners a connection to the outdoors.

that will force air to circulate if the generator fails. The budgets—about $3 million for each—were barely enough to cover the building's functional needs. What the Andersons value engineered out was the expected smooth sheetrock finish. "The bones are what make the buildings interesting, so let's just let that be exposed," John concluded.

The end result is the largest collection of minimalist architecture—or minimalist anything—in Mississippi. We toured a shelter for evacuees with special medical needs, located in the Flat Top/Catahoula area. Walking along a curving and raw-looking 150-foot-long poured-concrete wall (which extends for an additional 50 feet outdoors, cradling the building), it felt like we were touring a jumbo Richard Serra sculpture. When we emerged into the bright sunlight, it occurred to me that if this building were something other than an emergency shelter—a museum, say—it would be famous.

Often, the Andersons' work is marked by peculiar juxtapositions. The firm's oddest couple may be the 2011 Downtown Parking Garage in Bay St. Louis and the newly opened Longfellow Civic Center, which sits on top. The parking garage occupies the former site of the county jail, demolished after Katrina. "We recycled 86 percent of the materials," Allison boasts, including the concrete blocks and structural steel. Even "the floor slabs went out to form a fishing reef offshore called Jailhouse Reef."

The garage is as green as a parking structure can be, designed to generate much of its own power, with a 12-kilowatt solar array. It harvests rainwater from the parking decks to irrigate a green wall. A long, scenic elevated walkway leads to the civic center. "The client wanted a classical temple on top of this very modern parking garage," Allison says. John counters that the client really wanted "a plantation house." They designed a nondescript, dun-colored exterior that gives way to a lovely interior, the roof supported by elegant white scissor trusses and the space featuring a sweeping Gulf view.

When unencumbered by the need for armor—against extreme weather or clients' preconceptions—the Andersons' work can be especially lovely. Consider St. Patrick's Episcopal Church, located on eight waterfront acres in Long Beach, Miss., until Katrina destroyed the building. The Andersons designed a new church farther inland. "They did this wonderful visual survey," recalls then–Rev. David Knight. They showed the congregation pictures of churches, "from all over the world, and had us rate them. How do you feel about this one? It was brilliant. There was this sense in the room of this 'oooh' and 'aaaah' feeling when you hit one that really resonated."

The result is a church that relates to the outdoors as if it were still on the beach. The high-ceilinged room that doubles as a hall for worship and other church functions has a wall of tall windows behind the altar, giving parishioners a constant connection to the outdoors. But the most remarkable thing about St. Patrick's is that it represents the rare unforced merger between the vernacular, board-and-batten coastal style, and the modern. It is not Postmodern or New Urbanist. It is simply a church well suited to its time and its place, a cluster of simple white buildings on an expanse of green. As Knight puts it, "They just listened so well."

My favorite Unabridged project was inspired by the drawing John was working on when I first met him. He was dreaming up a new kind of business district for towns like his own, a vision that inspired the 2012 Waveland Business Center, in what was once the downtown of Waveland, Miss. The idea was to create a nexus of commerce that was elevated enough to be above flood level but that was still connected to the street. A cluster of three, colorful, rounded commercial buildings—pods—are collected under a jumbo shed roof. The complex has gentle ramps leading to a shaded plaza 6 feet above grade. The exterior areas can be used for café seating (a restaurant facility inside is not currently in use), concerts, markets, or events. John points out that the double system—little buildings under a communal roof—is more resilient in a storm and keeps the sun's heat off the smaller, individual roofs.

To architectural cognoscenti, the setup is reminiscent of the structure Samuel Mockbee's Rural Studio built to shelter the students' experimental living pods. John argues that it's "just a big gas station canopy." Either way, the business center remains mostly unoccupied. Waveland, says local alderman Lili Stahler, had a "series of misfires" when it tried running the place as an incubator for innovation, and is now intending to fill it any way possible.

THE ANDERSONS' body of work is undeniably sui generis. The post-Katrina recovery years allowed them to be remarkably versatile for a small firm. And their area of expertise—the meeting point of sustainability and resilience—seems increasingly crucial given the rise of destructive storms in various regions around the country. Indeed, when I last saw Allison, she was giving a post-Sandy lecture in Tom's River, N.J., at an event called "Gulf to Shore: Disaster and Rebuilding Lessons Learned from the Gulf Coast." In a lineup dominated by bureaucrats and academics, Allison was uniquely able to move beyond jargon-filled platitudes. She opened with a photo of her house surrounded by the rubble of her neighbors' homes: "This is my house after Katrina. Remember this image."

TOP: JIMMY WINSTEAD; BOTTOM: ALLISON ANDERSON

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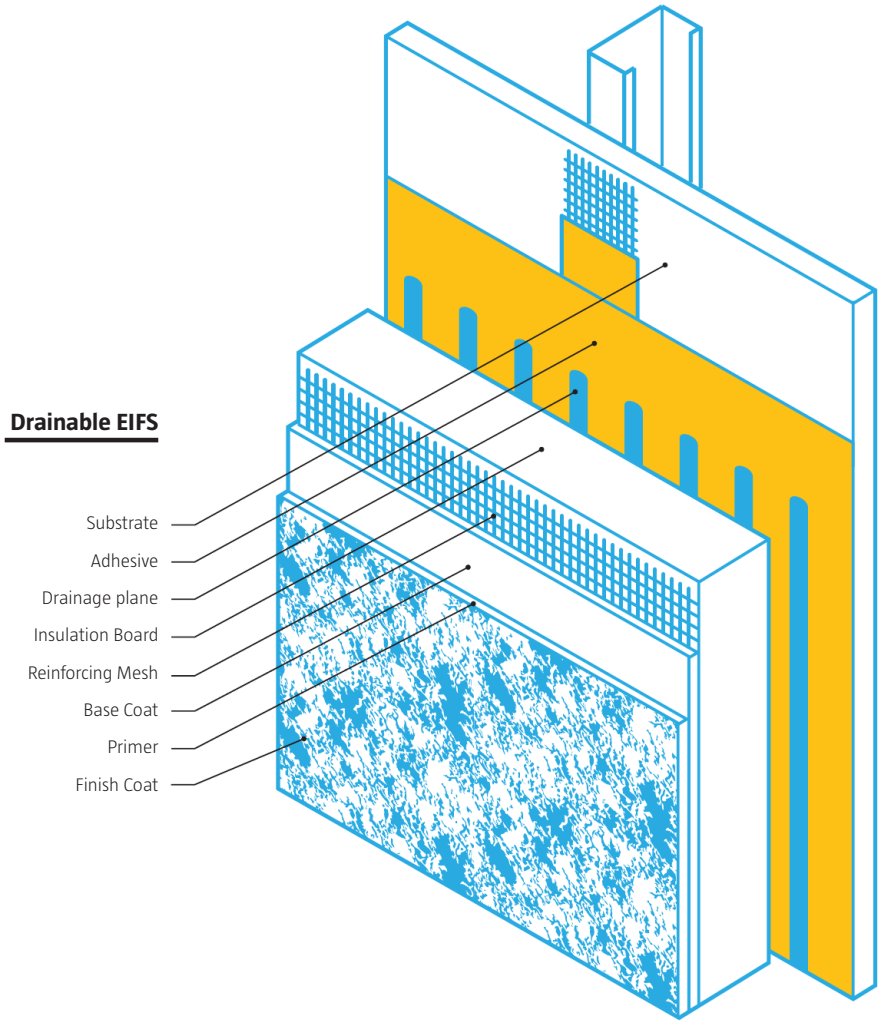
TECHNOLOGY

WATER UNDER THE BRIDGE

EIFS BECAME KNOWN AS A LAWSUIT MAGNET IN THE 1990S. BUT WITH NEW ENERGY CODES FOR COMMERCIAL BUILDINGS IMMINENT, IS THE CLADDING SYSTEM POISED FOR A COMEBACK?



Text by **Elizabeth Evitts Dickinson**
Illustration by **Jameson Simpson**

IN 1996, A HOMEOWNER living in Wilmington, N.C., made a call to Daniel Bryson, an attorney based in nearby Raleigh. Bryson specializes in construction defects involving mass torts and class action lawsuits, but he had never heard a story like this one. "The homeowner was putting a new shutter on the garage. And he missed the shutter, and the nail went straight through the wall," Bryson says. The man then broke open a piece of the exterior cladding and uncovered a horrific scene: the wood underneath had deteriorated from pervasive rot. "He thought he had stucco, but what he saw inside the wall he called Styrofoam," Bryson says. "The building inspector had no idea what the product was. I had never seen anything like it."

The house was actually wrapped in a proprietary lightweight synthetic cladding known as an Exterior Insulation and Finishing System (EIFS)—a multilayered wall system with thermal insulation built right in. It is composed of expanded polystyrene insulation board covered with glass fiber mesh and layers of thin synthetic coating for the exterior finish. Early system designs used an adhesive to bond the insulation board directly to the building's sheathing. These systems, known as "barrier EIFS," were touted for their insulation capacity and affordability. But what Bryson soon discovered was that they failed to drain moisture that got behind the finish coating of the system. "Water was getting in through windows and other wall penetrations, but the system had no way for the water to escape."

Bryson filed one of the first EIFS lawsuits in the country and secured a settlement for his Wilmington client. He went on to win about $150 million in claims against EIFS manufacturers in the U.S., and was one of a handful of prominent attorneys in the 1990s who filed hundreds of lawsuits against the manufacturers for structural damage. Bryson and other lawyers dubbed barrier EIFS the ultimate roach motel: The water could get in, but it couldn't get out. "The original iteration of this product was one of the worst I have ever seen in over 25 years of litigation, second only to Chinese drywall," Bryson says.

Fast-forward to today. EIFS manufacturers such as Dryvit, Sto, and BASF have redesigned their products to include a drainage plane and a weather resistive barrier between the sheathing and insulation board. The drainage happens in one of two ways, most commonly through the use of vertically troweled mortar, which leaves adequate space for moisture to exit. Some systems specify drainage through a grooved composite board. These "drainable" versions of EIFS, first introduced in the U.S. around 1995, provide protection from moisture for the underlying materials. Bryson says that their introduction dried up the court cases: "The litigation has virtually disappeared."

Joseph Lstiburek, principal of Boston-based Building Science Corporation and an ASHRAE fellow, was one of the first forensic engineers

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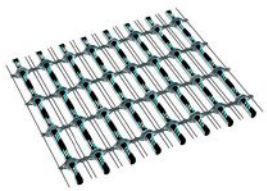

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to sound the alarm over moisture buildup within barrier EIFS in the late 1980s. Lstiburek served as an expert witness for Bryson and became instrumental in the class-action lawsuits against EIFS manufacturers. Today, however, his assessment of EIFS has evolved: It's "a phenomenal system," he says. "They addressed the fundamental flaws that they had in the 1990s, which is they added moisture management. And now EIFS resembles the perfect wall."

This October, when the U.S. Department of Energy strengthens regulations on energy efficiency for commercial buildings, some designers believe EIFS may become the best available cladding option. In an article published this winter in the trade magazine *Walls & Ceiling*, an architect named Chris Dixon wrote that "EIFS is positioned for a huge comeback in buildings in the United States."

The EIFS industry hopes to finally shake the hangover of past litigation and become the comeback kid of cladding for both commercial and residential projects. In the meantime, the story of how this wall system evolved over the last four decades offers a valuable reminder for a building industry rushing to embrace ever-greater energy efficiency standards.

EIFS BEGAN AS A pragmatic solution to a pervasive problem. After World War II, Europe needed to rebuild, and the system was invented to repair damaged masonry buildings. In 1969, Dryvit set up shop in Rhode Island and brought the technology to the United States. The American energy crises of the 1970s propelled more architects and developers to spec EIFS because it mimicked the look of stucco while providing something known as Continuous Insulation, or CI. Instead of placing insulation inside the wall cavity, which creates opportunities for thermal bridging, CI is wrapped around the exterior, creating an uninterrupted barrier. According to the EIFS Industry Members Association (EIMA), most EIFS systems use an insulation board with an R-value of R-5.6 per inch, which, when combined with traditional cavity insulation, can result in an overall value of R-16 or more.

When the EIFS problem surfaced in North Carolina in 1996, Tom Kenney, vice president of engineering and research at the National Association of Home Builders' Home Innovation Research Labs, participated in a task force led by the Wilmington Buildings Codes Department. He spent a good portion of a year getting to the root causes of the issue and writing EIFS standards. He says the problem wasn't solely with the EIFS walls, but with the entirety of a building's construction. "The building codes back in the day were wholly inadequate with detailing the flashing systems that were necessary to keep water out of the walls," Kenney says. "It really woke up the home building industry in general with regard to moisture management. It was a complete blindspot," he says.

In 2009, the International Code Council added drainable EIFS to the international commercial and residential building codes as acceptable for use. Current versions of the system feature advancements in the synthetic coating that enable EIFS to aesthetically mimic any finish—wood, stone, brick, even metal—at a fraction of the cost of the real thing. Moreover, the reinforcing mesh can be customized to climate and geography, offering things like increased impact resistance for hurricane-prone areas. Bob Dazel, AIA, marketing manager

for strategic initiatives at Dryvit, says his company's Outsulation product can withstand a small missile impact test, meaning that a hospital clad in impact-resistant EIFS won't need to evacuate during a Category 4 hurricane.

David Boivin, CEO of Sto, points to the Lido Beach Towers on Long Beach Island as a good example of EIFS evolution. Five years ago the 1920s structure was re-clad in EIFS and after Superstorm Sandy destroyed several floors of the interior—depositing sand up to the ceiling of first floor units—the exterior survived. "Literally, the whole beach came up on that project, and the bottom floors were completely inundated with water and sand," Boivin says. "When they cleared everything away, the EIFS wall structure suffered virtually no damage. The owners were stunned."

Ryan Johnson, Assoc. AIA, of LSE Architects has worked on several hotel and casino projects that used EIFS. He says the insulation and the aesthetics make it a popular choice for commercial clients. "We've been trying to move the insulation to the outside of the building on all of our projects, no matter if it's an EIFS project," he says. But EIFS is the only option that offers true CI, he says: "Other product manufacturers aren't figuring out how to attach their product back to the building without going through the exterior insulation. If it's metal panel on the outside, and it's got exterior insulation, you're still punching little holes all through the insulation to attach it to the building."

