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Your Office, Your Future

What's next for the architects' office? In this challenging economic climate, there's no better time to rethink how your firm practices. ERIC WILLS, WITH BNIM, ERNEST BECK, ELIZABETH EVITTS DICKINSON, ALEX HOYT, AND JEFFREY LEE

Nurture: Morale Will Improve As the profession faces a looming talent shortage, some firms are attracting new employees with happy hours and Flamenco. Can a friendlier culture help their bottom line?

Meet: Face to Facebook Some architects have embraced social media and telecommunications, but others struggle to discern the actual benefits. Can your firm tweet its way to success?

Research: Design by Numbers Many firms have already realized research's importance in wooing clients and securing projects. Here's how they made research an integral part of their practices.

Focus: Architect, Design Thyself As firms encourage more collaboration between architects and launch new research initiatives, office-space design will also change. Welcome to a world of incubator spaces.

Nourish: A Natural Manifesto The 2011 AIA National Architecture Firm Award winner, BNIM, offers eight ways to create a healthy office. Because connecting with nature will become a strategic goal.

Grow: Finding Your Balance Smartphones and ever-growing workloads have broken down the walls between home and office. Fortunately, architects are finding creative new ways to manage their time.

→ ONLINE

There's more online at architectmagazine.com:

Weekly videos about the future of practice.

More case studies about how firms are using social media.

Read more stories from architects about how they handle their work/life balance.

Blaine Brownell's Mind & Matter blog looks at products and materials in development and on the market.

Aaron Betsky's Beyond Buildings blog comments on the impact of design on our society and culture.

And there are constant updates: breaking news, new products, slide shows, extra images of the projects in the issue, and more ...

ON THE COVER
WHAT'S NEXT: THE OFFICE OF THE FUTURE AND THE FUTURE OF ARCHITECTURAL PRACTICE. ILLUSTRATION BY PETER ARKLE.
ABOVE: THE CENTER FOR ARCHITECTURE SCIENCE AND ECOLOGY (CASE), A COLLABORATIVE RESEARCH EFFORT BETWEEN SOM AND RENSSELAER POLYTECHNIC INSTITUTE, BRINGS TOGETHER ARCHITECTS AND PROFESSORS TO SOLVE REAL-WORLD DESIGN PROBLEMS.

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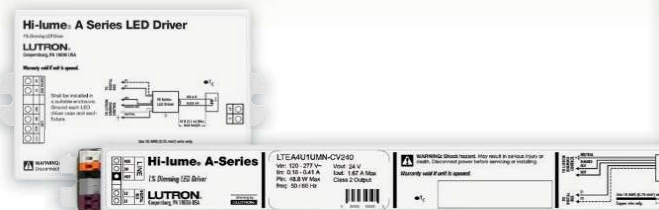
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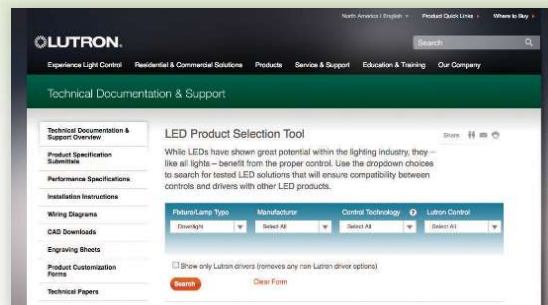
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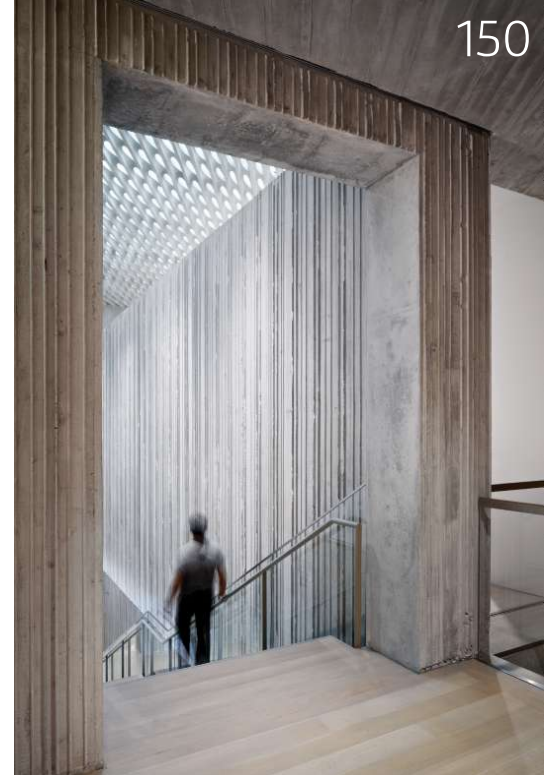
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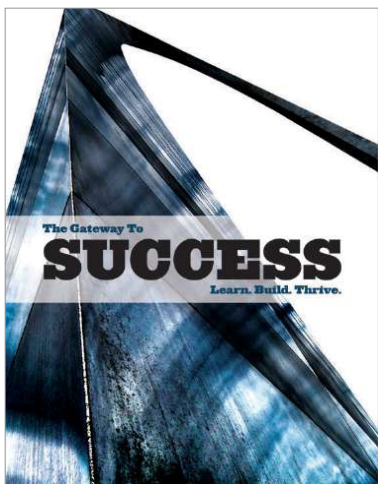


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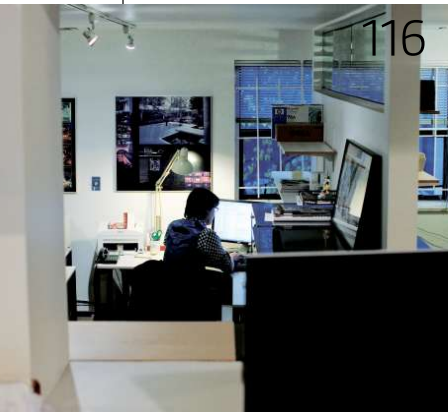


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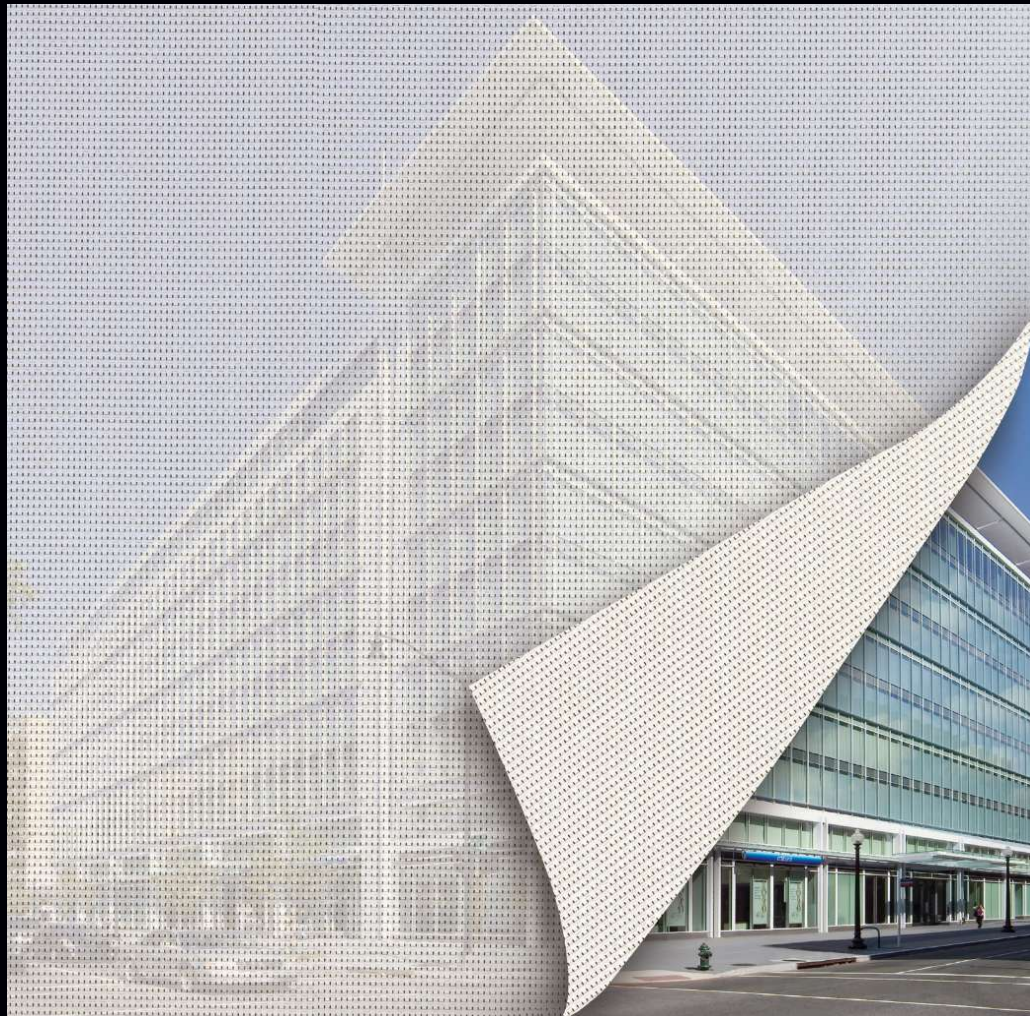


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A Valuable Material for Daylighting

As builders and architects discover innovative ways to increase energy efficiency in buildings, they are turning more and more to daylighting as a viable solution.

Daylighting is the practice of placing windows or other openings and reflective surfaces so that during the day, natural light provides effective internal lighting. GKD's extraordinary collection of woven metal fabrics provides the architectural community with various amounts of transparency for daylighting applications.

Woven metal provides a number of benefits specific to daylighting. By shading a building's interiors and keeping it naturally cooler, less energy is needed to power HVAC systems. Metal fabric allows the transmission of natural light, which provides effective internal illumination while reducing related energy costs.

Solar Shading Plus Innovative Design

Architects are also discovering the opportunities presented by metal fabric in solar shading — the ability to control a building's absorption of the sun.

Solar shading is the process of controlling the amount of heat and light admitted to a building, reducing the need for heating or air conditioning by maintaining a more even temperature despite varying climatic conditions. It can also cut the amount of energy required for interior lighting by admitting more light during overcast conditions.

In 2009, the Mayor of Phoenix, Ariz., introduced the Green Phoenix plan, a partnership with community groups and individuals, with the goal of becoming the most sustainable city in the United States. Exemplifying this partnership, Arizona State University built the 223,000-square-foot Walter Cronkite School of Journalism and Communication building in downtown Phoenix.

Ehrlich Architects selected GKD's Lago vertical stainless steel woven metal fabric to create sunscreens covering windows on the west side of the building, protecting the glass from damage while allowing light to penetrate deep into the building. This transparent metal weave mitigates solar heating but allows easier viewing of flat-screen TV's and computers. Because of the transparency of the fabric, building occupants can still see a view of downtown Phoenix.

Solar Management in a Climate of Extremes

For the new Mark Jefferson Science Complex, Eastern Michigan University and architectural firm Lord Aeck & Sargent found an ideal solar management solution in GKD metal fabrics. Sunshades on the building's façade shield the building from direct sun while providing enough daylight for students and staff to utilize the building with less energy usage and reduced environmental impact.

The sweeping three-tier building exterior incorporates cutting-edge solar-management techniques from ground to roof and offers environmental sustainability, all while holding up to Michigan's weather extremes including ice, rain, wind, and excessive heat and cold.

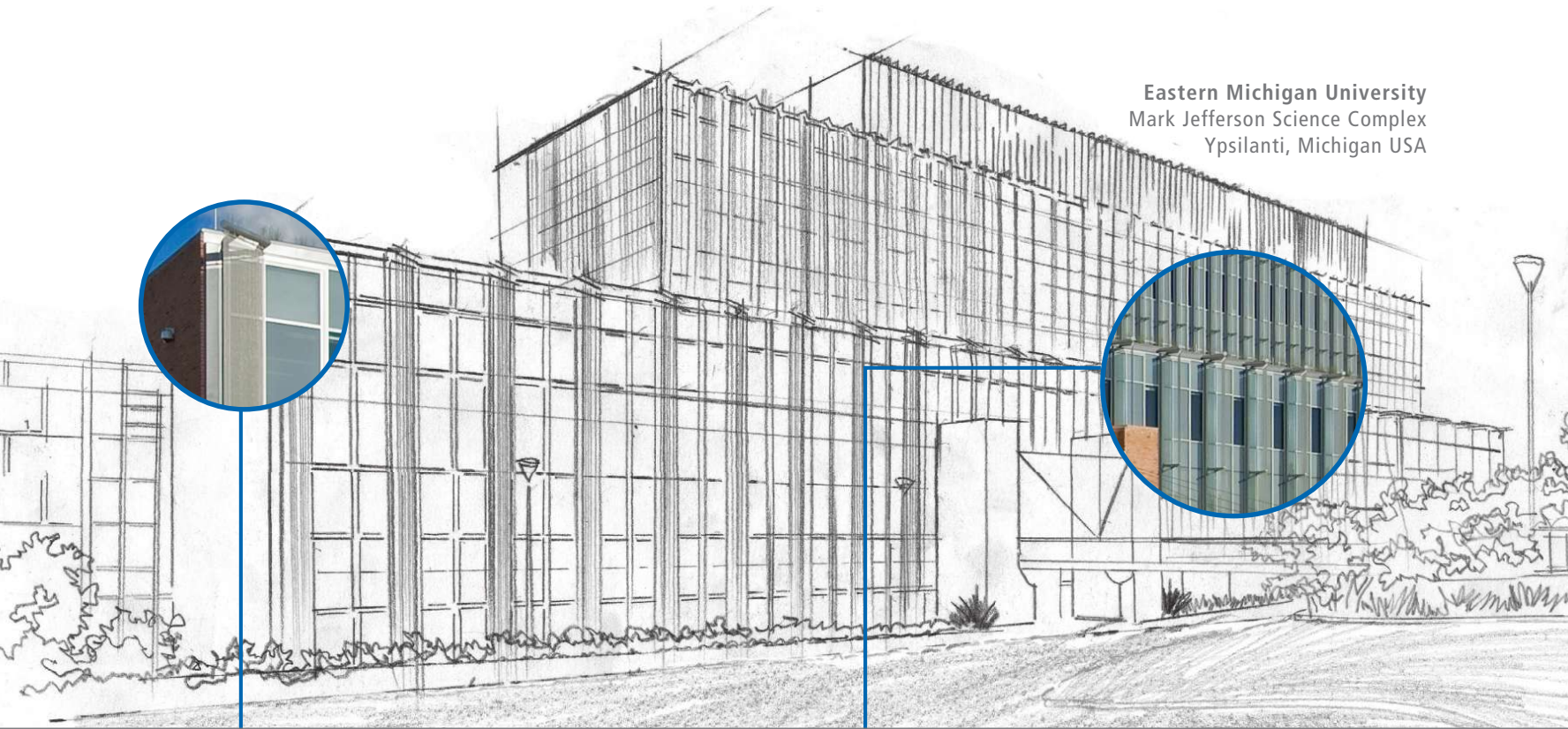


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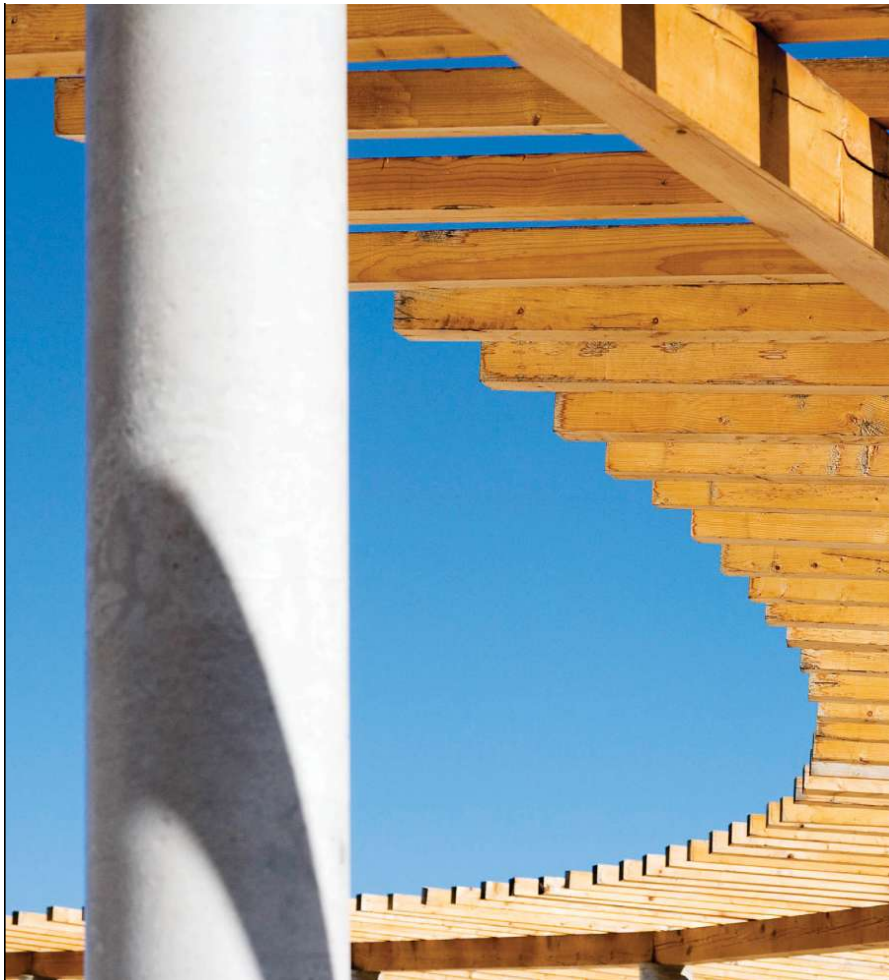


SONOTUBE® CONCRETE FORMS

Presents:

Strong and Smooth – Using Smooth-Finish Concrete Columns in Building Design

By Kathy Price-Robinson



Throughout architectural history, few features have preserved as have columns. Many materials have been used: wood, various stones, concrete; they have always required extensive labor and craftsmanship; until now.



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LEARNING OBJECTIVES

1. Describe how columns were used in ancient civilizations and how they help to define a space in modern buildings.
2. List the common materials used for concrete formwork and compare the ability of each material to provide a seam-free finish.
3. Describe how seam-free forms work, where they can be used, and at least two advantages over other form materials.
4. Describe the size and scale of the concrete and column work in the UT at Austin computer science complex.

When students, faculty and staff linger in the atrium of the new Bill & Melinda Gates Computer Science Complex at the University of Texas at Austin, they'll likely feel uplifted by the vast expanses of glass, the warmth of the wood railings and trim and floating bridges across the upper levels.

But the one architectural feature tying it all together- stately concrete columns - will likely escape conscious notice.

Yet those strong and smooth pillars evoke both thousands of years of history beginning with the birth of democracy and learning in ancient Greece, and provide a framework from which the rest of the stunning complex is hung.

The concrete, said Bill Butler, AIA, LEED AP, "adds an organic contrast to the finishes of the interior and will improve with age. The cement is locally sourced from native limestone to resonate with Austin culture."

Butler, a principal with Pelli Clarke Pelli Architects in New Haven, Conn., is the principal in charge of the \$120 million project.

"There is an honesty in expressing the concrete structure as it serves the building systems," Butler added. "This ordering device will modulate the flexible environments of the computer science department, providing a rich and varied interior workplace."

This article will discuss the history of columns in architecture, from wood to concrete, how concrete columns are formed, a growing movement toward smooth-finish columns, and finally a case study of the new Austin complex.

1. HISTORY OF COLUMNS IN ARCHITECTURE

Pelli Clarke Pelli as a firm is well versed in using columns in strikingly modern buildings. A good example is the Minneapolis Central Library, with two volumes around a commons, and large open floors structured by a grid of massive concrete columns.



Column forms are often placed around reinforcing steel before concrete is pumped into the forms. After the concrete has set, the form is removed.

Throughout human history, few architectural features have persevered as have columns. In a book titled "How Buildings Learn: What Happens After They're Built," author Stewart Brand, author of the Whole Earth Catalog, writes:

"... in matters of style, some elements seem to have lives of their own, like classical columns. A decorative Post-Modern column refers to the Beaux Arts column, which referred to the Renaissance column, which referred to the classical Roman column, which referred to the classical Greek column of stone, which referred to the earlier wooden column made of a tree."

Clem Labine, founder of Old House Journal, agreed: "While the popularity of classicism has certainly waxed and waned, there hasn't been a period in over two millennia when someone in some part of the world hasn't been fitting architraves across column tops."

"Modernism swore it would get rid of these pagan temple ornaments forever," Brand continued, "and the first thing Post-Modernism did was put them back."

In ancient Egyptian architecture as early as 2600 BCE, the architect Imhotep used stone columns with surfaces carved to reflect such natural symbols as bundled reeds. In most ancient Egyptian and Persian architecture, columns held up the roof inside the building, while the outside walls were covered with reliefs or paintings.

But the ancient Greeks used columns on the outside as well, and created massive temples beginning 600 BCE, as monuments to the gods. Religious followers were not required to gather in the temples for worship; rather the temples housed sacred statues. But over time, uses changed. The Parthenon, on the top of Acropolis and one of the most famous buildings in the world, was started in 447 BCE and finished in 432 BCE. It originally housed a massive statue of Athena Parthenos made of gold, silver and ivory, which the Romans reportedly rooted in the Fifth Century. The Parthenon later served as a fortress, a church and a mosque.

According to history books, the ancient Greeks originally made columns and posts of wood, and when a series of events brought Greeks into contact with

Egyptians, who had access to a harder stone than did the Greeks, they observed and learned new architectural methods for creating stone columns.

Some early stone columns were monolithic, making them among the heaviest stones used in architecture. In some cases, sectioned pieces were carved with a center hole so they could be pegged together.

Modern columns have purposes beyond holding up a roof. According to Christopher Alexander et al in "A Pattern Language:"

"A freestanding column plays a role in shaping human space. It marks a point. Two or more together define a wall or an enclosure. The main function of the columns, from a human point of view, is to create a space for human activity."

In the computer science building in Austin, which will be explored in more detail later in the article, the columns surrounding the atrium are both structural and space defining.

They signify, with the gravity of thousands of years of human history, that this is a meaningful place to come together.

2. HOW CONCRETE COLUMNS ARE CREATED

While columns and pillars of the ancient past were made of wood and then stone, many modern columns are made of concrete, an incredibly versatile, strong and durable material.

The creation of concrete columns involves setting up a well-braced form, usually with reinforcing steel inside, that is pumped full of fresh concrete mix and allowed to dry. Afterward, the form is removed.

For square pillars, builders may rely on wooden formwork built on site. But for round columns, pre-made formwork is the norm. Choices in pre-made forms include steel, fiberglass and fiber. Steel and fiberglass forms can be reused, which sounds appealing at first glance

for ecological and financial reasons. However, these methods bring several drawbacks.

Slow Pace of Concrete Placing

First and foremost is the need to set iron and fiberglass forms, then remove and reset the forms for subsequent column pours. Just one set-up can be difficult with heavy steel forms, which typically require a crane.

For a four-column pour and access to four forms, this is not an issue. The crane does its thing, the concrete truck comes one time, and all is well.

However, on larger jobs there may be, for instance, 60 columns to be poured and access to only 20 forms. That means the crane sets the forms in place, the truck arrives, places concrete in 20 columns, and then goes away until the crane readies the next set of forms. Rinse and repeat. Few project managers tolerate these delays gracefully.

Fiber forms, on the other hand, are used one time and so all columns can be formed and poured the same day. This means a speeding up of the construction schedule, a benefit for contractors, financiers and final users. For the bottom line, and bottom time, fiber forms make sense.

Cleanliness of Interior Form Surface

When steel and fiberglass forms are used over and over again, the interior surfaces must be meticulously cleaned between uses. If oils, chemical release agents, or dirt remain inside, the finished column will be marred and blemished, much to the ire of the architect's eye and intention.

Rust build-up inside steel forms bring the same result - columns marred and blemished.

In an attempt to correct these problems after the fact, workers labor to grind out defects and patch the flaws, which anyone in the business can tell you is a less than perfect art form, if it is done at all. Even with laborious rubbing, shadows remain.



Seam-free forms provide the desired finished look without having to sand, grind or otherwise re-finish the surface to remove or patch spiral seams, rust, saw marks, bug holes or other surface imperfections common with other forms materials.

Spiral Markings on Columns

Even fiber forms, used one time to avoid the delay, cleanliness and rust problems listed above, bring challenges to an architect's refined eye: spiral marks made by the form, and lines made by the skill saw used to remove the form. Once again, workers strive through many hours of labor to repair the appearance in aesthetically sensitive situations, and often with limited results.

"You won't get the look an architect's looking for if someone has to come in and grind that seam and patch over it," said Terry McKeon, national construction sales manager for a company that makes seam-free fiber forms. "You don't get the aesthetic architects want."

The good news is that most or all of these problems disappear with use of seam-free fiber forms, an innovative solution to column imperfections.

3. SEAM-FREE FIBER FORMS - HOW THEY WORK

When an architect specifies poured concrete columns for a project, a smooth, consistent, blemish-free surface typically

comes to mind. According to McKeon, who has been in the concrete form business for 28 years, a nicely poured column can come out looking like marble.

But the reality often falls short of that. Surface flaws in poured-in-place concrete columns happen for several reasons:

- Materials and contaminants on the interior surface of the form
- Rust on the interior of a steel form
- Spiral seams on the interior of fiber forms transferred to the concrete
- Saw marks from removal of fiber forms
- "Bug holes" from insufficiently vibrated fresh concrete (more on that later)

Seam-free forms, available in diameters from 12 to 42 inches and lengths up to 20 feet, eliminate the first four problems listed above.

Seam-free forms have two major advantages over other forms: they speed up production time and leave behind strong and smooth concrete columns without the need for labor-intensive grinding, fixes and patches. They do this with two strategies:



Seam-free columns were used throughout the Health Sciences Education Building, Phoenix Biomedical Campus, as shown in this design rendering by CO Architects with Ayers Saint Gross.

- Slick, spiral-free interior surfaces to which newly dried concrete won't stick.
- Stripcord removal system, eliminating the need for saw cuts.

Applications where smooth, seam-free columns may be desired include residential and commercial buildings and other structures, entryways and porticos, decorative and barrier posts, stub piers for elevated ramps, as well as outdoor sign, light pole and fence-post bases.

Slick Interior Surface Prevents Concrete Marring

The slick interior surface is key for columns free of marks made by forms. Think of it like a coating of glass inside the form, rather than the spiral lines seen on a toilet paper roll. The slick surface also resists any sticking of the concrete. (However, an optional added chemical release agent makes a sticking-free outcome even more certain, no matter the site conditions, mixture, and air temperature or humidity conditions.)

Once the concrete is placed in the form and allowed to cure for at least 24 hours but no more than five days, it's time to remove the form. It's here that seam-free fiber forms diverge from the norm, and are equipped with two "stripcords" on opposite sides of the form. Think of it like opening a FedEx envelope, where pulling on a filament cord easily cuts through the envelope.

Of course, a fiber form capable of containing massive amounts of concrete will require a stronger system than an envelope. On seam-free fiber forms, a length of filament extends past the form two feet on the top and bottom. To activate, a concrete worker wraps the filament around a hammer handle, pry bar or piece of iron and pulls the filament the length of the form.

Augi Sustaita, operations manager with American Pan Enterprises Company (APEC) who used the forms on the Computer Science Complex in Austin, found the method quicker and easier than using a saw.

"You just pull the cord," Sustaita said.

Fewer Potential Worker Injuries

On most jobsites, power saw use is not an extraordinary event. But when it comes to stripping forms off concrete posts, special circumstances complicate the process, increasing the potential for mishap or worker injury.

"A lot of times tubes are placed and poured on uneven ground," said McKeon, "causing a lack of stability when a worker has to climb to the top of the ladder to use the power saw to strip the column."

As you can imagine, standing on a free-standing ladder 12 feet above ground with a heavy saw in hand is difficult at best and can lead to disaster if the cutter loses his balance.

The article continues on www.hanleywooduniversity.com

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KEEPING
EMPLOYEES
ON TOO TIGHT
A LEASH IS
BAD NOT JUST
FOR MORALE,
BUT FOR
BUSINESS IN
GENERAL.

HAPPY PLACE

I **DON'T CARE** when the ARCHITECT staff gets to the office. There's no reason to be rigid about it. We're not one of those businesses that has an inherently fixed daily schedule, the way a trader is tied to the opening and closing bell or a clerk to store hours. Our art director arrives at the crack of dawn and usually is the first to leave, while the editors are generally mid-morning to early-evening people. As long as the work gets done on time and communication is effective, everybody's happy.

For reasons that a glance at a newspaper will explain, happiness is nothing to sniff at these days. That may be the biggest takeaway from this, our second-annual What's Next issue. Last January, working in collaboration with designer Bruce Mau, we cast the net as broadly as possible and covered advances in seemingly every area of architectural activity. This year, in consultation with the AIA's 2011 National Architecture Firm Award winner, BNIM, we focus on the architectural workplace and practice.

Turn to page 123 and you'll find interviews with leading practitioners, reports on best practices, research on professional attitudes, and even a manifesto by BNIM. There's a lot to absorb (and there's even more online), about topics ranging from telecommunications to space planning. And happiness pops up like a bunny as the central theme on practically every page.

It was feasible to dictate 9-to-5 office hours when the average employee had a stay-at-home spouse to cook the meals, get the kids to school, and starch those uniform button-downs. But with middle-class salaries stagnant, two-job families are the new norm, leaving nobody to tend the hearth. And making life even more complicated, laptops and smartphones mean that the workday never really ends, not at night, not on weekends, not even during vacation. Work has unilaterally invaded the home.

Partners and principals will find themselves under increasing pressure to loosen the constraints of the typical workday. This shift won't necessarily be easy for the boss: Architects tend to be controlling by nature. According to a prominent leadership coach and management consultant, fully a third of his hundreds of executive architecture clients falls into a single Myers-Briggs psychological profile, known as the Field Marshal. This type (there are 16 in total) only occurs in about 1.8 percent of the general population.

So managers who find themselves resisting flexibility should wonder whether they're motivated by legitimate business reasons (which is fine) or because they just feel better knowing where every single employee is at all times (which is definitely not fine, and probably generates a lot of unnecessary resentment among the staff).

In fact, keeping employees on too tight a leash is bad not just for morale, but for business in general.

The recessions of the late 1980s and mid-2000s have resulted in a shortage of Gen-X and Gen-Y architects and designers—and both age groups are hardwired to question traditional office culture. Firms may not feel the talent pinch right now, but the economy will rebound eventually, and job candidates who have plenty of options will be judging a prospective employer at least in part by the office culture. Sweatshop & Partners will not get its top draft picks.

I use office hours as an example because it's one small way in a relatively large corporation that I can set policy for my own team. By contrast, architecture firms are generally small businesses, so there are arguably fewer political and bureaucratic obstacles to the creation of a benevolent workplace.

Here are a few more ideas that you might consider for your staff or suggest to the boss: a monthly team lunch, a casual dress code, a weekly bring-in-the-kids day, an open pets-at-work policy, or even just free time to prep for the ARE, LEED accreditation, or CES courses. Personally, I wish I could bring my dog Mortimer to the office. My contentment level surely would spike if my best friend were napping under the desk as I read copy. My productivity would rise as well, if only because I wouldn't have to dash home to walk him every night.

I know a flexible work schedule isn't right for every practice. Fortunately, there are innumerable other ways to boost morale, and they don't have to entail a massive outlay of cash or buy-in from above. And it's an easy matter to demonstrate the return on an increased investment in human resources, by tracking absenteeism and employee-retention rates. Even if you have to go *mano a mano* with the managing partner to promote a happier office culture, it'll be worth the effort.

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LETTERS

LESS IS MORE?, November 2011

Thanks to you and writers Brad Grimes and Vernon Mays for the 2011 Solar Decathlon coverage. As the estimators and jurists for the affordability competition, as well as practicing architects and designers, we think that verifiable-cost and energy-use data are the tools to open home buyers' minds to sustainable architecture. Thanks to Richard King and the DOE for their foresight and commitment, and to getting the message out that sustainability is good for the environment and our bottom line. *Matt Hansen, Assoc. AIA; Ric Licata, FAIA, Reno, Nev.*

Thank you for putting us on the cover. We wanted to inspire the American people to think that solar living is possible *today*. With a grand opening for early 2012, the team is excited to have a deserving family in the INhome in West Lafayette soon. *Sarah E. Miller, INhome Purdue Solar Decathlon Team, West Lafayette, Ind.*

DISSECTING DIAGRID, October 2011

Note that the first of the contemporary generation of diagrid high-rise structures was the IBM Building in Pittsburgh (now the United Steelworkers Building)

[below]. It opened in 1963 and was designed by architects Nathaniel "Buster" Curtis Jr. and Arthur Davis of Curtis & Davis in New Orleans and structural engineer John Skilling of Worthington Skilling Helle & Jackson in Seattle (now Magnusson Klemencic Associates and Leslie E. Robertson Associates). Not only was this the first major diagrid building, it was the first to use three different grades of structural steel in the exterior to allow seamless integration of the architecture and structure. The red-painted steel members were the first to be 100,000-psi in a major building. This was also the first exterior "tube" building with 100 percent of the wind forces resisted by the diagrid. It represented a breakthrough on many fronts. *Jon D. Magnusson, Hon. AIA, Seattle*



ARCHITECTURE TO THE RESCUE, September 2011

I was disappointed to see that ARCHITECT didn't mention the AIA for Haiti efforts in the disaster-assistance issue. The effort was spearheaded by Stacy Bourne, AIA, Florida/Caribbean regional director under the aegis of George Miller, 2010 AIA president. Many AIA members are still involved. It produced two face-to-face meetings with Haitian architects in Puerto Rico and New Orleans, speaking engagements at the 2010 NOMA Convention, and an exhibition at the 2010 AIA Convention. The AIA's own publication shouldn't turn its back on its own effort. *Benjamin Vargas, FAIA, Puerto Rico, Cuba*

Below are comments from our website:

SINGAPORE'S URA: TOO MUCH PLANNING?, from our **Beyond Buildings blog** by Aaron Betsky

Dec. 6, 2011—1:54 a.m.

Looming like a sinister presence, absurd in scale, the Marina Bay Sands development cuts the city off completely from the sea, and hence from its history. Now the former waterfront is a traffic-dominated hell.

Dec. 6, 2011—2:55 a.m.

Singapore isn't the only place where large-scale planning has taken place. Give Marina Bay time to take on its identity. I doubt anyone really fancies "urban messiness."

Dec. 16, 2011—9:00 a.m.

As a Singaporean architect (who trained in the States), I think you hit the point spot on. The city's natural, ground-up, urban fabric has been systematically removed and not replaced.

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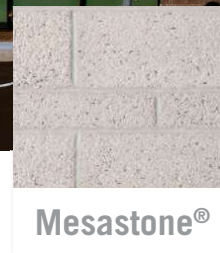
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Contributors



Aubrey Altmann

Aubrey Altmann is the senior art director for ARCHITECT. Her career with Hanley Wood precedes the publication: Altmann joined the company as a graphic designer eight years ago, rising to the title of senior designer while working on other publications. From the May 2007 issue forward, she has worked to realize the graphic character of ARCHITECT, establishing it as a leading brand in the field. In the magazine's five-year publication history, Altmann's leadership has earned the magazine numerous awards for excellence in design, including accolades from the American Society of Magazine Editors, the Society of Publication Designers, the Trade Association Business Publications International, and the American Society of Business Publication Editors, among others. She is also the senior art director for *Architectural Lighting* and *Eco-Structure*.

Originally from Cleveland, Altmann graduated from Virginia Polytechnic Institute and State University with a degree in industrial design. Prior to joining Hanley Wood, she worked as a designer for Black & Decker. An unapologetic Justin Bieber fan, she lives in Catonsville, Md., with her husband, two children, and chocolate Labrador, Winslow.

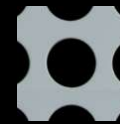
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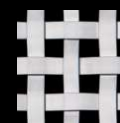
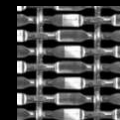
McNICHOLS® Designer Wire Mesh was used to construct the trendy signage for the Atlanta Urban Outfitters store in Atlanta, GA.

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The Hole Story



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NATIONAL BUILDING MUSEUM



Proposal for the Lincoln Memorial by John Russell Pope, 1912. National Archives and Records Administration, Washington, DC
Main elevation of Capitol competition entry by James Diamond, 1792. Courtesy of the Maryland Historical Society, 1976.88.51

Original photo by Scott D. Spagnoli

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NEWSWIRE

EDITED BY KRISTON CAPPS



SAN FRANCISCO CHRONICLE

Snøhetta expansion clips Botta staircase

The biggest change to the Mario Botta–designed SFMOMA building in Snøhetta’s recently released expansion design plans is the removal of the museum’s three-story granite staircase.



THE NEW YORK TIMES

Presidents announce energy initiative

President Barack Obama was joined by former President Bill Clinton to announce \$4 billion in public–private commitments for building renovations targeting energy efficiency.



PORTLAND TRIBUNE

Portland Building added to National Register

The 1982 building by Michael Graves & Associates, acknowledged as a pioneering Postmodernist structure, was added to the National Register of Historic Places in November.

Interior Design Billings Index

The American Society of Interior Designers’ Interior Design Billings & Inquiries Index witnessed a third quarter in which tight credit and weak consumer confidence hampered business conditions for the interior design industry.

The ASID Interior Design Billings Index fell to its lowest point in July, recovering slightly in subsequent months. The Billings Index was 45.1 in July and increased to 48.6 in August before declining again to 48.2 in September, never rising into positive territory (50.0 or more).

The Inquiries Index, on the other hand, performed slightly better, rising from 45.8 in July to a positive score of 55.1 in August.

Interior designers in the Northeast and West outperformed their counterparts in the Midwest and South, where Regional Indexes showed declines. With indexes of 54 and 53, respectively, the Northeast’s and West’s outlook was positive, despite the overall national downturn in the third quarter.

The Commercial Sector Index Means continued to show decline in the third quarter. And the Institutional Sector Index Means—constituting interior design services for government, education, and healthcare organizations—also fell in the third quarter.

At 50, the Residential Sector Index Means was positive, following single-family and multifamily housing increases in September—a month that also saw increased billings for all firm sizes except those with between two and nine employees.

KRISTON CAPPS

AIA Names New President, Awards

THE AIA BOARD OF DIRECTORS has announced two of its biggest awards of the year. Steven Holl, FAIA, was honored as the 68th recipient of the AIA’s Gold Medal, which recognizes an architect whose body of work has had an enduring influence on architectural theory and practice. The 2012 AIA Architecture Firm Award was awarded to VJAA, the Minneapolis-based practice led by principals Vincent James, FAIA, Jennifer Yoos, AIA, and Nathan Knutson, AIA. And this month, Jeffery Potter, FAIA, succeeded Clark D. Manus, FAIA, as the AIA’s president.

Founded in 1995, VJAA has won praise for its innovative designs, such as the integration of structure and skin at the University of Cincinnati’s Clifton Arc Gatehouse. Its pioneering use of energy modeling and sustainable design garnered the practice AIA/COTE Top Ten Green Projects awards in 2008 and 2009. Recent projects include the Central Campus Master Plan for Tulane University in New Orleans and the

Charles Hostler Student Center at the American University of Beirut.

AIA 2012 Gold Medal winner Holl founded Steven Holl Architects, a design firm of 40 employees with offices in New York and Beijing, in 1976. In Helsinki, the firm’s Kiasma Museum of Contemporary Art, with its swooping curves that mimic the surrounding landscape, plays on chiasma, described by *The New York Times* as “the crossing point of optic nerves.” His recent projects include Beijing’s Linked Hybrid, a ring of mixed-use towers connected by a 20th-floor skywalk, and Shenzhen’s Vanke Center, a horizontal skyscraper.

Jeffery Potter, FAIA, was inaugurated as the 88th president of the AIA on Dec. 9 at the Library of Congress. The vice president of Dallas-based Potter Architecture, Landscape Architecture, Planning, he has been an AIA leader since 1998. (See page 54 for Potter’s first Perspective column as AIA president.) ALEX HOYT



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Pay Name	Regular	OT	Sick Pay
of Lily Wong	40	5	
of Eloisa Castillo	40	5	

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*Based on the Hoover's Report as of October 13, 2011.

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→ NUMBERS

Construction Dysfunction

IF THERE CAN'T BE A RECOVERY WITHOUT NEW CONSTRUCTION, THEN THE LAST YEAR SHOWS THAT RECOVERY IS STILL A WAYS OFF.

TEXT BY KRISTON CAPPS

7,700

LARGEST NUMBER OF JOBS LOST, IN ATLANTA

SOURCE: ASSOCIATED GENERAL CONTRACTORS OF AMERICA

24

LARGEST PERCENTAGE OF JOBS LOST, IN LOGAN, UTAH

SOURCE: ASSOCIATED GENERAL CONTRACTORS OF AMERICA

5,100

LARGEST NUMBER OF JOBS GAINED, IN HOUSTON

SOURCE: ASSOCIATED GENERAL CONTRACTORS OF AMERICA

28

LARGEST PERCENTAGE OF JOBS GAINED, IN LAKE COUNTY, ILL.

SOURCE: ASSOCIATED GENERAL CONTRACTORS OF AMERICA

337

TOTAL METRO AREAS MEASURED BETWEEN OCT. 2010 AND OCT. 2011

51

AREAS WHERE CONSTRUCTION EMPLOYMENT DID NOT CHANGE

140

AREAS WHERE CONSTRUCTION EMPLOYMENT INCREASED

146

AREAS THAT LOST CONSTRUCTION JOBS

FEDERAL RESERVE CHAIRMAN BEN BERNANKE, during testimony to Congress earlier in the year, said, "It's normal for housing and construction to be an important part of the recovery." In that case, we're in for a long economic winter.

Between December 2007 and February 2010, the economy shed some 2 million construction jobs—22 percent of total jobs lost, according to a report by the Motley Fool. Another 1.6 million jobs followed as a knock-on effect of curtailed spending by those workers who had lost their jobs. That adds up to 40 percent of all jobs lost.

The last year has not shown appreciable improvement for construction, according to a new report released by the Associated General Contractors of America. Between October 2010 and October 2011, the majority of U.S. metro areas either lost jobs or reported no new jobs in construction.

A stalled Congress that has yet to pass new infrastructure legislation is partially to blame: A failure to move federal bills on transit, highways, and water has led to slower infrastructure planning at the state and local levels.

Some metro areas will end 2011 in the black. Those that added jobs include Houston; Columbus, Ohio; and Buffalo–Niagara Falls, N.Y. The worst-hit metro areas were hit hard: Wilmington, N.C., for example, saw a 21 percent decline in construction employment. Even when the national appetite for construction returns, it may take time before orders can be filled, given the sheer number of jobs that have disappeared. □

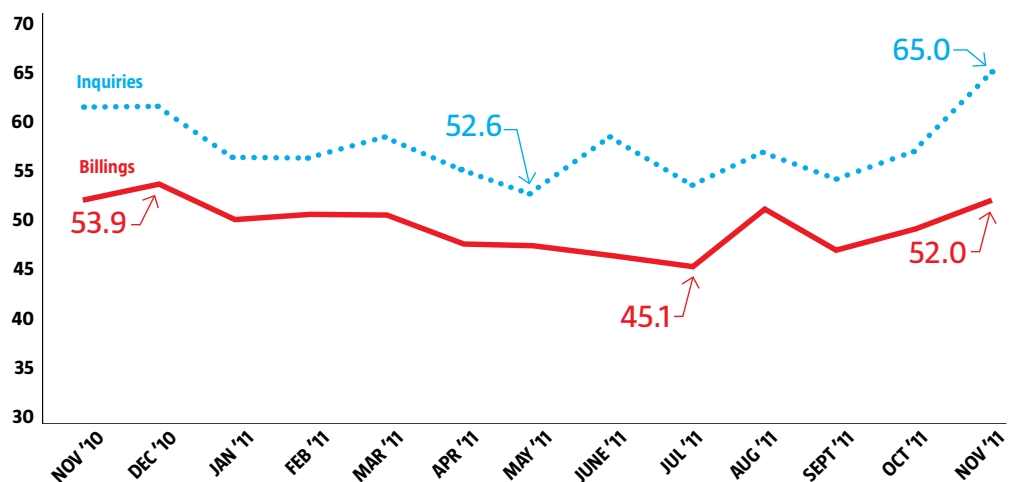
NOVEMBER 2011 ARCHITECTURE BILLINGS INDEX

↑ 52.0

- ↑ 53.9 commercial
- ↑ 48.9 institutional
- ↓ 41.6 mixed practice
- ↑ 55.8 multifamily residential

SOURCE: AIA

BILLINGS AND INQUIRIES INDEXES



Make it a double.



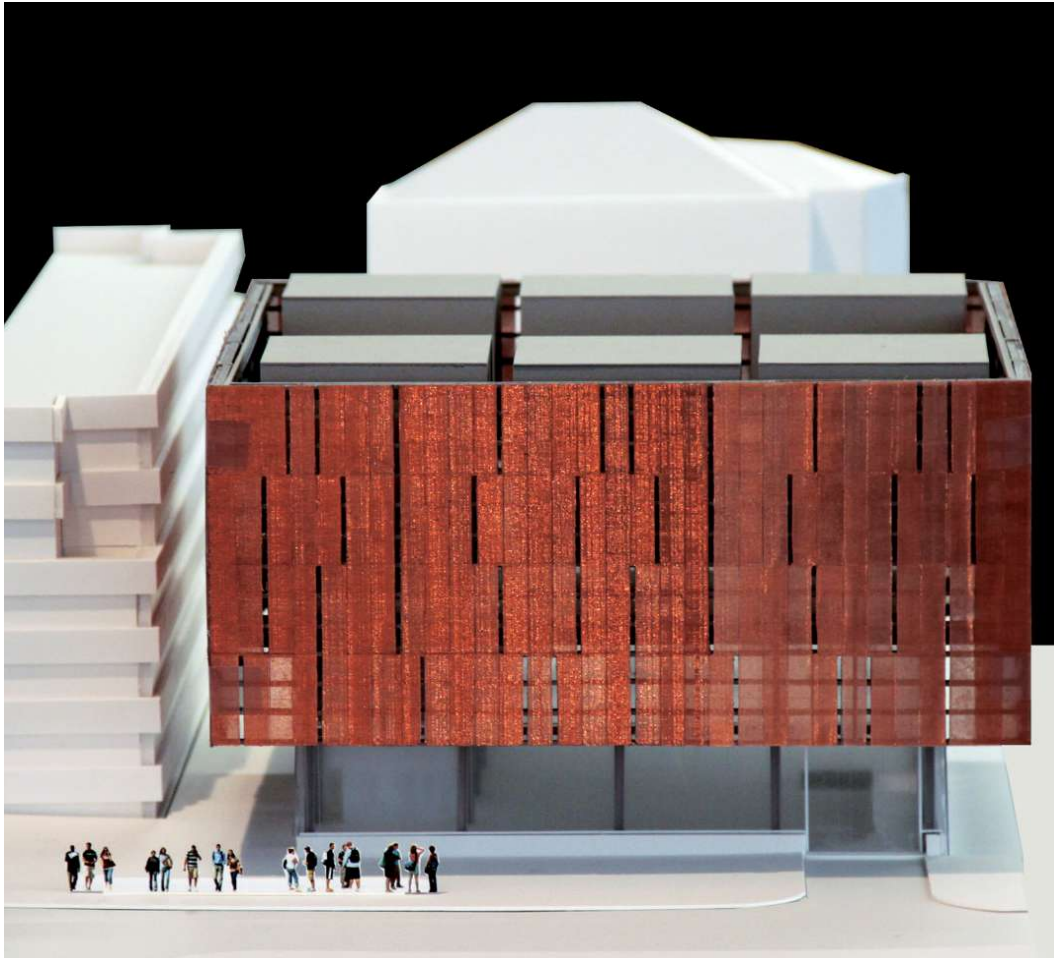
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On the Boards

TEXT BY KATIE GERFEN



Ohio State University East Regional Chiller Plant

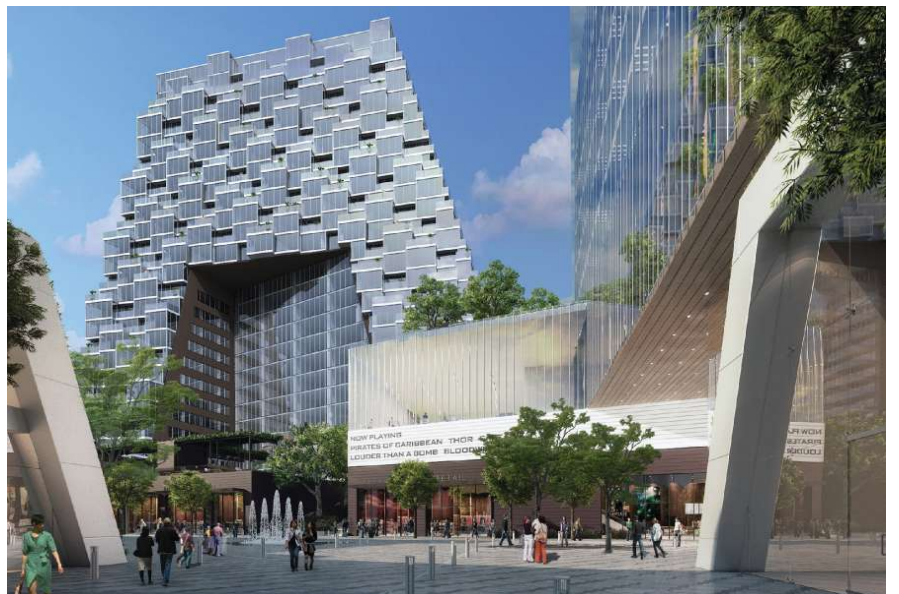
LEERS WEINZAPFEL ASSOCIATES ARCHITECTS

The 23,163-square-foot East Regional Chiller Plant at the Ohio State University in Columbus, Ohio—designed by Boston-based Leers Weinzapfel Associates Architects—will provide cool water to surrounding university buildings. The structure comprises two slipped volumes: a glass-encased rectangle at the ground plane that houses six chillers and a perforated metal screen that extends up from the mezzanine level to serve as a cooling-tower enclosure. “We worked very hard to keep this building small—in footprint and in overall impact,” says principal Jane Weinzapfel, FAIA. The glazing incorporates a translucent frit, and, at night, the interior is lit to give a diffuse glow through the glass and slits in the metal screen. The purpose is to “enhance the pedestrian experience and be able to see something lively both day and evening,” Weinzapfel says. Several materials are currently undergoing testing for the screen, including copper and coated- or anodized-aluminum. Cincinnati-based GBBN Architects is serving as executive architect on the project, and the team is targeting a completion date in 2014.

North Bethesda Market II

STUDIOS ARCHITECTURE

Located on Rockville Pike, just outside of Washington, D.C., North Bethesda Market II (NOBE II) is a 970,000-square-foot mixed-use development with retail, office, and nearly 350 residential units. Designed by Studios Architecture for developer the JBG Cos., NOBE II is anchored at the northwest corner by a residential tower; the southern and eastern edges of the site are lined by lower retail and office volumes. A central plaza can play host to farmers markets, musical performances, and other entertainment. “I think there’s the desire to really engage in more than just a retail experience,” says David Burns, a principal in Studios’ New York office, and instead be “a real center to the community.” The stepped southern face of the residential tower “takes the building and tips it back, so that from the plaza, the sky really opens up,” Burns says. The curtainwall, which is composed of several modules of varying depths, allows for deep balconies and exposure to natural light for each unit. The complex should open in 2014.



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PHOTO: DANA HOFF

AIA VOICES

KEEPING THE FLAME ALIVE

During his entire career, Cecil A. Alexander Jr. FAIA, both advocated for basic civil rights and significantly contributed to the Atlanta skyline as a principal of Finch, Alexander, Barnes, Rothschild and Paschal (FABRAP). A 2001 recipient of the AIA Whitney M. Young Jr. Award for his work on social issues, Alexander has achieved a rare balance between activist designer and design activist. “As an architect,” he says, “I did well by trying to do good.”

When I heard about the horrors of the Holocaust from Jewish survivors in 1941, I temporarily lost all interest in architecture. For four years, I halted my graduate studies at the Massachusetts Institute of Technology and flew 60 missions as a dive-bomber pilot. The thought of possibly killing and wounding hundreds of human beings haunts me at times, but I helped our country to destroy the forces of tyranny.

At the end of the war, I enrolled in Harvard’s school of architecture, where Walter Gropius and Marcel Breuer shaped my Bauhaus philosophy about architecture. One classmate, however—a former Tuskegee Airman named Conrad Johnson Jr.—influenced my transition from a “good ol’ Southern boy” to a civil-rights fighter. My friendship with Conrad lasted for decades.

Back in my hometown of Atlanta, I protested against a racist system that limited the opportunities for black Americans like Conrad, despite their skills or service to our country. As

the president of AIA Atlanta, I urged architects to work for the elimination of segregated slums and the development of more humane housing. In response, the late Mayor [William B.] Hartsfield appointed me chairman of the Federal Urban Renewal Program in the 1950s, and I started my role as an adviser to mayors and legislators.

The campaign to help desegregate public housing, businesses, and schools consumed much time during my career, but also gave me contacts leading to several major commissions for FABRAP, including the Coca-Cola headquarters, the First National Bank tower, and the now-demolished Atlanta-Fulton County Stadium. FABRAP became a 300-person firm that designed corporate headquarters, laboratories, and sports stadiums across the United States.

My retirement from FABRAP in 1985 didn’t temper my civil rights work. In hopes of uniting white and black Georgians, I decided on my own to draw a new state flag, removing its divisive Confederate symbols, in 1993. My redesign of this flag flew over Georgia from 2001 to 2003.

I have many interests—architecture, art, international relations, flying, drawing, and poetry—and these days I create conceptual designs for a memorial to honor the late Atlanta Mayor Ivan Allen Jr. I collect material for my unpublished biography. I recite poetry to my wife, family, and friends. Age has slowed me down, but it hasn’t stopped my passions in life. —As told to Melody L. Harclerode, AIA **AIA**

AIA 2012

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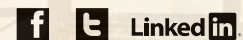
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AIA VOICES

LEADING THE CHARGE



PHOTO: GREGORY COWLEY

Raphael Sperry, AIA, LEED AP, sees social justice as today's civil rights—they both center on the human rights challenges affecting communities. As a senior consultant at Simon & Associates Inc., in San Francisco, and recipient of the 2007 AIA San Francisco Young Architects Award, Sperry combines architecture and social justice as interdependent pursuits. Sustainability is part of that relationship, and Sperry spearheads initiatives to combine green building with social consciousness.

My current volunteer work for Architects/Designers/Planners for Social Responsibility (ADPSR) and my consulting work in the green-building industry capture my zeal for sustainability. Think of sustainability as a three-legged stool supported by economy, environment, and equity. With economy, architects must find a way to design the buildings that people need and can afford. In terms of the environment, our profession is responsible for the quality of the built environment and its massive impact on natural systems. Equity is the big missing piece with this metaphor. Real sustainability requires everyone to buy in and to benefit, particularly those historically underrepresented communities such as minorities and the poor.

My mother and father spoke strongly about their political beliefs as I grew up in New York City. They supported a nuclear freeze, criticized the United States government for supporting the Contras in Central America, and discussed human rights issues around the world. I shared their outspokenness as I moved to San Francisco after graduating from the Yale School of Architecture.

San Francisco offered a slower pace of life and easy access to hiking trails. Since I've been here, I protested the buildup to the Iraq war starting in 2003—detesting how our government used unrestrained violence in past wars to promote its interests. About the same time, ADPSR invited me to join their board, and later I became the organization's president. ADPSR comprises design professionals advancing peace, sustainability, and social justice. It's a nonprofit group, and it seeks alternatives to incarceration as the punishment for crime. We support people like civil rights litigator Michelle Alexander, who criticizes our penal system for its racial disparity among prisoners.

Our group launched the Prison Design Boycott in 2004. ADPSR calls for architects, designers, and planners to boycott bids for new jails and prisons. The campaign encourages the implementation of preventative crime measures which would involve architects in the construction of more-affordable housing and community centers. Unfortunately, the State of California hasn't lessened its harsh approach for dealing with crime.

Still, I strive to bring sustainability and social justice together through my different kinds of work. Just as architects now realize how sustainability is connected to the built environment at a deep level that touches every project, I hope we might begin to realize that every decision about what to build has a big impact on the social equity in the communities where a project is located.

—As told to Melody L. Harclerode, AIA **AIA**



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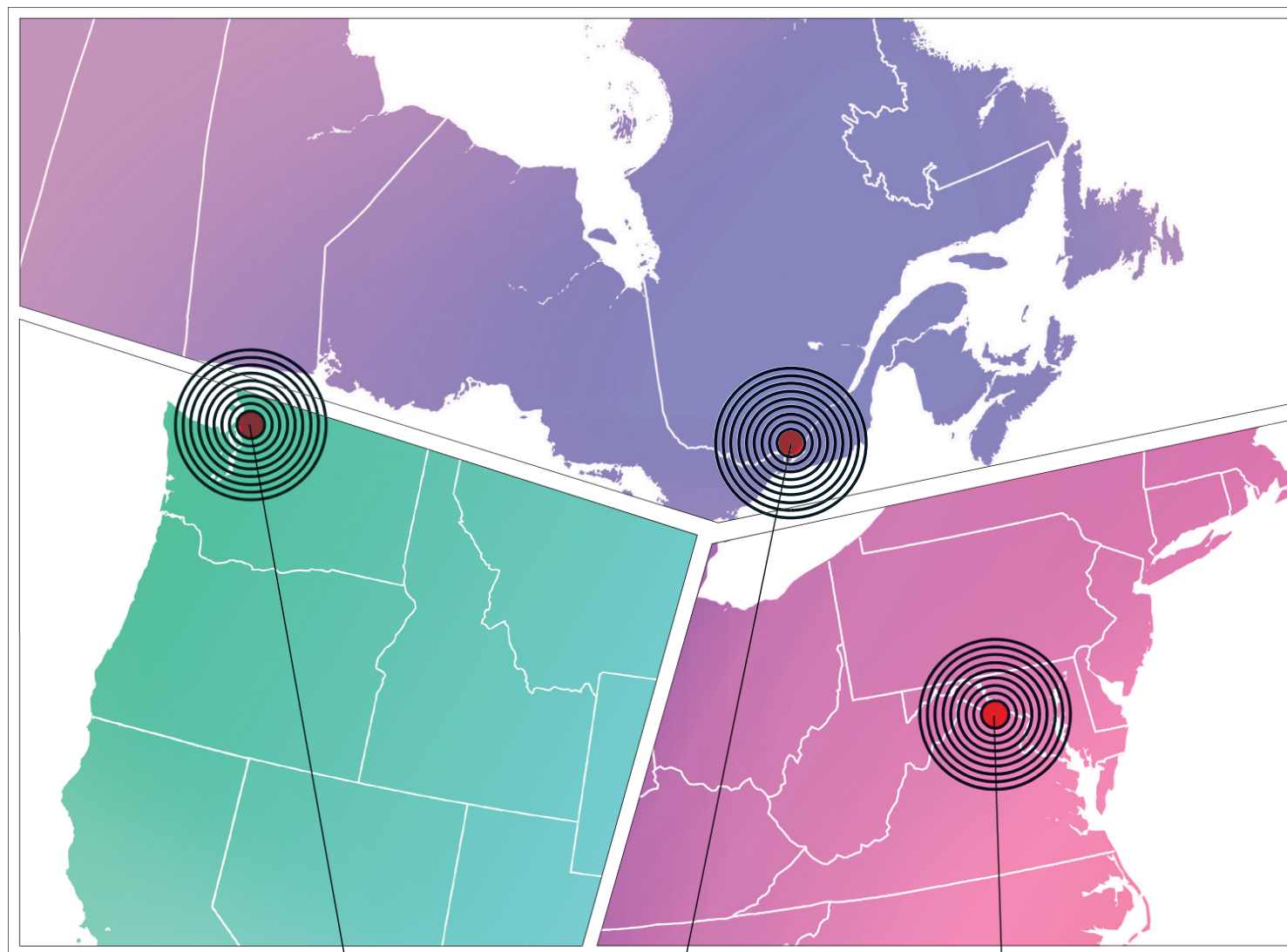


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AIANOW

ACROSS THE INSTITUTE



VIRTUAL

Modal Groove

Richard Saul Wurman, whose brain his wife once described as a “cellular Cuisinart,” has spent a career making things clearer for people to understand—geography, processes, medicine, data points, and information. As founder of the wildly popular TED Conference, he rewrote the rules for enticing brainy people to speak just as clearly to an unspecialized, if curious, audience. With the WWW.WWW Conference (Sept. 18–20), he’ll attempt to rewrite the rules, again: no presentations, no agenda, no public tickets—just 66 name brands performing so-called “intellectual jazz” for a live stream and tablet app.

➔ Learn more at thewwwconference.com.

SEATTLE

Future Anterior

The 1962 Century 21 Exposition, better known as the Seattle World’s Fair, presciently laid out a global agenda of bits, bytes, and scientific advancement. It was a safe bet: We’d be on the moon within the decade, digital storage usurped paper files, and the structural grace of Minoru Yamasaki’s Science Pavilion or the John Graham/Victor Steinbrueck/Paul Thiry Space Needle has been referenced many times over. This year, the Seattle Center Foundation marks the 50th anniversary of the fair with a series of events that celebrate Seattle and the future that came to be.

➔ Learn more at thenextfifty.org.

MONTREAL

Medical Inquiries

“Public health” and “wellness” are terms that have helped refine the nebulous term “sustainability” in recent years. It’s a good thing, too, at a time when anxiety about our planet’s future continues to mount. How do the practices of architecture, planning, and landscape architecture create solutions, and what are the issues behind the hype? The Canadian Centre for Architecture (CCA) explores these questions and others in the exhibition “Imperfect Health: The Medicalization of Architecture,” which runs through April 15.

➔ Learn more at cca.qc.ca/en and in this month’s AIA Feature.

WASHINGTON, D.C.

Number Crunch

The National Architectural Accrediting Board (NAAB) has begun preparing the 2013 Accreditation Review Conference (ARC13) to study accredited architectural education. Assisted by McKinley Advisors, NAAB convened nine focus groups and surveyed architects, educators, interns, and students last year. When “NAAB Conditions for Accreditation” is released in 2014, it will draw together traditional and nontraditional professionals, as well as educators and students.

➔ Learn more at naab.org.



AIAPRACTICE

KEEPING TABS



ILLUSTRATION: VIKTOR KOEN

Tracking firm finances can be a full-time job, but it doesn't have to be.

IT HAS BEEN SAID THAT SMALL BUSINESSES ARE the backbone of the nation's economy, and that's no different for the architecture industry. In 2008, 141,200 people across the U.S. were employed as architects, with most jobs found at small architecture firms, according to the U.S. Bureau of Labor Statistics. Roughly 21 percent of those architects were self-employed, almost three times as high as all other occupations.

While a significant number of small architecture firms are making a go of it, the reality is that those same architects go about their business day-to-day without the resources of much larger firms, especially when it comes to maintaining their financial health. It's a void that principals of small firms can't ignore. That's why vigilance may be the best strategy for successfully managing a business in a tough and increasingly competitive economy.

Tom Lenchek, AIA, principal of Balance Architects in Seattle says that the financial health of his seven-person firm relies on his ability to effectively allocate staff time to "the tasks that need to be done," while delegating responsibilities for billing, time-keeping, project tracking, and all of the other financial must-dos.

"The big challenge is to get all that stuff done, but then also still have some time to do at least some architecture, so I just don't end up being a manager," Lenchek says.

Belmont Freeman, FAIA, of Belmont Freeman Architects, a New York City-based firm also with a staff of seven, prefers, as Lenchek does, to delegate some of the firm's financial management to individual project architects. Freeman works particularly closely



with his senior associate architect, who, he says, "has more business sense than I do."

"It's good to have an associate in the office with whom I can discuss the finances of different projects, how to staff them, and how to push them forward," Freeman says.

AIAPRACTICE



Without the help of a full-time accountant, director of finance, or business manager on staff, principals such as Lenchek and Freeman have instead created processes that allow them to continually examine, on a regular basis, financial-performance measures including payroll, gross billings per month, gross income, and net income.

“I track a few key indicators that give me an indication of where we’re heading, how we did last month, where we are probably headed next month, and I just track those every month,” Lenchek says. “Over a number of years, I can get a feel for where things are at.”

Another resource that Freeman turns to for help is an outside business-management consultant, who comes in once a month to review how the firm is doing. Like Lenchek, he has learned how important it is to monitor closely the financial health of different projects and the history of the firm overall. “I was taught very early on by this consultant that the numbers you don’t quantify and look at regularly are never going to improve,” Freeman says.

Leaders of small firms should also take advantage of the everyday resources available to them, the way that Steven Fichtel, AIA, a sole practitioner in Minneapolis, does. “I try to look at business publications—magazines and newspaper articles that have to do with business in general—and always think about how this applies to my small architectural practice,” he says.

Fichtel is also active in his state AIA’s Small Firms Practice Committee, which he looks to as a source of support and face-to-face exchanges. The national AIA has a similarly organized Small Firm Round Table, and there are comparable groups at AIA chapters nationwide. Fichtel, who serves as committee co-chair, says that his group meets once a month to discuss a range of design and business topics unique to small architecture firms.

“The big challenge is to get all that stuff done, but then also still have some time to do at least some architecture, so I just don’t end up being a manager.”

“Being involved in these committees and the AIA has given me some discipline, and [has] given me some structure,” Fichtel says. “In other words, I’ve been more mindful of what I’ve been doing with my business, and what some of the issues are that I need to continue to pay attention to.” —By Jennifer Pullinger **AIA**

➔ To learn more, visit aia.org/practicing/business.

Keeping tabs on your resources

Small Business Software:

- QuickBooks (quickbooks.intuit.com)
- BillQuick (bqe.com)
- Quicken (quicken.intuit.com)
- ArchiOffice (bqe.com/default_ao.asp)

Mobile Apps:

- Expensify (expensify.com): Keep track of receipts, spending, hours, and mileage, and create expense reports.
- InDinero (indinero.com): Get a snapshot of the financial health of your firm from the palm of your hand with this small-business accounting app.
- 2Do (2doapp.com): Create to-do lists, set priorities, get reminders, organize calendars, and more.
- Drawvis (dotsystems.pl/products/drawvis): View technical drawings in AutoCAD DXF textual format and add sticky, voice, and image notes.
- Quickoffice (quickoffice.com): Create, edit, and share Word documents, Excel spreadsheets, and PowerPoint presentations on the go.

Books:

- *The Architect’s Guide to Small Firm Management* by Rena Klein (John Wiley & Sons, 2010)
- *Time Management for Architects and Designers* by Thorbjørn Mann (W.W. Norton, 2004)
- *Architect’s Essentials of Starting, Assessing and Transitioning a Design Firm* by Peter Piven and Bradford Perkins (Wiley & Sons, 2008)
- *Talent Is Not Enough: Business Secrets For Designers* by Shel Perkins (New Riders, 2010)

Websites:

- U.S. Small Business Administration (sba.gov)
- aecKnowledge (aeknowledge.com)
- Score (score.org)



NEREA CALVILLO, ARCHITECT, IN COLLABORATION WITH C+ ARCHITECTOS AND IN THE AIR, TOXIC TOPOGRAPHY OF BUDAPEST, HUNGARY, 2008. IN THE AIR

Accentuate the Positive

Salutogenic design, grounded in biomedicine and psychology, may be the key to turning sustainability into more than a buzzword.

BY BILL MILLARD

ALAN DILANI HAS TAKEN OVER 100 FLIGHTS THIS YEAR.