Today, EIFS manufacturers sell primarily to the commercial industry. Chances are you've seen the product, even if you didn't realize what it was. Much of the Vegas Strip is covered in EIFS, including the Bellagio. Estimates give the system about 20 to 25 percent of the commercial cladding business. Dryvit, whose Outsulation product covers the Bellagio, has about 40 percent of the total market in the U.S. The company says that 95 percent of its business is commercial and 5 percent residential, which may reflect the stagnant residential market over the last few years, but mostly points to the residual reputation damage from past litigation. A look back at market share of EIFS usage shows an overall decline in the residential sector once the lawsuits hit. In 1998, EIFS was on the rise, with 4.7 percent of the market in new construction single-family and townhouses, according to the NAHB. In 2012, the residential market share for EIFS was 2 percent.

The challenge in rebuilding that residential market is dispelling leftover concerns among Realtors, insurance companies, and others who still malign the product even though the lawsuits are now well over a decade old. "I am perplexed why people would not want to use a system that is so flexible, so energy efficient, and so easy to apply, and extremely cost competitive to other wall claddings," says David Johnston, the executive director of EIMA. "We need to move on."

Nevertheless, Kenney hopes that some of the lessons born out of EIFS travails won't be forgotten. The issues did spur building codes to evolve, he says, and ensured that "other cladding systems had a new awareness of that moisture management issue."

Today, "as we ratchet up the energy codes, there are consequences," Kenney says. What other building issues could emerge as the result of product innovation? "We're in the midst of a sea change, and the marketplace is doing what it does best: innovation. But uncontrolled and unregulated, it can be the Wild West."

HISTORY

END GAMES

WHEN THE OLYMPICS DRAW TO A CLOSE, THE SHINY NEW VENUES SUDDENLY GO QUIET. A NEW BOOK CHRONICLES THE SECOND LIVES OF THESE BUILDINGS.

Text by **Alex Hoyt**
Photos by **Jon Pack and Gary Hustwit**

WHEN BROOKLYN-BASED photographer Jon Pack heard that Beijing had spent $42 billion on infrastructure to host the 2008 Summer Olympics, he had one question: What happens to those buildings, and to the city, after the Games? To find out, he set off to photograph the structures left behind in the former Olympic host cities closest to him, Montreal, Quebec, and Lake Placid, N.Y.

Soon, his friend Gary Hustwit, the documentary filmmaker behind *Helvetica* and *Urbanized*, became interested, and the two raised $66,000 on Kickstarter to document the afterlives of 14 host cities. Their photographs from those excursions are now collected in *The Olympic City*, a 200-page coffee-table book designed by Paul Sahre, with an introduction by *The New York Times* architecture critic Michael Kimmelman. Among the pictures are an Olympic Village that became a prison (1980 Lake Placid Games), ski jumps that became the backdrop for executions (1984 Sarajevo Games), and a blighted waterfront that became a bustling marina (1992 Barcelona Games). On display throughout are the effects of war, weather, decay, regime change, neglect, and urban renewal.

Here we present a selection of eight photographs from *The Olympic City*—an ongoing project that will continue, we hope, with a look at Rio after 2016.

The Helsinki Olympic Stadium in Finland, designed by Yrjö Lindegren and Toivo Jäntti, hosted the 1952 Summer Games. The stadium today continues to host sporting events as well as music concerts.

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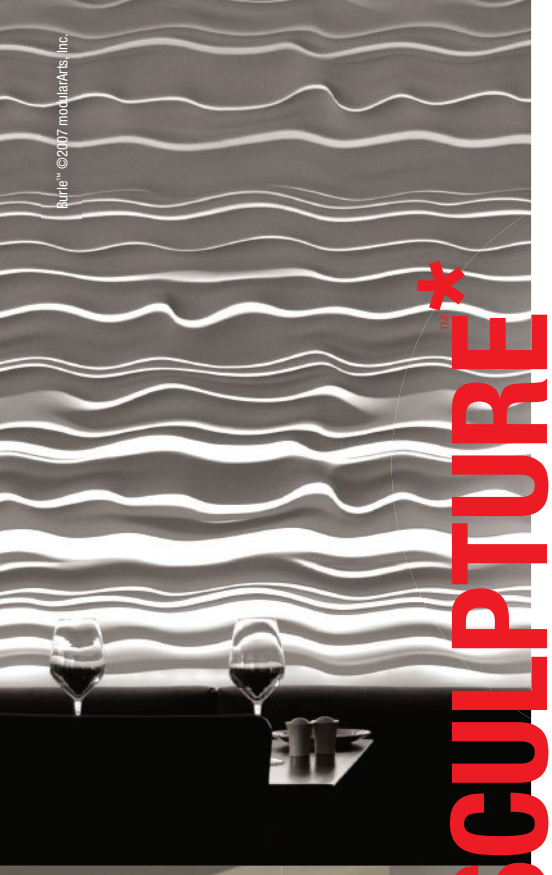
SARAJEVO 1984

The Igman plateau in the Dinaric Alps, overlooking Sarajevo, hosted the men's Nordic ski jump events in the 1984 Winter Games. The American Bill Johnson (downhill) and the Mahre twins (slalom) all climbed the pictured podium. But the Games were merely a peaceful interlude in a long history of violence. In the early 1990s, during the Bosnian Civil War, Serbian forces seized the mountain, dynamited the ski lifts and the Hotel Igman, and used the ski jumps as backdrops for firing-squad executions. Today, undetonated landmines remain on the slopes. Undeterred, Austrian architecture firm Hofrichter-Ritter has revealed designs for the renovation of the ski jumps and hotel.

BARCELONA 1992

The best view of Barcelona may be from the high dive of the Montjuïc Municipal Pool, the hilltop site of the diving events and the water polo preliminaries in 1992. The facility opened for the 1929 Barcelona International Exposition, and was tabbed as a venue for the anti-fascist Olympics, a proposed alternative to the 1936 Berlin Games that was canceled due to the Spanish Civil War. For the '92 Games, a large part of Montjuïc was renovated under the supervision of architects Federico Correa and Alfonso Milá. The pool hosted the diving competition for the 2013 World Aquatics Championships.



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CENTER

ATHENS
2004

An outdoor concrete track built in 1991, this 5,200-seat facility reopened for the 2004 Games, after an extensive renovation by Santiago Calatrava, FAIA. The venue for track cycling events, it features a 250-meter banked track covered in Afzelia wood and a retractable roof supported by steel cables affixed to two swooping arches—structures that recall Calatrava's Zubizuri footbridge in Bilbao, Spain. Many facilities in the Athens Olympics Sports Complex have fallen into disrepair, but the Velodrome remains in frequent use on the European track cycling circuit.

BERLIN
1936

Located in the Brandenburg countryside outside Berlin, this cluster of 142 cottages housed 4,000 male athletes during the Games (female athletes stayed at a separate facility). German architect Werner March, designer of Berlin's Olympic Stadium, created the master plan for the village, which the Germany military converted into a hospital during World War II. A scene of intense fighting between the Wehrmacht and the Red Army in 1945, it fell into the postwar Soviet zone of occupation, and became an interrogation facility for counter-intelligence agencies. Today, signs on the security fence warn of unexploded munitions. Though the Soviets tore down most of the athletes' cottages, the one occupied by Jesse Owens has been restored.

ROME
1960

At the Roses Swimming Pool, site of the elimination rounds of the water polo events at the 1960 Summer Games, Pack and Hustwit discovered an aquatics supply company advertising inflatable balls that enable their occupants to walk on water. The 50-meter reinforced-concrete pool was designed by engineer Mario Biuso and takes its name from an adjacent solarium brimming with roses. It is now Rome's largest public swimming pool.

MOSCOW
1980

Cleaning women take a break at the Krylatskoye Sports Complex Velodrome, which hosted the track cycling events at the 1980 Games. Designed by the Moscow Research and Design Institute for Culture, Recreation, Sports, and Health Facilities, the velodrome features a 333.3-meter track made of Siberian larch that ranks among the world's fastest surfaces. (Its 42-degree banked turns also rank among the world's steepest.) The facility regularly hosts international races, including the Moscow Grand Prix.

LONDON
2012

Street art in Hackney Wick, a working-class, East London neighborhood where part of the Olympic Park was sited, offers a blunt take on the Games. Anti-Olympic sentiment among street artists came to a head in July 2012, when British Transport Police arrested four ex-graffiti artists "on suspicion of conspiracy to commit criminal damage." For his part, Bansky, the world-famous graffiti artist, had critiqued Britain's increased military presence for the Games with "Hackney Welcomes the Olympics," an image of a javelin thrower hurling a missile.

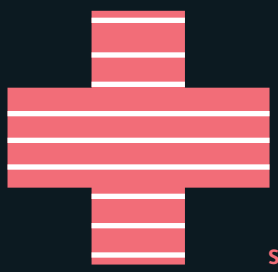
7TH ANNUAL R+D AWARDS

Intro by **Wanda Lau**
Text by **Gideon Fink Shapiro**

IF ANYTHING POSITIVE came out of the economic downturn that has shadowed our R+D Awards since its inaugural year, it is the sense of renewal and opportunity that is steadily permeating design communities. With their own stories of trail blazing behind and before them, this year's judges—Jing Liu, Lawrence Scarpa, FAIA, and Bill Zahner, Hon. AIA (bios on page 126)—were primed for the task of reviewing the more than 100 entries submitted to this year's program.

In identifying the eight winners, which include one best or "First Award," the jury felt a responsibility to celebrate the current culture of exploration in architecture, in which, as Liu said, "game-changing moments can come from grassroots efforts." The jurors were also compelled by the shrewd use of modern technology to resurrect endangered craft, the societal benefits of a high-performance affordable housing unit, and the professional community building enabled by an app (the first purely digital recipient of an R+D Award).

For an industry that is becoming ever more responsive, tech-savvy, and open-source, these winners exemplify the range of what's possible through tireless research and development.



See page 127 for project credits

FIRST AWARD
MORPHFAUX

ESCHEWING THE FLATNESS OF CONVENTIONAL BUILDING WALLS, **ARCHOLAB** IS REVITALIZING THE CENTURIES-OLD CRAFT OF PLASTERWORK WITH HELP FROM—WHAT ELSE?—A ROBOT.

Photos by **Alex Fradkin**

About a century ago, the modernist architect and theorist Adolf Loos declared that applied ornament was a retrograde, even criminal, waste of labor. Smooth, white stucco exteriors and plaster interiors became the signature of progressive modernity and architectural honesty. Fast forward to today and plain planes of drywall have become the ubiquitous void of architectural imagination, say the research collaborators at Ann Arbor, Mich.–based Archolab: "Fully industrialized modern architecture tends to produce homogeneous flatness. This flatness is literally coded into our built environment, which is covered in a ⅝-inch film of fire-rated gypsum wall board."

Undeterred by the lack of interior ornament today, Archolab wondered whether the wall could once again become an architectural surface modulated by thickness, texture, and decorative form, as in a Borromini chapel or Adams brothers salon. It found a solution in the very medium that drywall usurped: plaster.

Archolab evinces that plaster is still a vital, "proto-synthetic architectural material" about 10,000 years after it first came to being. After all, it possesses four "synthetic" qualities. First, it is compositionally synthetic, comprising a variable mixture of gypsum, lime, and water. Second, it is formally synthetic, with the capacity to assume a range of effects at different scales. Third, it is pedagogically synthetic, having once played an important role in the education of architects. And finally, plaster is operatively synthetic, malleable to tools as it cures from a liquid paste into a solid.

Instead of requiring craftsmen to toil for hours or even days at pasting and chiseling plaster—an expense that project budgets today wouldn't hesitate to nix—Archolab developed a novel suite of fabrication techniques that leverage modern-day technology. It built and outfitted a 9-foot articulated robotic arm with CNC precision tools that apply plaster with unparalleled precision, flexibility, and speed.

Unlike the machine-stamped ornament of the 19th century that attempted to mimic handmade ornament, Archolab's Morphfaux project examines the potential of digital fabrication technology for new uses of plaster wall ornament in our time. It is therefore not a false copy (*faux*), but rather a bid to expand the possibilities of iterative *morph*ology. "No one has the skill level to do plasterwork by hand anymore," said juror Bill Zahner. "This new application methodology has actually taken the old world and gone beyond."

Baroque masters would be taken aback by the robot's unorthodox techniques. Forget fixed rails and simple extrusions: The robot can loop a serpentine, "variable running mold" across a

Plan View of Robotic Arm Limits

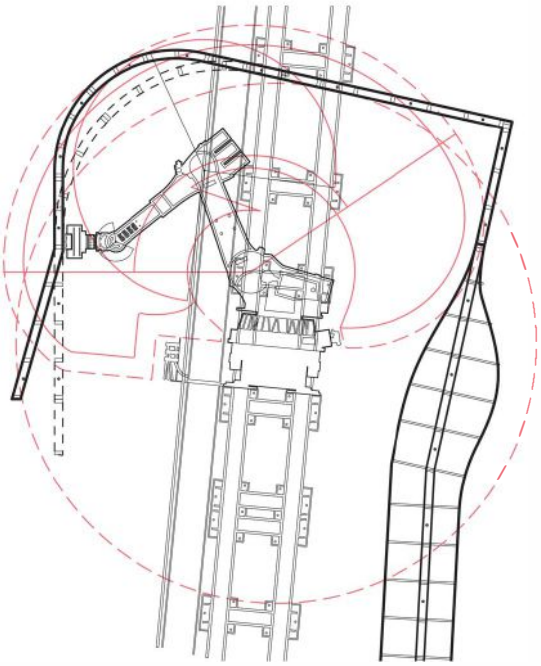
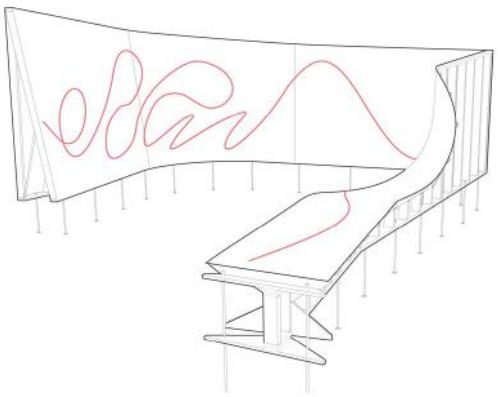


Diagram of Limit-Testing Construct



Morphfaux collaborators Joshua Bard (left) and Steven Mankouche work with a robotic arm outfitted with a variable profiler tool in Archolab's studio in Ann Arbor, Mich. The tool allows for a variable running mold of pastelike plaster (see next spread) to be deployed over any geometry within reach of the 9-foot articulated robotic arm, which runs along a 50-foot-long track.


ABB
LIFTING OF ROBOT
HEBEN DES ROBOTERS
LEVAGE DU ROBOT
WEIGHT
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slatted wood lath substrate similar to giant calligraphy. Another tool in its figurative belt is a customized wire saw that can slice large nesting blocks from a mass of wet plaster in any direction, creating wall tiles with unique surface topologies without any waste.