As director general of the International Academy for Design and Health (IADH), he's a globetrotter, a lecturer, and a consultant in constant demand from Cape Town, South Africa, to Brisbane, Australia, to Trondheim, Norway. Considering the airborne pathogens, circadian-rhythm derangements, and relentless hassles of frequent flying, he by all rights ought to be chronically exhausted or worse. Yet he never takes medications. He sees physicians, but not as a patient. And, according to him, he never gets sick.

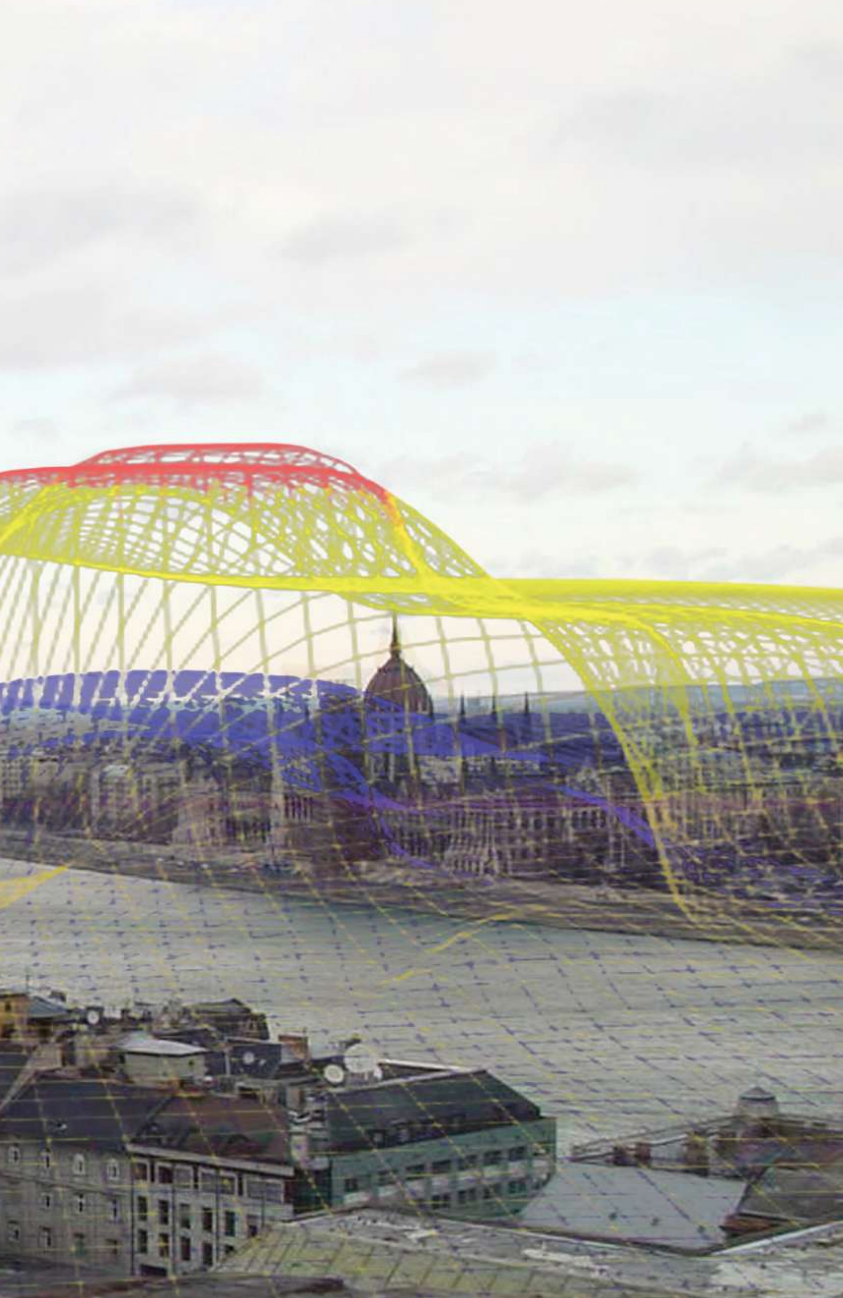
His secret is *salutogenesis*, which is to say a belief that, in order to be healthy, you have to address the root of unhealthiness rather than merely treat the illness.

Dilani is among the global leaders in the movement to incorporate salutogenic strategies into design on multiple levels. Single buildings can accomplish this with natural light, viewsheds, ventilation, nontoxic materials, prominent and welcoming staircases rather than elevators, serene colors, and clear wayfinding signals. Neighborhoods can relieve food deserts, include safe and well-lit sidewalks, and accommodate bicycle paths to make physical activity an easy choice, rather than an out-of-the-way recreational option. Cities can make room for town plazas, unfold according to a simple street grid, and replace congested arterial roadways.

Architects, planners, and public health officials have known about these strategies for a while. But what makes an idea such as salutogenesis useful is that it unifies the elements of smart cities, green communities, and eco-districts. Salutogenesis refines the principles of Smart Growth and New Urbanism; it also contributes to other initiatives, such as the Active Design Guidelines (ADG) developed by five municipal agencies—the New York City departments of Design and Construction, Health and Mental Hygiene, Transportation, City Planning, and the Office of Management and Budget—and AIA New York. For Dilani, salutogenic strategies go beyond hospital healing spaces or community fitness programs to find the foundations of somatic health and disease. And if he's right, these strategies will revolutionize how architects practice.



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In some respects, salutogenesis applies simple common sense to the relationship of environments, bodies, and minds. What makes it a coherent school of thought is its reliance on interdisciplinary research, connecting biomedical knowledge with an explicit mission to place human well-being—not financial imperatives—at the center of creative strategies. But it’s a far cry from feel-good crunchiness or hair-shirt asceticism. Since the benefits it generates include measurable gains in productivity and reductions in expenditures, it also offers clients a persuasive business case. It’s now embedded in national AIA policy through the new America’s Design and Health Initiative, currently producing a body of evidence, a research agenda, and recommendations for architects and officials that are promoted via articles, podcasts, and a recent workshop.

Ray Pentecost, FAIA, president of IADH and vice president and director of healthcare architecture at Clark Nexsen, draws parallels between high-performance, energy-conserving design and design for health. Now that sustainability has expanded from a small subspecialty to what is essentially a professionwide norm, he believes that it’s time for salutogenic design to become the next great wave of theory and practice. “The projects that don’t have it [salutogenic strategies] are going to fall out of favor in the same way that construction for fire safety became more than an option,” he says. When clients understand how much healthier their world

could be, “the architects who aren’t doing it won’t stay around,” he says.

Biology, behavior, and built spaces

The underlying biology of stress and relaxation is well understood, says Dr. Esther Sternberg, a medical researcher and author of *Healing Spaces: The Science of Place and Well-being* (Belknap, 2009). Any kind of stress triggers the hypothalamus (the brain’s stress center), pituitary gland, and adrenal glands to produce a cascade of hormones that aid in short-term fight-or-flight survival reactions. Those hormones also dampen inflammatory immune mechanisms. Stress responses don’t directly make us sick, she reports, but they can weaken our resistance to ever-present pathogens, particularly if they recur enough to become a chronic state.

Relaxation, conversely, triggers the brain’s “reward and anti-pain pathways” by releasing endorphins and dopamine. Since these responses developed over our long evolutionary history, during most of which our ancestors spent immersed in nature, it’s no accident that most of us find natural environments and biomimetic patterns (such as those found in fractal geometry) regenerative. The brain’s functional centers even include what Sternberg calls a “beautiful-view spot,” which University of Southern California neuroscientist Irving Biederman has discovered is rich in endorphin receptors.

That looking at certain spaces and forms might be “giving yourself a shot of endorphins” remains just a hypothesis, Sternberg says, but it is congruent with popular aesthetic experience. The brain also has a site for recognizing buildings, she says, which some evolutionary biologists believe involves our response to mountains and other large navigational cues. And as for the question: Why did such brain areas evolve? “I suppose God is an architect,” she speculates.

Dilani and Pentecost hold that salutogenic design connects these areas of physiological knowledge with the insights of American-Israeli sociologist Aaron Antonovsky, who originally coined the term—an awkward hybrid of Greek and Latin. In his research, Antonovsky identified certain “generalized resistance resources” that foster physical vigor and mental composure by studying the human response to extraordinarily bad conditions, such as concentration camps. People who find their environments manageable, even if those settings are rife with stressors, develop a personal sense of coherence and are better able to sustain health as the World Health Organization defines it: a state of optimal physical, mental, and social well-being; not only the absence of disease and disability.

Antonovsky surmises that because everyone is surrounded by opportunities to be sick, stress is what determines why some people get sick and others never do. “Health is a process,” Dilani says, “composed of psychosocial factors, lifestyle, and experience.”

The rediscovery of agency

For all of biomedical science’s impressive achievements in treating illness, it has not been as successful in promoting wellness. Industrial societies have built some of the most toxic and disturbing environments in human history. And though the United States outspends all other nations on medical care, its obesity, infant mortality, and life-expectancy rates are not excellent. Traditional public-health doctrine views disease as a triangle represented by an agent, a host, and an environment. If you block any point in the triangle (for instance, keeping people away from infectious organisms or out of toxic environments), you can



COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART, VIEW OF THE ENTRANCE STAIR, NEW YORK CITY, 2009, IWAN BAAN, PHOTOGRAPHER. © IWAN BAAN



prevent disease from spreading. Dr. Lester Breslow, dean emeritus of the UCLA School of Public Health, has identified three eras in world public-health history: first, from ancient times to the early 20th century, emphasizing communicable diseases such as small pox or malaria; second, the beginning of the 20th century, emphasizing chronic or non-communicable diseases such as obesity or Type II diabetes; and third, more recently, accepting personal responsibility for health.

A pathogen-control approach succeeded spectacularly in the first of Breslow's phases of public health, when acute infectious conditions were the chief concerns. But the subsequent focus on the pathogenesis of chronic disease has perpetuated "the mind-set that we often get sick because an agent gets to us or something happens to us; that it's somehow not our fault," says the IADH's Pentecost. "This masks the central role that each of us plays in our own health, and that design can play. Public health should enable us to do what it is that we want to do. That means taking personal responsibility, and that's where salutogenesis can have a great impact. It's where we say we're no longer going to settle for design that is simply profitable, or efficient, or sustainable, or programmatically compliant, or any of a dozen other measures of design success; we are going to look for design standards that address and respect public health."

In 1984, while teaching at Texas A&M University, the evidence-based design expert Roger Ulrich observed that good design could have a quantifiable impact on wellness. Faster post-surgical recovery rates, lower pain-medication requirements, and even better staff interactions with patients could be tied directly to building and interior design decisions. Since then, just as evidence-based medicine has revised traditional practices in healthcare, evidence-based design in medical facilities has led to improvements in patient outcomes, lower rates of iatrogenic injury (or medical error), higher rates of staff satisfaction, and other measures of how environments support healing.

Although some improvements derived from evidence-based design map onto familiar green-design strategies, Pentecost cautions against a general presumption that the validity of these ideas translates automatically across domains. Evidence-based design is a young field with

a developing research base, initially derived largely from the hospital sector; its advocates recognize the risk of overpromising, and it has its skeptics. Dilani, for one, views it guardedly, noting that "evidence-based design" is often used merely for marketing, especially in the U.S. "Design is not science; design is creativity," he comments, noting that the diversity of design solutions in different cultures contrasts with the clear conclusions and implications of evidence-based medicine.

At its most useful, though, the grounding of design in quantifiable results can guide cost-effective architectural and operational decisions. It can also help take the passivity out of the patient role, fostering conditions where patients' healing capabilities have a better chance to operate.

The human factor and the business case

In his forthcoming book, *Sprawling Cities and Our Endangered Public Health*

(Routledge, 2012), Clemson University architecture professor Stephen F. Verderber, Assoc. AIA, identifies an economic and political "sprawl machine" that has replaced natural ecologies. He argues that it has also replaced vernacular building traditions with cookie-cutter typologies. "Architects have aided and abetted this horizontal growth pattern for 50 years without really thinking very carefully about the health consequences of what they're doing from a community-health standpoint," Verderber says. "Architects were developing new building types for suburbia and designing buildings on individual sites without thinking of the systemic implications of what they were doing."

Verderber's book offers design guidelines, which he describes as "a synthesis of landscape urbanism and the best principles of New Urbanism [in] a 'both/and' proposition" to marshal those contending philosophies in the interests of promoting health and reviving traditional communities.

Clemson's Architecture and Health concentration has made it a leader in healthcare facility design, but its students also look more broadly at public health concerns. "In the evolution of healthcare architecture in the U.S. in mid 20th century," says program director David Allison, FAIA, "we migrated towards a line of thinking of an absolute belief in technology." Hospitals became driven by functional efficiency, he says. "We made very efficient technological factories for delivering healthcare, but up until the last decade or two we left out the human aspect." Allison often looks to European and Japanese facilities for better examples of investment in designs that bring long-range benefits for an up-front premium. "Part of the problem we have in the U.S. is a separation from understanding the value of capital investment versus long-term operating costs."

Since the average tenure of upper-level healthcare executives is often shorter than the time it takes to realize many healthcare facility projects, Allison says, their interest in saving money during their tenure trumps an interest in the long-term investment in a 50-year building. It's a false economy, he explains, because capital expenses account for a relatively small proportion of overall life-cycle "human functional costs" in buildings that operate on a 24-hour, 365-day

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basis and inherently place their staff, patients, and families in high-stress circumstances. A so-called “salutogenic premium,” akin to familiar green premiums, is hard to estimate until more cases come to attention, Verderber says.

Allison calls attention to the detailed cost-benefit calculations for a hypothetical “Fable Hospital” published by an all-star group of architects and analysts led by Blair L. Sadler of the Institute for Healthcare Improvement and University of California at San Diego. Salutogenic additions to Fable Hospital’s design, which represent \$29 million of an overall construction cost of \$350 million (roughly an 8 percent premium), bring \$10 million in annual savings through lower mortality rates, injury reductions, and shorter lengths of stay. With pay-for-performance Medicare reforms ending reimbursement for care delivered after avoidable adverse events, Allison adds, incentives for improving safety become even higher.

Markku Allison, AIA, (no relation), a resource architect at the AIA Center for the Value of Design and staff lead for America’s Design and Health Initiative, adds that intangibles such as natural light in workplaces yield tangible benefits when their effect on productivity is assessed indirectly through absenteeism rates or test scores.

Déjà vu?

For some architects, modeling a broad architectural philosophy on public health may ring certain historical bells; for others, it may raise alarms. “Imperfect Health: The Medicalization of Architecture,” an exhibition currently on view at the Canadian Centre for Architecture (CCA) in Montreal, suggests that attempts to solve social and health problems through design have often brought unforeseen consequences. In many cases, tightly sealed windows in 1970s commercial towers conserved energy but contributed to “sick building syndrome.” In other cases, planting trees to give industrial cities Olmsted-style “lungs” also filled the air with allergy-inducing pollen. In the most well-known instance, asbestos was regarded by builders as a flexible, strong, and fireproof “magic mineral” until its association with mesothelioma became apparent in the 1960s.

The show’s curator, Giovanna Borasi, finds architectural

prescriptivism a risky proposition. “The moment that architecture is considered a cure,” she says, “we might discover there is another kind of health urgency that becomes more important, and buildings will start to become obsolete.” Borasi, an architect, acknowledges that design can counteract problems such as obesity. But design is a tool that can be wielded in several ways—not all of them beneficial. One of the things that contributed to midcentury sprawl, for instance, was a public desire to move away from urban congestion, communicable-disease hazards, and poor air quality.

Socially purposeful modern architecture and planning addressed some pressing public issues, but the critical backlash against it in the 1970s and 1980s halted a lot of progressive thinking. “Architects just withdrew, except for the energy-crisis questions,” says Kate Schwennsen, FAIA, chair of Clemson’s School of Architecture. “There were some who just thought, ‘We don’t know how to do this, so we’re just going to give up.’” Schwennsen supports the development of salutogenic knowledge and practice, but she cautions against making the same mistakes twice.

Salutogenic-design advocates argue that quantifiable data and research can be corrective mechanisms to avoid past mistakes or structures that might become prematurely obsolete. An emphasis on promoting health (rather than merely treating disease), mitigates social segregation, quarantine, and paranoia that recur throughout the CCA exhibition’s darkly fascinating case studies. Think about how many films have appeared in the last 10 years dealing with some kind of “outbreak” or medical mass-hysteria.

But evidence-based design does not have to be overly prescriptive or hamper an architect’s creative freedom. “I don’t believe evidence-based design means you have to design unimaginative boxes with uninteresting spaces,” Pentecost says. “Early skeptics claimed, ‘This is going to kill creative design.’ Nothing could be further from the truth.” Pentecost adds, “Salutogenic strategies can make a complex design more clear, more useful, more workable, and healthier. They are freeing to the designer in many ways.” **AIA**

➔ To learn more visit network.aia.org/centerforvalueofdesign.



“IMPERFECT HEALTH: THE MEDICALIZATION OF ARCHITECTURE,” INSTALLATION VIEW AT THE CCA © CCA, MONTREAL

AIAPERPECTIVE

LOOKING AHEAD TO THE NEW NORMAL



PHOTO: WILLIAM STEWART

THIS ISSUE OF THE MAGAZINE LIFTS A CURTAIN ON WHAT'S IN STORE for the profession in the years ahead. Based on what I've heard from you and seen in my own practice, this much is clear: Don't expect a return to the heady days of boom times past. I'm not saying that irrational exuberance is dead, but I believe that our economy, and the public behavior that generally follows, will assume a more tempered character. What we're experiencing is not a momentary blip; it's the new normal.

Firms that embrace this evolution have changed their business plans. What follows are a few common themes:

Global practice. As the novelty is starting to wear off, more and more firms have some connection to practice beyond our borders. There's work in China, India, and other emerging economies—the outcome of the pent-up demand of billions of people who have been underserved by 20th-century development. From my engagement with architects at the UIA Congress in Tokyo this past September, I know that our model of practice and abilities are highly admired around the world. What is of concern is our sensitivity to regional cultures while sharing best practices. If you think your practice is too small to be part of a global profession, talk to some of the architects waiting in airport lounges for international flights.

Respecting our practice. Throughout 2012, I'll be working to speak for practice in AIA communications to various publics that admire us but don't quite know what we do. We all seek a business environment where our process-inspired service trumps any perception of commodity, and our investment in lifelong learning gives us an advantage in contract negotiations.

Institutional work. Colleges and health facilities are growing. Firms engaged in master planning, designing new buildings, and retrofits will continue to have access to some of the few bright areas in this economy. These will stay bright as demands for an educated workforce increase and we grapple with the needs of aging baby boomers.

Engagement in the community. Increasingly, public service will not be something architects squeeze in during off hours; it will be

an integral part of what we do. We have much to give, whether it's on the school board or helping neighbors clean up a nearby park or stream. A slow economy is the right time to be out and about. When a project does come along, people will know you by your first name; more importantly, they'll know you care about the community. Once your office is busy, don't slack off on your commitment. After all, you and your neighbors have a shared goal in shaping a more livable, healthy, and sustainable community.

Quantifiable data. Firms able to demonstrate to their clients that the impact of what they design can be objectively measured will have a leg up on the competition. The prospect of the adoption this year of the International Green Construction Code (IGCC) will drive this outcome. No architect wants another codebook on the shelf. But establishing measurable standards for performance that are coincident with

construction permitting reinforces architects as master collaborators in sustainable communities. Not to mention the firmer footing we will enjoy in advocating for practice in state and federal settings.

Disaster mitigation. As we grow to understand the ripple effects of catastrophic natural disasters, in terms of economic, social, and environmental impacts, we learn that there are more of us in harm's way. Be it putting back together a community or preventing harm by designing resiliency into the built environment, this is a task for which our profession must take a leadership role. While in Tokyo, I had the privilege of seeing firsthand the work of teams of architects and students leading the efforts to heal the northeast coast of Japan that was devastated by last year's earthquake and tsunami. We may not be first responders, but officials in countries both developed and undeveloped are realizing that the planning process must begin right away.

Architecture and health. In discussions with the public, decision makers, and, unfortunately, the medical profession, the role of architects and architecture seldom comes up—unless the talk is about hospitals and health facilities. In future conversations about the nation's health, I predict that the role played by the built environment will increasingly be raised. Now, as never before, we have such an opportunity to make the case that health is a design issue.

Health, disaster mitigation, sustainability, community service—these are some of the most obvious ways in which architects and architecture can change lives. Yet there's no broad public understanding of the power inherent in architecture. We've got to change that, and I'll be writing about these and other issues in the months ahead. When I ran for AIA President, my proposition was to tell your stories and to speak for practice. I plan on lifting the bar to a new normal in the way that the public and our clients appreciate architecture and architects. In the months ahead, I will advocate for nothing more—and be satisfied with nothing less. **AIA**

Jeff Potter, FAIA, 2012 President

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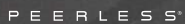
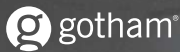
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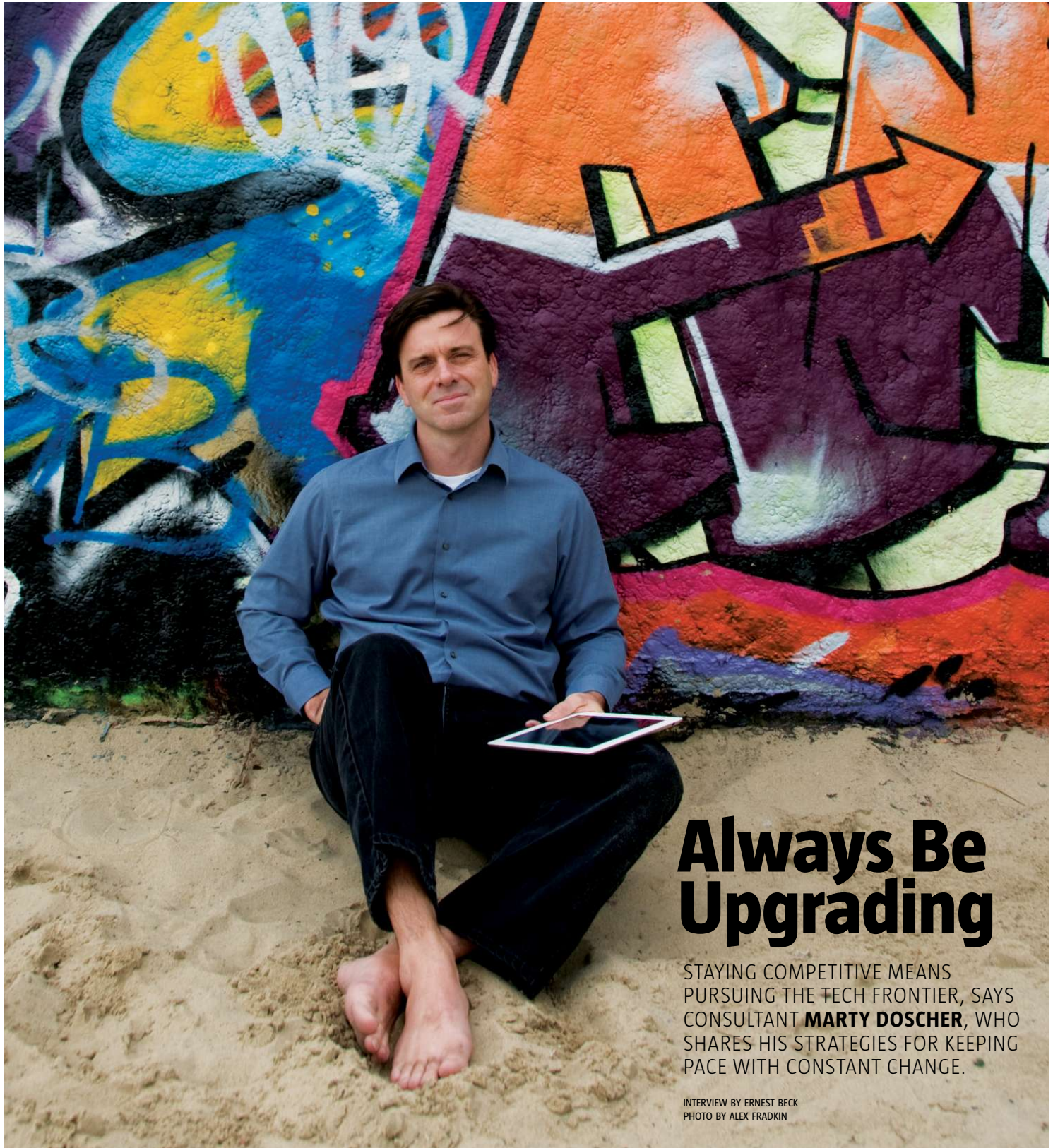


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BUSINESS



Always Be Upgrading

STAYING COMPETITIVE MEANS PURSUING THE TECH FRONTIER, SAYS CONSULTANT **MARTY DOSCHER**, WHO SHARES HIS STRATEGIES FOR KEEPING PACE WITH CONSTANT CHANGE.

INTERVIEW BY ERNEST BECK
PHOTO BY ALEX FRADKIN



NOBODY NEEDS TO REMIND YOU that technology has changed the way architects design buildings, develop new business, and manage their firms. Yet for a variety of reasons—ranging from simple fear to financial concerns—many firms have not made the leap to BIM and beyond. Don't be afraid, says Marty Doscher, Assoc. AIA. He is the founder and director of Synthesis Technology Integration, a Venice, Calif.-based consulting firm that helps design and construction companies implement and integrate technology into all

BEGIN MODELING IN 3D. MANUAL ISN'T AS RELIABLE ANYMORE. "CLIENTS AND NON-ARCHITECTS HAVE A HARD TIME READING DRAWINGS," DOSCHER SAYS. "THEY JUST DON'T GET IT—SO YOU NEED 3D FOR BETTER COMMUNICATION." ARCHITECTS WHO MASTER 3D MODELING SHOULDN'T IDLE: THEY SHOULD THEN TAKE THE NEXT STEP TO BIM.

areas of their business. A self-confessed geek, Doscher, 43, is also an architect and a former technology director at the Los Angeles firm Morphosis Architects. He feels equally at ease in hanging out with tech people as he does with designers. Doscher spoke to ARCHITECT about the transition to high tech.

You snooze, you lose.

If you look at the big picture, it's change or perish. That might sound alarmist, but it's true. The times are different and so is the context of how we work. To be competitive, a firm must be up to speed with technology and come to grips with what it means to use tech to design projects. "You have to say, 'I want to be more competitive and provide better service and design better buildings,'" Doscher says. "The fact is, the market demands that we change our ways."

Spend the money.

In general, new technology doesn't have to cost an arm and a leg. It's best to always keep a budget for technology. Regardless of the size of the firm, estimate that 5 percent of annual fees will go to software and hardware, Doscher suggests. To stay current, plan on replacing or upgrading your hardware and software every three to five years (and don't even think about pirating the software). It's important to always refresh the technology. And remember to think big, especially when it comes to processor speed and screen size. There

is a correlation between bigger screens and greater productivity. "It's all worth the investment, and with depreciation, the upgrade will pay for itself over time," he says.

Go virtual.

Make your firm a contemporary, global, and virtual practice, Doscher says. That means that you should be able to walk into your client's office and bring your office with you on your laptop or tablet. Doscher says that this is a habit of responsive designers: Speed helps them meet the needs of clients who are not always there. A firm's work must be able to happen everywhere, be it on a park bench or in a coffee shop. "You can meet your client over a screen," he says.

See the clouds.

To truly work everywhere, migrate to cloud computing. This not only lets you take your office with you, it lets everyone you are doing business with have access to your office, Doscher says. Email is wonderful, but it's not real time. With cloud computing, you can have a conversation with the structural engineer and the client simultaneously, and everyone involved can comment on and edit a document. These new tools allow for a more collaborative and therefore richer experience.

BIM or bust.

Begin modeling in 3D. Manual isn't as reliable anymore. "Clients and non-architects have a hard time reading drawings," Doscher says. "They just don't get it—so you need 3D for better communication." Architects who master 3D modeling shouldn't idle: They should then take the next step to BIM. This software can be expensive, and it might be difficult to make the transition, which is why many small firms don't use it. Beyond learning how to use the technology, it's necessary to "invest in the mind-set," he says.

You are not alone.

Tech can be scary, Doscher says. But not being aware that a technology exists or how it works should not be an impediment. You don't need to hire an entire tech department to make sure things run smoothly. There are a number of inexpensive remote services that provide assistance and training with a phone call or a click, and these are available to everybody. Technical assistants can coach you through a problem remotely. "You'll waste a lot of time if you think you can solve the problem by having the local high school kid come around to help," Doscher says.

Practice makes perfect.

Designers who want to see the benefits of technology advances such as virtualization and BIM—and want happier clients—need to put in the time with the new technology through practice. We are always more comfortable with the old ways of working, Doscher reckons. "Getting out of your skin can feel like putting on a blindfold and running across the street," he says. "But it will pay off in the end." □



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DEVELOPERS ARE TARGETING RECESSION-MINDED RENTERS AS WELL AS INNOVATIVE FUNDING SOURCES WITH MULTIFAMILY HOUSING PROJECTS THAT EMPHASIZE AMENITIES AND COMMUNITY.

TEXT BY ELIZABETH EVITTS DICKINSON

LOOKING AT RENDERINGS of Union Wharf, a project that broke ground in December in Baltimore's historic Fells Point waterfront community, it's difficult at first to decipher who the project serves. The mid-rise structure could be a resort, with its infinity pool and yoga studio overlooking the city's harbor. It could be a boutique hotel, with its modest but airy loftlike rooms capping a podium of amenities, including a movie theater, bar, lounge, and business center. In truth, Union Wharf is a new multifamily housing project. Surprisingly, all these amenities aren't meant to attract homeowners. They're to draw renters.

Toby Bozzuto, president of Bozzuto Development Co. and developer of Union Wharf, says that rentals now rule the multifamily typology. His company has more than 4,100 rental units in the works or under construction throughout the Mid-Atlantic and Northeast. This mirrors

what market analysts such as Cushman & Wakefield are seeing in the broader multifamily market. Brian Whitmer of Cushman & Wakefield recently told *The New York Times* that rentals "could be on pace to revisit prerecession conditions in the near term."

Bozzuto attributes the rise in high-end rentals to the needs of Gen Y. "Gen Y is the largest demographic boom since the baby boomers," Bozzuto says. "They are coming into the market and, assuming they find jobs, they are looking for places to live. Eight years ago, they might have tried to stretch and buy a house, but in this new world, they are more inclined to rent. We have this perfect captive audience looking for apartments."

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LaBrea Affordable Housing • West Hollywood, Calif. • Patrick Tighe Architecture • The 32-unit LaBrea apartment building (top), when it is completed this year, will feature an edible garden, infiltration planters, and other low-impact elements. The units at the Sierra Bonita apartments (bottom and previous page) have access to a bamboo garden in the building's central courtyard.



their time in their unit, so we're spending more money in enlarging the amenity areas," says Sanford Steinberg, AIA, principal of Steinberg Design Collaborative and past chairman of the AIA's National Residential Knowledge Community. Pools, courtyards, outdoor fireplaces, bars and cafés, fitness centers, and high-tech business centers are among the many benefits luring renters to sign leases.

Smaller unit sizes also mean cheaper rents for residents and more density for developers. Unit sizes have shrunk from an average of 925 square feet to below 700 square feet, according to Bozzuto. "A lot of my competition is trying to race to design the best microunit," he says. "People are trying to understand what you can do to make an excellent small unit without sacrificing anything."

Underused spaces, such as the dining room, were the first to go. Most new apartments emulate a loft with a small kitchen that opens to a living space. Bozzuto predicts that the kitchen will be the next room to dramatically shrink as appliance manufacturers recognize the market demand for space-saving items such as microfridges.

Outside the unit, however, things are only getting bigger. Chris Harvey, a principal and director of design at Hord Coplan Macht (HCM), says that many of the firm's multifamily





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business



projects are seeing major retail on the first floor, such as grocery stores and coffee shops, as well as resident amenities. Take, for example, the pool at Union Wharf, a project designed by HCM for Bozzuto Development Co. Set in a landscaped courtyard, the 175-foot infinity pool will include a wet deck where guests may place deck chairs in the water. Nestled amongst this vast outdoor space will be private areas for tenants to have a quiet dinner with friends.

Bozzuto says that it's this emphasis on design that helps yield strong rental returns. "I believe that architecture and design make a massive impact as to whether someone will rent in your project," he says.

What appeals to Gen Y also appeals to other markets, according to both Harvey and Steinberg. "The level of fit and finish is so high in many of these projects that there are some empty nesters coming into these as well," Harvey says.

While the rental market may be blowing up, and with it lines of credit for veteran developers to bring projects to completion, budgets are still tight. The result: High-rises are being replaced, in many cases, with more-affordable, podium-based mid-rises to keep construction costs lean. "We're seeing a one-level podium of concrete and four or five levels of wood on top all over the Mid-Atlantic," Harvey says. "It's more affordable and you still get density."

The placement of these projects is another interesting trend: many are located on urban brownfield sites. "Developers are focused on transit-oriented development. Any site that happens to be near a metro stop or a light-rail or a train line is a very hot property," Harvey says. "People are looking for a place to live where they can wake up, go downstairs and get a coffee, work out, and then jump on the metro and get to work. Then they can come home and go to the grocery store in the base of the building."

Market-rate rental isn't the only project type seeking transit-oriented brownfield development packaged in smart design. The West Hollywood Community Housing Corp. (WHCHC), a California nonprofit development company focused on affordable housing, selected a busy urban site on Santa Monica Boulevard for its Sierra Bonita project, which opened in 2011. Composed of 42 one-bedroom units sized at about 620 square feet each, the rentals are reserved for people with disabilities and HIV.

Patrick Tighe, FAIA, of Patrick Tighe Architecture designed the \$14 million project to be a showcase building. "There is a lot of stigma associated with housing low-income folks, so you have to say that you're going to do a high-quality design when bringing a project to a neighborhood," says Rose Olson, AIA, director of housing and real estate development for WHCHC.

"We didn't want the building to look like an affordable-housing project," Tighe says. "We wanted it to have movement and light and strength."