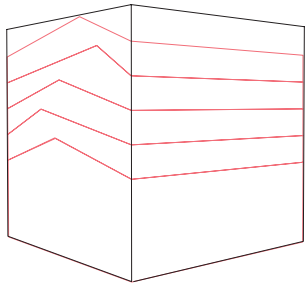
The creative retooling of a standard robotic arm for plaster manipulation fascinated juror Lawrence Scarpa. "The robotic wire sword put on the robot head ... looks like something out of a sci-fi movie," he said. "It's a blend of 1850 and 2050." Scarpa was also taken by Archolab's use of "an old school idea but with robotics ... bringing the lost craft back with new technology."

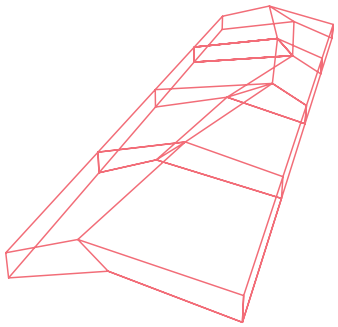
Lest the few remaining plaster masters fear their livelihood is at stake, Archolab collaborators Steven Mankouche, Joshua Bard, and Matthew Schulte—all University of Michigan instructors—intend to "augment human labor," not eliminate it, and to "illustrate a symbiotic relationship between the human body and the digital arm." The robot, which runs along a floor track, is only as brilliant as the imagination and commands of its programmers. Archolab anticipates developing additional CNC tools in line with the traditional processes of plaster craft, such as mixing, molding, profiling, sectioning, and carving. "Custom tools provided a constellation of operations activated through the open-ended platform of robotic motion," Archolab says.

If Archolab succeeds at making three-dimensional and detailed plasterwork more commonplace, perhaps interior ornament will seem less out of place in modern architecture. The researchers invoke the legacy of Louis Sullivan, whose biological dictum, "form follows function," was used by a subsequent generation of modernists not to promote organic ornament—which Sullivan did employ—but to justify its very absence. "Sullivan," Archolab collaborators charge, "failed to remind us, or to predict, that form often follows industry specifications driven largely by the availability of cheap materials and optimized manufacturing."

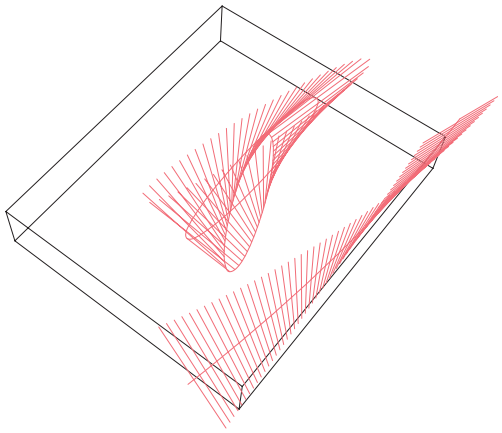
Archolab's attempts to renew and broaden the possibilities of the age-old craft of plasterwork in a culture accustomed to mass production are thus not retrogade, but rather renegade.

Robotic Wiresaw Cuts in Plaster

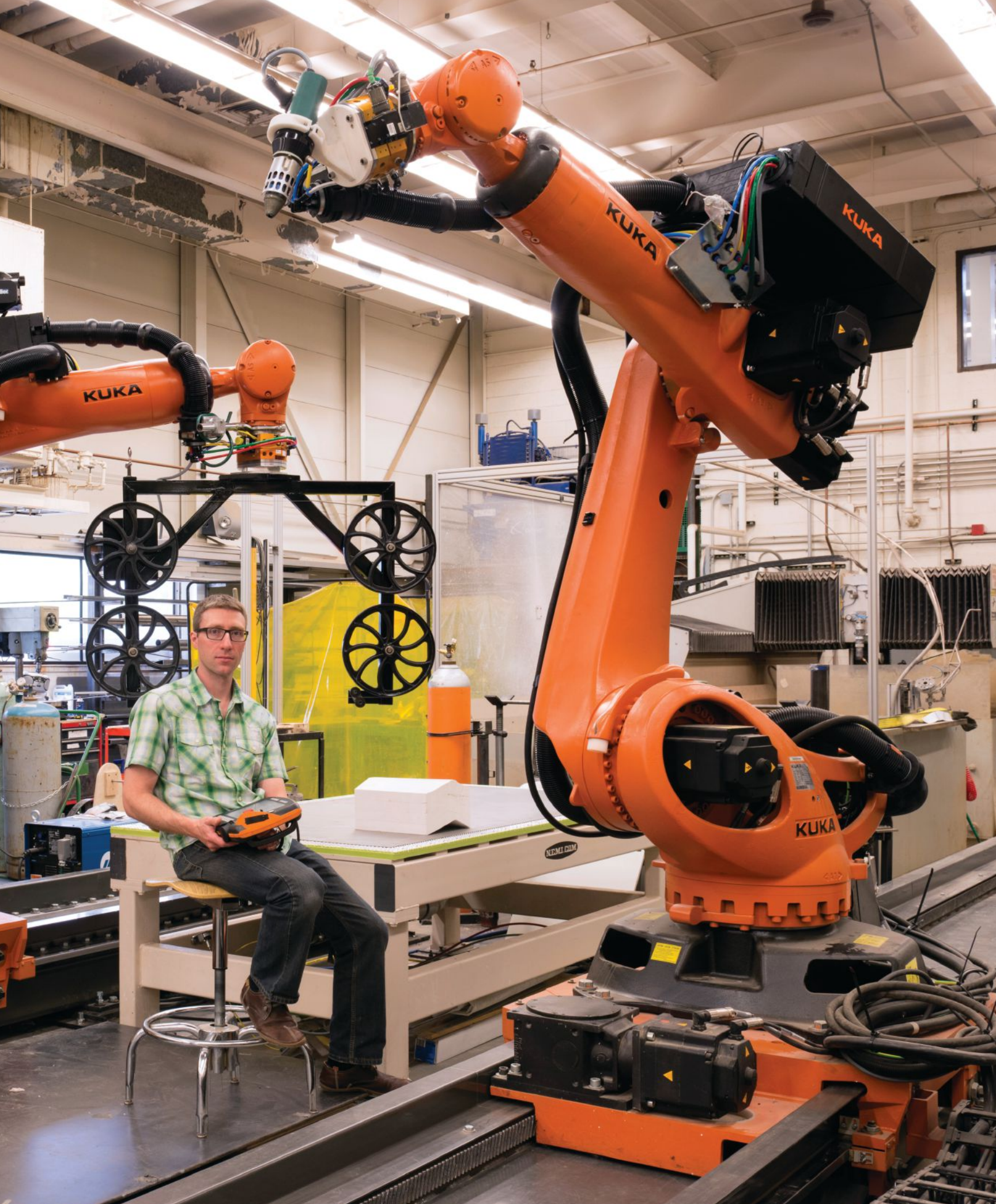




Robotic Water-Jet Cut Diagram



Archolab's Matthew Schulte holds the controls of the robot, which is outfitted with a wiresaw that can make articulated cuts through semi-cured and cured wet plaster. Two other plasterwork tools that Archolab has employed are inflatable molds (not shown) and water-jet carving, which was not developed by Archolab.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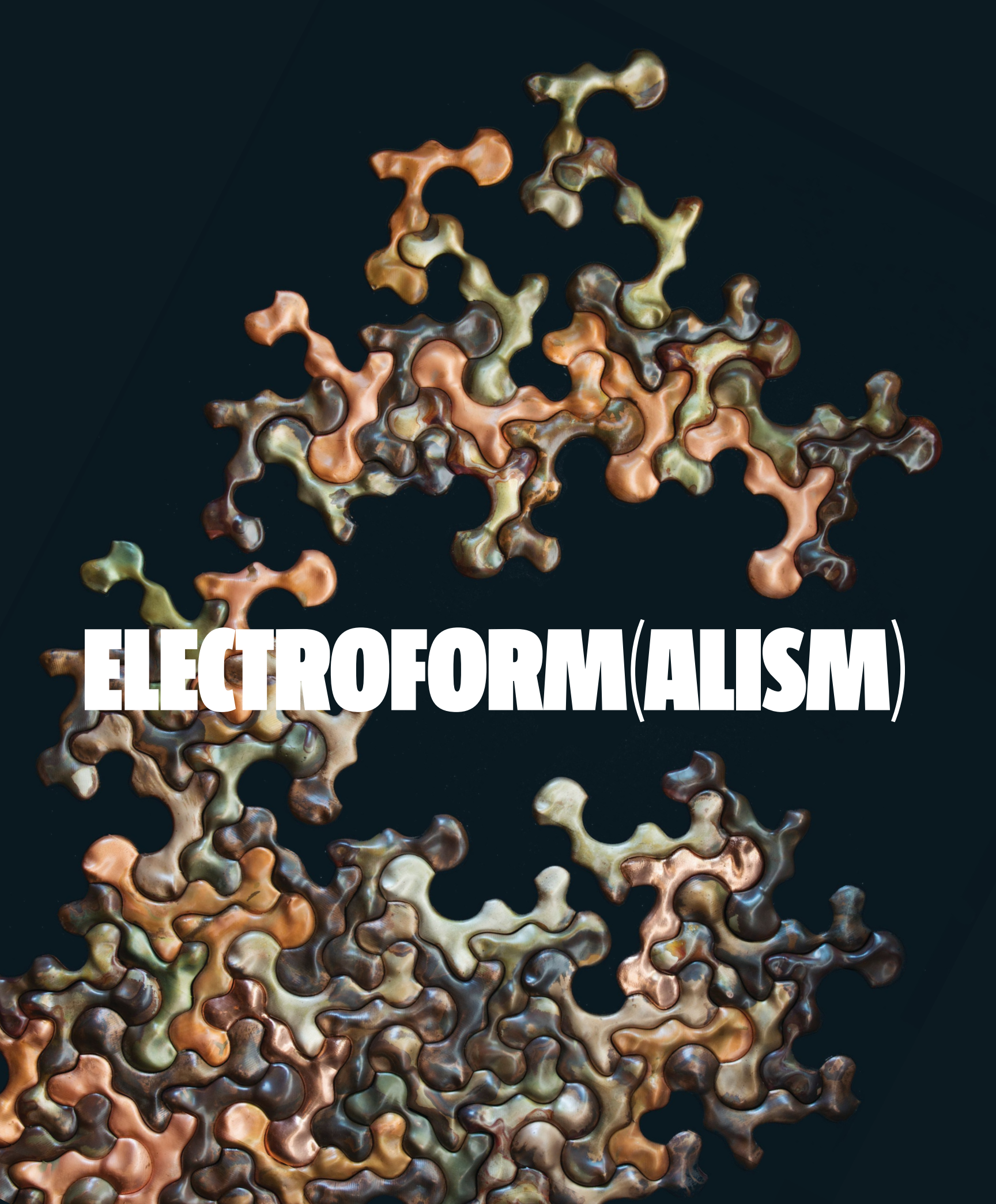

ELECTROFORM(ALISM)

WITH COMPUTER-DERIVED GEOMETRIES AND A LOVE FOR CRAFT, **AKOAKI** FOUND NEW ARCHITECTURAL APPLICATIONS FOR A 19TH-CENTURY TECHNIQUE.

Photo by **Alex Fradkin**

While electroforming was once used to crank out metallic sculpture and architectural ornament, it is now reserved primarily for industrial applications. But Ann Arbor, Mich.–based studio Akoaki envisions opportunities for architectural applications with "unmatched dimensional accuracy, thin material sections, complex curvatures, and refined detailing."

Electroforming enables the precise fabrication of thin, hollow shapes in metal. A conducting mandrel, or mold, attached to a wire is immersed in an electrolyte bath with a reducing agent, such as nickel or copper. The metal dissolves into ions that deposit themselves as a uniformly thick skin around the mandrel. When the desired thickness is reached, the current is cut, and—voilà!—a solidified electroform that can be split from the mold is formed.

Supported by a grant from the Taubman College of Architecture and Urban Planning at the University of Michigan, Electroform(alism) is both a prototype and an approach. The prototype, an electroformed copper wall finish, is "just a beautiful product," juror Lawrence Scarpa said. "You want to touch it." Meanwhile, the approach celebrates "small-scale fabrication ... in service of mass customization," Akoaki members Anya Sirota, Jean Louis Farges, and Patrick Beaucé note.

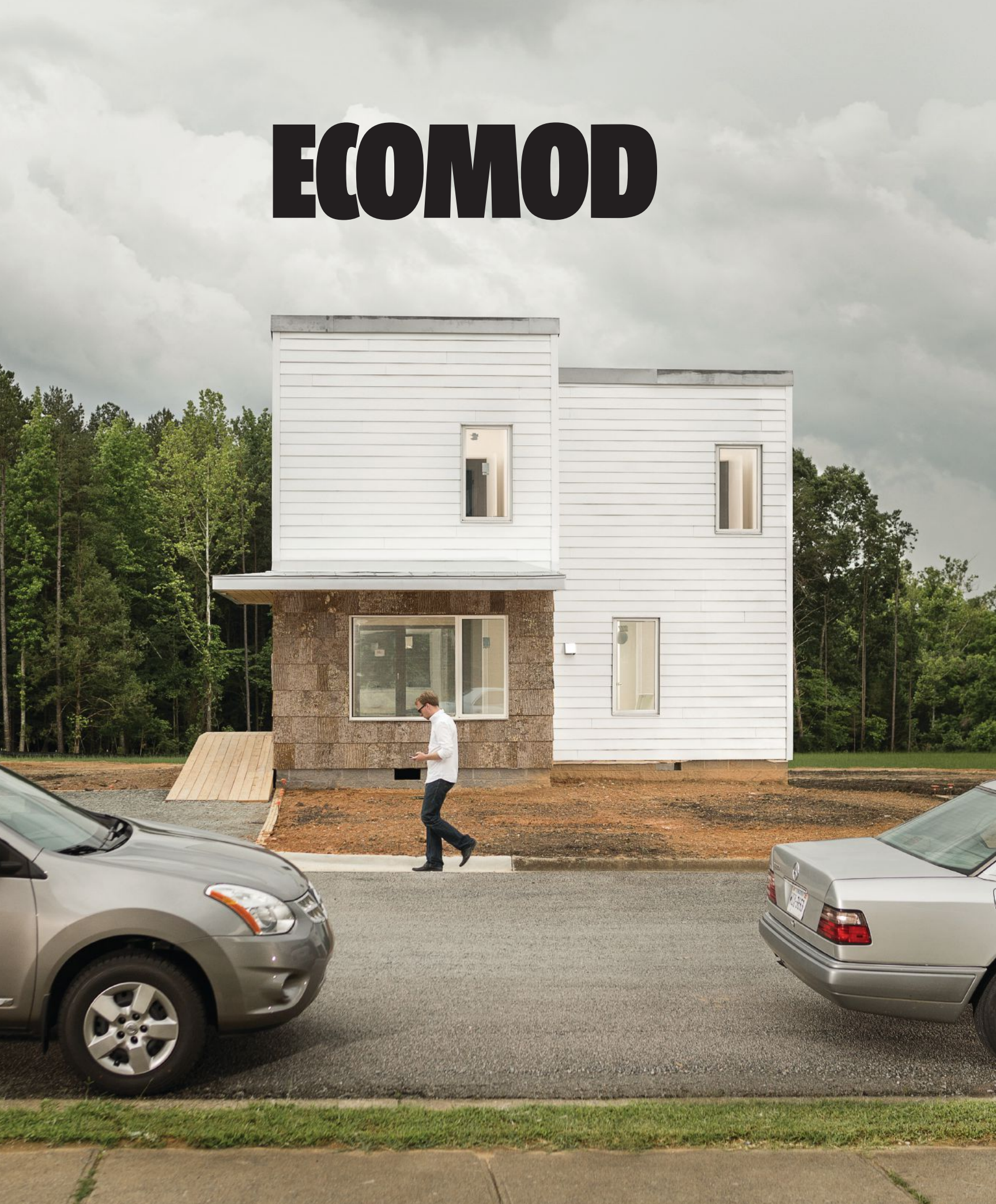
What makes the time-intensive manufacturing process efficient—each electroform unit takes about 24 hours—is the use of a single interlocking component to create the appearance of endless variation. For its prototype, Akoaki created 92 tessellation options, settling on a shape ornate enough to disguise the repeating pattern, but curvy enough for smooth electroforming. The result is similar to a sprawling cluster of molecules that bind together perfectly.