He achieved this by designing the apartments around a central courtyard supported by a steel-braced frame. He used that steel frame as a design element, developing a five-story lattice structure in the courtyard and then taking that motif to other parts of the building, such as a screening



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Union Wharf • Baltimore • Hord Coplan Macht • The mixed-use rental apartment building features five stories, 4,500 square feet of retail space, 5,000 square feet of office space, and some 10,000 square feet for amenities and common-use areas.



device at the front of the project. Photovoltaics power the common areas and solar thermal on the roof heats water for residents for free.

Tighe, collaborating with architect John V. Mutlow, FAIA, is now designing a second affordable-housing project with WHCHC, a \$15.3 million development called La Brea Affordable Housing. The scheme centers on a courtyard theme, but it will include a mix of apartment sizes. Located at the prominent corner of Santa Monica Boulevard and La Brea, Tighe played with the elevations of the corner piece so that it becomes a sculptural public face as well as major circulation for the building.

Tighe is testing a new building technique for this façade element: a fiberglass-reinforced polypropylene panel that will be manufactured and then cut into ribbon panels in a shop. "By using this new material, we're hoping to get bold results within our price point," he says, which is about \$200 per square foot.

While this latest housing boom in rentals has been promising, Bozzuto predicts that lenders will soon stem the tide of financing in order to assess the future. "It's been incredibly robust and healthy the past 12 months, but financing is starting to slow down," he says. "Banks made a lot of bets in 2011, now they want to see how they pan out. Next year may be much harder to finance." □

COURTESY BOZZUTO DEVELOPMENT CO.

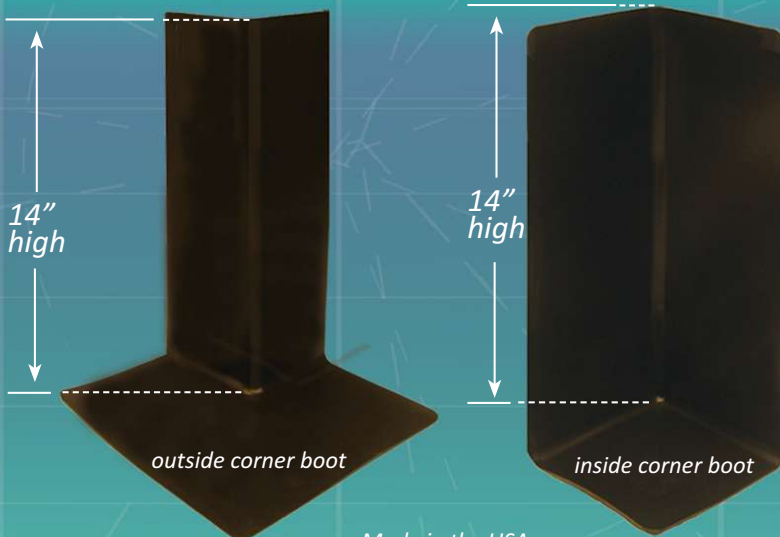
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Building Connections

HONEST BUILDINGS AIMS TO HARNESS THE POWER OF SOCIAL MEDIA TO SPEED INNOVATION AND FOSTER TRANSPARENCY IN COMMERCIAL BUILDINGS.

TEXT BY JEFFREY LEE
PHOTO BY NOAH KALINA



Part Yelp, part LinkedIn, Honest Buildings is a social platform built around commercial real estate. New York-based founder **Riggs Kubiak** (pictured), a veteran of Tishman Speyer, believes the site will foster new connections between architects, service providers, building owners and managers, and occupants.

35.3

THE PERCENTAGE OF BUILDINGS REGISTERED AS OFFICES ON HONEST BUILDINGS AS OF DECEMBER, REPRESENTING 13,641 OF THE 38,631 TOTAL BUILDINGS.

AFTER 10 YEARS honing his commercial real estate expertise, most recently for five years at industry titan Tishman Speyer, Riggs Kubiak, 31, knows how much data is available on the vast built environment. He served in both acquisitions and asset management for the company with one of the most comprehensive real estate platforms available, and eventually became its global head of sustainability.

But what still surprises him, in an age when consumer review sites, Google, and online commerce start-ups provide endless streams of information, is how little impact the Internet has on organizing the many types of information available on buildings.

"I've always been focused on the advancement of the Internet and watched how the consumer Internet has changed industries," he says. "I was always surprised it didn't affect real estate more."

Honest Buildings (honestbuildings.com), the website Kubiak developed this past summer to address the

building-information gap, bears the imprint of its co-founders, who are Internet start-up veterans. Part Yelp, part LinkedIn, and cross-bred with a commercial real estate database, it is "an aggregated platform to connect a bunch of disparate pieces of information in the built environment," he says.

The site combines aggregated building data with images, renderings, and information contributed by owners, service providers, and residents in a platform built on Google Maps and Microsoft mapping technology.

"The built environment has historically been a very closed book," Kubiak says. "We see it [Honest Buildings] as a resource for everyone who spends time in buildings about what's happening within their building."

Service providers—architects, sustainability consultants, retrofit contractors—can get the word out about their most innovative and successful projects by



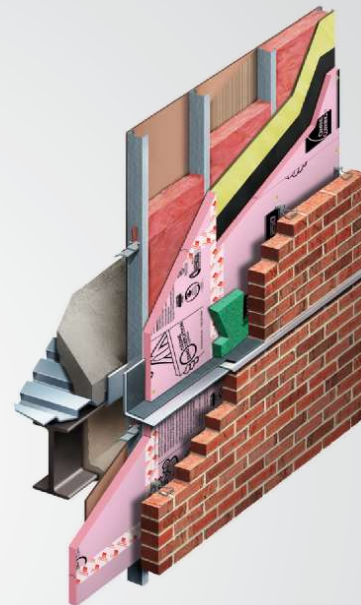


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→

"AS PEOPLE ARE GROWING MORE COMFORTABLE AROUND UTILIZING SOCIAL MEDIA, YOU CAN USE IT IN A VARIETY OF WAYS, WHETHER CONNECTING WITH PEOPLE IN CONDOS OR OFFICE BUILDINGS, OR BRINGING TRANSPARENCY TO THE MULTI-TRILLION-DOLLAR BUILT ENVIRONMENT," RIGGS KUBIAK SAYS.

→ creating a portfolio on the site and sharing it through links, email, and social media. Building owners and managers, meanwhile, can use the site to market their buildings, scope out the competition, and find partners for their next project.

"Owners and managers need to connect with architects to see their services," Kubiak says. "There's no outlet out there for them to connect today. We wanted owners and managers to get information more quickly and just be a catalyst for this to happen."

The site encourages building occupants to provide ratings and reviews of the buildings where they work and spend time. (A mobile app targeted for release in 2012 will allow users to photograph buildings or communicate with owners on their smartphones.) Businesses searching for space can use the site's data to find the best building in their neighborhood, but owners can also use the feedback to enhance their own offerings—and find service providers with the most innovative portfolios to make it happen.

"As people are growing more comfortable around utilizing social media, you can use it in a variety of ways, whether connecting with people in condos or office buildings, or bringing transparency to the multi-trillion-dollar built environment," Kubiak says.

Following the beta release of Honest Buildings, Kubiak's team has focused on seeding the platform with

data and content from pros. The site has worked with the USGBC and the EPA to index every building with LEED or Energy Star certification. With 10 billion square feet of building space already populating the site, users can log on and find tight clusters of LEED-registered buildings in many cities. And Honest Buildings employs a proprietary and patent-pending data-collection methodology to collect data through New York City's energy benchmarking law and partnerships with other organizations, including the agencies that run the equivalent of LEED in Europe and Australia—a feature that should rapidly grow the building count.

Kubiak says that Honest Buildings could serve as a driver of innovation. "When displayed in a transparent manner, it [the information] can foster a sense of competition in the market," he says. "Other owners or managers will say, 'How can I bring my project to match the market?'" Kubiak envisions the website hosting innovation challenges that spotlight the most groundbreaking projects in a variety of verticals.

By highlighting best practices and case studies, Honest Buildings could become a catalyst for swifter and more productive partnerships. The built environment will speed up in the future, Kubiak predicts. "Transactions and ideas will be shared more quickly than they are today," he says. "I'm hopeful that this creates ideas and concepts that keep pushing architecture further." □

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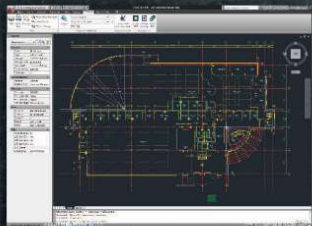
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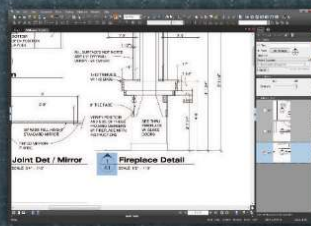
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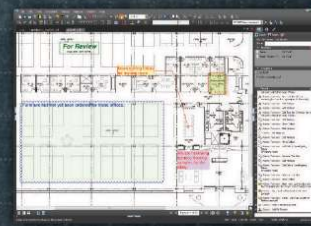
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Architect: Cooper Carry, Atlanta (architect of record); Duda Paine Architects, Durham, N.C.
Total Cost: \$51 million
Completion: 2008

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POPULATION, 2010

SOURCE: U.S. CENSUS BUREAU

6.4 MILLION

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SOURCE: ATLANTA CONVENTION & VISITORS BUREAU

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→ LOCAL MARKET

Atlanta

TEXT BY MARGOT CARMICHAEL LESTER
AND CLAIRE PARKER

THERE AREN'T MANY CRANES in the air over Atlanta, but when projects pick up—and locals are confident they will—seeking approvals and permits will be much easier.

In October, the Atlanta City Council unanimously adopted an ordinance to reform the permitting process, including consolidating related functions into one department and laying the groundwork to create a fast-track process for interior projects. And in December, Mayor Kasim Reed signed into law legislation that created separate tracks for small, medium, and large projects. That bill also enables registered applicants to get permits online in 10 business days.

“The City of Atlanta has removed a long-standing barrier to economic development by reworking the construction-permit process,” says Manuel Cadrecha, AIA, design director for Perkins+Will’s Atlanta outpost.

While development has stalled in the ATL, the multifamily, university, and build-to-suit sectors are seeing some activity. “There is no, I repeat, no spec development happening here, and there isn’t likely to be anytime soon,” asserts Bob Mathews, president and CEO of Colliers International’s local office.

The 10 Terminus Place project is a high-profile example of the multifamily building trend. The 19-story, 155-unit condominium tower sits on top of the Piedmont Road parking deck and features a window wall composed of both low-E vision glass and insulated spandrel panels.

Though known as a sprawling metroplex, Atlanta

boasts a downtown with a pretty pastiche of small neighborhoods and tree-lined streets. Water continues to be a significant infrastructural challenge as the population grows, and transportation is a key concern.

In response, planners in Atlanta and its suburbs are taking action. “Efforts to plan smarter, denser development, and to consider mass transportation in a more regional way, are being made,” says Joe Greco, AIA, principal and president of local firm Lord Aeck & Sargent.

The Atlanta Beltline project, for example, will connect 45 neighborhoods along a mostly abandoned rail line. And there’s LAS’s three-story Southface Eco Office, a 10,100-square-foot commercial office building, training facility, and green-design and -construction demonstration center. The LEED Platinum facility records both energy and water performance and features a green roof.

A destination city, Atlanta has several projects under way that appeal to tourists and locals alike. Case in point: the 75,000-square-foot College Football Hall of Fame, located in the museum district and adjacent to Centennial Olympic Park. The exterior skin of the features a dimpled metal scrim.

Despite the low project volume, Atlantans remain bullish. “We’re bumping along the bottom like a lot of other cities,” Mathews admits. “But I think we will come out of this beginning in 2013 and see more development activity and job growth that will build demand for commercial space. In five years, it should be fantastic.” □

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EDITED BY WANDA LAU
PHOTOS BY NOAH KALINA

Handcrafted in **Ann Sacks's** Portland, Ore.—facility, **Vicente Wolf Textures** is a collection of ceramic art tiles with repetitive textures carved in relief. Designer Vicente Wolf created seven patterns: Raffia, Roll-Up, Against the Grain, Slope, Illusion, Waves (above left), and In & Out (above right). Offered in sizes of 6" by 6" and 4" by 8", the tiles may be used for indoor wall applications and light-duty floors. In addition to the 142 tile colors currently available, Wolf will introduce a new color palette for the collection this year. • annsacks.com • Circle 100

Walker Zanger created the look of end-grain wood in its nature-inspired porcelain tile **Wood Age**. Produced with an ink-jet glazing technology, the tile pattern features the concentric rings, graining, knots, and texture of wood. The low-maintenance tile can be used both indoors and outdoors. Manufactured in two sizes, 6" by 24" and 9" by 36", Wood Age comes in four colors: marrow, heartwood (shown), ring, and cortex natural. • walkerzanger.com • Circle 101

The technical porcelain tile **Evolve** by **Atlas Concorde** mimics the look of brushed concrete. The tile collection has eight color options—including white, suede, and iron (shown)—and three surface-finish options—matte, honed, and textured. The textured finish offers slip resistance for use in exterior flooring applications. The 10mm-thick tile comes in four sizes: 30mm by 60mm, 60mm square, 60mm by 120mm, and 75mm square. The collection also includes Linea, a 4.8mm-thick tile that is suitable for use on walls. Decorative brick and mosaic patterns and trim pieces are also available. • atlasconcorde.it • Circle 102

Manufactured from large, unglazed porcelain stoneware slabs, the **Pico** collection by **Mutina** may be used on interior and exterior floor and wall surfaces. The matte tile is offered in two textures with either raised or sunken dots, and in three base colors—white, gray, and sand (shown). Optional accents include tiny red or blue color spots, in regular or irregular shapes. The 12mm-thick tile—available in 120cm square, 60cm by 120cm, 60cm square, and two mosaic sizes—is VOC-free and contains 20% pre-consumer recycled materials by weight. • mutina.it • Circle 103

Bluestone porcelain stone tile by **Crossville** features fossil-like impressions and a subtle pearlescent finish inspired by seashells. The durable tile—suitable for use on exterior and interior floors, walls, and countertops—contains at least 20% recycled content. Available with a natural or honed finish, Bluestone comes in four colors—Colorado buff, Arizona brown, Pennsylvania blue (shown), and Vermont black—and in a variety of sizes, up to 24" square. Mosaic tiles and trim pieces, including bullnose and cove bases, are also offered. • crossvilleinc.com • Circle 104

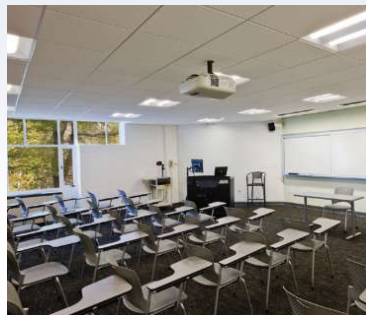


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Fab Four

IS DIGITAL FABRICATION MORE THAN A HOBBY? THESE FOUR DESIGNERS SEE IT AS A PROCESS THAT COULD AFFECT THE WAY WE MAKE EVERYTHING FROM LIGHTING FIXTURES TO HEATING SYSTEMS. THEY DISCUSS THE TOOLS AND CHALLENGES SHAPING THE PRINTED ENVIRONMENT.

TEXT BY BRIAN LIBBY
ILLUSTRATIONS BY PETER ARKLE

Most of the materials used for constructing buildings today are centuries if not millennia old: from brick and plaster to timber and stone. But a growing number of architects have seized upon digital fabrication as a chance to shift the paradigm. Although digitally fabricated products are typically limited in size and scale—and restricted to using cuttable, printable materials such as cardstock, foam, or nylon for interior surfaces—this quartet of architects is exploring how the future may see printers and computers replace hammers and nails.



Jeremy Ficca, Ficca Architecture

For Jeremy Ficca, AIA, head of the Pittsburgh firm Ficca Architecture and a professor at Pittsburgh's Carnegie Mellon University, robots are at the frontier of digital fabrication.

"Historically, robots have been quite expensive and generally confined to large-scale automotive and aerospace industries," Ficca says. "But they are getting cheaper, and how you control them is becoming more accessible. It opens the possibility for fabrication to potentially move beyond the limitations we've seen with cutting and carving of things."

For one class project, Ficca asked students to use robots to form rubber castings. Another robot task involved metal bending. "Is digital just skin game and surfaces?" he says. "A lot of folks now are trying to look at ways to get it ingrained into the bones and body of architecture. Some interesting work has been done with casting. We're doing some work with different ways of making molds that use less material and can open up new ways of dealing with precast concrete."



Lisa Iwamoto, IwamotoScott Architecture

Although Lisa Iwamoto literally wrote the book on digital fabrication (*Digital Fabrications: Architectural and Material Techniques*, Princeton Architectural Press, 2009), the San Francisco architect says her challenge is not one of technology so much as human collaboration.

"I don't think many architecture firms own the machinery," says Iwamoto, co-founder of IwamotoScott Architecture and associate professor at the University of California at Berkeley. "To me, the challenging part has been working with fabricators who might have that equipment but are used to still doing the same thing. There's a gap between what the instrumentation can do and what the machinist wants to do."

Iwamoto seeks a simple resource guide for fabricators willing to collaborate with architects on digital fabrication. "You call 12 people and the first 11 think you're crazy. Whenever you're trying to do something outside of the norm for any particular industry, it's difficult," she says. "That said, I think there are some people filling in the gap."

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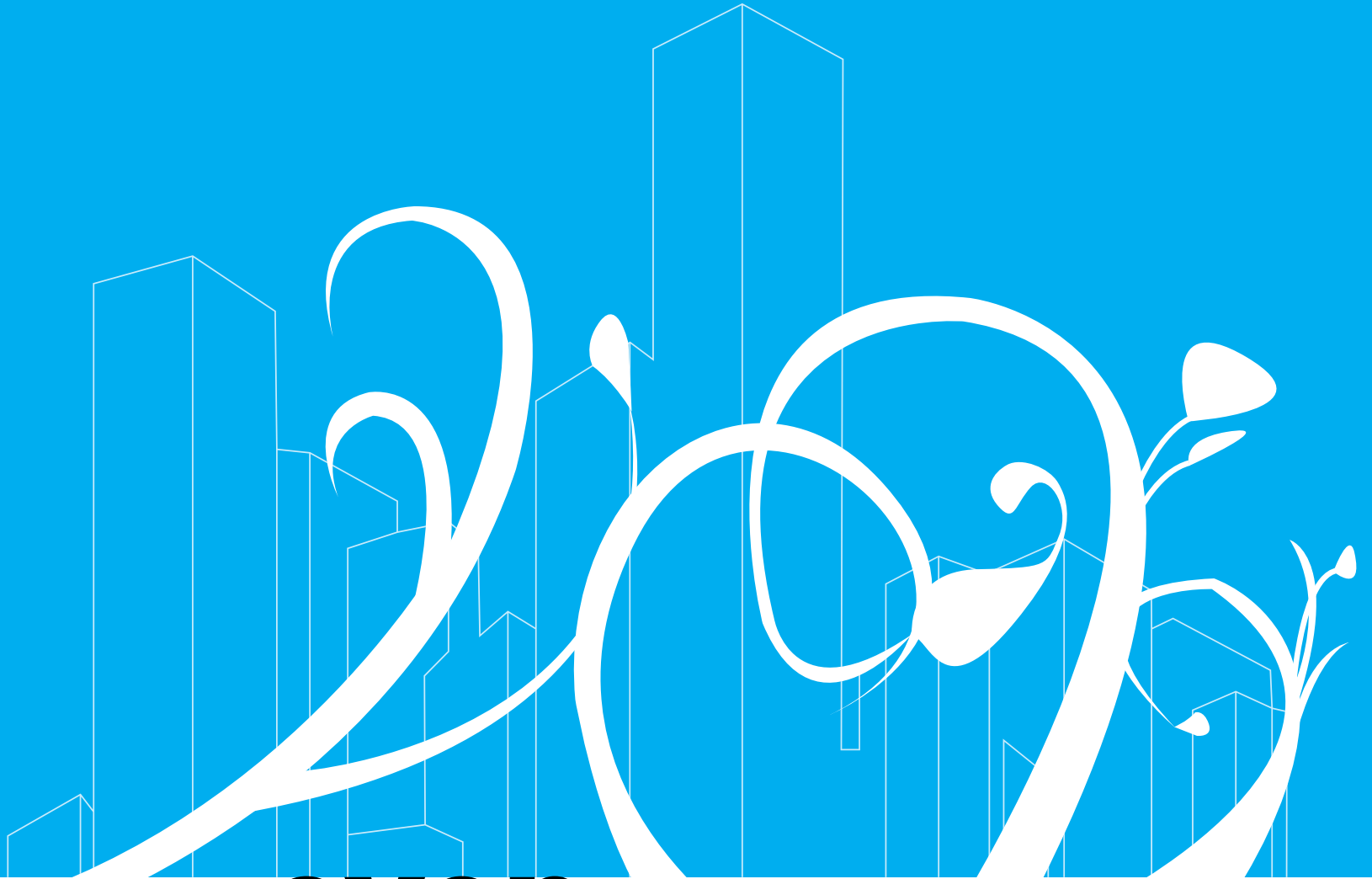
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Andre Caradec, S/U/M

At the Oakland, Calif., firm S/U/M, owner Andre Caradec is interested not in how digital fabrication can become self-contained architecture, but how to best use ubiquitous tools to foster ease of communication between a building team's many parties. "You're trying to insert a very high-performance vehicle into a non-high-performance bus," he says and laughs. "You come into a very sort of conventional system where everyone's tuned, and you throw a wrench in it."

Although the process for Caradec's firm begins with 3D modeling software such as Rhino and its Grasshopper plug-in, his preferred tool is the common Computer Numeric Control (CNC) milling machine.

"You're trying to weave analog output with digital input," he explains. "The CNC router is now embedded in the sense that any cabinets shop or Ikea online, the factories are all using the machine. It's our job to reinvent it and find ways to use it. Ours is larger, 5 by 10 [feet], so we can use industry-standard, 4-by-8[-foot] panels and cut standard construction material. The trick is always designing with the tools you have. This particular machine can only cut so thick of a material. You have to take the limitations of the machine and apply it."



Lawrence Sass, Massachusetts Institute of Technology

"It's a huge challenge going from what you see on the screen to something machines can read and make, and people can put together," says Lawrence Sass, AIA, an associate professor at MIT. "When you scale an object to 20 times its size, you have to deal with loads, gravity, wind, earthquakes, and human loads."

An expert in rapid prototyping, Sass has been researching the idea of integrated digital fabrication: not just using a tool to cut materials, but also embedding other materials and systems. "You can imagine 3D printing a trailer, like a FEMA trailer," he explains. "Or lighting fixtures that are printed in one slab with the ceiling. There could be flooring systems where instead of having heating and cooling separate, they're printed into the floor. You're talking about a complex system."

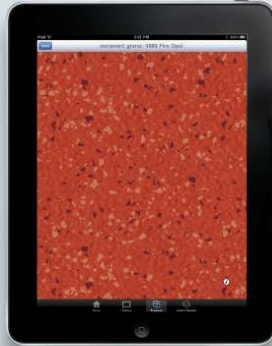
Sass believes that the advances necessary to see these ideas become reality may ultimately be bridged outside of the profession. "I feel confident these issues will be solved, but not in the field of architecture. Our revenue stream's not enough," he says. "The first CAD tools in the 1980s were for people to design circuits. That's a multibillion-dollar industry now. And computer graphics were originally intended for the movie industry." □



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Learning Objectives

1. Provide one objective that London's Olympic Delivery Authority included in its sustainable-design guidelines.
2. List and describe the structural feats achieved by the three stadiums designed for the 2012 Olympics.
3. List and describe the atypical post-Games occupancy requirements to which the project teams had to abide.
4. Describe why service life and material selection were critical for the 2012 Olympic venues.

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An Olympic Feat

THREE NEW STADIUMS FOR LONDON'S 2012 GAMES COMBINE STRUCTURAL INNOVATION WITH SUSTAINABILITY TO ENSURE A POSITIVE LEGACY LONG AFTER THE TORCH MOVES ON.



Olympic Stadium, Populous

BEYOND WORLD RECORDS and athletic prowess, the Olympic Games have long been known for the massive urban overhaul and construction projects that host cities undertake to prepare for the onslaught of visitors. With instant architectural icons such as the Bird's Nest and the Water Cube, the 2008 Summer Games in Beijing are a hard act to follow. When the International Olympic Committee (IOC) selected London to host the 2012 Games, many wondered how the city could top the design and engineering feats of its predecessor.

During its bid, London, like all of the short-listed cities, had pulled out all the stops, including proposals for extravagant new buildings. As the London Organising Committee of Olympic and Paralympic Games (LOCOG) and the Olympic Delivery Authority (ODA)—the joint organizations tasked with bringing the event to fruition—refined plans for capital development, the city's pledge to the IOC to create “the first sustainable Olympic and Paralympic Games” would become the vehicle by which the new structures would make their mark.

The ODA, which is overseeing the construction of new venues and infrastructure for the Games, created the “London 2012 Sustainability Plan” that challenged architects to deliver facilities that would embody the spirit of the Games, create a lasting social, economic, and environmental legacy for the United Kingdom, and inspire change in the way that future events worldwide would be planned and built—all without compromising design. It established design targets for projects that included the use of environmentally friendly and ethically produced materials and the reuse or recycling of 90 percent of construction waste. “We encouraged designers to achieve a high quality of finish while adapting to this sustainability criteria,” explains Simon Wright, the ODA's director for venues and infrastructure. “It provided quite a bit of a challenge, but in general, the designers were very creative in their solutions.”

The Stratford region of East London known as the Lower Lea Valley became the stage for a collection





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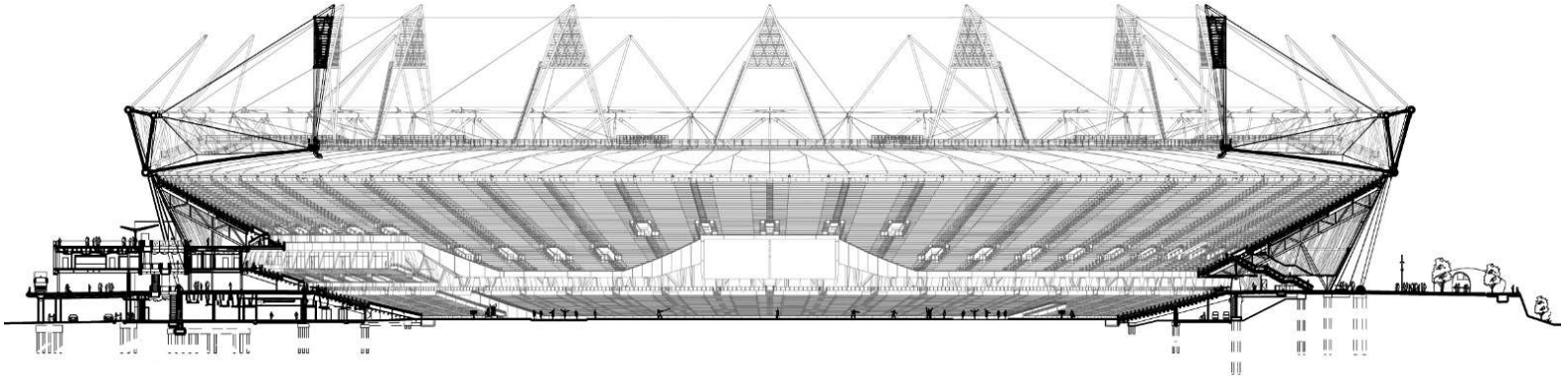
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→ of world-class sporting venues that rely on structural ingenuity in a different way than their cousins of four years ago—to push the boundaries of not only what can be built, but also what can be built sustainably and for the long term. Spurred by ODA, the architects sought to design large-scale venues that minimize the use of materials and their footprints, both physical and carbon.

Olympic Stadium

As the host for the central activities of the Games—the opening and closing ceremonies as well as the track and field competitions—the Olympic Stadium is the largest

new venue to be built. Looking to the post-Games life of the building, the ODA determined little need for a facility with a capacity of 80,000 seats; London already has a number of large stadiums, such as Wembley and Emirates. So when the ODA handed its brief to the London office of Populous, which worked with structural engineer Buro Happold, it asked for a structure that could handily be downsized to 25,000 seats after the Games. “That transformation of going from 80,000 to 25,000 seats had never been done before,” says Philip Johnson, Populous’s project leader. “We had to figure out how to do it in a cost-effective and sustainable way.”

PREVIOUS PAGE: MORLEY VON STERNBERG
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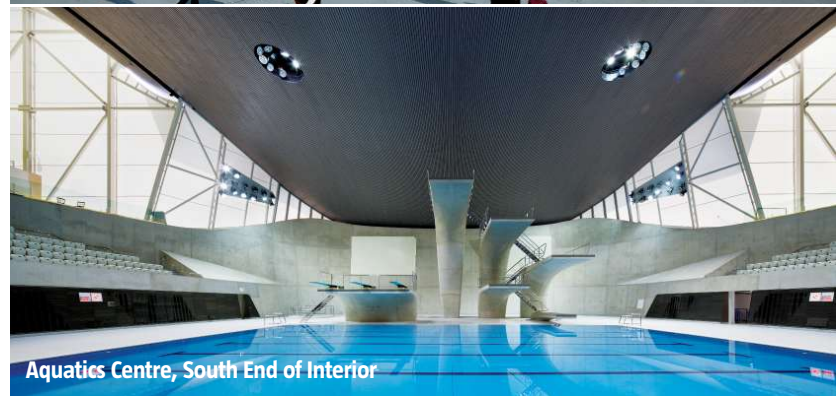
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technology



Aquatics Centre, Zaha Hadid Architects



Aquatics Centre, South End of Interior

Material availability further complicated matters. Steel—the go-to structural material for a building that would be largely dismantled—was in short supply when the project was commissioned. After some research, Populous pinpointed a solution that would reduce the amount of steel typically required for a stadium of this magnitude by 75 percent: sink all 25,000 permanent seats and the lower bowl of the stadium into the ground. As a result, the earth, bolstered by some 5,000 reinforced concrete piles driven as deep as 20 meters into the ground, became the structural substrate for the permanent grandstand.

A lightweight steel structure comprising 112 rakers supports the 55,000 temporary seats in an upper tier around the excavated bowl. The design specified standard off-the-shelf, wide-flange structural steel sections, which workers could bolt together easily and, after the Games, dismantle and return to the market just as easily. These structural members were painted black to create a calming space through which visitors will pass before stepping into the excitement of the events inside the stadium.

The contrasting white steel members of the stadium represent an independent structural system that supports the venue's 450-metric-ton (496-ton) cable-net roof system. The roof system covers two-thirds of the spectator seating with a 25,500-square-meter (274,480-square-foot) canopy of white PVC fabric. The canopy is supported by 3-inch-diameter steel cables drawn tight between an outer steel compression truss and an inner steel tension ring to create a rigid structure. The outer compression truss—composed of 28 steel sections each measuring 15 meters high by 30 meters long—transfers the entire weight of the roof system to concrete footings



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technology



Aquatics Centre, Interior



on grade through diagonal steel columns around the stadium's 860-meter (2,822-foot) perimeter.

The steel used in London's Olympic Stadium was sourced in a sustainable manner. The subcontractor obtained many of the tubular members that make up the roof structure from unused steel sections intended for a Russian oil pipeline. Workers cut and butt-welded the pipe sections together to form the truss ring, tension ring, and diagonal columns. "They are a little bigger in diameter than we wanted, but they worked," says Johnson.

When completed, the elliptical-shaped stadium covered a 40-acre footprint with just 10,000 metric tons (11,023 tons) of structural steel—by far the lightest Olympic Stadium ever built. In comparison, the 91,000-seat Beijing National Stadium (the Bird's Nest) for the 2008 Summer Games covered a 64-acre footprint and used 100,000 metric tons (110,231 tons).

Aquatics Centre

While the Olympic Stadium may be considered the heart of the Games, the Aquatics Centre is the gateway to Olympic Park; the ODA expects more than two-thirds of visitors to enter the park on a bridge that spans a portion of the venue. London-based Zaha Hadid Architects wanted to devise a formally expressive roof structure to invoke the excitement of athletic competition and, in particular, the events within the Centre: diving, swimming, synchronized swimming, and the aquatics portion of the modern pentathlon. The challenge was to deliver an evocative profile with a non-obtrusive structural system.

The facility had to provide 17,500 seats during the Games, the second-highest capacity Olympic Park venue after the Olympic Stadium, and then drop to 2,500 seats, becoming the smallest-capacity venue for legacy use post-Games. The design team also had to create a facility in which, when filled to capacity, few if any structural supports would impede view lines.





Inspired by the fluid forms of water in motion, the architects designed the roof as a wavelike volume that expresses its formal quality outside and inside. "The roof concept came from the more dynamic effect of athletes in water," says Glenn Moorley, Zaha Hadid Architects' project leader. "We conceived of the architectural surface and fed it to Ove Arup & Partners, the structural engineers, giving them a starting point to design the steel structure."

The resulting 11,000-square-meter (118,403-square-foot) roof spans a column-free area 160 meters (525 feet) long and up to 90 meters (295 feet) wide. Despite its complex, undulating shape, the roof structure was kept relatively simple. Ten structural steel trusses, 87 to 156 meters (285 to 512 feet) long, span the facility's length in the north-south direction and incline out from the centerline like a fan. These fan trusses, varying in height up to 16 meters, create the roof's



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Velodrome, Hopkins Architects



Velodrome, Interior

→ sweeping shape. Two transverse trusses, one at the north end of the building and one at the south, connect the fan trusses and support the 3,200-metric-ton (3,527-ton) roof structure at only three points: one support on a concrete shear wall at the building's south end that is free to slide longitudinally, and fixed supports at two concrete cores 54 meters apart at the building's north end.

Under uniform loading, the roof's opposing inclined arches, or wings, balance each other, forming a compression hoop at the roof perimeter. A tension tie across the center of the fan trusses resists tensile forces that develop due to a change in geometry in the wing tips. Horizontal and diagonal cross bracing between the top chords of the trusses provide lateral stability.

Workers prefabricated the massive steel trusses in sections before trucking them to the site. Once on site, the trusses were assembled and craned into place atop temporary trestles, where riggers completed bolting the assembly together; approximately 70,000 bolts were used.

The standing-seam, recycled-aluminum roof panels and hardwood ceiling establish the roof's finishing poetic lines. While the wavelike form may appear complex to clad, the flexibility of the aluminum sheets allowed the panels to take the shape of the final profile. Only 5 percent of the 280 panels required custom fabrication, which helped minimize costs. On the interior, timber joists

TOP: COURTESY HOPKINS ARCHITECTS
BOTTOM: COURTESY ODA

refine the geometry of the ceiling, which is clad with 30,000 timber panels fabricated from birch plywood planks laminated with a veneer made from FSC-certified red louro, a Brazilian hardwood. Solid red louro panels clad the ceiling where it curves down and meets the visitor areas. "It had to be durable," Moorley explains, "and able to take the odd knock from the odd kid in the Stratford region."

The Aquatics Centre houses temporary seating in two inclined volumes that flank the permanent facility. Bolted, wide-flange steel sections support the temporary grandstands, which are enclosed within a translucent PVC envelope. After the Games, this steel will be disassembled and returned to the market, as will the temporary seating and temporary toilets. The PVC envelope will be recycled into a lower grade of PVC.

Velodrome

Of all the Olympic stadia, the ODA considers the Velodrome to be the most sustainable. Designed by London-based firm Hopkins Architects with structural engineer Expedition Engineering, the 6,000-seat, 234,000-square-foot venue for track cycling will be retained in its entirety after the Games. Among its sustainable-design features, which include natural ventilation and ample daylighting, the lightweight cable-net roof system is perhaps its most impressive both in terms of energy performance as well as structural design. Whereas the Olympic Stadium's roof system needed only to provide partial coverage to spectators and none to athletes, in line with previous Olympic stadiums, the Velodrome's roof system had to enclose the facility entirely and span a length of up to 130 meters (427 feet).

"We wanted the building to reflect the design ethos of the bike sport itself, paring things down to the absolute minimum as efficiently as possible," says Chris Bannister, a partner at Hopkins Architects. "One of the things was to minimize the overall envelope of the building itself."

A cable-net roof system suited the Velodrome's design and programmatic needs perfectly. The 250-meter track banks 12 degrees on straightaways and 42 degrees at the ends, where the track curves. The architects placed minimal seating at the ends because of the difficulty of establishing sight lines; the U.K. sets the maximum rake of grandstands at 34 degrees. As a result, the majority of the seating—and thus the highest points of the structure—exist beside the long portions of the track. The resulting volume is a bowl with two high points and two low points, creating a structurally strong, double-curve roof geometry that a cable-net system could assume.

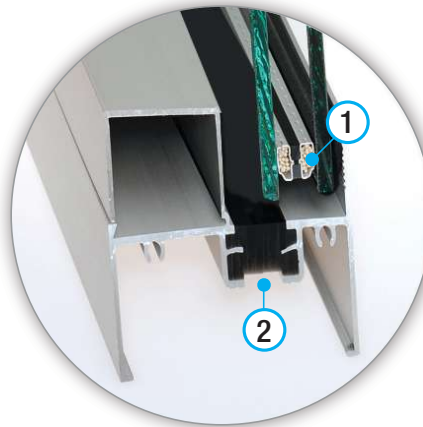
The system comprises a 3.6-meter-square mesh of twin steel cables, 36 millimeters in diameter and 62 millimeters apart. At every grid crossing, a steel node connector—a clamp with a plate and four connectors for the ceiling and roof panels—bolts the two pairs of perpendicular cables together. After its prefabrication in Germany, the cable-net system, totaling more than 16 kilometers of cable, was transported to the Velodrome where workers laid it out on the floor and bolted it together. The cables were then jacked up into place

and pinned onto a steel ring truss via fork connections. The ring truss sits at the upper edge of the Velodrome's seating bowl and pulls the cable-net system into tension.

"Because we could assemble the cable mesh on the ground and then jack it up into position, we avoided a lot of scaffolding and temporary works," Bannister says. Erecting the lightweight system took just 12 weeks—



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—CHRIS BANNISTER, HOPKINS ARCHITECTS

eight to put the system together on the ground and four to raise it up—saving costs and reducing construction time by about three months.

The cable-net system not only provided a compact structural system over 12,000 square meters (129,167 square feet) of clear span in the Velodrome, but also was an ideal shape for the facility, which relies primarily on natural ventilation. The low-slung profile of the cable net reduces the volume of air enclosed by the building and thus the amount of interior space that needs to be heated and ventilated. The shape of the cable-net roof also moves exhaust air naturally up into the higher

areas of the Velodrome, along the track’s straightaways, where it vents out.

The roof system supported by the cable-net system is also highly insulated. Just 18 inches thick, the system, consisting of a prefabricated timber birch box substrate, 12 inches of insulation, and a standing-seam aluminum roof, achieves an approximate R-value of 6.66 (R-38 in Imperial units), which will help maintain the Velodrome’s track area at about 80 F; the warmer air reduces aerodynamic drag on the cyclists. At 30 kilograms per square meter (6.1 pounds per square foot), the Velodrome’s roof weight per area is less than half of that of Beijing’s Laoshing Velodrome, which weighed 65 kilograms per square meter.

After the 2012 Games

Supported by monumental achievements in structural design, the array of new stadiums for the London 2012 Games demonstrates that architecture held up to the Olympic spotlight can be both sustainable and adaptable for long-term use. While the ODA had set the stage for the event’s central theme of environmental stewardship by undertaking a massive clean-up of the once-underused and polluted site in Lower Lea Valley for Olympic Park, the design teams for the new stadiums capitalized on structural innovations to put real meaning behind the mantra of reduce, reuse, and recycle. The Olympic Stadium, Aquatics Centre, and Velodrome demonstrate that world-class structures can go hand in hand with resource conservation and strategies for use in legacy.

In their vision for the Games, LOGOC and the ODA set many goals, both short term and long term, and local and global. Careful planning and execution helped ensure that the high-profile venues of Olympic Park will become social and economic drivers rather than infrastructure burdens for the city after the crowds of athletes and spectators return home. However, only time will tell whether the sustainability objectives emphasized in the London Games will make an impression worldwide and, in particular, whether the torch of sustainability will be passed on to the next Olympic Games. □

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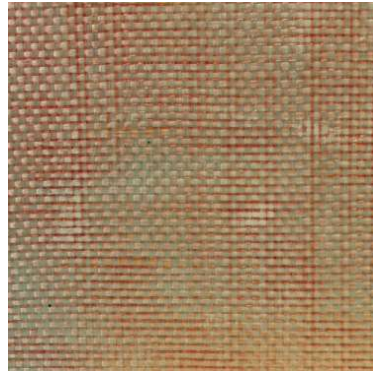


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→ PRODUCTS

Editor's Choice



TEXT BY WANDA LAU

57

The percentage of facility managers who said that "saving water and costs" was their key reason for installing waterless urinal systems, in a 2011 survey. "Wishing to 'test the system'" was the second most common response, at 15 percent.

SOURCE: WATERLESS CO.

The **SheerWeave Performance +** interior window-shade fabric by **Phifer** has a metallic finish on its outside face that helps reflect solar heat and reduce glare inside. The fabric is infused with a Microban antimicrobial product to deter growth of stain-causing bacteria, mold, and mildew. Available in 10 colors, Performance + is made with a 3% or 5% open basketweave fabric and in widths of 63" or 96". It is Greenguard- and Greenguard Children & Schools-certified. • phifer.com • Circle 120

Available in capacities of 12, 24, and 36 gallons, the stainless steel **Universal Litter & Recycling Receptacle** by **Forms+Surfaces** is suitable for litter, recycling, compost, and combined use. Four metal finishes and eight patterns are available; the 12-gallon receptacle also comes in fused bronze and fused nickel silver. The 100% recyclable receptacle has a polyethylene liner and a slate-gray polyethylene lid with a side or top opening; a stainless steel top-opening lid is also an option. • forms-surfaces.com • Circle 123

Corbett Lighting's Tango LED fixture is made from hand-crafted iron and finished with a textured bronze exterior and silver leaf interior. The Tango pendant (shown) is available in diameters of 12", 18", 23", and 30", and can be sourced with a 12W or 18W LED light engine. The Tango sconce is 13¹/₄" wide with an overall height of 6" and uses eight 1.2W LEDs. Both the pendant and sconce light fixtures are dimmable and produce a color temperature of 2,900 K (plus or minus 100 K). • corbettlighting.com • Circle 121

Armortex's Bullet Resistant Composite Fiberglass Panels contain woven roving ballistic-grade cloth that allows proper ply delamination to capture projectiles. The flat, rigid sheets are available in 3' by 8', 3' by 9', 4' by 8', and 4' by 9' sizes. The panels, offered in UL product levels 1 through 8, are approved by the U.S. Marshals Service and the U.S. General Services Administration, and comply with National Institute of Justice standards. • armortex.com • Circle 124

EcoClad XP expands **KlipTech's** EcoClad line of cladding products made from a 50-50 fiber blend of FSC-certified, 100% post-consumer recycled paper and bamboo. Manufactured with a 50% vegetable-based resin system, the VOC- and formaldehyde-free cladding can contribute to LEED points. EcoClad XP resists fading and UV damage, and is available in 600 different finishes, patterns, and textures. The standard panel thickness is 7mm; thicknesses between 3mm and 30mm are available. • kliptech.com • Circle 122

Centaurus by **Keramag** is the first hybrid urinal that can operate in a waterless mode or with a water flush on request. The rimless, glazed-ceramic body is 370mm wide by 710mm high and 330mm deep. A membrane in the rubber siphon trap allows liquids to drain before closing. Centaurus uses less than 1L of water per flush and can operate on a time-controlled flush system. A completely waterless version of the urinal is also available. • keramag.com • Circle 125

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technology



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The Contract lounge, a part of the **Millbrae** collection by **Coalesse**, combines paneled, quilted cushions with modern horizontal lines and metal legs. The seating is offered in both lounge or bench (shown) versions with one- to four-seat configurations. The lounge version may be specified with or without arms for ganging. Fabric may be upholstery or leather; several colors are available. The Millbrae collection also includes tables and the Lifestyle lounge, which has tufted cushions. • coalesse.com • Circle 128



Herman Miller has extended its offerings to include white ash as an option for the classic **Noguchi table's** solid-wood base. The wood is finished so that its creamy white tones will not yellow over time. Designed by Isamu Noguchi, the eponymous table was first introduced in 1948 and comprises three pieces: a 3/4"-thick plate-glass top and two solid-wood legs, which are also available in black, walnut, and cherry. The table is 50" wide by 15 3/4" high and 36" deep. • hermanmiller.com • Circle 127

Sefar Architecture's Vision is a mesh fabric woven from black polyester fibers and coated on one side with metal—aluminum, copper, aluminum and copper, chromium, titanium, or gold. For use in both exterior and interior applications, Vision may be laminated in glass or plastic, or embedded within an insulated glass unit, to reduce light and heat transmission while allowing for one-way views. Vision may also be coated with metal on both sides or digitally printed with custom designs. Six fabrics with a yarn thickness of either 140µm or 260µm and mesh apertures between 25% and 70% are available. • sefar.us • Circle 129



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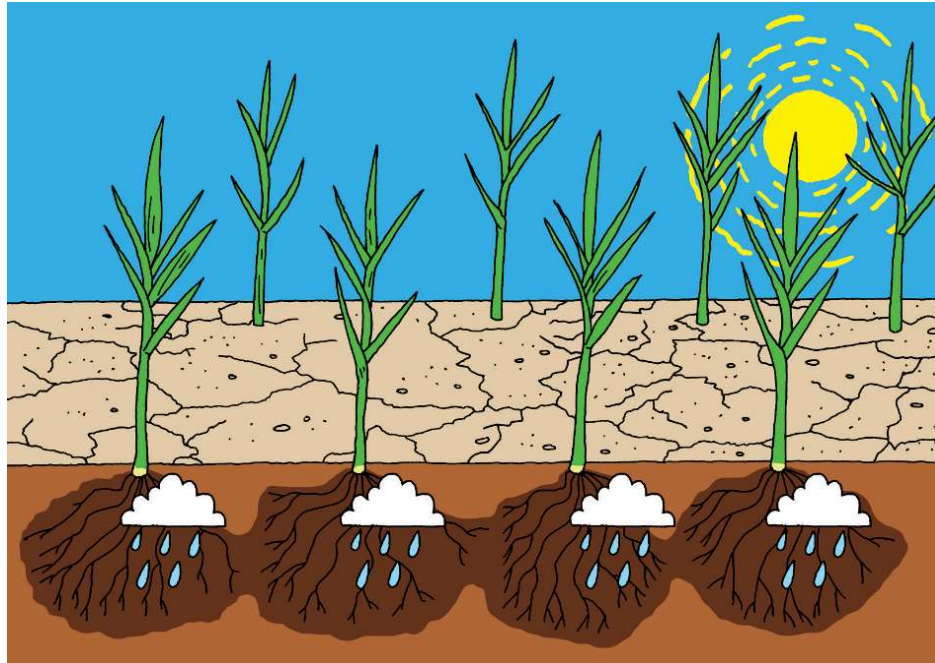
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43

NUMBER OF COUNTRIES
WORLDWIDE WHERE
WATER SCARCITY OCCURS.

SOURCE: UNITED NATIONS—WATER
“WATER FOR LIFE” DECADE, 2005–2015

AS MARK TWAIN ONCE REPORTEDLY SAID, “Whisky is for drinking, water is for fighting over.” As fresh water becomes an ever-precious resource, talk of hydrological conflict has escalated. Despite constituting less than 3 percent of the world’s water, fresh water is in sufficient supply to fulfill the needs of the global population. However, over-consumption, pollution, and unsustainable management—plus uneven distribution of supplies—has resulted in increased water stress.

According to the United Nations—Water “Water for Life” Decade, a 2005–2015 program, nearly 20 percent of the world’s population resides in regions of water scarcity, and another almost-quarter of the population faces water-supply shortages. The U.N. estimates that “two-thirds of the world’s population could be living under water-stressed conditions” by 2025. In addition to better water-management practices and policies, design will play an increasingly important role in addressing the U.N.’s Millennium Development Goal of halving the proportion of the population without adequate access to safe water by 2015.

A popular strategy to deliver more fresh water is to extract it from the oceans—the repository for the remaining 97.5 percent of the planet’s water. Used primarily in arid regions, desalination is typically expensive and energy-intensive, often requiring fossil fuels in the process. However, a U.K.-based designer has recently proposed a concept for a desalination plant intended to overcome these obstacles.

Phil Pauley’s “Solar Cucumber” is a simple floating tank covered in photovoltaic panels. Designed to assist coastal communities in regions of water scarcity, the desalination device uses solar-powered reverse osmosis to extract potable water from seawater. Because the device may be located at the source (floating in the ocean), it minimizes the transportation energy needed.

While extracting fresh water from seawater is a highly sought-after method, one young Australian inventor is following the road less traveled: pulling water from thin air. Edward Linacre, a Melbourne-based designer and graduate of the Swinburne University of Technology, has recently unveiled “Airdrop,” an ingenious irrigation system in which moisture is harvested from the air and stored underground.

Designed as a response to perpetual droughts in Australia, Airdrop utilizes a small turbine powered by solar cells to pull air below the soil, cooling it and causing its moisture to condense inside an underground tank. The water is then pumped to crops via efficient drip-irrigation tubing. Linacre received the 2011 James Dyson Award for his invention, which includes a monitoring system for tracking water levels and system pressure.

The standalone apparatus holds promise not only for agricultural applications but also for architecture. After all, if the U.N.’s water-scarcity projections come to pass, architects will need to look beyond water conservation alone and consider an additional source of fresh water: the air that surrounds their structures. □

TEXT BY BLAINE BROWNELL
ILLUSTRATIONS BY PETER ARKLE



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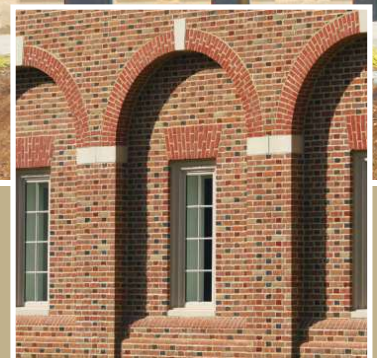
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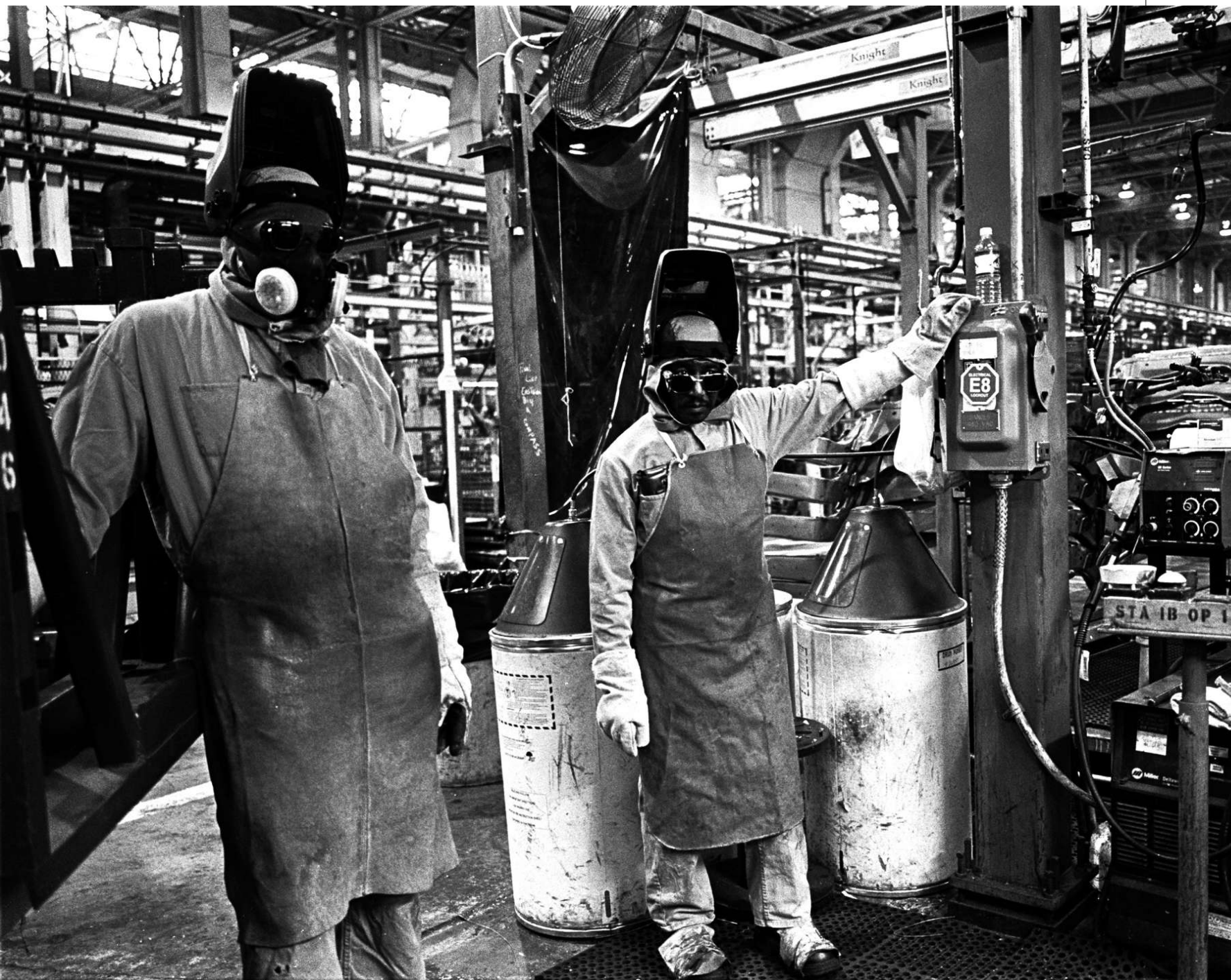
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CULTURE



EDITED BY LINDSEY M. ROBERTS

→ EXHIBIT

There's one Motor City industry that's been rising steadily over the last decade: ruin porn. As the industrial capital's core has collapsed, Detroit has become the destination for voyeuristic tourists shooting urban wastelands. **Detroit Revealed: Photographs 2000–2010**, an exhibition at the Detroit Institute of Arts, stands apart from the exploitative click-baiting Web slide shows with a survey of Detroit pics that is neither vulgar nor prosumer, but decidedly art. (Shown are autoworkers during the last days of Mustang production before a Ford Motor Co. plant's demolition.) The curators don't hide ugly truths or romanticize them, but rather focus on some overlooked qualities: color and composition. • Through April 29. dia.org



→ **EXHIBIT**

A new exhibit, **RE-CYCLE: Strategies for Architecture, City, and Planet**, at the MAXXI in Rome won't discuss trash or aim to prove recycling's ethical or ecological importance. Instead, it demonstrates how deeply rooted the idea of recycling is in creative art and design. The exhibit features a model of Manhattan's High Line, which offered a first look at the abandoned railroad reinterpreted as a trail of site-specific urban microclimates. A photo depicts Switzerland's Freitag Flagship (shown), a shop made from containers for the company that sells bags made from tarps. And the display "Music on Bones" is a lesson in the resilience of art and rebellion: Dissidents in the Soviet Union pressed records of Jimi Hendrix and other Western rock stars onto X-ray plates of fractured skulls, spinal cords, and tibias to create phonographic recordings of forbidden music. Through April 29. • fondazionemaxxi.it



→ **OBJECT**

The Red Globe teapot by designer David Birch solves a small but pesky problem: It doesn't drip when pouring. The pots were designed in 1991 for the Conran Shop, a U.K.-based design-goods store now with 10 outposts in six countries. Two hundred are on display at London's Design Museum for the exhibit **Terence Conran: The Way We Live Now**, which toasts the museum's 80-year-old founder and auteur of British design. From the '50s onward, Conran promoted fresh, European aesthetics through his many home décor stores and his interiors firm, which designed Heathrow's Terminal One. (His children, contemporary designers Sebastian, Jasper, and Sophie Conran, continue his legacy.) The knighted man's sweep was wide, but his aim was narrow: "to produce useful things at a price that most people can afford," he says. "Such things may not win design prizes, but neither do they go out of fashion." That's something to raise your teacup to. Through March 4. • designmuseum.org

→ **BOOK**

Humanity's aspirations have their most obvious and enduring architectural manifestation in the tall building. Examples range in time and treatment from the biblical Tower of Babel to the boggle-the-mind Burj Khalifa in Dubai, United Arab Emirates. In 2009, Steven Holl, FAIA, set the heroic typology on its side with the Vanke Center, a massive mixed-use building in Shenzhen, China. A new monograph, **Horizontal Skyscraper**, takes its title from Holl's nickname for the structure, which floats horizontally over the ground on eight freestanding cores. Essays by Holl, Li Hu, Yehuda Safran, and Lebbeus Woods explain the theory behind the many drawings and photographs of the project. • \$35; William Stout Publishers, December 2011



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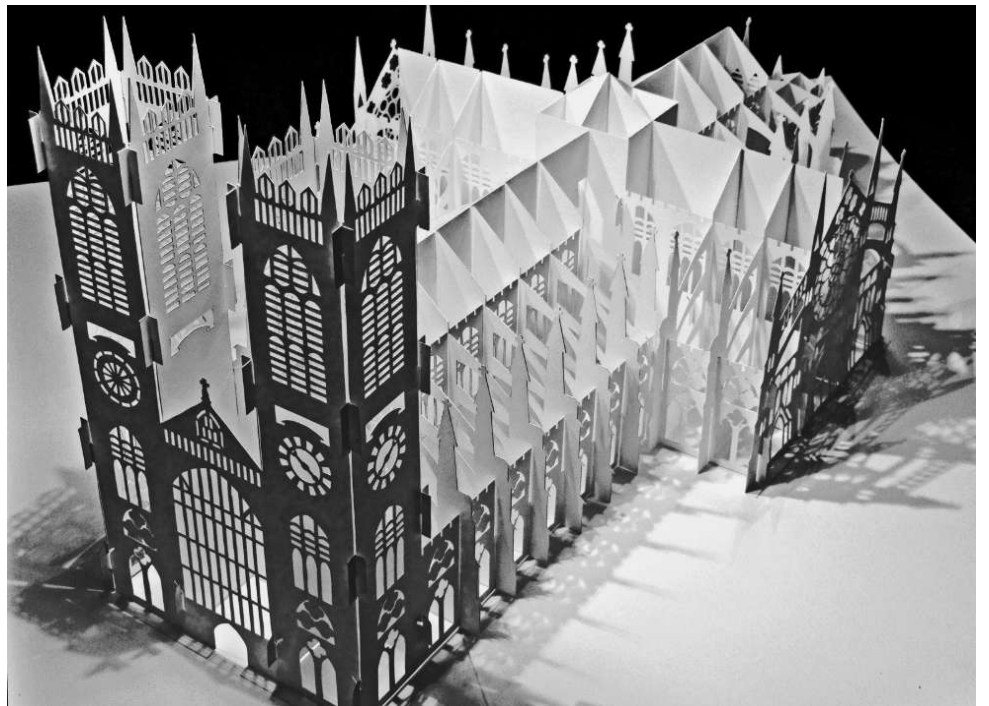
Last summer, one of every 611 American homes went into foreclosure. Seeing this and other recessionary housing stats as indicative of a failed paradigm, the Museum of Modern Art and MoMA PS1 asked five teams of architects and other design experts to envision the suburbs. As part of the program **Foreclosed: Rehousing the American Dream**, each team focused on a region within a “megaregion.” Leaders included Jeanne Gang Architects for the Cicero, Ill., region and Zago Architecture for the Rialto, Calif., region. For Orange, N.J., (shown), Hilary Sample, AIA, and Michael Meredith, AIA, initially proposed taking over streets with housing and building 12-foot-wide rowhouses, as well as sharing equity in the form of co-ops. “We’re questioning the idea of home ownership and looking at new models,” Sample says. Final proposals will be on view from February 15 to July 30. • mom.org

→ BOOK

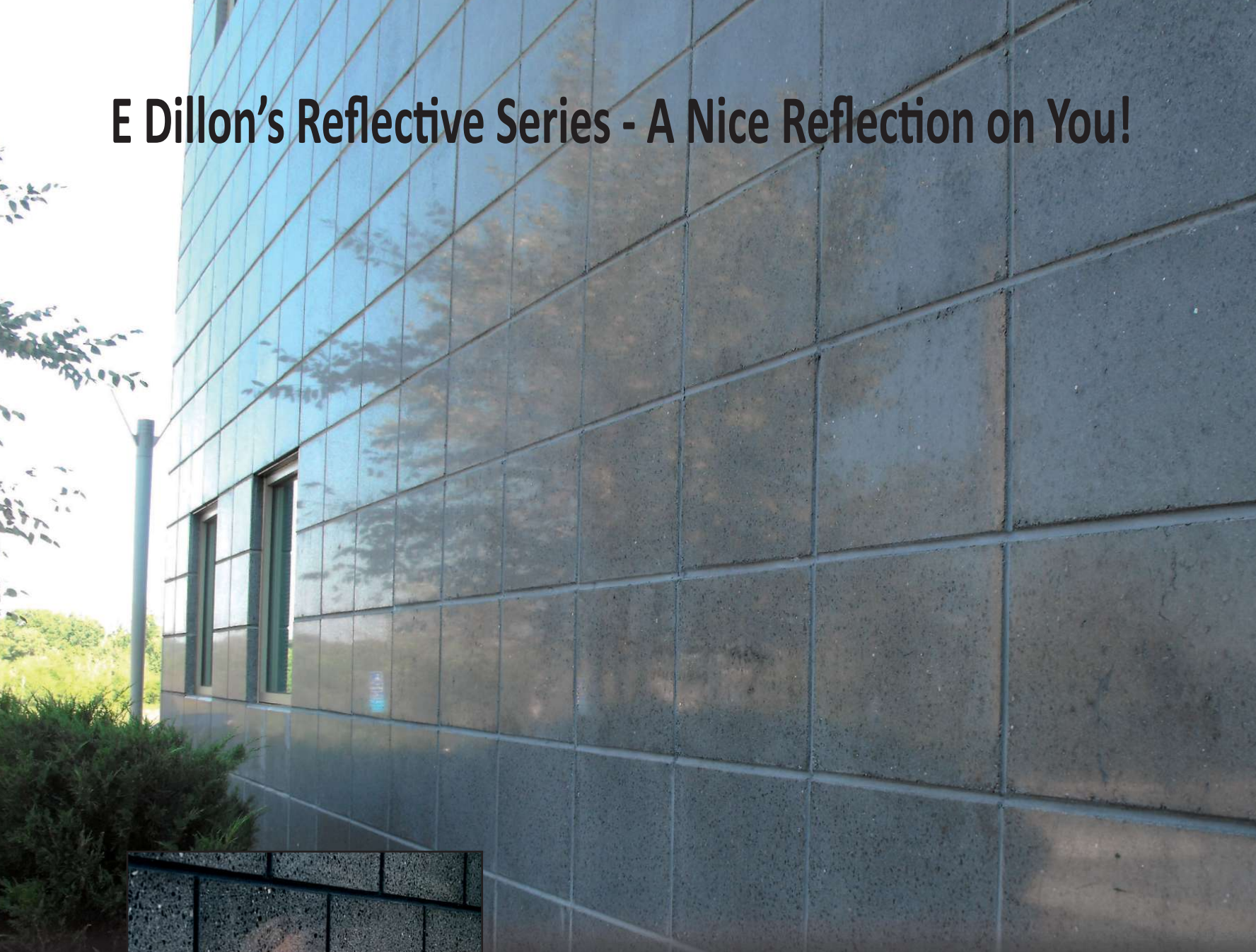
From 3D jigsaw puzzles of the New York City skyline to Lego replicas of the Burj Khalifa, the options available to the hobbyist starchitect have never been more bountiful.

Origami Architecture: Papercraft Models of the World’s Most Famous Buildings, from paper architect and author Sheung Yee Shing, adds craft paper to the model builder’s toolkit, providing templates to cut and assemble models of 16 of the world’s most recognizable buildings, including the Eiffel Tower, the Chrysler building, and the Hall of Supreme Harmony. What’s notable about these paper replicas is how much detail that plain white paper can illuminate. When you strip away the model’s materiality, the simple interface of light and shade highlights the striking beauty of the buildings’ architectural outlines

(London’s Westminster Abbey, after 66 cutting and interlocking steps, shown). That such intricate crafts can be folded flat only adds to their mystery. • \$24.95; Tuttle Publishing, October 2011



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→ **FILM**

Soaring atriums, lit columns, glass elevators, water fountains—such features have become synonymous with hotels and convention centers. But they are only ubiquitous since architect-developer John Portman, FAIA, almost single-handedly changed the hospitality typology from blah boxes into spectacular spaces. Documentary producer Ben Loeterman, in **John Portman: A Life of Building**, helps us look with fresh eyes at the architect's calling cards. Starting with Atlanta's Hyatt Regency in 1967 (now part of the Atlanta Merchandise Mart), the 87-year-old founder of John Portman & Associates has designed countless hotels and convention centers around the country and the world, including the Bonaventure in Los Angeles, the Embarcadero Center in San Francisco, the Marriott Marquis in Atlanta (shown), and the Shanghai Centre—and has had countless copycats. Although Portman has been criticized for designing introverted buildings that separate guests from their urban surroundings, commendation comes just as freely from critics such as Paul Goldberger and Herbert Muschamp, who famously described Portman's better buildings as being like “architecture at happy hour.” • johnportmanfilm.com

CLOCKWISE FROM LEFT: MICHAEL PORTMAN; COURTESY PRINCETON UNIVERSITY ART MUSEUM

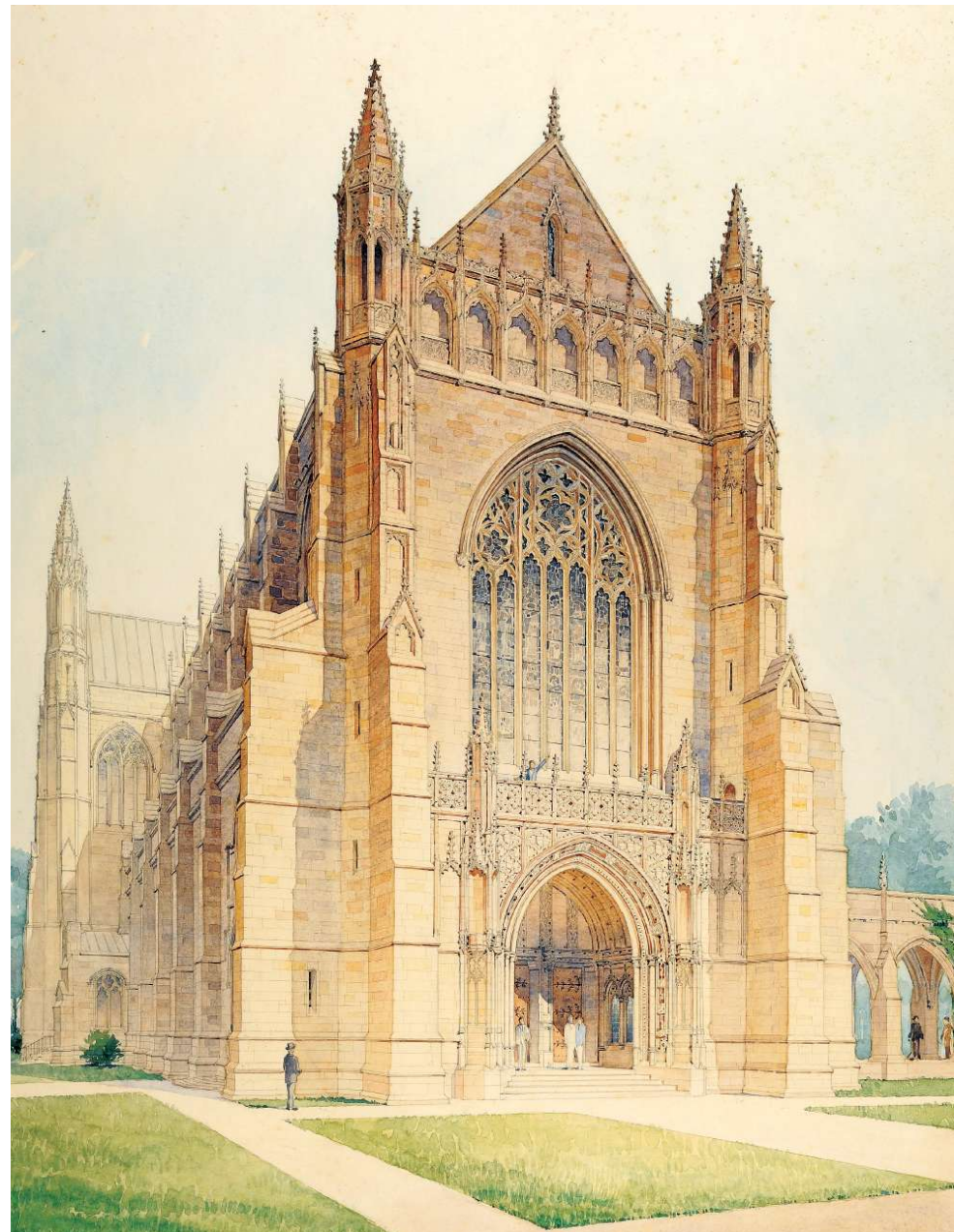
→ **EXHIBIT**

Of all the architectural revival styles of the 19th century that experienced popularity in this country—Romanesque, Queen Anne, Neo-Byzantine, Beaux-Arts—the Gothic Revival has had the most staying power. Princeton University, hinting that its own architecture helped spur the movement, is putting on **Princeton and the Gothic Revival: 1870–1930**. At its founding in 1746, the university was known as the College of New Jersey, but a century later, the newly named Princeton decided to become an international institution, starting with its architecture. Cram and Ferguson modeled new buildings in the Gothic style after Oxford and Cambridge, including the firm's chapel (shown), finished in 1928—and cementing forever the ideal collegiate typology in American minds. From February 25 to June 24. • artmuseum.princeton.edu



→ **VIDEO**

Be honest. Unless you're a critic, the last earnest conversation you had about the philosophy of architecture was probably in your dorm room while studying for an art history final. David M. Schwarz Architects aims to remedy this discourse gap with a series of short videos called **Conversations on Architecture**, on the firm's YouTube channel. In one video, principal Craig Williams suggests that architects could join politicians in benefitting from a bit of bipartisanship: “Why does the architectural world believe that there has to be a divide between traditional architecture and modern architecture?” • go.hw.net/schwarzarchitects





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COMMERCIAL

→CRIT

Roman Candle

EXAMINING THE LIFE AND WORKS OF ROMAN ARCHITECTURAL HISTORIAN WILLIAM MACDONALD REVEALS AS MUCH ABOUT CONTEMPORARY ARCHITECTURE AS IT DOES ABOUT ANCIENT ROME.