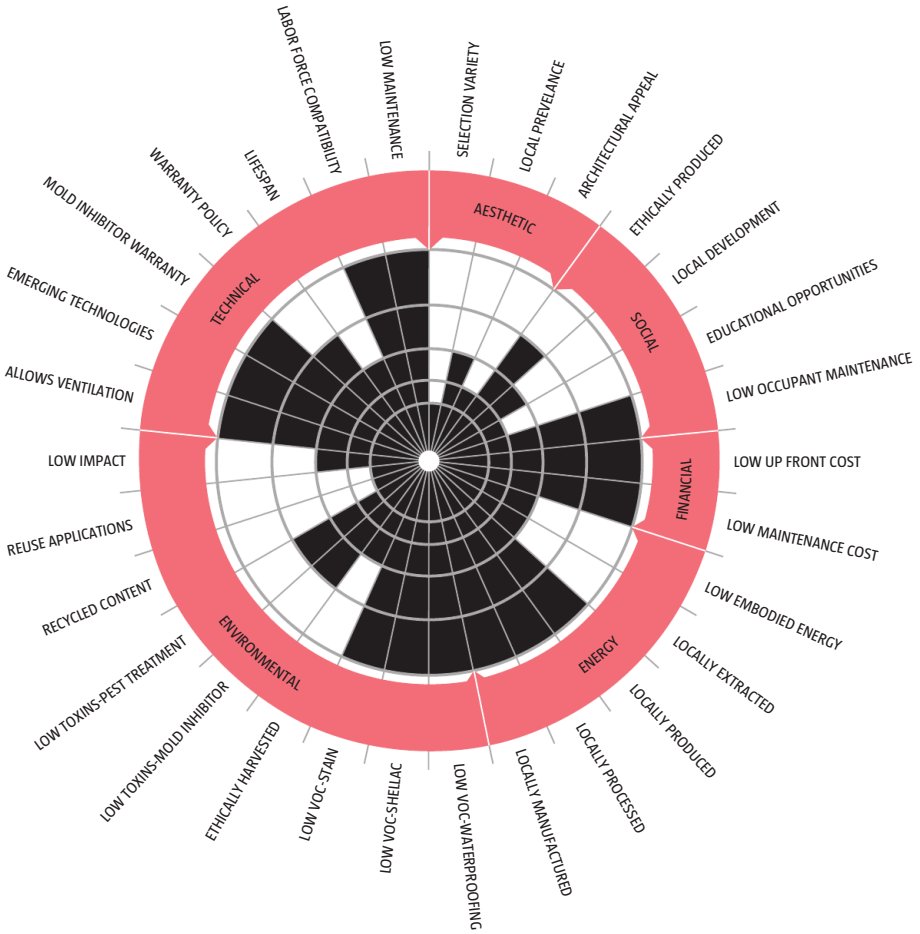
Electroforming is relevant to architecture today for four reasons, Sirota and her team argue. First, the process works at any scale, "from a cufflink to a submarine." Second, any failed units can be dissolved back into the solution. Third, the technique lends itself to short-run production—a midpoint between the artisanal one-off and mass replication. And, finally, electroforming offers the potential of "nomadic production" with a compact, portable lab. "All you need is a source of current, a rectifier [DC adapter], a plastic garbage can, and you're ready to plate," they say.

Drawn to the project's use of small-scale experimentation, juror Jing Liu noted, "You can see that there is love in it." Though juror Bill Zahner felt that the process lacks originality, he said, "It always interests me to take technology from another industry and apply it to architecture."

Akoaki's technique relies on relatively inexpensive materials, including vacuformed styrene master molds (above) produced from CNC-milled fiber board, which are used to create the raw copper pieces. An acidic wash is used to create a tarnished finish of the electroforms before a polyurethane veneer is applied to halt the oxidation process. The individual pieces can be arranged into a sculptural installation (opposite).

ECOMOD





THE **UNIVERSITY OF VIRGINIA** IS REDEFINING THE NOTION OF HIGH-PERFORMANCE, MODULAR HOUSING, BEGINNING IN THE NEIGHBORHOODS THAT NEED IT MOST.

Photos by **Trent Bell**

Sustainable and *affordable* are two words that aren't typically seen together in the building industry. The juxtaposition is what caught the eyes of the jury as it reviewed the high-performance, modular housing design led by John Quale, an associate professor of architecture at the University of Virginia (UVa). Over the past decade, the EcoMod project has pooled the research and development efforts of more than 370 students from UVa's architecture, engineering, landscape architecture, planning, business, and historic preservation programs. Together, they've ventured into merging ecology with economy, and modern design with modular construction and community partnerships.

This summer, EcoMod is wrapping up its first three modular, "commercially viable," and affordable houses. Juror Jing Liu praised Quale's dedication "to hold on to something so unflashy and make it happen eventually."

Reaching this current state of imminent commercialization required the completion of several one-off housing prototypes. The first iteration of EcoMod, an energy-efficient, two-unit condominium in a low-income neighborhood of Charlottesville, Va., was realized in 2004 in collaboration with the local affordable housing organization, Piedmont Housing Alliance. The next iteration, designed and built in collaboration with Habitat for Humanity of the Mississippi Gulf Coast in 2005 and 2006 for a family displaced by Hurricane Katrina, was a steel-and-foam panel house with both passive and active energy-saving technologies. In 2009, the group realized a prototype house for Habitat for Humanity of Charlottesville that featured a super-insulated building envelope, stormwater recapture, and a photovoltaic array donated by the local utility company.

In 2011, Quale received a $2.45 million research grant to redevelop and "commercialize" the Charlottesville prototype into a replicable, economically sustainable design. Working with a Passive House consultant, a local modular homebuilder, and two nonprofit housing organizations, Quale and his students experimented with massing studies and building components in an attempt to optimize housing costs, livability, and energy performance.

To determine which building system or component to implement, the team developed a Decision Analysis Tool (see example above), a

EcoMod recently completed two prefab houses in South Boston, Va. Sited side-by-side, the structures look nearly identical, but the one on the left is designed to Passive House standards—a challenge given the area's hot, muggy summers and cold winters—while the other serves as a control house against which to compare building performance. Both use materials rated with the team's system of radial charts (see previous spread) that quantify key project goals.

radial chart that quantifies any number of parameters in six categories: social, environmental, financial, technical, aesthetic, and energy. For example, after comparing the benefits of structural insulated panels (SIPs) with a more conventional double-stud wall, the team opted to combine aspects of both: SIPs on the outside plus an extra stud wall on the interior, for a three-layer wall separated by two layers of insulation.

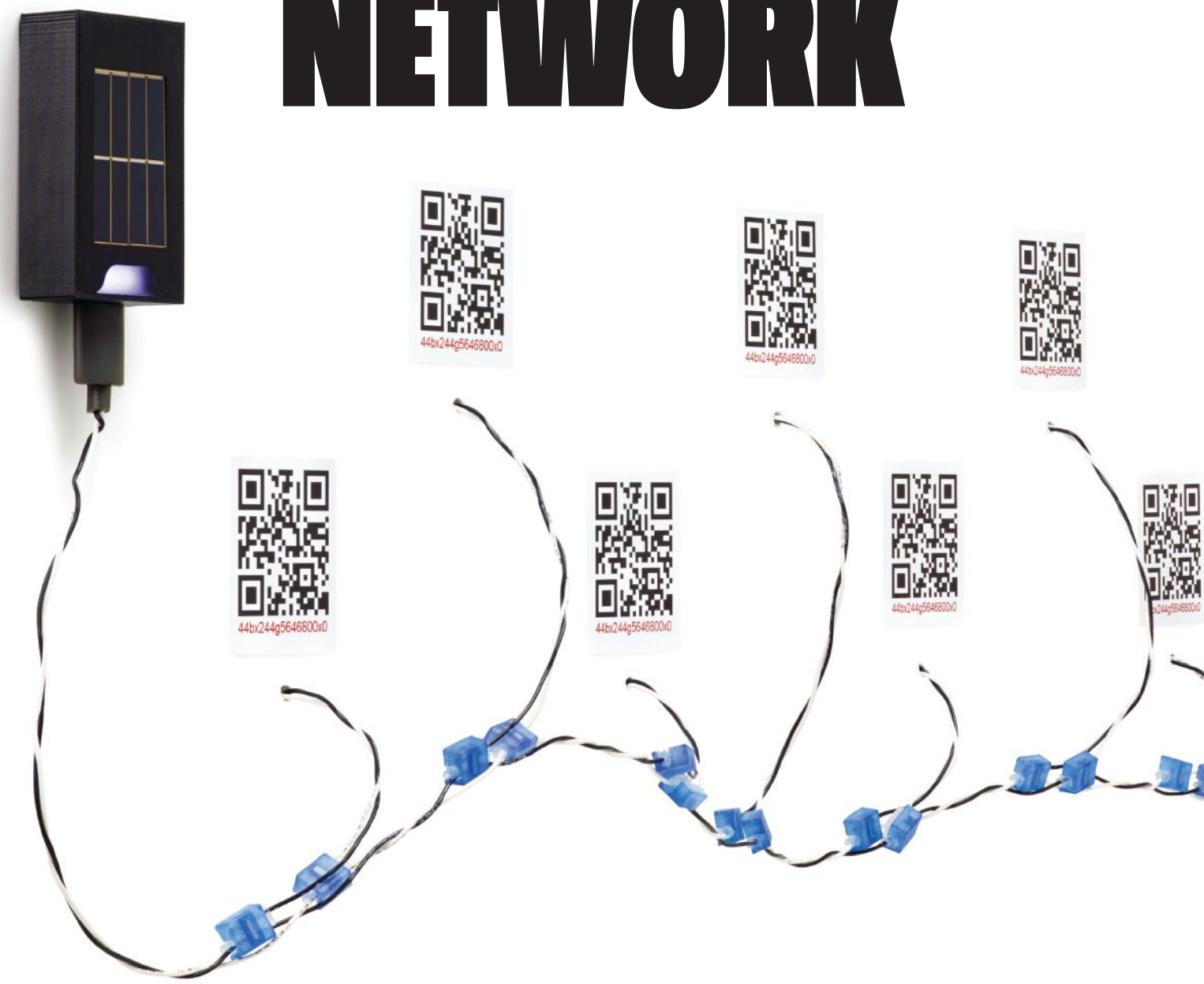
Fabricated earlier this year, the first three commercially viable modular units—all two-story, 1,800-square-foot, four-bedroom residences—are being installed on site this summer. All three houses are slated to be rented or purchased by low-income families. Two of the houses have been built to international Passive House (PH) standards at the construction and delivery cost of $105 per square foot (this does not include design fees or foundation work). One PH unit is sited in muggy South Boston, Va., while another is sited 200 miles west in mountainous Abingdon, Va., where winters are much colder. The third unit, sited next door to the South Boston PH unit, was built to the local code requirements and cost $70 per square foot—it serves as a sort of control unit. EcoMod plans to monitor the thermal and energy performance of all three units throughout occupancy to compare the effect of climate variation and to "assess the return on investment" on energy-saving components and systems.

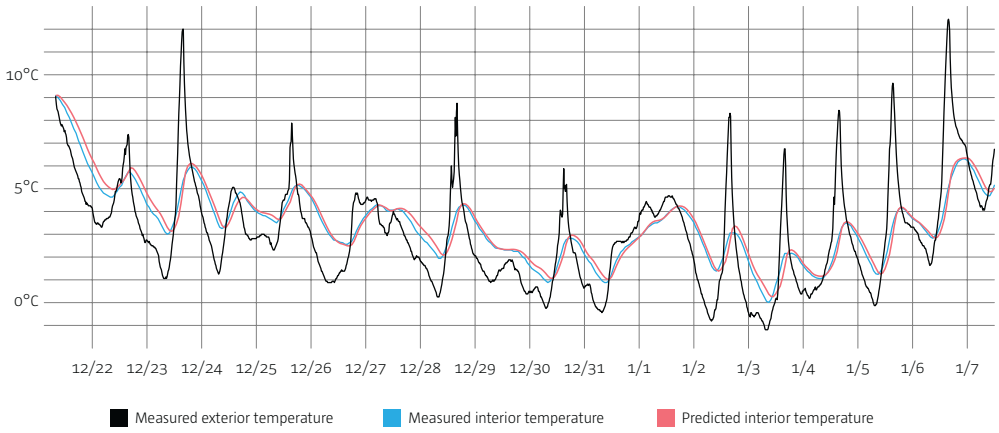
"I don't see anything super innovative here," juror Bill Zahner said, but the project's objectives "to deliver energy efficiency and build affordable housing in an area that is depressed are great." To which juror Lawrence Scarpa noted, "Well, here's something innovative: $105 a square foot. The project is doing more than just providing shelter: It's really adding to the environment and community and the economy."