The Pantheon

TEXT BY DIANA E. E. KLEINER
PHOTOS BY MASSIMO MASTRORILLO



Diana E. E. Kleiner is Dunham Professor of History of Art and Classics at Yale University. Her course on Roman architecture is available online at the Open Yale Courses website as well as through iTunes U and YouTube.

THERE IS NO MORE PERFECT PLACE for a conference on Roman architecture than the majestic Villa Aurelia on the Janiculum Hill in Rome. From the lofty perch of the 17th-century palace's *terrazzo*, the Eternal City presents its familiar panoramic splendor. The distinctive silhouette of the Pantheon dome—wide, flat, and ridged—distinguishes itself from the steeper profiles of its neighbors, serving as the archetype of Roman concrete construction at its most transcendent.

Not surprisingly, the Pantheon served as a leitmotif for a gathering to honor William L. MacDonald, who passed away in March 2010 and left an enduring heritage as an inspiring teacher, influential scholar, and unforgettable friend. The Pantheon was MacDonald's Holy Grail. And "Paradigm and Progeny: Roman Imperial Architecture and its Legacy," a conference hosted at the villa by the American Academy in Rome in December, further revealed that MacDonald's quest to understand the Pantheon uncovered architectural design ideas very much in practice today.

MacDonald fathomed as did few others the essence of Roman architecture and shared his knowledge with warmth and generosity. In his writings and in his virtuoso lectures at Yale University in Connecticut and Smith College in Massachusetts, MacDonald defined Roman architecture in a singular language that he

created for that purpose. His evocative prose is well demonstrated in, as one conference participant put it, "the most influential book on Roman architecture of the second half of the 20th century": *The Architecture of the Roman Empire I: An Introductory Study* (1965).

So critical is MacDonald's language to his legacy that the symposium's sessions were organized to track his major works. A session titled "Urban Armature: The City Shaped" neatly fit MacDonald's 1986 *The Architecture of the Roman Empire II: An Urban Appraisal*, in which he developed the concept of armature to explain urban design in ancient Rome. A session called "Hadrian and the Empire" expanded the ideas that surfaced in 1995's *Hadrian's Villa and its Legacy*, which MacDonald wrote with John Pinto, who, along with Diane Favro and Fikret Yegül, organized the conference. The sessions were supplemented by a forum moderated by Pinto and Academy director Christopher Celenza, who together engaged three noted architects—Frederick Fisher, Stephen Kieran, FAIA; and Laurie Olin, Hon. AIA—on the relevance of ancient Roman architecture to contemporary design.

Those architects reached consensus on at least one thing: Bill MacDonald mattered because he was



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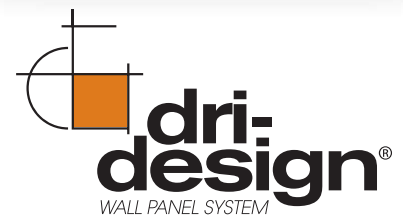
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an architect's architectural historian. He was driven by the qualities that absorb architects, including space, volume, light, materials, and technical innovation. "Bill wrote about Roman architecture in a way modern designers could understand," Olin said. MacDonald himself affirmed in *The Architecture of the Roman Empire* that "in the study of architecture there can be no substitute for leaning against one's buildings." Especially memorable for a discussion within the architecture field—one that is rapidly transitioning to digital modeling—was the architects' exhortation to draw. "One can't think as an architect without drawing," Kieran said. Fisher added, "I always see something better when I draw it."

MacDonald also looked and saw. He carried scaled drawings of major buildings such as the Pantheon in his pocket and fixed the structures he saw in his mind's eye by photographing them. (Three thousand images from his well-known collection are now housed at Princeton University.) So thoroughly had the historian embraced the architect's thinking and vision that MacDonald planned to write (but did not complete) an 11th book to Vitruvius's 10-volume treatise on architecture.

One objective of the symposium was to assess new directions in Roman architectural studies; a perpendicular concern was the impact of ancient Roman buildings on later architecture. MacDonald worked at the intersection of those interests. The conference scholars steered subjects long associated with MacDonald toward contemporary issues, demonstrating the innovative tools employed for research today. In one paper delivered for the session called "Rome Builds," inspired by MacDonald's *The Pantheon, Design, Meaning, and Progeny*

(1976), University of Pennsylvania professor Lothar Haselberger disregarded the interior of the Pantheon's celebrated dome in favor of the columns on the temple's façade. Using those columns to underscore the wisdom of MacDonald's commitment to close visual analysis, Haselberger showed that the original granite column shafts vary in diameter, while the Corinthian capitals vary in height. Haselberger explained these disparities—documented through laser scanning by the Bern Digital Pantheon Project—as the result of the complexity of the building program, scale of the temple, reliance on outsourcing, carving of the columns by hand, and quest for dramatic visual effect.

Northwestern University professor emeritus James Packer—who, in 2010, launched a digital recreation of the Roman Forum—applied the urban armature concept that MacDonald developed in 1986 to the evolution of the Forum. According to MacDonald, the streets, plazas, and key public buildings of Roman metropolitan centers formed urban armatures, whose components accumulated over time in response to what he characterized as "the universal urban need for an architecture of connection and passage." MacDonald differentiated urban armatures from city plans, which had a theoretical basis and were laid out all at once. Packer's treatment of the Forum's architectural development, the most comprehensive to date, associates the Forum with armatures deployed in such frontier municipalities as Palmyra (Syria).

The *opus reticulatum* at Hadrian's Villa at Tivoli, Italy, admired by today's designers for its netlike pattern, was waning as a concrete facing by 120 C.E.,



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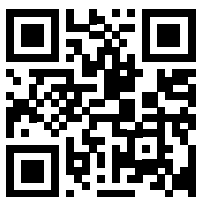
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culture



The *opus reticulatum* at Hadrian's Villa



according to York University professor emeritus Guy Métraux; it may have exemplified a nostalgia sometimes present in private villa architecture. Elizabeth Fentress, president of the International Association for Classical Archaeology in Rome, revealed interesting details about “other villas” belonging to Hadrian at Anagni and Praeneste that further expand MacDonald’s work at Tivoli, but also make apparent that Hadrian’s Villa remains unique.

The formal program concluded with a presentation by University of California at Santa Barbara professor Fikret Yegül, which stood out as the most MacDonald-like of the conference’s many papers. Yegül pronounced the column to be the principal gene of Classical architecture. Elegantly simple, with base, shaft, and capital, the column was used for structural, aesthetic, and symbolic purposes—alternatingly and even simultaneously. Ubiquitous in the ancient world, the column could be endlessly duplicated, as the preserved streets of Roman Palmyra attest. The Romans were skilled at using this fundamental module of Classical architecture in traditional ways (to hold up an architrave, for example) but also deployed the column in innovative configurations. Experiments in Rome began with the projecting columnar bays of the Forum Transitorium and the pilasters supporting broken triangular pediments in the hemicycle of the Markets of Trajan—culminating in such pulsating “baroque” façades as that of the Theater at Sabratha (Libya).

By focusing through his writings on the Pantheon, Hadrian’s Villa, and the Roman provinces under Trajan and Hadrian, MacDonald illuminated Hadrian as both a patron of architecture and an amateur architectural practitioner known for sketching vaults in the form of gourds. The Roman architect Rabirius may have inspired Hadrian’s famous “pumpkin” domes; Rabirius certainly inspired MacDonald, who playfully signed his name, along with those of other Classical architects, to postcards that he sent to colleagues and friends. While MacDonald’s work on the Pantheon and other major Roman buildings defined his legacy as an architectural historian, it was MacDonald’s close and personal association with his subject—with architecture, and with architects—that cemented his reputation among designers working nearly two millennia later. □

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Bing Thom Architects is based in a former factory that manufactured rubber diving suits. Even in 1982, the year that Bing Thom, AIA, built his studio, he was looking forward with plans for growth. "I wanted a space where I could move into other warehouse spaces cheaply," he says. And so he has done—leasing and expanding into adjacent warehouse spaces and houses and increasing his studio size 400 percent over three decades.

Today, the firm in Vancouver, British Columbia, Canada, employs 30 people. Thom describes them as "hyphenated": engineer-architects, interior designer-architects, MBA-architects. The firm's designers hail from 10 countries and speak 12 different languages.

"My office is a hidden oasis in the middle of the city," Thom, 71, says. "It's a sanctuary space for thinking and contemplation and keeping the outside world away, where we can be on our own. It has the feeling of a warehouse, but very serene."

When Thom first leased the factory space in 1982, he didn't wait to add a sunlit floor for extra space. "My structural engineer told me, 'Add the second floor. Either you're going to make it or you're going to go broke.'"

Thom sought out an industrial space that reflected his personality. Before his additions, the studio was a one-story concrete block located at the foot of the Burrard Bridge, a dramatic, Art Deco structure. "I'm an edgy guy," he says, "in the sense that I don't like to be in the middle of the action. I like to be on the edge and making my own conclusion. That's why I'm in Vancouver and not New York or Shanghai. I like the tranquility. I do my best work when I can be observing."

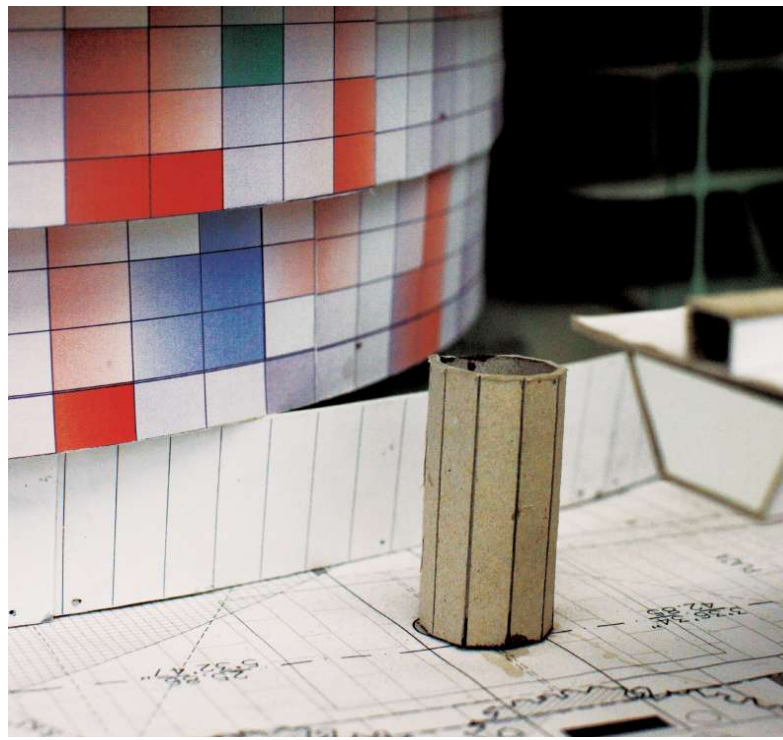
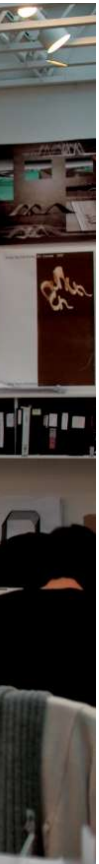
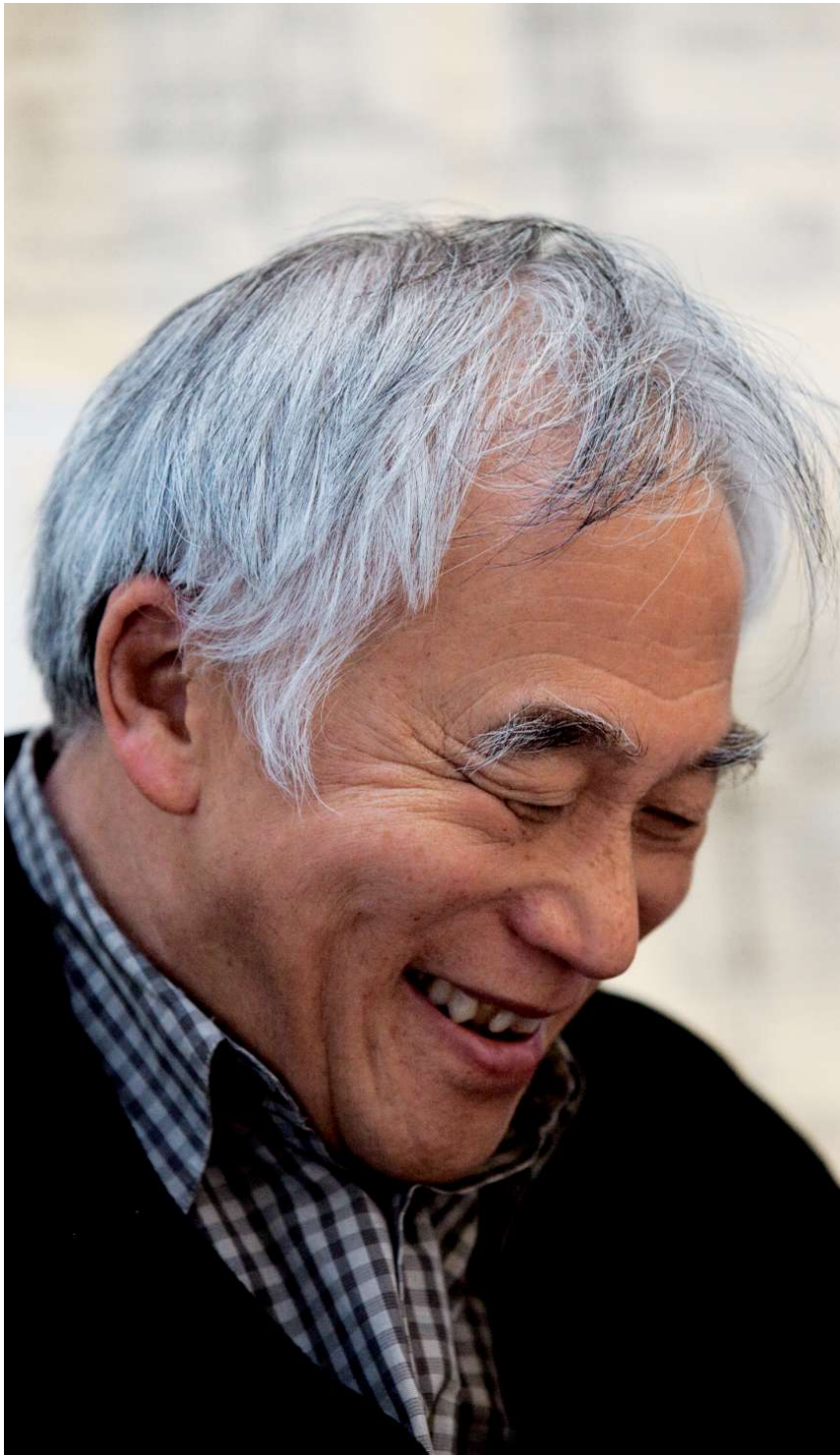
→STUDIO VISIT

Bing Thom

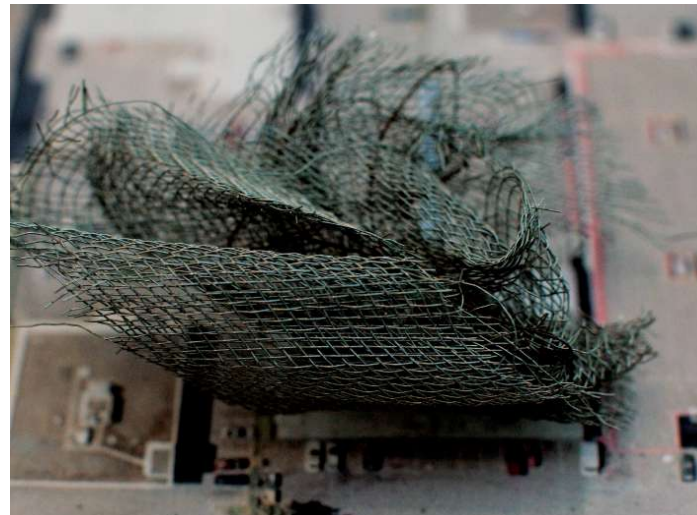
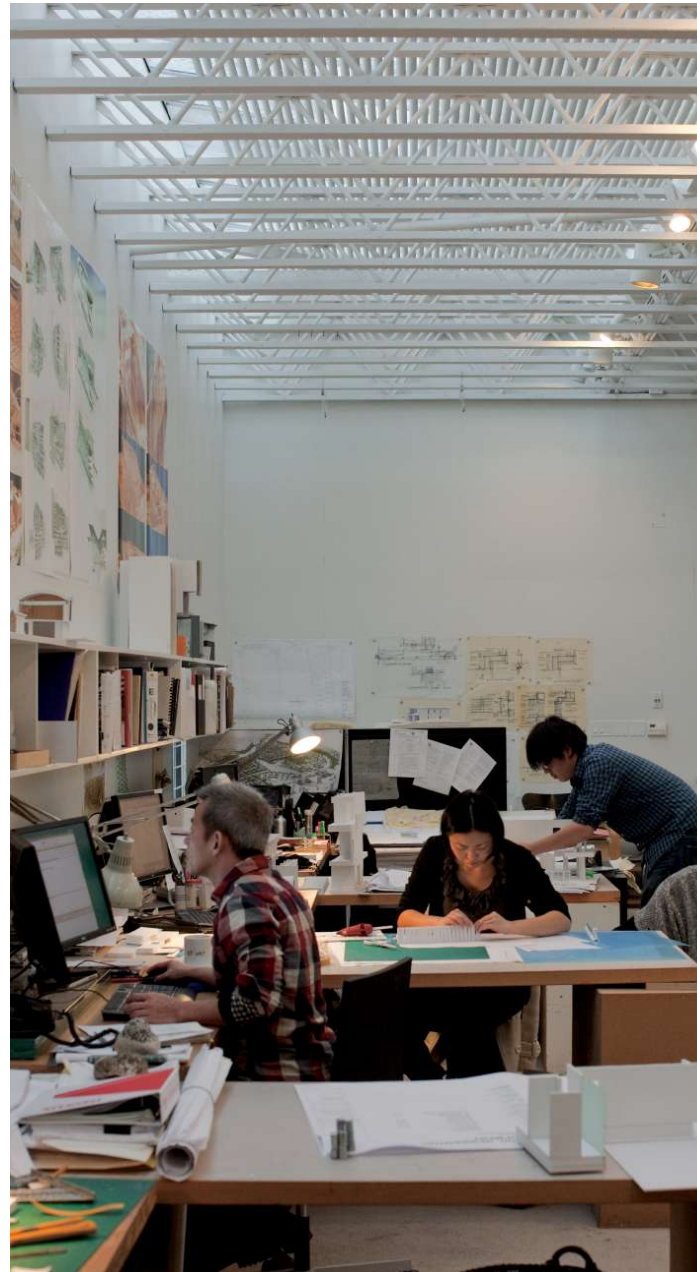
THE CANADIAN ARCHITECT—WHOSE NAME IS SYNONYMOUS WITH VANCOUVERISM IN ARCHITECTURE AND URBAN PLANNING—DISCUSSES HIS STUDIO AND THE FEATURES OF THE CITY THAT INSPIRE HIM.

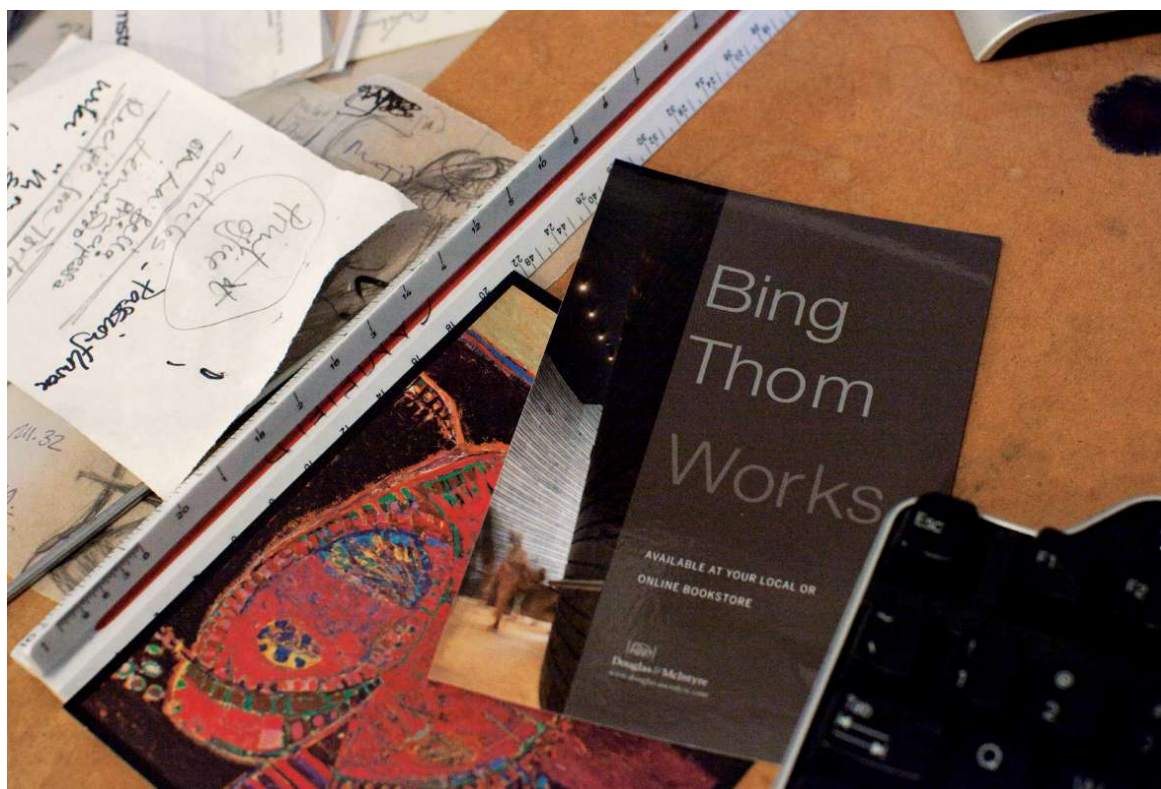
TEXT BY KRISTON CAPPS
PHOTOS BY JASON FULFORD





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"It's more like a school," Thom says of his studio. "It's really not an office." He isn't exaggerating: The firm in fact hosts classes from the University of British Columbia, which are run through the studio's research and development division, BTAsworks.

"The office is now quite mature," Thom says. "Most of the staff has been here for over eight years. We're very quick to decide what we want."

It's fitting that Thom built his studio so close to False Creek, a short inlet that runs through Vancouver, as water is a key theme in the firm's work. Recently, BTAsworks performed a study on the consequences for Vancouver of rising water levels. The firm is performing a similar study for Hong Kong—where some of Thom's suggestions draw blank stares. He would like to export to Hong Kong the signature downtown beaches of Vancouver. "Beaches are very good for filtering water," he says.

The year that Thom built his studio, city workers in Vancouver were on strike. By the time the strike was over, Thom was able to apply for permits to build his studio—but he had in fact already completed the project.

→ BEYOND BUILDINGS

Beyond Bilbao

MODEST GESTURES, BETTER SPACES, LOCAL CULTURE:
WHAT THE BILBAO EFFECT DIDN'T DELIVER.



At 320,000 square feet, the Guggenheim Abu Dhabi, which was designed by Frank Gehry, FAIA, will be the largest of any Guggenheim museum—if it is ever completed.

IT'S BEEN A BAD STRETCH for culture buildings. In October, the Los Angeles County Museum of Art (LACMA) announced that the Academy of Motion Arts' film museum is moving into the old May Co. building, meaning that the May Co. building will not become the capstone in LACMA's often-reconceived and always-shrinking planning efforts. The Tate Modern announced that it will not open a giant new Herzog & de Meuron addition in time for the Olympics, but will rather occupy basement spaces with art.

In Abu Dhabi, United Arab Emirates, construction was recently officially delayed on the new Guggenheim there, though a friend who visited said the cranes have been motionless since spring. The Abu Dhabi branch of the Louvre will now not open for another few years. There are the continual delays in the renovations of the Rijksmuseum and the Stedelijk Museum in Amsterdam. To cap it all off, the October opening of the renovated Musée d'Orsay in Paris was marred by strikes and protests.

So I guess we can officially say that the so-called big-museum building boom is over. It was never as big a deal as some thought, as there were a lot more buildings announced than were ever completed. In the Middle East, we got the new Arab Museum of Modern Art in Qatar, period. In Asia, a renovation to a massive existing museum on Tiananmen Square, period. In this country, mediocre new wings grace the Art Institute of Chicago, the Museum of Fine Arts in Boston, and LACMA. None of them is a signature building.

The Bilbao Effect, in other words, didn't really exist. In lieu of iconic structures, the place where quality truly shone was at a much smaller scale. Partially because of European Union policies and partially because many European countries actually care about the culture that brings communities together, that whole continent is now dotted with little jewels of regional museums and cultural centers, though even there the financial crisis has curtailed operations and construction.

The few bigger museums that do not pretend to be neutral containers, such as the de Young Museum in San Francisco, have been successful, both as forms and as attractors for visitors. It may be the case that the Bilbao Effect was actually a name for a different phenomenon: cultural attractors.

In an era of instantly consumable images, etherizing communities, and lack of either social or societal identity, we actually want places in which to gather, to contemplate, to be immersed, and to be part of a history. Sometimes that act needs architecture of a recognizable sort as a catalyst; other times it needs a great performer or artist, an event, or just a good place to reoccupy.

Just putting up a big building and importing some art alone will not do it. It is difficult to predict what will work, though good spaces seem to be key, even when, like the High Line in New York, they have no ostensible function. So let's hear it for the real Bilbao Effect: great architecture, culture, and place, all coming together at the right time. Good riddance to the imitators, and to the big-box style the Bilbao Guggenheim represents. □

TEXT BY AARON BETSKY
ILLUSTRATION BY PETER ARKLE



→ Read more of Aaron's design observations at ARCHITECT's Beyond Buildings blog: go.hw.net/betsky.

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Steel structural beams and plates, foundation and wall sections are manufactured using recycled materials.

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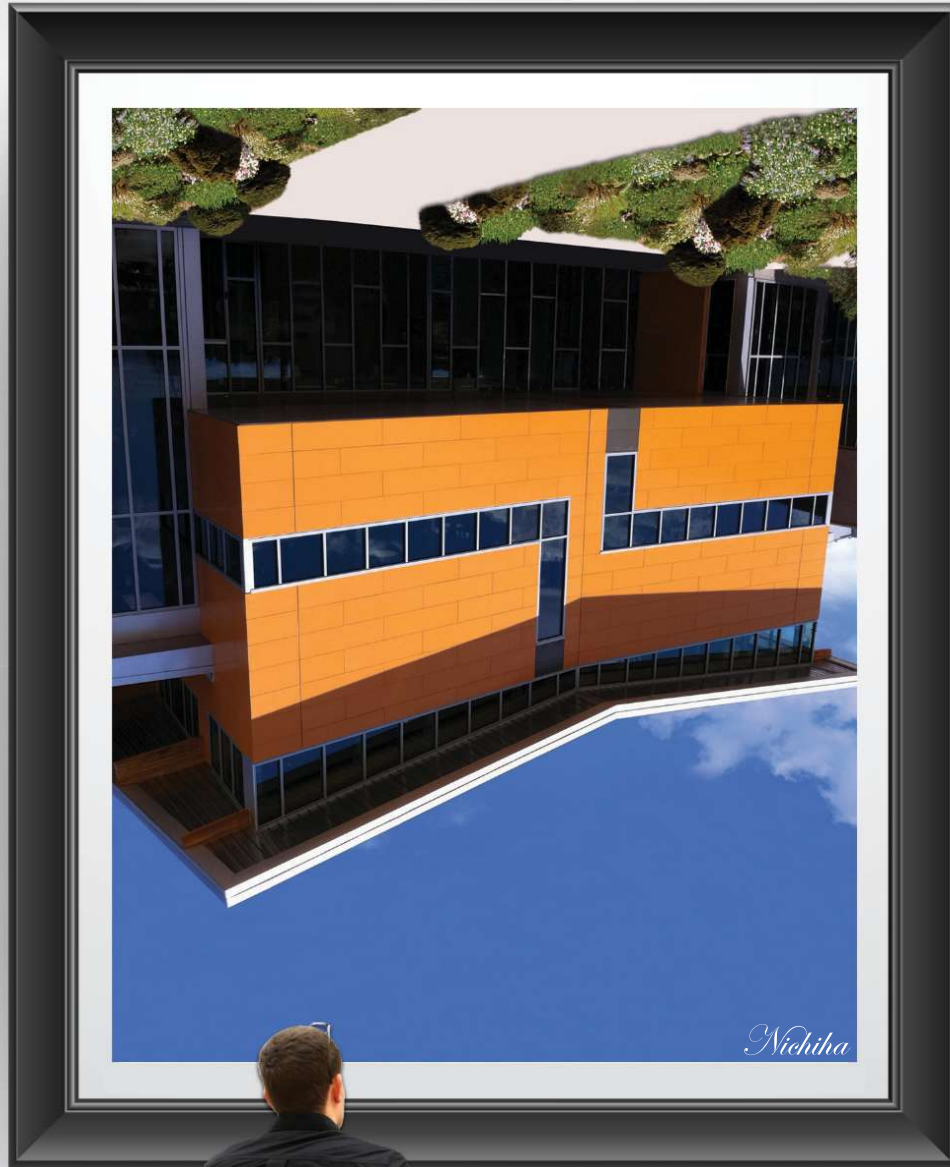
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WHAT'S NEXT » We asked leading architects, critics, designers, and other thought leaders a simple question: What do you envision when you think about the future of the architectural workplace and practice? Find their responses on the coming pages, and in our new weekly "What's Next" video series at architectmagazine.com.

Your Office, Your Future

TEXT BY ERIC WILLS

IF THERE HAS ever been a moment when architecture firms would like nothing more than to push a giant Staples-style reset button, this may well be it. For all the momentary reverie that comes at the start of a New Year, it's impossible to escape the specter of the flailing economy. You may have more free time than you'd like as you search for new clients. Or you may find that your workload doubled because a colleague got the pink slip.

The Staples button may just be an ad campaign, but back in the real world, there's no better time than the present to reinvent your practice. The Empire State Building rose as the nation plunged into the Great Depression. John Jakob Raskob, the building's financier, was hardly dissuaded by the economic climate of the time; indeed, he never wavered from his bold and ambitious plan, even as the economy grew worse. So, too, can firms view the current financial malaise as an opportunity—to rethink, even in small, manageable ways, their approach to office culture, social media, or business development.

In this, our second annual "What's Next" issue, we explore the future of the architectural workplace. The conversation continues online at architectmagazine.com in the form of additional case studies and interviews, and in our new, weekly "What's Next" video series, in which leaders from within and around the profession share their own ideas, in 60 seconds or less.

The conversation will culminate at the 2012 AIA National Convention and Design Exposition in

Washington, D.C. The 2011 AIA Architecture Firm Award recipient, BNIM, is designing an exhibit, "The Open-Source Office," that will serve as the centerpiece of the expo hall and spark dialogue around the future of architectural practice and workplaces. In developing the exhibit content, BNIM has identified six areas of critical development for the office of the future—nurture, meet, research, focus, nourish, and grow—which serve as the organizational structure for this issue. BNIM also contributed a manifesto (page 140) about how the natural world should inform the design and function of the architectural workplace.