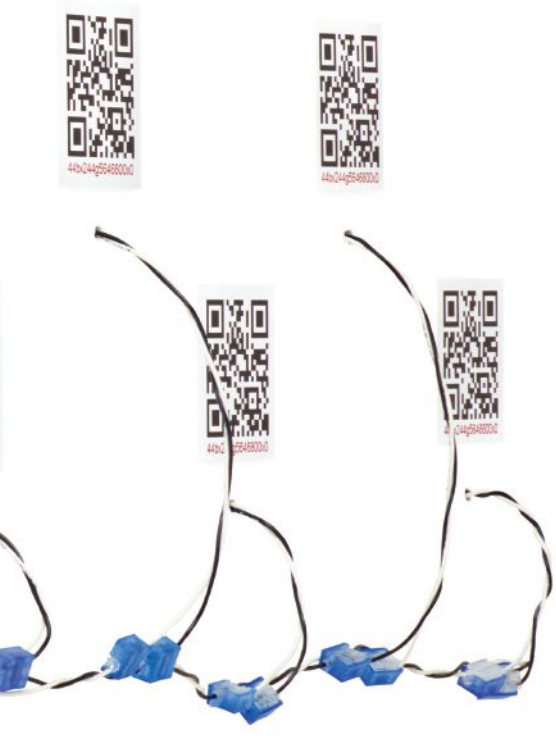
The modules were fabricated just 20 miles away from the South Boston building site in the Cardinal Homes factory. Meanwhile, many of the building materials were regionally sourced: the FSC-certified red oak flooring hails from Abingdon, the bark siding from just south of the Virginia–North Carolina border, the decking lumber from in-state, and the SIPs and cementitious fiber board siding—which contains 50 percent flyash recovered from nearby coal-burning power plants—from Georgia.

EcoMod is on the verge of redefining what affordable housing means. Its high-performance modular house could proliferate in the coming years; it can now be licensed to potential homeowners, developers, affordable housing organizations, and modular home builders. Meanwhile, Quale and his collaborators are embarking on another energy-efficient renovation initiative in Charlottesville, while pursuing the dream of designing a LEED certified residential ranch that costs $65 to $70 per square foot.

WIRELESS SENSOR NETWORK







To develop its sensor network, KieranTimberlake had to look outside of architecture to industries such as bridge construction and agriculture. The sensors are deployed throughout a building to record detailed performance data (see chart, above right). Up to 100 sensors, each with a unique ID, can be tied to a single wireless node.

THE BASIC STEPS TO IMPROVING BUILDING PERFORMANCE—ADD INSULATION, UPDATE WINDOWS, ETC.—ARE OBVIOUS, BUT **KIERANTIMBERLAKE** WANTED TO PROVE THAT THEY WORK.

Photo by John Romeo

Retrofits are the new frontier of energy-efficient architecture. But as juror Jing Liu pointed out, "Without the information on how a building performs now, you can't submit a design to bring it up to a specific standard."

That disconnect is precisely why KieranTimberlake began collecting thermal performance data on newly constructed buildings eight years ago, and on existing buildings slated for renovation three years ago. At the time, the work was hampered by technological limitations: data loss, malfunctioning sensors and equipment, prohibitive field equipment costs, time-consuming data retrieval, and, perhaps most vexingly, the lack of BIM-integrated software capable of analyzing the data collected.

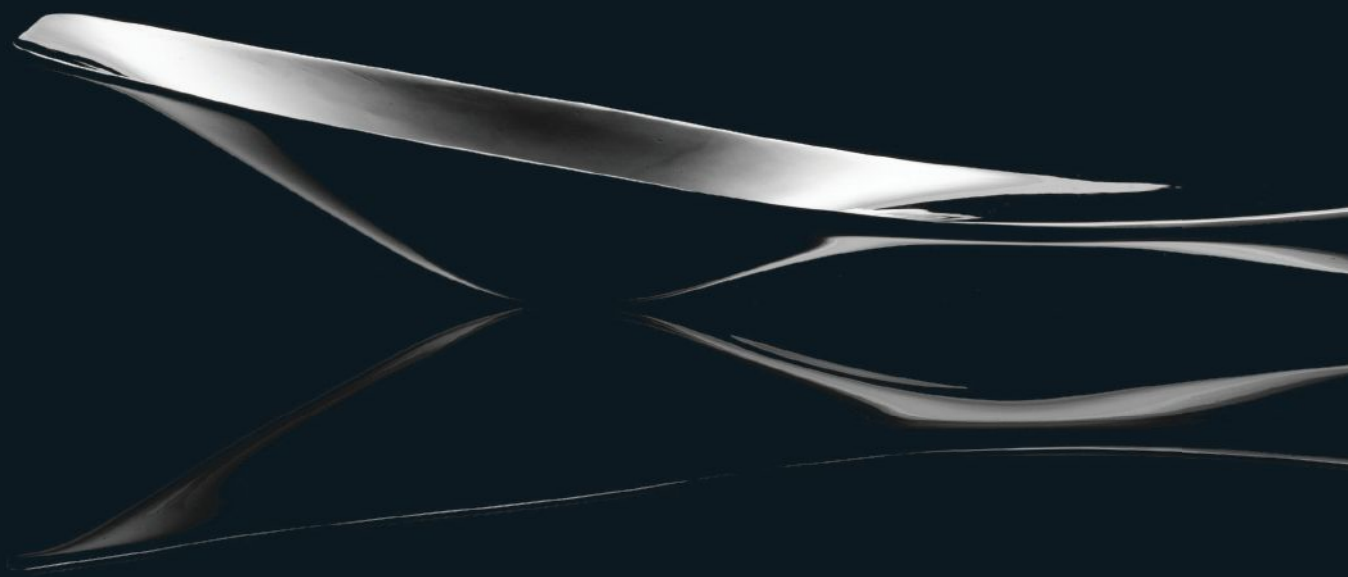
So the firm set out to "simplify sensor deployment by creating an easy-to-install, plug-and-play network that could receive data wirelessly for viewing in a web interface." To develop the custom field sensor circuitry and software apps to analyze the data, KieranTimberlake leveraged its internal research group, whose 12 members have diverse backgrounds in fields such as electrical engineering, computer science, and environmental management.

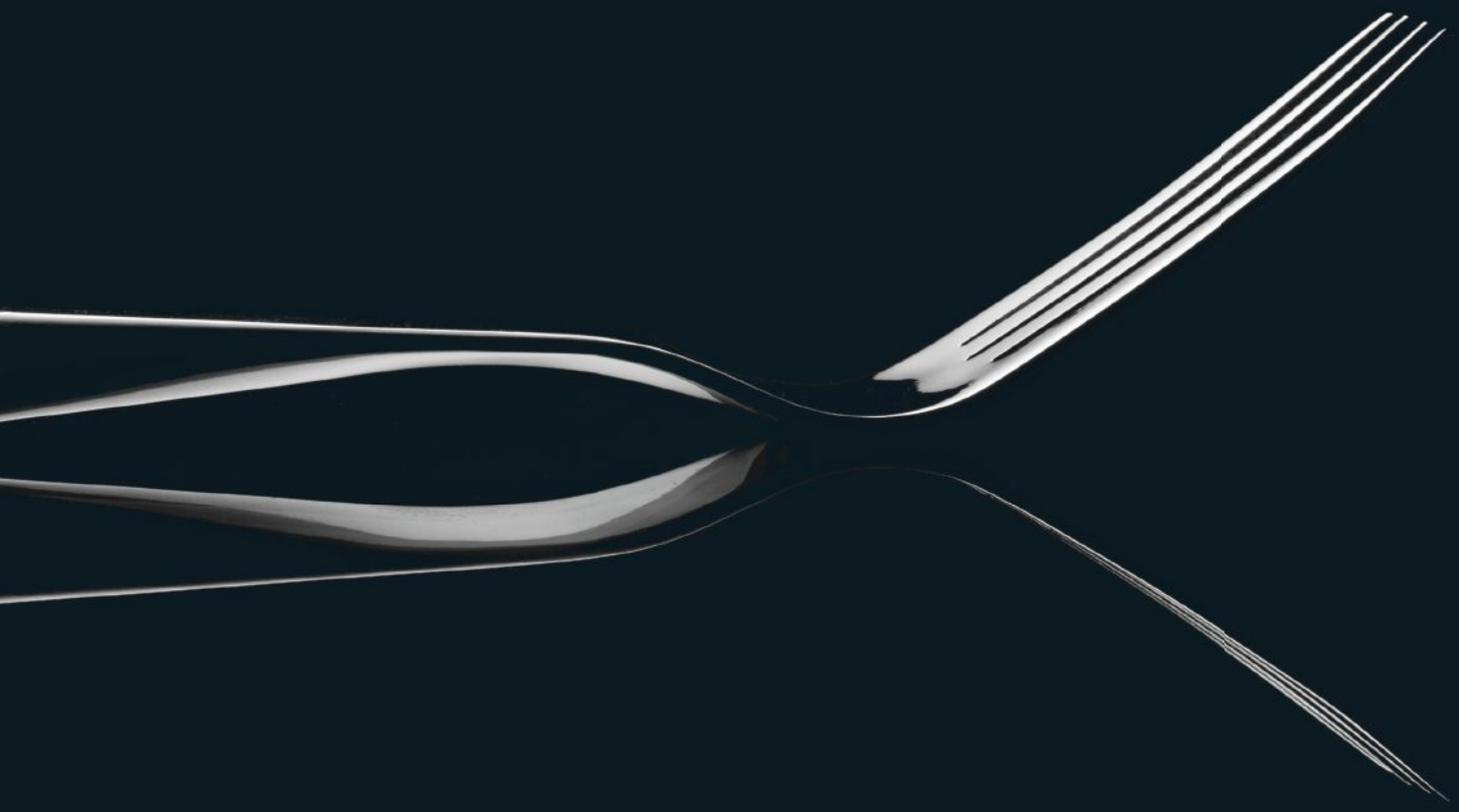
The result: a flexible kit of inexpensive thermal and moisture sensors, plus the ability to monitor them and improvise experiments remotely, and finally, the capacity to export the data into a BIM program. To evaluate the performance of a building, for example, the researchers can insert a series of temperature probes within the thickness of an exterior wall section to identify the precise wall component and location at which thermal leakage is occurring.

The resulting data can help inform on the benefits of repairing or rebuilding a wall, replacing windows, or adding insulation to an existing structure. Juror Lawrence Scarpa likened the technology to surgical implants that monitor a building's performance. "These sensors are very small and very unobtrusive," he said.

In 2010, KieranTimberlake deployed a network of off-the-shelf and modified sensors in a 1930s masonry building at Yale University to quantify the benefits of increasing wall insulation. As the firm took on buildings at the Philadelphia Navy Yard and a 1948 former bottling house in Philadelphia—which will soon become KieranTimberlake's new office—it continued to refine the wireless system. For example, when the team discovered that the sensors' standard watertight cable fittings were difficult to deploy in the field, it developed its own low-cost, waterproof, and self-configuring digital connector. That's innovation in the face of innovation.

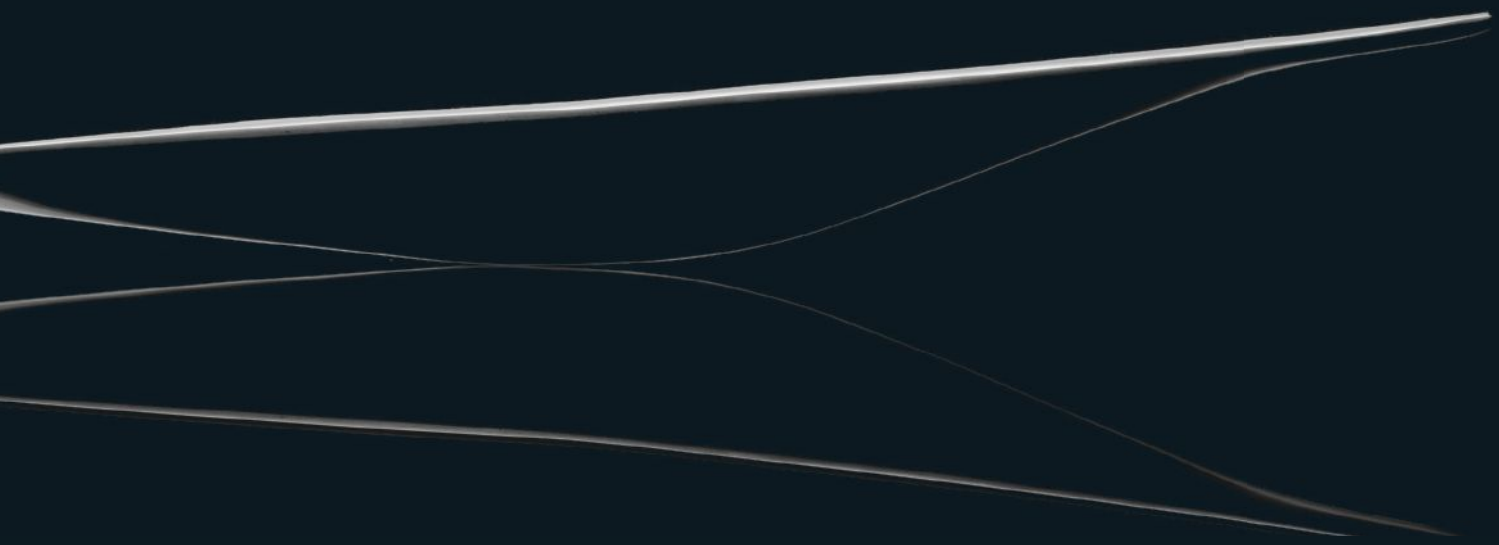
NUM NUM FLATWARE





DESIGN AND PLANNING FIRM **NADAAA** TACKLED A PROBLEM THAT HUNGERED FOR A SOLUTION: CREATE A COLLECTION OF UTENSILS THAT LOOKS GOOD AND PERFORMS EVEN BETTER.

Photos by **Bruce Peterson**



Over the years, toothbrushes have evolved to have thicker, easier-to-grasp handles and pencils have gained slip-on grips for added depth and usability. Yet the handles of flatware have remained largely ignored and static in their design, says Nader Tehrani, principal of Boston-based NADAAA and professor and head of the Department of Architecture at the Massachusetts Institute of Technology's School of Architecture and Planning.