At first glance, some of the suggestions in the following pages may seem absurd. Your firm should cultivate a vegetable garden. Employees shouldn't have to work fixed hours. Your next client will find you via Twitter. Five percent of the bottom line should be dedicated to research.

Outlandish, you say? In truth, ideas such as these are already the reality at many firms around the country. And those firms are seeing the benefit.

Return on investment. You'll find those words often in this package. Ditto for collaboration, flexibility, speed, and data. As the profession changes and becomes more of an interdisciplinary pursuit, as client expectations grow more complex, as technology continues to evolve at warp speed, firms will need to consider where they want to be in five years, in a decade. These are challenging times, yes, but this is also an era of great opportunity. □

Nurture » Architecture's nonstop-charrette, sweatshop-style office culture is no longer sustainable. Taskmaster bosses, faced with an epidemic of staff burnout, declining retention rates, and a shrinking talent pool, will be forced to acknowledge that a business can only succeed to the extent that its employees flourish. The office culture of old, hierarchical to a fault, will be replaced by a new, employee-centered workplace that caters to staff happiness and encourages collaboration.

Morale Will Improve

As the profession faces a coming talent shortage, some firms are attracting new employees with happy hours and Flamenco. Can a friendlier culture help the bottom line?

TEXT BY ELIZABETH EVITTS DICKINSON
PHOTOS BY LEE POWERS

A FEW YEARS AGO, a now-defunct blog called Intern Architects in Hell inspired a small but dedicated following. The site posted cartoons depicting the frequently baffling, often amusing exchanges between an overworked, underpaid intern and his bosses. In one cartoon, a principal holding designs that he drafted himself chastises a young intern, saying, "If you had drawn those, I would have fired you." The series encapsulated the strenuous, hierarchical environment that is prevalent at many practices—the kind of environment where you say goodbye to a personal life, keep your mouth shut, and toil away for years in the hopes of advancing up the food chain.

You won't find that cutthroat, pay-your-dues philosophy at Mithun, a design firm founded in 1949 and known for highly sustainable designs and urban plans. Located in a sunlit studio in a converted industrial pier on the Seattle waterfront, Mithun (which also has a second office in San Francisco) defies the stereotypical culture so often associated with architecture. First, there's the commute. Staff are encouraged to walk or bike, and those who do receive gift cards from places such as REI as a reward. Once on site, there is ample bike parking and showers as well as three hybrid cars for staff to share.

Inside, the principals' offices do not rim the perimeter hogging the view; instead everyone has a sight line to Elliot Bay and the Olympic Mountains beyond. People sit where it makes the most sense for current projects, so new employees share space with senior partners and the firm's multiple disciplines—architecture, interior design, landscape architecture, and urban design and planning—work in close proximity. Lunchtime often finds employees participating in a Mithuniversity class—

an award-winning continuing education program that highlights cutting-edge ideas and products. Employees also find inspiration in the firm's Threshold Gallery, an employee-curated space featuring a rotating cast of emerging designers and artists. Courtney Rosenstein, 43, a marketing specialist with more than 15 years of experience at architecture firms, joined Mithun in 2010. "When I started here I was almost overwhelmed by all the perks," she says.

This list is indeed impressive. There's an annual Mithunerfest celebration with employees, family, and clients, and the biennial Mithun Olympics, where staff compete in competitions such as relay races. Frequent crits held by project teams encourage collaborative insight and inspiration, and a 5 p.m. happy hour on Fridays caps off the week. Individuals are afforded the freedom to work when and where they need. Some leave early to coach soccer, participate on boards, or teach; new moms work a reduced schedule, and parents volunteer at their children's schools. And because creative energy is so valued here, employees are offered paid scholarships to attend activities not related to their profession. The J. Don Bowman Scholarship, named for a former employee, underwrites lessons in Flamenco, classes in French pastry, and trips down Highway 101 for a film documentary. "I got that scholarship and took a jewelry class and made an engagement ring for my wife," says Brendan Connolly, AIA, 38, a partner at Mithun. "It's incentive to learn new things, and for me it was great to take a class that was not about architecture."

The office culture holds such appeal that employees who decamp for other firms often return. It happens enough that they coined a term for it: Mithunerang.

Mithun's Seattle office (opposite) is housed in a former industrial pier, a 35,000-square-foot space that was vacant when the firm began restoring it in 1998. The structure features an open floor plan and unobstructed views of Puget Sound.



“There are so many aspects that drew me back to the firm,” says associate J. Irons, 37, who returned after a stint at another firm. “Continuing education, mentorship, a commitment to good work and innovation. The car share at work means we only have one car as a family. Having those benefits sets this firm apart.”

These perks benefit employees psychologically, but they aren’t free. This year, Mithun set aside \$40,000 just to cover Mithuniversity. In a floundering economy, how can a firm afford to invest so much in human capital? What’s the return on investment? For starters, it has helped Mithun retain talented employees. One third of the staff has been with the firm for more than a decade.

“As a design firm, our resource is creative people,” says Dave Goldberg, AIA, 42, president of Mithun. “Like everyone, we have to be strategic about where we invest time and money. To retain a creative person—to convert that to a monetary value—is difficult, but the return is huge. It gives us a competitive edge and it attracts the best clients, clients with shared values who want to work with people who are smart and happy.”

The Impending Talent Shortage

Mithun has seized on an emerging trend, says Ray Kogan, AIA, president of Kogan & Co., a management-consulting and strategic-planning company for design firms. He believes that attracting and retaining talent will become the top priority for the firm of the future: “Architecture

firms will face a skills shortage in the near future and they have two real challenges ahead of them: quantity and quality of people.”

According to Kogan, population trends warn of a diminishing talent pool. Thirty-five percent of the AE workforce is older than 50, and with the economy discouraging many from entering the profession, managing employees is going to require business acumen. “When people get so scarce and the talent is hard to come by, firms are going to have to turn their attention to that,” he says.

This task, Kogan says, will rival that of business development. “Today, firms that compete for projects get disappointed when they don’t win,” Kogan says. “Soon, I think firms are going to be equally disappointed if they cannot attract or retain people they want. That is going to be a commodity, and it’s going to be a very important aspect of a firm’s existence.”

Mithun isn’t the only firm to recognize the value of an employee-centered office environment. At Louisville, Ky.-based Lockett & Farley, Architects, Engineers, and Construction Managers, nurturing employees is now a part of the firm’s strategic plan. Founded in 1853, Lockett & Farley is one of the oldest architecture and engineering firms in the country. The firm’s president and CEO, Ed Jerdonek, AIA, says that to remain nimble and competitive, the firm has rejected the traditional mentality, “where you hire a young intern and they work

The Periscope (below), located along Main Street, the primary walkway that runs through Mithun’s Seattle office, has a Skype connection to the San Francisco office. Employees walking by often catch up with their remote colleagues. A set of clocks in the Seattle office (opposite) capture Mithun’s quirky humor and poke fun at the impersonal nature of major international firms with outposts in multiple time zones.





Karen Van Lengen, FAIA University of Virginia professor • You're going to work in a more collaborative way than you did 15 years ago, when the napkin sketch went down the food chain through all the consultants and became a building. People are really embracing a more comprehensive and efficient design process. You need to have a space suited to partners and consultants coming and going.

a 60-hour week, nose to the grindstone, and they don't look up."

"That's the environment I grew up in and a lot of places are still that way," Jerdonek, 50, says, "but it's ridiculous. Those days are long gone. The question we ask our candidates is not what they can do for us, but what we can do for them to make their job at Lockett & Farley most meaningful."

In recent years, Lockett & Farley has revamped its benefits packages for employees and explored ways to cultivate a happy and supportive office environment. Jerdonek says that it's hard to quantify how much of the annual budget supports employee perks and benefits, but, he says, "it is a significant amount of money that we invest." The benefits include paying above-market salaries and quarterly bonuses based on firm profitability, taking staff on outings and hosting events, contributing to health and retirement benefits, and offering a competitive paid-time-off policy. "Every five years an employee earns another week of paid time off," Jerdonek says. "After 15 years of service, we pay that [the equivalent of another week] in cash as a retention bonus."

Quantifying the exact return on this investment is difficult, Jerdonek says. "You are talking about cultural change, the essence of the organizational DNA." Still, he believes that the strategy is effective, as evidenced by how well the firm has retained quality projects, clients, and employees. Jerdonek tells the story of one

interior designer, Judy McGrath, 55, who cut her vacation short when a client—a Fortune 100 company—called with a last-minute plea for help in moving its office. Jerdonek knew nothing of McGrath's sacrifice until the client called to rave about the results. "She took direct ownership of the problem, and she exceeded expectations," Jerdonek says. "Can I measure that? I cannot, but let me tell you what I know as a CEO: The expected value of work we will get from that client will be in large part due to the reputation of people like Judy."

The ultimate goal, Jerdonek says, is for his firm—which currently has 82 employees—to become the employer of choice for the AE industry. "We believe that if we have the best culture, we will attract and retain the best people and the best clients."

Once hired, Jerdonek recognizes that he must mentor future leaders. Last year, he launched a Leadership Institute, in which employees apply to participate in a series of classes aimed at developing personal and professional skills. Nicole Dorion, 30, is the firm's director of first impressions, a title that reflects her growing role as more than a receptionist. When she started in 2007, she was unsure of her career goals or whether she would stay at an architecture firm. But after participating in the seven-month Leadership Institute in 2011, she says, "I've totally bought in to Lockett & Farley."

The fellowship classes feature an intentional mix of professional disciplines and ages that Dorion

HAPPY WORKPLACE »

SARA SKINNER, A HUMAN-RESOURCES MANAGER AT MITHUN, SHARES SOME OF THE CREATIVE WAYS THAT THE FIRM FOSTERS A HAPPY WORKPLACE:

MITHUN OLYMPICS: Held during the real Olympics, Mithun's version includes Barbie High Jump, Sustainable Relay Race, Blindfold Soccer, and No-Rules Tug-o-War.

MEET AND EAT: A bimonthly gathering brings all staff together to enjoy good food. One staff member receives a Starbucks gift card for his or her contribution to the potluck.

SHOW AND TELL: Projects are highlighted on the Glimpse Board, which is centrally located in the office. Images and text describe projects and their status.

OUTSIDE IN: Staff participate in regional university career fairs, give student tours of the office, and host interns for up to a week so that they can see firm life.

MITHUNERFEST: Mithun's annual Oktoberfest draws over 200 staff, families, clients, and colleagues to Seattle's Pier 56 for an evening of bratwurst and beer. Mithun's house band, the Mediocres, entertains guests.



says gave her access to a range of people, and a better understanding of how the firm operates. And it instilled greater confidence in her future. “I have more trust built up with the business as a whole and the employees,” Dorion says. “I know that if there is something I want to do, that someone in the company is going to back me to grow, which is huge.”

Dorion is also impressed that firm leadership listens to employees. “They have us do surveys on a regular basis, and I’ve seen what the employees ask for put into effect,” she says. “From little things like buying soft drinks so that we don’t have to pay for them, to the attire, which has become more casual.”

“It is very important for leaders to listen,” Kogan says. Yet this is a skill that can be hard for some in this profession to master. “Architects are very task-oriented people. It begins when we are in school. You are given a project, you are given a deadline, and by God, you keep that deadline. None of that prepares you for the nurturing of people. But as you grow your career, more and more, you are involved in people planning, not technical planning.”

An especially difficult management challenge can be catering to the different workplace needs of multiple generations. Baby boomers, Gen-Xers, and Gen-Yers have distinct skill sets and philosophies on live/work balance, and leadership must help navigate those generational divides effectively. “The needs of each generation are very different,” Jerdonek says, and the danger is that divergent perspectives among his firm’s 87 employees may eventually lead to irreparable rifts. “Thirty-two-point-one

percent of my workforce is Gen Y. They are young, but they are digital natives. They can work with software. The baby boomers and Gen-Xers, on the other hand, have a lot of context. They’ve seen it all, they’ve stepped on just about every land mine possible, and they know how to do architecture and engineering. But the way we do architecture and engineering is changing so rapidly. These Gen-Yers are proficient and very comfortable with the technology. Yet, they lack the context with which to apply it.”

“In order for our firm to thrive and grow into the future,” Jerdonek says, “we have to really take care of the people who are going to come behind us and run this company.”

The Generation Gap

Barbara H. Irwin, president of the Washington, D.C.–based HR Advisors Group, has worked in human-resource management for over 20 years and now serves as an HR consultant for small and mid-sized AE firms. She found communication between the generations to be the biggest challenge for employee relations and retention. Irwin conducted a survey a few years back and found many leaders flummoxed about how to manage younger employees. “Time and time again, we would hear clients telling us this younger generation is entitled, and they don’t know how to deal with them,” Irwin says. “They would tell us that they couldn’t seem to recruit people and keep them happy.”

Meanwhile, survey responses from employees with up to seven years of experience cited communication

Mithun has three company hybrid cars at the Seattle office, including a Honda Insight nicknamed Buzz (below). A Toyota Prius is named Ohmr, after the firm’s founder, Omer Mithun. The firm values continued education, spending \$40,000 last year on Mithuniversity (opposite), a series of classes often held during lunchtime.





Lori Gee Director of workplace solutions at Herman Miller • Why come to the office [in the future]? You won't need to, to accomplish most individual work. The reasons to come in will be face-to-face problem solving, inspiration, and mentor relationships. There's more of a focus on bringing in residential design elements: wood, lighting, and floor materials that make an office feel a lot more like our homes.

within the firm as the single biggest issue. "They just wanted to know what was going on in the firm, how they were doing, how the firm was doing."

Irwin's advice is to communicate on a regular basis with staff, but this message doesn't always get through to managers. "We keep hearing, 'But we need to keep our eyes to our desk and we have to focus on our clients,'" Irwin says. "I tell them that every little thing they do now will help them in the end, because when we come crawling out of this recession—and we will—they risk losing these employees to other opportunities."

Improving employee relations doesn't require extravagant measures, according to Irwin. It could be as simple as hosting a lunch where an experienced member of the firm talks about his or her area of expertise, or revamping the annual employee review to focus more on the goals and needs of the employee.

"Just last week, I was encouraging a CEO to have a meeting with younger staff to discuss how he moved up through the ranks," Irwin says. "Storytelling is simple, but effective. If you tell them a story, they will listen, they will absorb it. If, on the other hand, you tell them only, 'Do this, don't do that,' you are going to lose them. Give them a road map. Show them how to succeed. Show them respect."

Mithun's Goldberg remembers how the firm's respectful approach to employees immediately won him over. "I am one of only two people in my graduating class who has stayed at the same firm," says Goldberg, who has been with Mithun for 16 years. "I remember meeting friends from other firms for lunch and they kept looking

at their watches because they had to be back by 1 p.m. or there would be repercussions. I couldn't understand it. I was treated as an adult. There was a free flow of ideas, so it wasn't a big change from my academic setting."

Creating a culture of respect—of listening and engaging and mentoring one another—is at the heart of Mithun's office policy. Employees of all levels consistently repeat a powerful refrain: A good idea can come from anywhere. "We don't have a top-down design hierarchy," Connolly says. "The staff recognizes that there is opportunity to insert thought and opinions without fear of repercussion. Anyone can pull up a chair."

Miye Moriguchi, 30, architect intern at Mithun, had several firms vying for her when she graduated in 2003. She chose Mithun because of the company ethos. "When I interviewed with a different firm, they told me, 'You are going to sit in the corner and draw details all day,'" she says. "Then I came to Mithun for an interview and the principals didn't talk about architecture with me. Instead, we talked about who I am as a person, what I like to do, how I think. It was amazing."

Mentorship is so valued at Mithun that each year the firm awards one staffer with the Mithun Mentor of the Year Award. Feed the mind and the soul of the employee, Mithun believes, and you feed innovation—an indispensable part of the firm's design approach. "We have a high metric for sustainability, and we expect a certain level of performance. Every project is to be better than the last," Connolly says. If the firm's culture helps to achieve that goal, then that's a significant return on investment indeed. □

HOW TO KEEP YOUR STAFF »

BARBARA IRWIN, PRESIDENT OF HR ADVISORS GROUP, CONSULTS WITH SMALL AND MID-SIZED AE FIRMS. HERE ARE HER TIPS FOR ATTRACTING AND RETAINING EMPLOYEES.

ORIENTATION: "So many studies say that if you don't grab your employees within the first 30 days and tell them the values that they are going to bring to the firm, then you're going to lose them one day," Irwin says. "I would argue that you need to grab them from day one. Firms need to beef up the onboarding process."

PROFESSIONAL DEVELOPMENT: "It's important to keep employees engaged," Irwin says, from lunch-and-learn to leadership-training programs. She also counsels managers to take annual reviews seriously and use them as opportunities to mentor and listen to employees about what will keep them fulfilled in their jobs.

COMMUNICATION: Bringing staff in the loop on how the firm is doing was cited as the number one need in an employee survey of AE firms. When staff understand the firm's direction and how decisions are made, it greatly improves their satisfaction.

KNOWLEDGE: Too often, managers believe that expertise for training needs to come from expensive consultants. Irwin disagrees. "Tap into your own expertise on staff. If someone has a strength, give them an opportunity to share that information."



Meet » New technologies are transforming the way we interact at work. Architects will never stop meeting clients in person and securing projects through old-fashioned, face-to-face networking. But the rise of social media has given firms new tools to market their services and forge industry connections, while telecommunications technologies are making it easier to connect regularly, across great distances. In the office of the future, architects will need to master new technologies and collaborate with clients in the virtual world.

Face to Facebook

Some architects have embraced social media and telecommunications, but others struggle to discern the actual benefits. Can your firm tweet its way to success?

TEXT BY ERIC WILLS
INFOGRAPHICS BY CATALOGTREE

DEVOTEES OF SOCIAL MEDIA, especially Millennials, have not been shy in proselytizing about how Facebook and Twitter will change business forever. Yet many companies—and architecture firms, especially—struggle to justify the investment that social media requires in staff training and time, and they question its capacity to improve the bottom line.

We conducted an informal investigation, using SurveyMonkey, that asked firms how they use social media and other communications technologies (see the results on the facing page). The answers supplied by the 301 respondents indicate that while some firms have readily embraced blogging and tweeting, and even in some cases can boast of new clients as a result, just as many architects either admitted uncertainty about how these technologies could benefit their practice, or downplayed the significance. (Wrote one respondent: “Social media has distracted our competition into wasting enormous amounts of time and has allowed us to be more productive and efficient than they are.”)

Tami Hausman, a New York-based marketing and communications consultant for designers, thinks that architecture firms on average have been slower than other industries to embrace social media. Yet she also doesn't champion sites such as Facebook and YouTube as some kind of magical elixir that will increase firm profits by 20 percent. Rather, Hausman says, social media should be an integral part of an overall communications and marketing strategy.

Even though the return on investment remains difficult to discern, Hausman predicts that architects will eventually use social media as commonly as they

do email, and firms would be wise to explore how best to exploit the various platforms: “In this economy,” she says, “if you're not visible, people will wonder if you still exist.”

Large firms such as HOK naturally have marketing departments that spearhead social-media use, and they use such tools in part to attract talented younger employees who are natural users of the technology. But small firms have also seen success. Andrew van Leeuwen, AIA, 39, one of the partners of Build, a Seattle-based residential firm, helped start a blog with his partner almost five years ago. Today, the blog gets about 10,000 estimated views per day and boasts 60,100 subscribers to its RSS feed.

Van Leeuwen spends about 10 hours a week on average blogging, time he might have otherwise devoted to applying for awards for his firm's projects. “The blog's a powerful tool to bring jobs into the pipeline,” he says, and it helps potential clients gain confidence in the firm's expertise. “When potential clients have seen the projects we've done, someone has referred them to us, and when they've seen the blog, we rarely lose the project.”

Van Leeuwen's blog does more than promote the firm's work. Posts such as “Top 10 Things You Should Know About Drywall” use terms someone might Google if they're considering doing a home renovation. “The best strategy is putting up valuable and honest information people will find useful, rather than employing some sort of strategy or spin or marketing techniques,” he says. □

For more case studies about how other firms are finding success through social media, visit architectmagazine.com.



Brett Kincaid Director of design at Steelcase • There's incredible pressure to manage more-complex information faster. Today, technology is often inserted into office space. As technology and space are merged more over time, there'll be a more seamless transition between the two. These more intuitive settings will enable people to take control of information and integrate into meetings in a more seamless way.

SURVEY SAYS: ARCHITECTS SEEM UNCERTAIN ABOUT THE VALUE OF SOCIAL MEDIA, BUT TELECONFERENCING AND OTHER COMMUNICATION TECHNOLOGIES LOOK LIKE WINNERS.

THE MOST POPULAR SITES EMPLOYED BY ARCHITECTURE FIRMS ARE AS FOLLOWS:

LINKEDIN **69.0%**, FACEBOOK **57.6%**, TWITTER **35.4%**, FIRM BLOG **25.3%**, NONE **20.5%**

→ NEARLY ALL RESPONDENTS, **91.3%**, SAID THAT THEIR FIRMS USE SOCIAL MEDIA FOR MARKETING AND PUBLIC RELATIONS. **10.5%**

SAID THAT THESE SITES HAD HELPED SECURE NEW CLIENTS. → WHICH

SITE MOST HELPED THEIR FIRM? RESPONDENTS SAY: LINKEDIN **21.8%**, FACEBOOK **16.8%**, TWITTER **9.2%**, FIRM BLOG **8.4%**

, TUMBLR **0.4%** → YET THE POTENTIAL BENEFITS OF SOCIAL MEDIA REMAIN AN ELUSIVE GOAL FOR MOST AND AN IRRELEVANT GOAL FOR MANY.

43.5% OF RESPONDENTS SAID THAT THESE SITES HAVEN'T HELPED THEIR FIRM AND **53.5%** INDICATED THAT THEY DON'T KNOW OR CAN'T MEASURE HOW SOCIAL MEDIA HAS HELPED THEIR PRACTICE. → OF THOSE WHO TOOK THE SURVEY, **60.9%**

WORK REMOTELY. THE MEDIAN NUMBER OF HOURS PER WEEK THEY WORKED REMOTELY WAS SEVEN. → **52.7%** OF RESPONDENTS SAID THAT THEIR FIRM PROVIDED THEM WITH A SMARTPHONE OR HANDHELD COMMUNICATIONS DEVICE. THE MOST POPULAR DEVICE, USED BY **49.3%** OF RESPONDENTS? AN IPHONE.

→ THE MOST POPULAR TECHNOLOGIES WERE AS FOLLOWS: **56.3%** TELECONFERENCING, **51.4%** GOTOMEETING, **38.5%** SKYPE, **36.5%** VIDEOCONFERENCING, **30.2%** WEBEX.

→ WE ALSO ASKED HOW COMMUNICATIONS TECHNOLOGIES HAVE CHANGED PRACTICE. HAVE THEY LED TO FEWER FACE-TO-FACE CLIENT MEETINGS? TO THIS, RESPONDENTS SAID THAT THEY:

5.5% STRONGLY AGREE, **35.3%** AGREE, **30.8%**

NEUTRAL, **22.9%** DISAGREE, **5.5%**

STRONGLY DISAGREE. → HAVE THEY STREAMLINED THE PROJECT-DEVELOPMENT PROCESS?

19.4% STRONGLY AGREE, **46.4%** AGREE, **29.8%**

NEUTRAL, **2.8%** DISAGREE, **1.7%**

STRONGLY DISAGREE. → HAVE THEY GENERATED MORE INTERNAL COLLABORATION?

12.1% STRONGLY AGREE, **37.9%** AGREE,

40.0% NEUTRAL, **8.6%** DISAGREE, **2.8%**

STRONGLY DISAGREE. LASTLY WE POSED THE QUESTION: IF YOU

COULD DESIGN THE OFFICE OF THE FUTURE, WHAT COMMUNICATIONS TECHNOLOGIES

WOULD BE MOST IMPORTANT? RESPONSES INCLUDED: **SMARTBOARD**, TO COMMUNICATE DRAWINGS SKETCHES AND CONCEPTS BETWEEN OFFICES; **FLEXIBLE WORKSTATIONS** AND

MODULAR SPACES, FOR GROUP ADAPTATION; **SHARED DIGITAL WORKSPACE**, ALL FILES IN THE CLOUD, ACCESSED BY THE ENTIRE TEAM; AND **VIDEOCONFERENCING**, WITH MULTIPLE COMPUTER STATIONS BEING ABLE TO ACTIVELY MANIPULATE REVIT MODELS.

Research » Say goodbye to the traditional, Howard Roark model of the architect as unchallenged creative visionary. The firms that will succeed will do so in part because they can effectively capture data from their projects and demonstrate the value of design using hard numbers. Building on an ever-increasing knowledge base will ensure that their architecture remains cutting-edge.

Design by Numbers

Many firms have already realized research's importance in wooing clients and securing projects. Here's how they've made research an integral part of their practices.

GENSLER » Gensler dramatically changed its approach to research after the firm conducted a survey in 2005 that explored how employees actually worked. That survey, and a subsequent one, proved so insightful, recalls Diane Hoskins (right), a Gensler executive director, that the firm created a permanent Workplace Performance Index, or WPI: a pre- and post-occupancy diagnostic tool that is now a standard part of Gensler's workplace projects. "Of course you carry knowledge with you from project to project, but you could not address the type of issues that come up in WPI under the time-crunch of a project," Hoskins says. "Now we can go further and broader into the issues."

A Web-based survey, the WPI takes about 10 minutes to complete and includes questions for clients about workday activities, spaces used, and the organization's culture. The results are analyzed, compared to industry benchmarks, and presented to clients to see what is working and what isn't.

For Atlanta advertising agency 22squared, which in 2011 wanted to move its 192-person staff to a new office, the WPI confirmed something managers already suspected: The company needed more collaboration and knowledge sharing. Gensler designers opened up the workspaces to allow for greater flow—while also maintaining a sense of individual privacy—and clustered workers in "neighborhoods." And they added pool and ping-pong tables to bring people together. The result? Hoskins says that a post-occupancy WPI survey, conducted several months after the move, indicated that collaboration and knowledge sharing had improved by more than 20 percent.

TEXT BY ERNEST BECK
PHOTOS BY LEE POWERS

PALOMAR MEDICAL CENTER WEST, a \$960 million state-of-the-art hospital in Escondido, Calif., will open in 2012 boasting a number of innovative healthcare design features, including patient-healing environments and daylit surgical areas that provide staff with views of trees and greenery in courtyards.

Daylighting is unusual for surgical platforms, says Thomas Chessum, FAIA, a principal of Co Architects, the Los Angeles-based firm that designed the building, but it was used in the project after a joint research team of hospital and design staff analyzed, proposed, and endorsed the idea. "We always advocate daylight but hadn't done it before," Chessum says. "This was a research project in which the client became an ally and supported us."

Research will continue when the 360-bed, 740,000-square-foot hospital starts admitting patients. Co Architects will undertake a post-occupancy controlled-research survey to assess the benefits of daylighting on staff performance and productivity, job satisfaction and employee retention, and patient outcomes. These numbers will then be compared to the performance of the health district's old hospital.

"The world out there demands more research," Chessum says. "Clients today are looking for advantages in buildings and systems, and we have to tell them what those benefits will be," he adds. "We can't just wave our hands and say this or that works. We have to capture what we know and make it understandable, and that is dependent on real, hard facts."

Once the mainstay of academic institutions and the private sector, research today is attracting more

resources and funding at architecture firms than ever before. The trend will likely continue as advances in many fields—from materials science to energy use—generate new ways to design buildings and to measure the performance of increasingly complex systems. "There is research now in everything we do," says Leigh Stringer, director of innovation and research at global design firm HOK. "Clients are demanding more, and so we have to be innovative at every level," she says. "Research is integral to innovation. Without research, HOK has no business."

How Data Can Sway Clients

Exactly how much firms are investing in research is difficult to discern, because funding sources are often mixed. But interviews conducted for this story suggest that both the overall amount of that investment as well as the number and variety of research projects are on the rise. The trend will likely continue as firms capitalize on their research initiatives to drive product and business development, and to refine how they market their services to sophisticated clients in specialized fields.

The phenomenon is evident in practices of all sizes. HOK, over just the past two years, has developed books, methodologies, and software—almost 200 items in total—through firmwide collaboration across practice fields and the efforts of its dedicated research staff of three employees. Philadelphia-based KieranTimberlake also has a dedicated research staff, which currently includes seven employees (up from four a few years ago, and including a full-time research director) out of a staff of 66. And many smaller and newer firms such as







Charles Renfro, AIA Principal, Diller Scofidio + Renfro • Likeminded offices will team up and form new kinds of consortiums without losing their identities, through AECOM-type overtakes or mergers, and share resources and employees to ensure themselves against the vicissitudes of the marketplace. It's a great way to keep firms nimble, fungible, profitable, and to keep your staff gainfully employed.

UrbanLab in Chicago and Kennedy & Violich Architecture in Boston, were founded with research as a core value.

Architecture Research Office, a midsized, middle-aged practice, was established in New York almost 20 years ago and has developed an integrated approach to research in which the work is shared between all 23 employees. Research initiatives originate from client projects and also from what the firm itself is interested in pursuing. One project, called Paper Wall, started because “we were interested in combining CAD-CAM technology and craft and working with a prosaic material,” principal Adam Yarinsky, FAIA, says. The project explored how a humble material such as paper could be transformed through laser cutting into a material that was 3D, foldable, opaque, and capable of filtering light. A few years later, a client read about the Paper Wall research and was so impressed that he asked ARO to use the technology in his Central Park West apartment: The firm, based on the Paper Wall research and other studies involving laser cutting, developed wall dividers that resemble latticed screens. Over the years, ARO’s research has also tackled broader themes, such as climate change and its impact on cities, as well as ultralow-energy building prototypes.

At a giant such as HOK, the expanding scope of research reflects not only the size and reach of the firm’s practice areas but also the changing role of the architect as expert and consultant in specific fields. “Research isn’t just about having something clever to say to win the work,” says Clark Davis, vice chairman of HOK. “The expectation of the client and the marketplace is that our knowledge is more specialized and current and relevant to an individual client’s situation.”

Diane Hoskins, FAIA, an executive director at Gensler, says that her firm uses its research initiatives—especially its expertise in pre- and post-occupancy workplace management—to help differentiate the firm in business pitches, a critical factor in a brutally competitive environment. “Our clients are looking for a partner to challenge them and engage them with ideas that are

outside the realm of what they may have thought of before,” she says. “If you have the knowledge backed up with research, they will go to that new place with you.”

That dovetails with what Hoskins sees as the changing role of architects. “If there is someone good at only drawing, there’s nothing wrong with that,” she says. “But that is the past. You have to come to the table with knowledge and insight, and research is part of how you do that.”

Making Research Pay

Of course, starting a research initiative requires funding. Many firms rely on grants from private and public institutions to supplement internal resources. Awards such as the AIA College of Fellows’ \$100,000 biennial Latrobe Prize are another source. (The initial research behind ARO’s Paper Wall, for example, was funded by a grant from the New York State Council on the Arts.) Other firms work directly with sponsor companies to research and develop products, a tactic favored by Kennedy & Violich. Licensing agreements for cutting-edge innovations can also help generate revenue, though firms have often struggled to secure such agreements or find viable commercial partners for their products.

Los Angeles–based Gehry Technologies (GT) offers one creative business model. Spun off from Gehry Partners’ in-house research and development team in 2002, GT now boasts a staff of 135 employees and eight offices worldwide; it functions as an independent firm that provides project-management technology and consulting services to other firms. “It made sense to be external,” says Dennis Shelden, GT’s chief technology officer. Gehry Partners still does most of its work with GT, but this relationship represents only a “small fraction” of GT’s overall business. “This benefits everybody,” Shelden says. “We keep the Gehry connection. We have an anchor client, and they have premier relations with us.” (Frank Gehry, FAIA, is co-founder of Gehry Technologies and chairman of the board, and he and his firm have an equity stake.)

Firms also help fund research by teaming up with academic institutions—for example, the Center for



The percentage of annual profits that the global design giant Gensler dedicates to research, according to Diane Hoskins, an executive director at the firm

URBANLAB » In 2000, when Sarah Dunn, AIA, and Martin Felsen, AIA, (left) founded their Chicago architecture firm, they wanted to pursue a broad range of work, from small, private residential projects to large-scale urban ones. But soon the husband-and-wife duo realized that big urban projects require vast amounts of time and fund raising, which would be difficult for a seven-person firm. To remedy this problem, UrbanLab began a series of interrelated research projects exploring Chicago’s infrastructure, to learn about the needs of the city and to use that expertise as leverage to secure large urban projects. “Research is about developing data and information metrics, so that when we try to convince city officials or a department about starting a project, we have the data to back it up,” Felsen says. “The ultimate goal is to delve scientifically into a subject and come out with a design project.”

UrbanLab’s research, some in collaboration with Archeworks, an alternative design school in Chicago (Felsen sits on the board of directors), as well as other design professionals, engineers, ecologists, and economists, recently helped the firm procure an ambitious project for the city’s Department of Environment: transforming the Stockyards—the iconic symbol of Chicago’s meatpacking-industry past—into a vertical urban farm and biofuel power plant.

UrbanLab secured the Stockyards commission through a research project dating back to 2006. Called Eco-Boulevards, the initiative explored ways to reconceive the Chicago street grid as a “holistic biosystem” that captures, cleans, and returns waste and stormwater to Lake Michigan. Currently, Felsen and Dunn found, Chicagoans discard, down their drains, over 1 billion gallons of Great Lakes water every day. A second phase of research led to a Web-based toolkit called NeighborShed that enabled individuals and local governments to calculate their energy use, water use, and overall carbon footprint. The idea behind NeighborShed, which was funded by a \$100,000 AIA Latrobe Prize in 2009, was to create a metric-based social network platform to help “track and tweak” community-action plans related to energy, water, and food, and to encourage citizens to get involved in the city’s Climate Action Plan. Interested city officials, including former Mayor Richard M. Daley, suggested that the firm use aspects of this research to focus on an urban agriculture project.