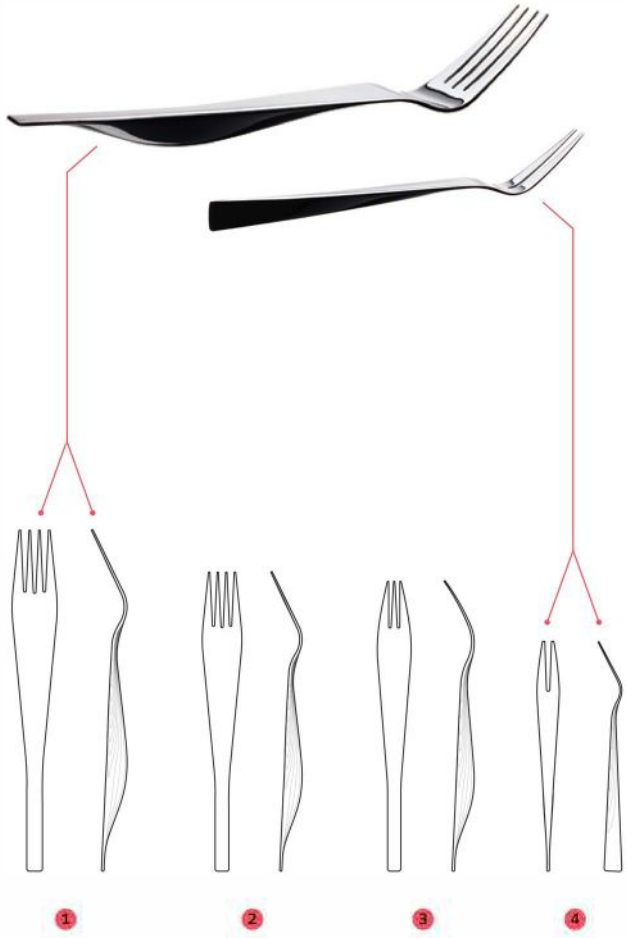
With its prototype Num Num Flatware, his firm set out to establish a more effective and comfortable relationship between hand and utensil. If successful, the fork, spoon, or knife would function as a natural extension of its user.

Tehrani, who began the research at his former practice, Office dA, discovered that the key to this relationship laid in the development of a thick wedge at the midpoint of each utensil's handle, where the thumb touches the index and middle fingers. "The design of this silverware began with a generic triangular cross section and evolved into various sections to conform to the hand in all scenarios of purpose and use," he says.

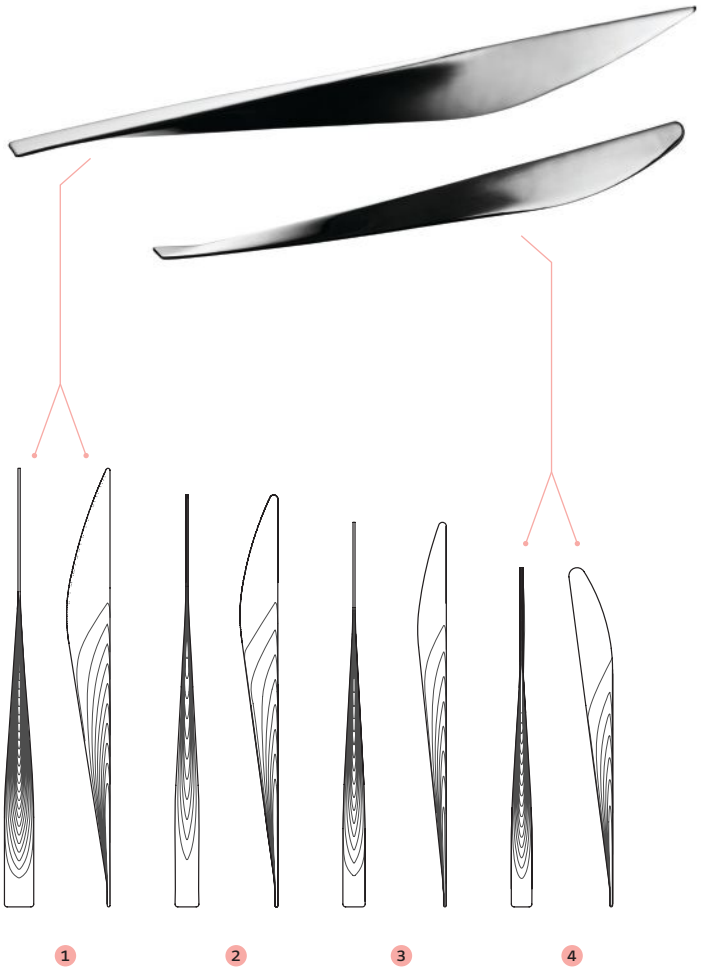
In developing the collection's stainless steel pieces, NADAAA also considered the multiple functions each utensil—fork, knife, and spoon—would perform, and designed a special grip to accommodate each motion. A knife, for example, alternately spreads, slices, and separates. Hence, four knives—steak, entrée, salad, and butter—were created, each with different section profiles and lengths.

Contrary to the conventional "barbell" profile of contemporary eating utensils, the final set of Num Num Flatware flares gently in the middle of the handle, like the keel of a yacht. Balance is maintained by reducing the mass of the utensil's head, which is pressed to a thin sheet. For juror Jing Liu, part of the research's "draw is the study of the center of gravity," she said.

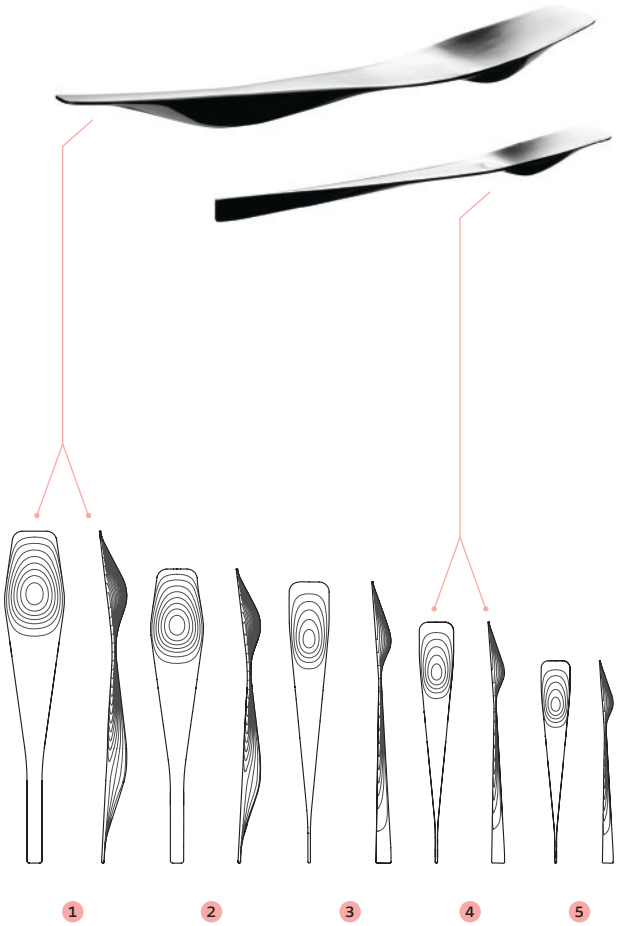
"It's just something you want to pick up and hold," juror Bill Zahner said as he examined the flatware's images in NADAAA's submission. Lacking a physical model to test, however, he wondered whether they would work as well as they looked. In the case of the dessert fork—whose three-pronged profile distinguishes itself from the escargot, entrée, and salad forks—the proof will have to come with the pudding.



1. Entrée
2. Salad
3. Dessert
4. Escargot



1. Steak
2. Entrée
3. Salad
4. Butter



1. Soup
2. Entrée
3. Tea
4. Coffee
5. Espresso

THE BEAUTY OF A MOSAIC MURAL WAS ONLY ENHANCED BY THE INHERENT UNDERSTANDING OF THE PAINSTAKING EFFORT BEHIND ITS CREATION. THAT IS, UNTIL **ARTAIC** CAME ALONG.

Mosaic techniques are thought to be as old as the ancient ziggurats of Mesopotamia—and equally as labor intensive. "In the early history of mosaic production, artists would design and slaves would implement," says Paul Reiss, co-founder of Boston-based mosaic fabricator Artaic. As it happens, the modern term robot is derived from the ancient Slavic words for *drudgery* and *slavery*. So perhaps it was only a matter of time before someone—in this case, Artaic—built a labor-saving robot that automates the assembly of mosaics. After juror Lawrence Scarpa deemed this project a "natural" application of existing robotic technology, he asked, "Why didn't I think of that?"

In 2007, Artaic began developing software and a robotic arm to automatically—and quickly—assemble tile mosaic walls and floors based on any image. The designer or client begins by selecting or generating a digital image along with the desired tile palette. Artaic's software then translates the image into pixels that will correspond to each physical mosaic tile of a given color and size. Similar to painting by numbers, the robot in Artaic's shop picks up and positions the corresponding, individual mosaic tile into a square-foot grid. With a placement rate that Artaic claims can exceed one tile per second, the feed system for the automated tile assembly "is a tricky, interesting beast," juror Bill Zahner said.

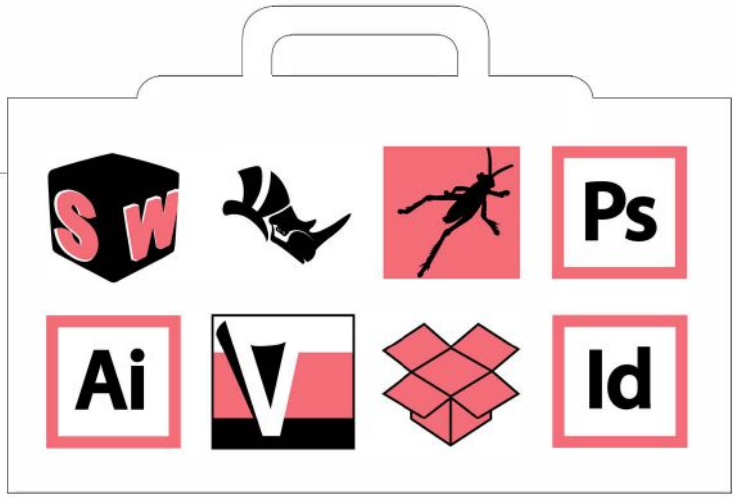
The square-foot grids are turned into mosaic tile sheets, which are then shipped to the project site and assembled into the full, seamless image. Producing the tiles for a mosaic mural at Iowa State University measuring 75 feet long by 18 feet tall took about two weeks, according to the company.

The visual complexity of an Artaic mosaic is limited only by the size and color of the individual mosaic tiles available. The company currently offers tiles in three types of glass, plus stone and unglazed porcelain. Most come as half-inch or 1-inch squares, although the vitreous glass tiles come as small as ⅜-inch square. Designers have no shortage of color options for the glossy- or matte-finished tiles: about 50 hues for each type.

Artaic's robot, which is named Arty, picks up and assembles individual mosaic tiles into 1-square-foot grids that are derived from the tesselated image file created in the company's software. These grids of tiles are then anchored to backing to become a mosaic tile sheet. One large mosaic can comprise roughly 1,500 such sheets, which are installed on site.

Each user of AEC-Apps can combine third-party programs from companies such as Autodesk and Adobe with apps, plug-ins, and scripts written by other architects or software developers. This bottom-up approach to software allows users to review programs and applications, and share tips and tricks for how to best use the software that drives the AEC industry.

AEC-APPS



NOW, MORE THAN EVER BEFORE, INNOVATION IN ARCHITECTURE IS HAPPENING IN THE DIGITAL WORLD, AS **SKIDMORE, OWINGS & MERRILL** AND **CASE DESIGN**'S NEW NETWORK DEMONSTRATES.

Illustration by 500GLS

Between unending project demands and the hunt for future commissions, architects are expected to keep up with the ever-proliferating array of software. But which programs are worth the time it takes to learn them? The answer may lie in digital technology itself.

AEC-Apps, a website and social network co-developed by Skidmore, Owings & Merrill (SOM) and Case Design, is a crowdsourced information resource and exchange created specifically for architects, engineers, builders, and designers. The online forum is intended to foster dialogue about the profession's digital toolkit.

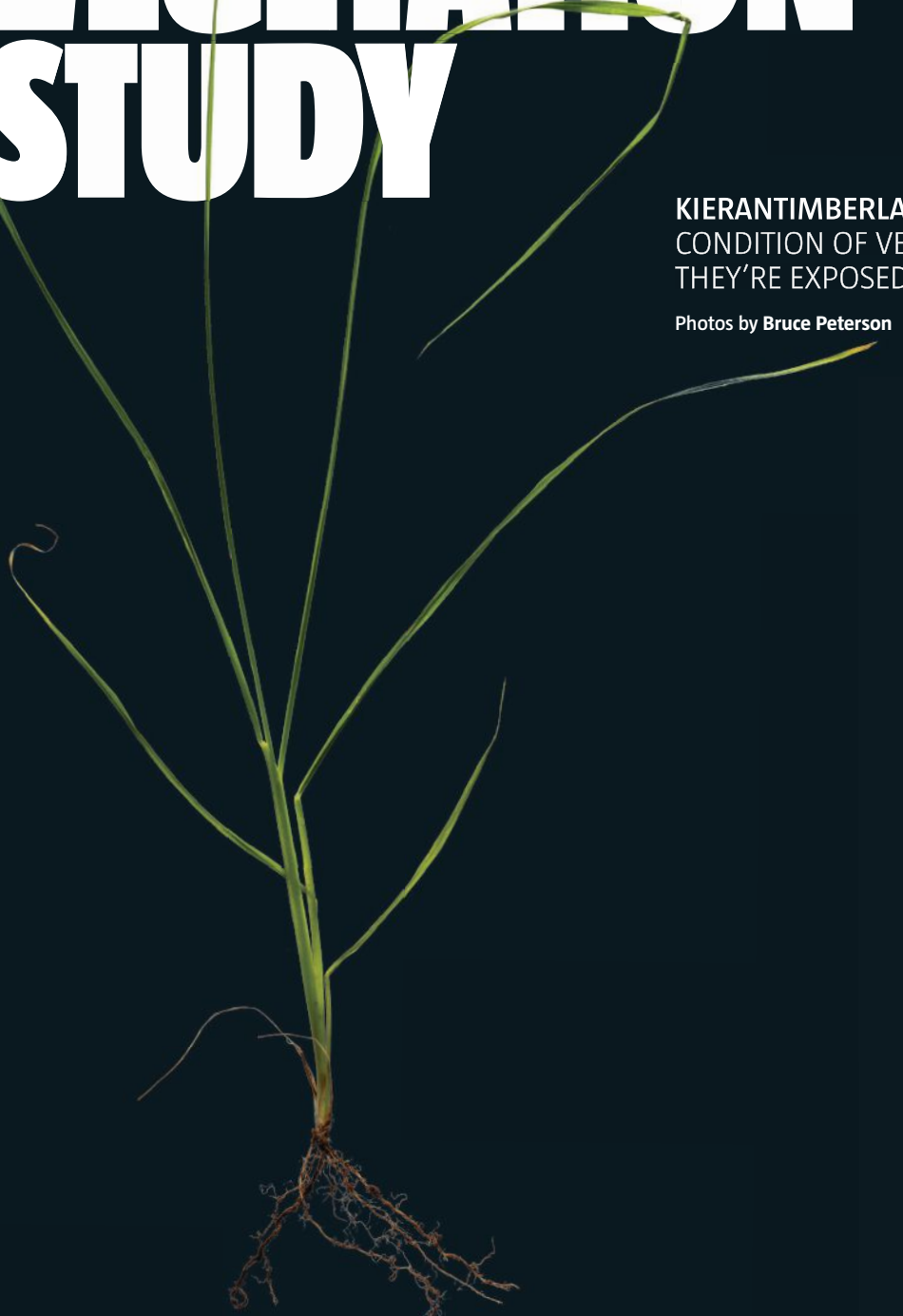
Generally speaking, AEC-Apps combines an open-ended set of available, third-party software applications with an open-minded set of community members. Website users group apps according to their relevance. In turn, these groups of related apps help members find other like-minded members. Users can browse each other's virtual toolboxes, or "App Kits." Each app is rated and reviewed by fellow community members and listed alongside plug-ins and other similarly recommended programs. Aggregate or crowd-sourced ratings determine the order in which the apps appear. "It's interesting how social media is being interwoven in our society in areas that we'd never expect," juror Bill Zahner said.

Interestingly, AEC-Apps is conceived not only as a consumer exchange but also as a progenitor of new apps. SOM and Case hope that users will invent or adapt new tools as they identify gaps in the available technology. Here, digital DIY will meet commercial software on a level playing field, with potentially complementary results. Although AEC-Apps is currently in beta testing with a small base of users (membership requires approval by the site's administrators), its web of knowledge is steadily spreading.

GREEN ROOF VEGETATION STUDY

KIERANTIMBERLAKE DARES TO INVESTIGATE THE CONDITION OF VEGETATIVE ROOFS YEARS AFTER THEY'RE EXPOSED TO THE REAL WORLD.

Photos by **Bruce Peterson**



PLANNED

Sporobulis heterolepsis Prairie dropseed

THRIVED

Sedum spurium fuldaglut Two-row stonecrop

INVADED

Phlox subulata Moss pink, pink phlos

It's one thing to Photoshop a green roof into a rendering; it's another thing to plant and sustain one. And it's all but unheard of to go back and analyze the state of these living roofs years after their completion, as Philadelphia-based KieranTimberlake did for its groundbreaking Green Roof Vegetation Study. The study responds to "a lack of long-term data on real buildings with diverse and dynamic plant communities," according to the firm. Instead of concentrating on one engineering or horticultural aspect of green roofs, the firm looked at "how green roofs function as ecosystems and how they change over time."

The jury highlighted two innovative aspects of the study: its comparative method and its ecological thesis. In 2011 and 2012, KieranTimberlake surveyed six of its completed green roofs, ranging in area from 1,744 to 10,000 square feet, and designed between 2003 and 2011. Using the Relevé vegetation survey method and the Braun-Blanquet abundance scale to quantify its findings, KieranTimberlake assessed the roofs' vegetative cover, species richness, and species diversity in 2-meter-square sections. The researchers also interviewed facilities and grounds maintenance personnel at each site. Juror Bill Zahner praised the study's "way of collecting the data needed rather than saying, 'Well, let's just put seeds down and keep our fingers crossed.'" Juror Jing Liu agreed: "What they're doing is different. The research is to study the long-term dynamics of green roofs."

The resulting report confirms that roof ecologies are indeed dynamic and that changes will occur spatially and over time from the original planting design. More importantly, it details the nature of those changes, and raises questions about what the changes might indicate for long-term resiliency.

In many of the case studies, the prevalent species observed on the roofs in 2012 that were part of the initial planting design were accompanied by dozens of new or "emergent" species. *Artemisia* (commonly known as mugwort) at the Yale Sculpture Building and *Melilotus* (or sweet clover) at Cornell University's Alice H. Cook House independently found their way to roof tops, took root, and eventually made themselves at home in the roofscape design. Roof biodiversity often increased, although the report cautions that the results of any single survey could be deceptive: "What appears to be major shifts in species composition may in fact be short-term fluctuations or cycles caused by unpredictable changes in experienced climate and environmental conditions."

While the report rigorously maps the distance between design intent and material outcomes, it also sets the stage for even more radical research to be conducted on the

interplay between landscape and architecture. KieranTimberlake envisions deploying sensors on the roof to measure thermal and moisture conditions in relation to the building's internal climate and energy consumption.

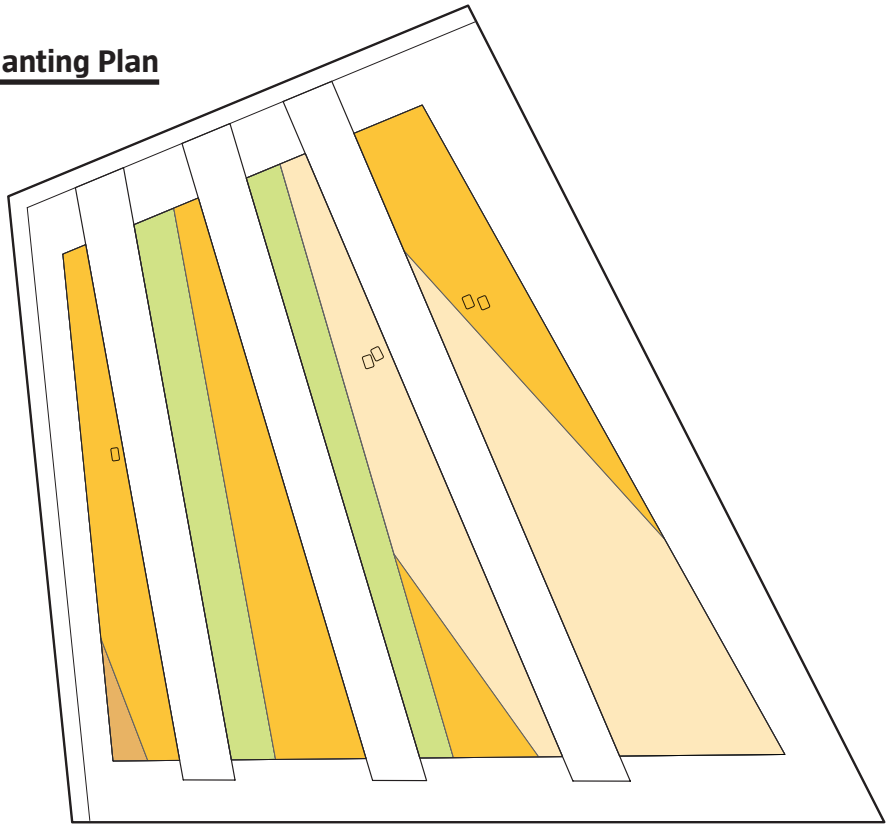
The report also suggests that architecture "is responsible for the ... vegetative dynamics and ultimate performance of the roof." On the roof of a dining hall at Middlebury College, for example, the otherwise feeble grasses and forbs become lush and verdant around the skylight cones, whose shade presumably helps the soil retain moisture. "Architectural design creates microclimates across a roof, determining availability of sunlight, water, and nutrients," the report states.

KieranTimberlake is already putting its newfound knowledge to use on the forthcoming Penn State Center for Building Energy Education and Innovation at the Philadelphia Navy Yard, which itself will serve as an ongoing laboratory and teaching center for scientists, students, and professionals interested in eco-effective architecture. The firm has developed a proposal to create a green roof test bed on this building; currently, it is in the process of raising funds.

But documenting the consequences of a designed green roof subjected to unforeseeable or uncontrollable environmental forces has wider implications for architecture in general, juror Jing Liu said. "If you think of the green roof as an ecological system, you can have architecture as an ecological system," she said.

In the messiness of the real world, architecture depends on dynamic variables. Buildings are never really complete. Rather, they are subject to the vicissitudes of client maintenance regimes, the inconsistencies of occupant behavior, and the unpredictability of weather. That is why post-occupancy studies—of both indoor and outdoor environments—must be as meticulous as they are fearless.

2005 Planting Plan



Succulents

Sedum spurium fuldaglut	Two-row stonecrop
Sedum sexangulare	Tasteless stonecrop
Sempervivum spp.	Houseleeks, liveforever

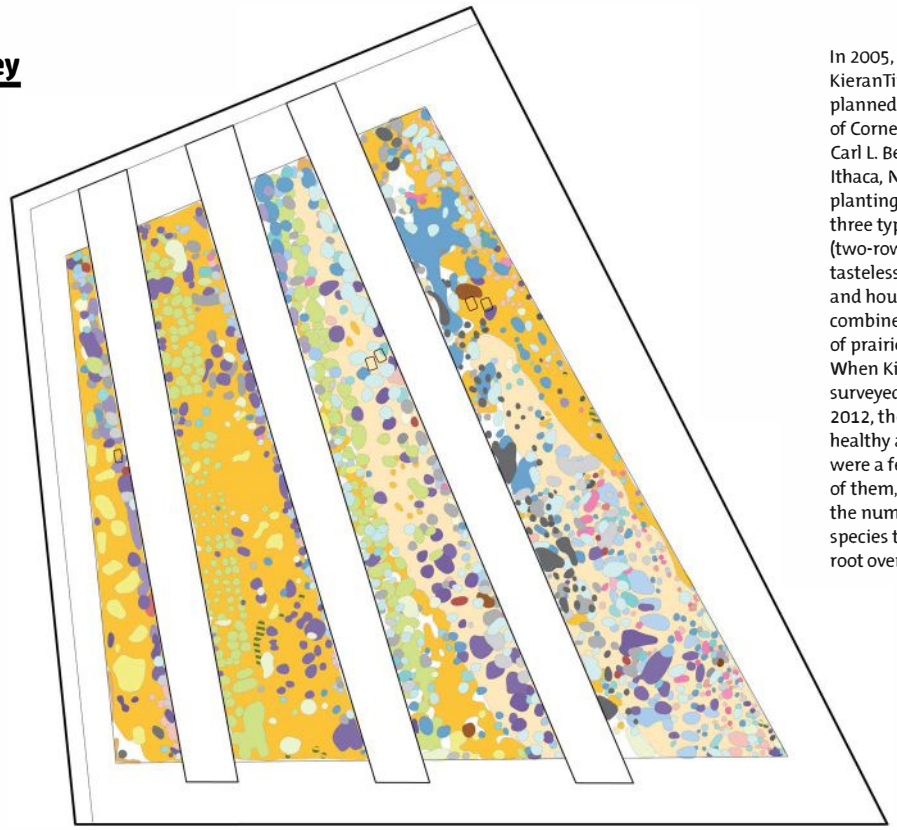
Trees

Acer platinoides	Norway maple
Juniperus virginiana	Easter red cedar
Populus spp.	Poplar species
Quercus rubrus	Red oak
Prunus virginiana	Choke cherry
Rhamnus cathartica	Buckthorn
Rhus typhina	Staghorn sumac
Robinia pseudoacacia	Black locust

Shrubs

Acer negundo	Box alder
Elaeagnus umbellata	Autumn olive

2012 Survey



In 2005, when KieranTimberlake planned the green roof of Cornell University's Carl L. Becker House, in Ithaca, N.Y., the rigorous planting plan comprised three types of succulents (two-row stonecrop, tasteless stonecrop, and houseleeks), combined with strips of prairie dropseed. When KieranTimberlake surveyed the roof in 2012, the vegetation was healthy and full, but there were a few surprises—54 of them, in fact. That is the number of new plant species that had taken root over the years.

Herbaceous Forbs (Assorted)

Allium cernuum	Nodding wild onion
Asclepias syriaca	Common milkweed
Cerastium fontanum	Mouse ear chickweed
Chamaesyce maculata	Spotted sandmat
Daucus carota	Wild carrot
Hypericum perforatum	St. John's wort
Oenothera fruticosa	Sundrops
Oxalis stricta	Woodsorrel
Phlox subulata	Moss pink, pink phlos
Plantago major	Plantain
Polygonum scandens	Climbing false buckwheat
Silene latifolia	White campion
Verbascum thapsus	Common mullein
Unidentified forb 1	
Unidentified forb 2	
Unidentified forb 3	
Unidentified forb 4	

Herbaceous Forbs (Asteraceae)

Achillea millefolium	Yarrow
Aster obl. 'october skies'	October skies aster
Aster pilosis	Skinny aster A
Cirsium vulgare	Bull thistle
Erigeron annus	Daisy fleanane
Hieracium sabudum	Hawkweed yellow
Lactuca serriola	Prickly lettuce
Leontondon automnalis	Fall dandilion
Solidago canadensis	Flat leaf goldenrod
Solidago graminfolia	Lanceleaf goldenrod
Taraxacum officinale	Common dandelion

Vines

Lonicera japonica	Honey suckle
Parthenocissus quinquefolia	Virginia creeper
Rosa multifloria	Multiflora rose
Vitis riparia	Riverbank grape

Herbaceous Forbs (Fabaceae)

Lotus corniculatus	Birdfoot trefoil
Medicago lupulina	Medic
Melilotus officinalis	Sweet clover
Trifolium pratense	Red clover
Vicia spp.	Vetch

Grasses

Andropogon geradii	Big bluestem
Carex appalachica	Applalachian sedge
Dactylis glomerata	Orchard grass
Fesuca ruba	Creeping red fescue
Setaria viridis	Green bristlegrass, green fox
Sporobulis heterolepsis	Prairie dropseed
Unidentified grass 1	
Unidentified grass 2	

JUDGES

LAWRENCE SCARPA

A fixture of the Los Angeles architecture scene, Lawrence Scarpa, FAIA, is a co-founder and principal of Brooks + Scarpa, the successor firm to Pugh + Scarpa, which was the recipient of the 2010 AIA Firm Award. Scarpa's design work has long been rooted in placemaking. Since 2009, he has served on the Mayor's Advisory Council for City Design in Los Angeles. Scarpa, who holds a Bachelor of Design and an M.Arch from the University of Florida, has lectured and taught at numerous universities around the country. He has also held visiting professorships at Harvard University's Graduate School of Design, the University of Southern California, and the University of Michigan.

JING LIU

A principal at Brooklyn, N.Y.–based Solid Objective-Idenburg Liu (SO-IL), Jing Liu holds an M.Arch from the Tulane University School of Architecture. The "idea-based practice," as Liu and partner Florian Idenburg call it, is known for work that ranges in scale from master plans to art installations. Recent projects include the Frieze Art Fair in New York and the Kukje Gallery in Seoul, South Korea. SO-IL, partnering with Bohlin Cywinski Jackson, also won the recent competition to design the forthcoming UC Davis art museum. Liu is on the faculty at Parsons The New School for Design, and teaches at Columbia University's Graduate School for Architecture, Planning, and Preservation.

BILL ZAHNER

Since 1989, Bill Zahner, Hon. AIA, has been president and CEO of A. Zahner Co., the Kansas City, Mo.–based architectural metals company. Under his direction, his family's business has become known for collaborating with numerous architects and firms around the world, including Herzog & de Meuron and Frank Gehry, FAIA, to realize metal skins and building products that push the envelope of material and manufacturing science. Zahner is the author of two books, including *Architectural Metals: A Guide to Selection, Specification, and Performance* (Wiley, 1995). He is currently serving on the 2013 Manufacturing Council of the International Trade Administration, to which he was appointed by the U.S. Secretary of Commerce.

CREDITS

Morphfaux PAGE 98

Project Morphfaux
Design Firm Archolab, Ann Arbor, Mich.
Primary Investigators Steven Mankouche, Joshua Bard, Matthew Schulte
Project Team Claire Sheridan, Michael Senkow, Andrew Thompson, Richard Tursky, Jono Sturt, Robert Yuen, Efrie Frieldander
Consultants University of Michigan College of Engineering, Ann Arbor, Mich.—Edwin Olson; Spider Technologies, Ann Arbor, Mich.—Gary Schultz; SuperMatter Tools, Sydney and Boston—Wes McGee; Hofmann Plastering, Saline, Mich.
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Electroform(alism) PAGE 106

Project Electroform(alism)
Design Firm Anya Sirota + Akoaki, Ann Arbor, Mich.
Primary Investigators Anya Sirota (assistant professor, Taubman College of Architecture and Urban Planning, University of Michigan), Jean Louis Farges (principal, Akoaki), Patrick Beaucé (associate professor, École Supérieure des Beaux-Arts de Valenciennes)
Research and Design Team Nathan Doud, Assoc. AIA, John Guinn
Electroform Consultant Galvanique, Providence, R.I.—Alex Belykh
Funding Taubman College of Architecture and Urban Planning Research Through Making Grant

EcoMod PAGE 108

Project EcoMod South: High Performance Affordable Housing
Client Southside Outreach, South Boston, Va.—Earl Howerton, Earlene Powell; People Inc., Abingdon, Va.—Mike Rush, Michael Weaver
Primary Investigators University of Virginia, School of Architecture, School of Engineering and Applied Science
Project Team John Quale (associate professor and EcoMod project director); Michael Britt, AIA (project manager); Elizabeth Rivard, Assoc. AIA, Erik de los Reyes (research assistants: architecture); Beth Bailey (research assistant: landscape architecture); Barbara Gehrung (Passive House consultant); Paxton Marshall (engineering director); Nancy Takahashi (landscape architecture adviser); Eric Field (digital simulation adviser); Galen Staengl, Staengl Engineering (mechanical design); Phil Parrish (associate vice president for research)
Prototype Design Team The EcoMod South design is based in part on EcoMod4, a modular home completed in 2009 for Habitat for Humanity of Greater Charlottesville; the design and construction team included more than 70 architecture, engineering, landscape architecture, planning, and commerce students.
Off-Site Construction Cardinal Homes, Wylliesburg, Va.—Bret Berneche (president)
On-Site Construction Allen Stevens Construction (site in South Boston, Va.); People Inc., C.W. Denton Construction (site in Abingdon, Va.)
Funding Tobacco Indemnification and Community Revitalization Commission of Virginia

Wireless Sensor Network PAGE 112

Project Wireless Sensor Network
Design Firm KieranTimberlake, Philadelphia
Project Team Roderick Bates, Richard Clark, Peter Curry, Eric Eisele, Billie Faircloth, AIA, Stephen Kieran, FAIA, Taylor Medlin, Alex Roscoe, James Timberlake, FAIA, Ryan Welch

NUM NUM Flatware PAGE 114

Project NUM NUM Flatware
Design Firms NADAAA, Boston; Office dA, Boston
Principal in Charge Nader Tehrani
Project Coordinators Brandon Clifford, Parke MacDowell
Project Team Catie Newell, Monica Ponce de Leon, AIA
Fabricator NADAAA (R+D prototyping); GPI Prototype and Manufacturing Services (metal prototyping)

Innovative Mosaic PAGE 118

Project Innovative Mosaic
Design Firm Artaic, Boston
Primary Investigator Paul Reiss (co-founder and creative director)
Research and Design Team Ted Acworth (founder and CEO), Blake Goodwin (director of operations)

AEC-Apps PAGE 120

Project AEC-Apps (aec-apps.com)
Design Firm Skidmore, Owings & Merrill, New York; Case Design, New York
Project Leaders Nicholas Holt, AIA (director, Skidmore, Owings & Merrill); David Fano (partner, Case Design)
Project Team Skidmore, Owings & Merrill—Jason Chen, Robert Yori, Assoc. AIA, Robert Mencarini, AIA, Nick Scalco; Case Design—Mike McDearmon, Angel Ceballos, Jose Capelan, Diego Sapriza, Jorge Sierra

Green Roof Vegetation Study PAGE 122

Project Green Roof Vegetation Study
Design Firm KieranTimberlake, Philadelphia
Project Team Roderick Bates, Stephanie Carlisle, Billie Faircloth, AIA, Stephen Kieran, FAIA, Taylor Medlin, Assoc. AIA, Max Piana, James Timberlake, FAIA, Ryan Welch

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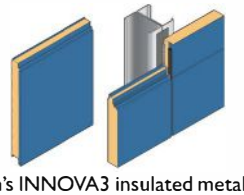

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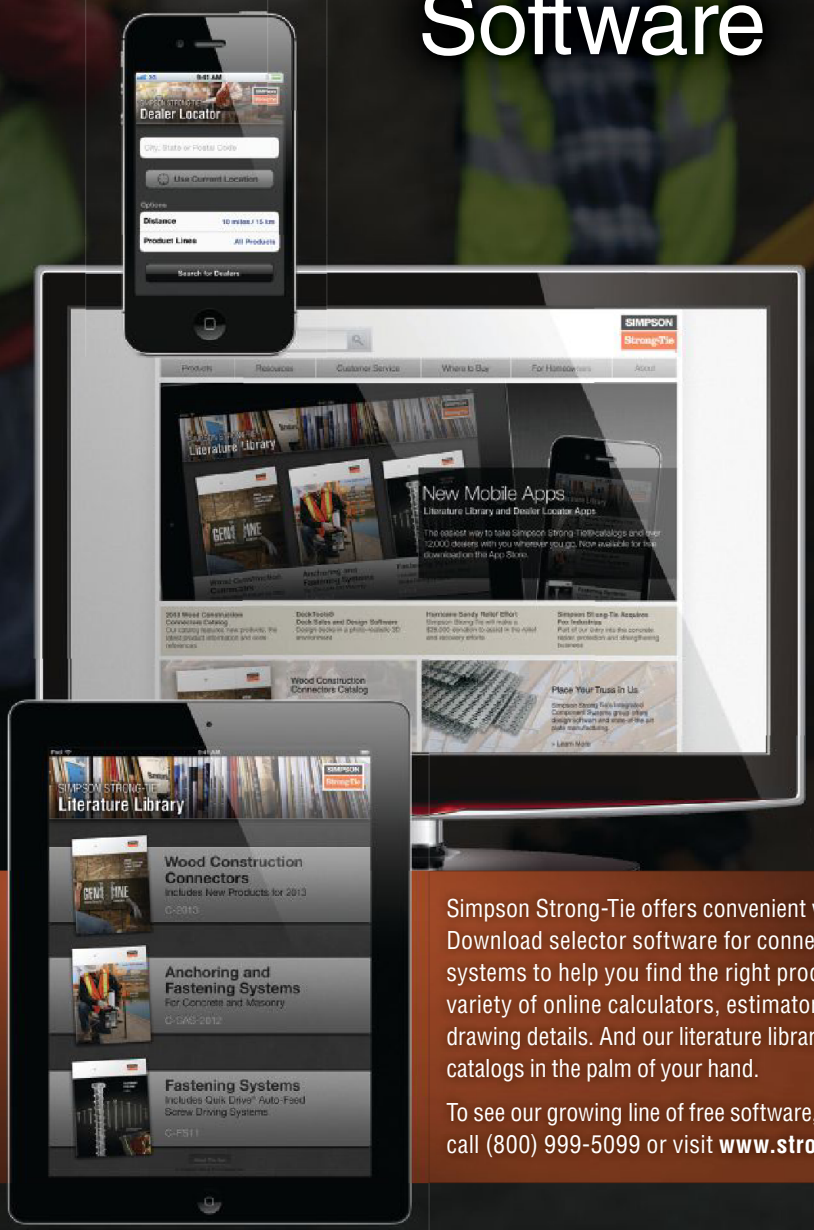

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Recognition for Reuse

LEE HARRIS POMEROY'S SCHEME FOR CONVERTING AN OLD FACTORY MARKED A SHIFT IN THE PROFESSION'S PRIORITIES.

Text by **John Morris Dixon, FAIA**

UP UNTIL THE 1960S, architects were more intent on replacing old buildings than saving them, but by 1963, a P/A Awards jury was ready to honor adaptive reuse. Lee Harris Pomeroy's Henry Street Studios proposal for artists' housing in a former Brooklyn, N.Y., candy factory was "unanimously applauded" by a group that included some of the century's most prominent names, all of whom agreed that this conversion was "done ingeniously and sensibly, and with respect for the existing architecture."

According to that awards issue, the jurors were disappointed with most housing entries, feeling that too often "no real architectural challenge had been posed." That observation appears related to their decision to honor this project, which represented a type of challenge just then emerging.

Completion of the project was delayed until 1975, in part because building codes initially prohibited certain design elements, such as exposed timber framing in multistory housing and loft-style apartments. The location in the Brooklyn Heights Historic District—New York's first such area—entailed approval for one nonhistorical exterior elevation to replace a blank party wall.

As gentrification of the neighborhood proceeded, the building was converted from subsidized to market-rate housing. Now PKSB Architects is thoroughly renovating the structure for condominiums and adding a four-story annex. The city's Landmarks Preservation Commission has approved the massing of the new construction and redesigned windows for the original building's arched openings.

The new exterior features of the resulting complex take design cues from the one major element created earlier by Pomeroy: that modern fourth wall.

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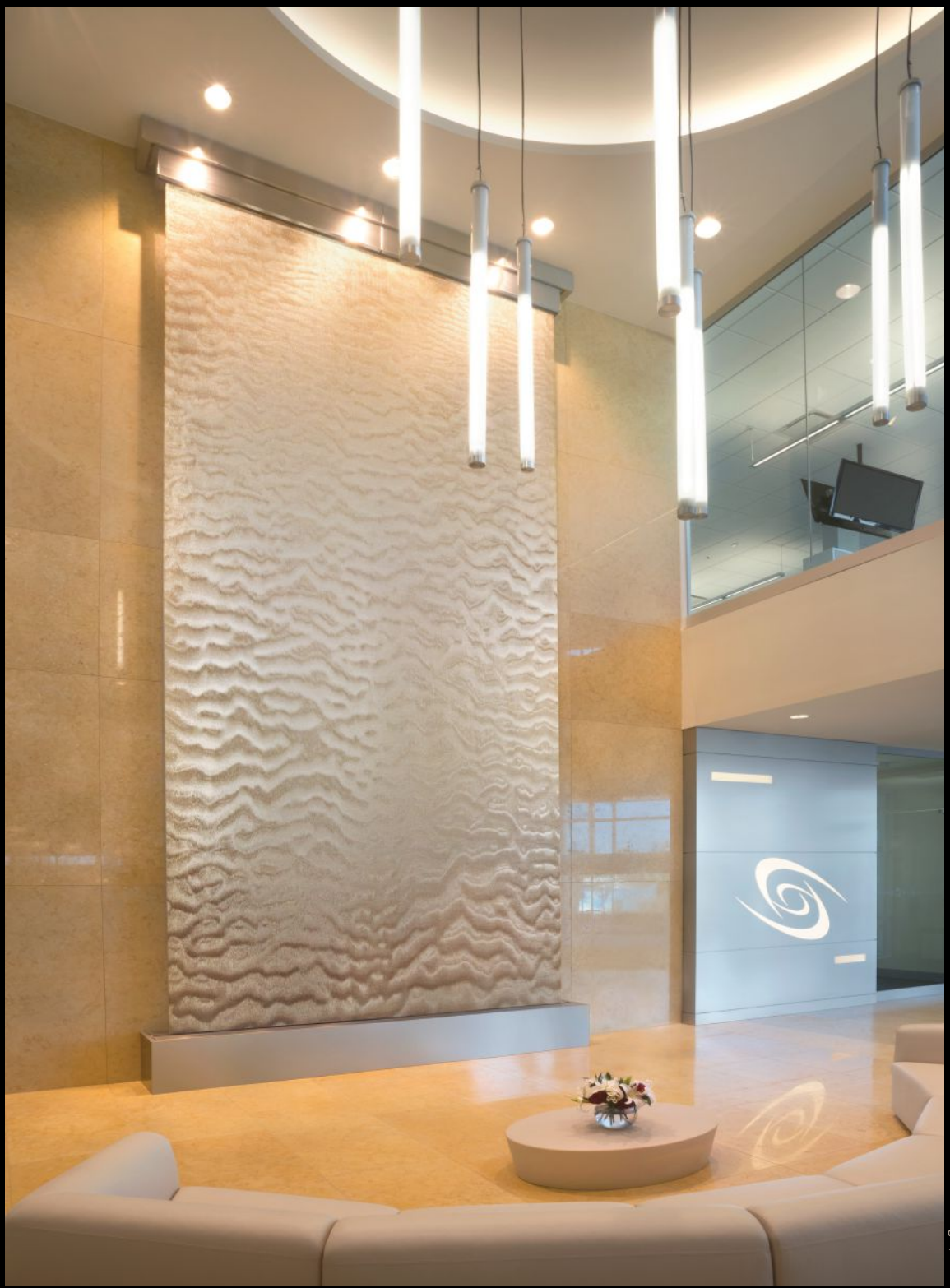

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