The Stockyards project—called Chicago Metabolism—was born. Now in the conceptual design phase, the project picks up on many of the ideas and research generated over several years by UrbanLab, including Eco-Boulevards and NeighborShed. The project imagines a new identity for areas within the Stockyards, which have now largely fallen out of use, as an off-the-grid sustainable center for locally grown produce and bioenergy, and a new generation of food companies.

As the winding path to securing the Chicago Metabolism project suggests, it’s not always clear where UrbanLab’s research will lead. “We’re not fixed on a certain idea,” Felsen says, which can be frustrating for architects, who stereotypically like assignments with well-defined boundaries. By comparison, research is open ended. “We work on projects and they turn into something else and then something else. They can morph into different things. Sometimes they never end.”



Gregg Pasquarelli, AIA Founding principal, SHoP • We are going to go back to drafting boards. They're going to be 46-inch iPads. The new office will resemble an investment bank's trading desk. There will be a constant exchange of information. By bringing really smart people together, that's how things are invented. There will be more and more in-office fabrication. You'll get to test ideas immediately.

Architecture Science & Ecology, a joint venture between Skidmore, Owings & Merrill and Rensselaer Polytechnic Institute, and HOK's partnerships with the Biomimicry Guild and Washington University in St. Louis.

But what about the potential return on investment? At KieranTimberlake, which won the first Latrobe Prize in 2001, "research is not an adjunct activity that waxes and wanes through economic declines," says James Timberlake, FAIA, a founding partner of the firm. Rather, research remains core to the practice "even if it may or may not be directly profitable."

Indeed, the firm exhibits a clear commitment to research, allocating 3 to 5 percent of gross annual profits to its pursuit and the development of intellectual property, such as the patent-protected SmartWrap technology—a lightweight, energy-gathering, mass-customizable building envelope material that has been employed in firm projects such as the Cellophane House for a Museum of Modern Art exhibit. Other current research projects include 35 studies into the inner and outer building envelopes for the new U.S. embassy in London, and the monitoring of the post-occupancy environmental performance and energy systems, including green roofs, at seven buildings that the firm designed. The data is shared with clients and added to the firm's knowledge base—part of what Timberlake calls "a cycle of continuous improvement" that research affords.

For his part, Timberlake says that the decision to pursue research topics is not determined solely by the potential return on investment. "We consider research at all levels to be useful to us, our clients, and the profession." If ROI was the only consideration, he says, "we would exclude exploring research or socially responsible projects on a variety of topics because a team, or the firm, cannot 'pre-prove' the investment possibilities." He adds that ROI is measured on a firmwide basis, on all projects including research, but not on silos of individual exploration, projects, or initiatives. "We don't place unreasonable or narrow boundaries on

what we do simply based on what we want the profit outcome to be," Timberlake says.

You Can, Too

Small firms looking to start research projects may not have the financial means of a KieranTimberlake. But they can cut costs by pursuing academic partnerships and sharing resources such as equipment and space. To secure client- or project-based funding, ARO's Yarinsky advises focusing on one particular aspect of a project for investigation that can be framed as having value to the client. "Even a conventional material like brick can be explored in terms of patterns and sizes, or it can be a quality of light or space, or something related to energy use for the building," he says. This way, "it is possible to conceive of every project, no matter what size or type, as a form of research."

Perhaps the most important consideration for small firms: ensuring that they are generating meaningful results. James Timberlake worries that research has become so trendy that some firms are jumping on the bandwagon without applying the necessary rigor. "They are hopping on and saying, 'We can do this,' and promoting it to the client, but it's on a superficial level, without proof and the facts," he says. "We want everyone doing it in a serious, peer-oriented way."

Research is becoming more of an interdisciplinary effort, a reflection of how fields such as biology are influencing design practice. "Research will not be limited to people with backgrounds in architecture, design, and planning," says HOK's Davis. "The rich mix of challenges will get more people involved."

Nicholas Holt, AIA, SOM's technical director, believes that future research will gravitate more to systems than to components, and to systems integration across multiple platforms, such as energy: "In short, the next frontier in architectural research is going to be looking at how all of the information it is now possible to gather in buildings will be leveraged to enhance performance and experience." Or, as his colleague, managing director Kenneth Lewis, puts it, "In the future, every building will have an IP address." □

KENNEDY & VIOLICH ARCHITECTURE ▶▶ The Soft House, a conceptual design developed by the Boston architecture firm Kennedy & Violich Architecture and its materials research division KVA MATx, features an energy-harvesting roof with a flexible form that responds to sun angles. Translucent movable curtains distribute light and low-voltage energy, and fold up into a soft luminous chandelier—one of the project's many innovations in bendable photovoltaic technology. With its renewable electrical power and flexible, photovoltaic nanotechnology materials, Soft House "could become a platform for an entirely different form of living," predicts Sheila Kennedy (right), founding principal of KVA, who partners with Juan Frano Violich.

Since it was created in 2000, a decade after KVA was established, KVA MATx has been committed to pursuing this kind of applied research, whether projects arise from in-house ideas or from design commissions. Projects can also originate when a manufacturer "calls us and says there is a technology or a material that is having a crisis or that is outdated or too conventional," Kennedy says. This has yielded an impressive range of work for companies including Herman Miller, Philips, and North Face, for which KVA MATx devised high-performance sportswear designs that enable athletes to control their clothes' heating and cooling. Working for 3M, it produced a sunlight-delivery prototype that captures sunlight and distributes daylighting deep within a building interior.

Most KVA MATx projects revolve around ideas about materiality "and the emerging nexus of materials and energy and information," Kennedy says. Many lead to significant advances in technology and materials. For example, parametric design software developed for Soft House allows a homeowner to customize the cladding form and solar orientation and customize the energy density of the house's textile components according to local needs and regulations. Another project, the 34th Street Ferry Terminal in New York, now under construction, has an "intelligent infrastructure" with an interactive LED lighting system built into large oculi in the roof canopy, and integrated radiant heating in the passenger waiting area that is protected from wind and rain by retractable weather screens. KVA MATx developed the concept as well as all the lighting systems and architectural details.

Research is fully integrated into the firm's design process and workplace, with all 16 staff participating. "We debated whether to have a separate company but always came back to a symbiotic relationship in which everyone is involved, one way or the other," Kennedy says. The firm's office, in the former Blue Bird bottling plant, features a design studio as well as a digital-fabrication workshop with a lightweight industrial robot and digital prototyping equipment, as well as saws and other tools. This approach, Kennedy believes, allows architects to be intimately involved in technology innovation while providing their knowledge of building construction and design.

Unlike collaborative arrangements with universities or other institutions, Kennedy argues that the interdisciplinary KVA MATx model is an ideal way to concentrate expertise, provide continuity on projects, and to move quickly to find solutions. "We are our own self-standing organization," she says. "This is not an academic endeavor, or a student endeavor," she adds. "This is our research center. We follow a trajectory of thought that is of interest to us. It gives us great independence."



Focus » The nature of architectural practice and workplace behavior is becoming ever more collaborative—something impossible to achieve when the boss is sequestered in the corner office and team members are scattered every which way. As architects have been telling clients for years, good office design can foster productivity and innovation. Now architects should apply the lesson to themselves.

Architect, Design Thyself

As firms encourage more collaboration between architects and launch new research initiatives, office space design will also change. Welcome to a world of incubator spaces.

TEXT BY JEFFREY LEE
ILLUSTRATION BY PETER ARKLE

THE ARCHITECT'S OFFICE of the future will need to support an impressive range of collaborative pursuits, offering spaces where designers can trade creative new ideas, young employees can learn new skills and technologies, and team members can interact socially and professionally. But architects will also need quiet spaces to pursue solo projects.

The midcentury office model, with private offices in a ring around the perimeter of the building, served this need very well—providing secluded spaces where workers could focus. In today's office, as one architect might be quietly developing plans for the next great industry innovation, two colleagues may need space to work together and perfect a drawing.

Whether they're designing an office for a client or for their own practice, architects must meet the different needs of every firm employee, says Lisa Bottom, Assoc. AIA, a workplace designer and principal in Gensler's San Francisco office. "The big challenge now is understanding how to support the individual while still allowing the team to have access to each other for collaboration," she says. "We're starting to look at the office in a more holistic way, and looking at ways we can create lively zones and quiet zones and spaces in between."

It takes a combination of data and intuition to design an effective workspace. Scientific measures of productivity, however, can often be difficult to pin down. Pre- and post-occupancy surveys, as well as academic studies measuring the impact of features such as daylighting or acoustic barriers, generally rely on self-reported satisfaction measures. Such studies can still be helpful—if employees like a space, they're more likely to spend time there doing their jobs.

But architects also must design spaces that support the ways that their employees work. To provide for easier communication and collaboration between team members, for instance, firms have started to design workspaces in a more open environment, featuring benches or workstations with low barriers so that workers can see their colleagues.

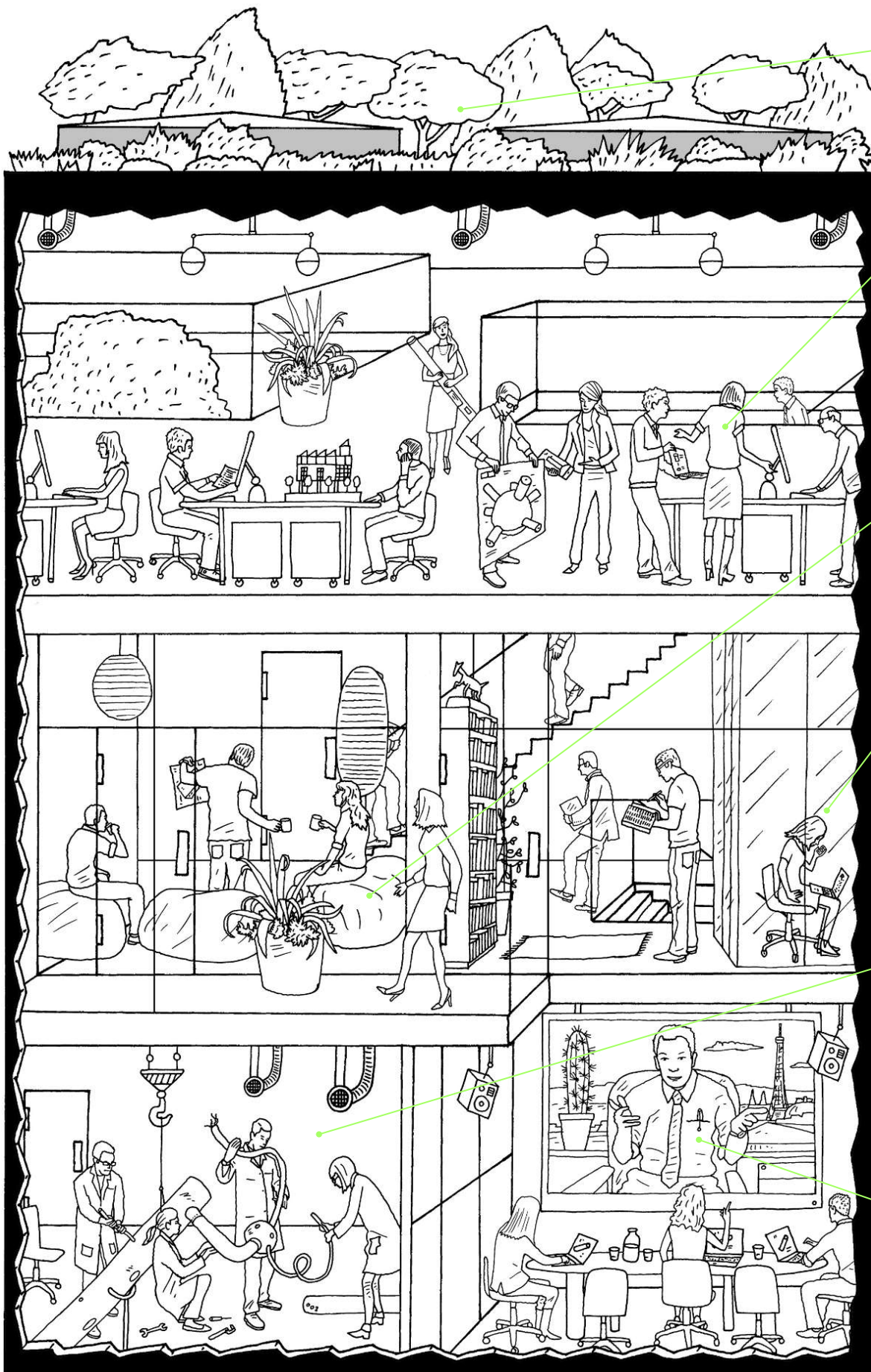
Firms are also focusing more on designing community space, such as lounges or cafés, where staff can sit in casual chairs and set up laptops on sidetables for impromptu meetings. The idea, says Elisa Garcia, senior project manager and operations director at San Francisco-based Garcia Architects & Advisors, is "to create traffic routes or spaces where people are forced to come together to learn or share information."

As the collaborative workplace becomes more prevalent, the need for spaces where workers can focus grows more important. Architects say that many offices are beginning to incorporate smaller concentration rooms in areas close to open workspaces, so that workers can review plans without distractions. Incubator spaces—areas where architects can meet with product developers, say—will help fuel research initiatives.

The ultimate goal will be to make the office into a compelling space, where the commute to work is worthwhile because of the opportunity to connect with colleagues—not just because that's where your computer is located. With the workforce of the future becoming more mobile, able to work from home or the road, the office will become the central hub and gathering place that helps shape a firm's identity. Ultimately, Garcia says, "the office space needs to make people feel like they're a part of something bigger." □

"THE ARCHITECT'S OFFICE OF THE FUTURE WILL ALLOW YOU TO WORK IN REAL TIME WITH TECHNOLOGY THAT IS ACCESSIBLE ANYWHERE EFFORTLESSLY. THE ABILITY TO WORK WITH REMOTE TEAMS WITH TECHNOLOGY WILL BE UBIQUITOUS."

Lisa Bottom, workplace designer and principal in Gensler's San Francisco office



NOURISH » Having happy, healthy employees is good for business. Offices will feature low-emitting paints and finishes and ample natural daylight, reducing the reliance on artificial light. Employees will have views and access to natural green spaces as well as fresh, healthy air. Firms that practice the sustainability ethos that they preach will impress both their staff and their clients.

GROW » As the speed of business increases, the need for rapid collaboration will become ever-more important. Traditional cubicle panels that block access to views and to other team members (and that provide only a false sense of acoustic separation) are disappearing, replaced by bench-style workspaces or workstations with shared spaces. Impromptu meetings can now take place with a mere swivel of the chair, allowing partnerships and productivity to grow.

NURTURE » Community space gives employees a chance to refresh and refuel, but also helps nurture the accidental learning and sharing that develops through chance connections. Located near a building entrance or a high-traffic route, and sprinkled with lounge chairs or laptop tables, these spaces encourage open meetings that allow architects passing by to join the conversation and share their input.

FOCUS » Constant collaboration is great for productivity—until you're trying to concentrate on a set of drawings. How to balance the need for open space with areas for focus? Offices will include small concentration rooms, or may even have designated library-like quiet zones, where architects can escape from the bustle and noise as they review plans or make a private telephone call.

RESEARCH » Already a trendy addition to some of the country's most forward-thinking architecture firms (Gensler included one in both its Atlanta and Los Angeles offices), incubator spaces encourage innovation by bringing together thinkers in ways they normally wouldn't collide. Made available for free to local entrepreneurs or product developers, these spaces help firms make new connections that lead to technology or research breakthroughs.

MEET » Architects will collaborate not only with their colleagues in the office, but also with teams around the globe. Firms can't afford lengthy waits to establish connections—face-to-face communication with remote associates will be effortless. And while architects will still work on collaborative projects in the office, mobile technology will make it seamless to work from home or the road.



Jamie Pedler, AIA President and CEO of Slaterpauil Architects • Not every office will be LEED. But every space will have elements of sustainability and energy conservation. A big chunk of that will be natural lighting. You're going to see more offices with private offices and conference rooms on the inside so you can bring natural light much deeper into the space.

Nourish » Amid the relentless hassles of work life—looming deadlines, dropped calls, flight delays—architects need to find the time to take care of themselves. A healthy diet, regular exercise, and socializing are key to meeting the creative challenges posed by the practice of the future.

A Natural Manifesto

The 2011 Architecture Firm Award winner, BNIM, offers eight ways to create a healthy office. Because connecting with nature will become a strategic goal.

TEXT BY BNIM
INFOGRAPHICS BY CATALOGTREE

WE LIVE IN an age of transformation. The office culture of old, dominated by an absolute subservience to the bottom line, has started to vanish now that many companies have started fostering a new, more human-focused workplace. Corporations such as Google and Apple have realized that a product or service may be their ultimate goal, but that it's their employees—the people—who enable them to be financially successful. As more architecture firms attempt to create a holistic workplace culture, they should be looking to nature—and its never-ending pursuit of balance—for some important lessons.

We're fortunate now to have decades of mounting research and data that prove the benefits of nature-inspired design. In her 1997 book *Biomimicry: Innovation Inspired by Nature*, Janine Benyus makes a compelling case for deriving inspiration from nature to tackle human problems. As we design our future offices, we should enhance our connections to and relationships with nature. Firms should explore using onsite renewable solar-power and wind-energy technologies. And they should design interior spaces that have ample daylight, clean air, and strong visual connections to nature.

Daily exposure to daylight, outside views, and access to green spaces yield improved learning, health, job satisfaction, increased productivity, and reduced stress. Our employees, who enhance our bottom lines, need nourishment—the tangible and intangible things that stimulate and empower them—if they are to reach their potential. Biophilia, a concept pioneered by E.O. Wilson, the noted evolutionary biologist, suggests that nature is our ultimate nourishment. Humans who share a direct, beneficial relationship with nature will take respective measures to ensure its preservation.

Yet we've severed many of our ties with nature. Consider our connection with food. The growing, gathering, preparing, and eating of food remains a fundamental human activity that brings us together, fuels conversation, and gives us a creative outlet. During the last century, though, food production has become increasingly industrialized and dominated by mass production.

Today's developed global societies have largely lost touch with the origins of food, its production, and its preparation. We have lost out on the nourishment that a deeper relationship with food can provide. The act of eating has become a largely passive, secondary activity—something we do over a keyboard or in the car, amid so many other distractions that we hardly notice the food at all, much less consider or appreciate where or how it was grown, who produced it, or how it came to us.

Sadly, the modern office all too often reflects this modern take on food as an afterthought. In an unscientific survey conducted by ARCHITECT magazine, 84 percent of respondents said that their firms provide only a simple kitchenette with a basic microwave, toaster, and refrigerator for food preparation. Moreover, while 60 percent of firms offered a break room for eating, and 35 percent had an outdoor space or picnic area, just 8 percent offered a designated dining room. (See more data on the following pages.)

Many firm employees, if they don't eat at their desks, must find space in multipurpose or conference rooms. Most importantly, the survey results suggested that most companies fail to take full advantage of the incredible nurturing power that can come from sharing food experiences as a business community.

We can change the future—by design. Nature-inspired design is not an unpragmatic luxury but can help create happier and more productive employees. Firms are indeed starting to change their focus and spend investment dollars to improve their workplace cultures. They are beginning to see the connection between the benefits of green spaces, healthy food culture, productivity, employee retention, and job satisfaction.

Positive change is coming. By design, we need nourishment, but through design, we are unlocking its power. Amid the vestiges of the 20th-century workplace inspired by corporate America, we have started to envision and design a new workplace. Here is our manifesto for how nourishment will make that office of the future a more inspired place to be. □

1

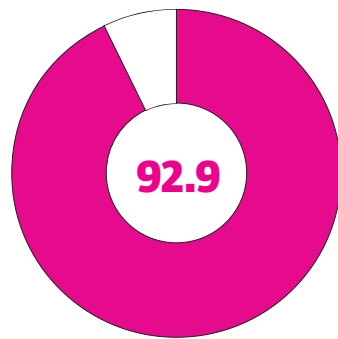
NATURE

Reconnect to nature. We thrive when we are connected to it, and we need it to survive. In the workplace, introduce plants and ensure that workers have access to sufficient daylight. Integrate building systems that mimic nature, such as water-management systems that use “waste equals food” processes for filtering and cleansing. Make physical connections to nature by providing access to green spaces and by supporting company-sponsored gardens.

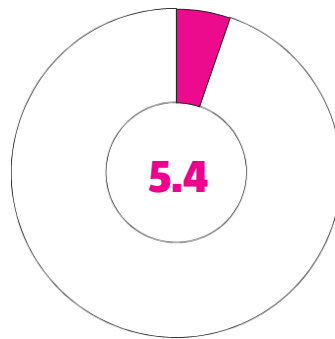
2

Humanity

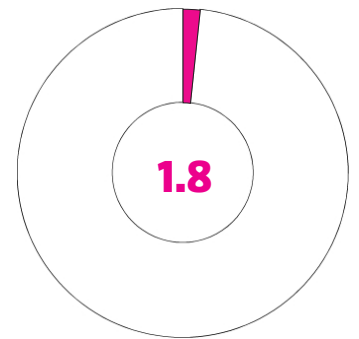
How can we design with the goal of nurturing humanity? In the workplace, promote a culture of collaboration, transparent communication, and unity. Host annual companywide gatherings that give all employees a voice, an opinion, and opportunities to contribute to office discussions and projects. Use technology to connect staff in meaningful ways, creating venues for generating and sharing ideas.



PERCENTAGE OF FIRMS THAT DO NOT PARTICIPATE IN COMPANY- OR COMMUNITY-OWNED GARDENS



PERCENTAGE OF FIRMS THAT PARTICIPATE IN COMPANY-OWNED GARDENS

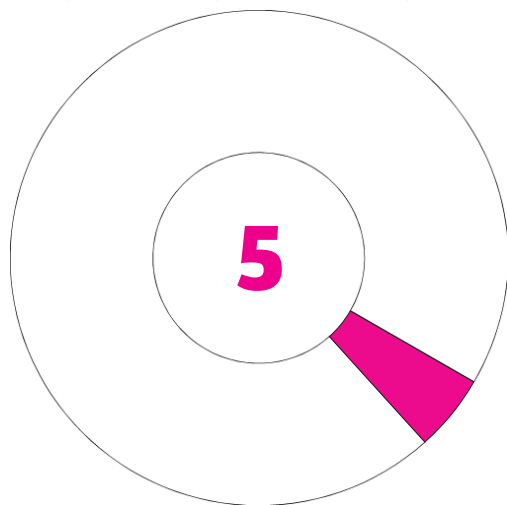


PERCENTAGE OF FIRMS THAT PARTICIPATE IN COMMUNITY-OWNED GARDENS

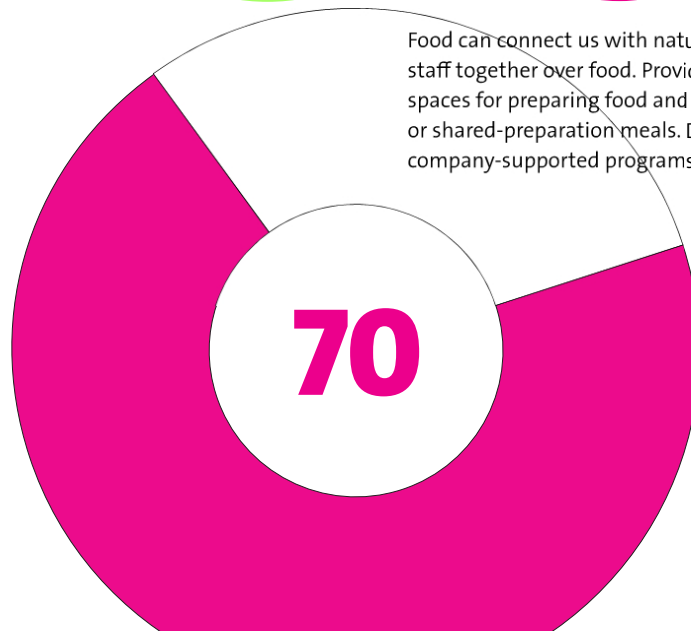
3

FOOD

Food can connect us with nature and to each other. In the workplace, bring staff together over food. Provide designated and appropriately equipped spaces for preparing food and eating as a group. Host informal potluck or shared-preparation meals. Discourage eating at the desk. Develop company-supported programs for healthy eating and community farming.



PERCENTAGE OF FIRMS THAT DINE TOGETHER EACH WEEKDAY



PERCENTAGE OF FIRMS THAT DO NOT HAVE A PROGRAM FOR OR COMMITMENT TO SUPPORTING HEALTHY FOOD CHOICES

4

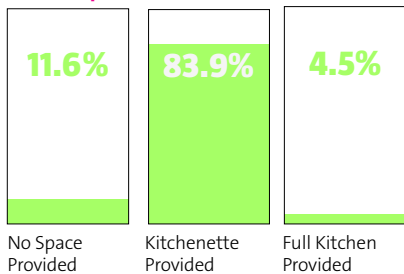
COMMUNITY

The African philosophy, Ubuntu, promotes the belief that we thrive as individuals when our community thrives. In the workplace, join forces with other local businesses to create a commitment to using local restaurants and food producers for company-provided meals. Bring your community into your office through an art-in-the-office program featuring rotating exhibits from local artists. Encourage and support community involvement.

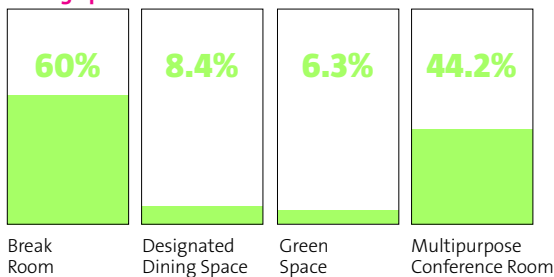
HOW DO ARCHITECTS EAT AT THE OFFICE? »

We used SurveyMonkey to conduct an unscientific investigation into firms and food. What kind of amenities do firms offer? Do they support community gardens for staff members or local food programs? Do employees dine together? How often? A total of 118 architects completed the survey, and their responses showed that few firms have embraced the local food movement or support company gardens.

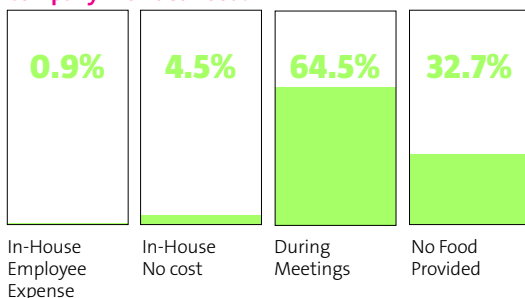
Food Preparation:



Dining Spaces:



Company-Provided Food:



PERCENTAGE OF FIRMS THAT DO NOT HAVE A PROGRAM FOR, OR A COMMITMENT TO, SUPPORTING LOCAL FOOD PRODUCERS

82

5 CREATIVITY

Creativity is the key to innovation and problem solving. Unlock the power of creativity in the workplace by bringing staff together for open dialogue. Encourage participation and seek ways to reduce inhibition. Offer a variety of venues for creative exploration and exchange, both physical and virtual.

6

Challenge

Challenges force us to be our most creative and innovative, and our most focused. Embrace challenge in the workplace and empower each employee to find solutions. Seek ways to enable transparency and involvement. Integrate emerging concepts such as crowdsourcing to discover and engage untapped knowledge within your staff and community.

7

PLEASURE

Take time amid the harried pace of the modern workplace to appreciate healthy pleasures. Support initiatives that help refresh, invigorate, and calm staff: good food, green spaces, and opportunities for quiet meditation and spirited interaction. Cultivate a culture of giving and sharing.

8

CURIOSITY

Design your office spaces and business to incubate curiosity. Seek new ways to gain and share knowledge. Encourage inquiry, exploration, and innovation. Invest, however modestly, in research and development, and enable all employees to contribute.

2.5

Average number of times each month that firm employees dine together, according to survey respondents



Julie Eizenberg, AIA Founding principal of Koning Eizenberg Architecture • In boutique firms, there are going to be fewer people on site. More review and production work will be done elsewhere. You're doing more redlining. All the disciplines that used to be easily managed by generalists have become specialized in the past 10 years. To do hardware specifications in-house is crazy. The changes in source-lighting—the actual lamping—have made it so different that you can't keep up with it unless you're a specialist.

Grow » In the face of never-ending work pressure, is it possible to lead a well-rounded life? Architects are rejecting the old-school model of advancement and finding new paths to a healthy life/work balance. Everyone's situation is different, so flexibility is essential. Smart bosses will start stretching.

Finding Your Balance

Smartphones and ever-growing workloads have broken down the walls between home and office. Fortunately, architects are finding creative ways to manage their time.

TEXT BY ERIC WILLS
INTERVIEWS AS TOLD TO ALEX HOYT
PHOTOS BY LEE POWERS

BRIAN FUENTES, AIA »

Age: 34
Firm: Fuentesdesign
Bio: Semipro mountain biker and solo practitioner who designs straw-bale houses.

I've worked in and out of my house during the last 10 years. In 2004, I bought a 19th-century stone house just south of Boulder, Colo. There was a stone garage, and we put a steel roof on it and straw bales on the inside. That was my office. But there were rats and it was freezing cold. I ended up moving back downtown. Now we're in a warehouse with a steel fabricator, a builder, and a hardwood-flooring guy.

Today I'm working on my laptop from my condo. Tonight I'll be working from a coffee shop. Tomorrow morning I'm going into the office to meet my employee. We're going to do a little charrette action in the a.m., then go for a ride.

Once I established my business, I started racing bikes harder. I didn't have a car, so I'd ride my bike to projects. Commuting is good training. I'm definitely less productive when I can't ride. When I worked in an office, at 2 p.m. I'd be drafting and would not be that productive. Now I get on the bike for a couple hours and come back refreshed.

I'm going to be married next August. My fiancée and I are building a house. That's kind of put the kibosh on my racing. Architecture culture is for workaholics. I've made an effort not to do that. I'm only going to work until I'm tired and not productive. Then I'm going to ride, or sleep, and then come back and hit it hard again. There has to be a healthier way to do architecture and we're trying to discover it. I don't know if it's the right way, but we've survived so far.

OUR REQUEST was simple: Tell us about your challenges with balancing work and life. Clearly architects have spent some time pondering this issue, because they responded to our email blast with passionate and insightful missives—hundreds of them. We heard from individuals Skyping at all hours with clients in China. We heard from an intern working nights as an Outback Steakhouse server to make ends meet. We heard from single moms juggling child-care pickup with client meetings. We heard about how the pervasive culture of long hours at many firms can be traced back to the all-but-mandated all-nighters in architecture school, and how the flailing economy and threat of layoffs only exacerbate the stress.

But we also received fishing-trip photos from a partner playing hooky, got lectures about how overcharged striving after the American Dream precipitates burnout, and heard stories about how flexible working hours and remote officing make it easier to spend time with family. In the end, a rather rich cross-section emerged of day-to-day life in the trenches, at firms small and big, from semiretired baby boomers to Gen-Xers eschewing traditional corporate office culture.

In their own words:

"My work is an integral part of my life. The borders between home, family, office, studio, etc. are healthiest when they're indistinct." A Portland, Ore.-based architect

"Work/life balance? I've blurred the distinction and usually work 18 hours a day/7 days a week, thanks to the computer and the difficult economy." A Houston-based solo practitioner

"I try to keep work separate from home as much as possible. There are times when it's necessary to bring work home for deadlines, but for the most part I disengage once I leave work." A Scottsdale, Ariz.-based architect

"Our society, and unfortunately our profession, doesn't place much value in achieving appropriate life/work balance. Our relationships (and our children) often pay the price." Principal of an Olympia, Wash.-based firm

"Architecture has become much more than a career but a lifestyle." A Louisville, Ky.-based intern

"One of the things that makes balance possible in the face of being on the road four days a week at minimum is the current state of technology. Without the communication advantages offered by the smartphone, tablet, and laptop, I would spend my time at home doing nothing but catching up." Principal of a Tucson, Ariz.-based firm

Indeed, flexibility emerged as a recurring theme, with many respondents saying that being more plugged in meant they worked more outside the office. That's no surprise, says Cali Williams Yost, a *Fast Company* blogger and CEO of Flex+Strategy Group, a consulting firm that works with corporate and nonprofit clients. A study her company conducted this year with the Opinion Research Corp. suggests that full-time employees are increasingly embracing the idea of flexible hours and worrying less about being perceived as slackers or about losing their jobs when they take advantage of such policies. Increased workloads inspired by the recession, however, have made it harder for workers to take advantage of flex time, the study showed.

So how should firms and employees introduce flexibility into the workplace, to maximize worker productivity and happiness? "Organizations can give us flexibility, but they can't tell us when to turn on or turn off," Yost says. In short, workers must figure out their own best strategy for maintaining their productivity, happiness, relationships, and outside pursuits. For some architects, integrating their work and life may be ideal. For others, the answer may be starting their own firm or keeping a strict boundary between home and office.

In these pages we feature the stories of three architects who responded to our query. (You can read many more such stories online at architectmagazine.com.) Amid the lingering recession, these individuals are managing their own practices, which grew and took shape around their busy lifestyles. In envisioning the workday of the future, one trend seems clear: The traditional 9-to-5 will become ever less common. □



DAVID GREUSEL, FAIA »**Age:** 55**Firm:** Convergence Design**Bio:** After being laid off in 2010, started own firm in Kansas City, Mo., with a workplace culture that promotes flexibility.

Convergence Design was born in adversity. All architect staff who work here are former Populous employees, and we all were set aside during the Great Recession. I knew there was basically no chance I was going to hook on with another firm in early 2010. The architectural market here was as depressed as anyplace else. I'd always talked to myself about starting my own firm, and I thought now's my chance. We're located in a 100-year-old building in downtown that was the livestock exchange, where all the cattle brokers used to work.

We don't buy into the notion of work/life balance, because we think it presents a false dichotomy. We're seeking to integrate work and life in a seamless whole. You don't compartmentalize. If you're working on a report at midnight you don't feel as guilty, you don't say this is me-time I'm giving to the company. It works the other way, too. We have people at our office who have to run out and pick up a kid at daycare, and that's fine, too. We don't want them to feel guilty either. [Sometimes] they bring their kids back to the office, and the kid just works alongside the parent until it's time to go home.

We still don't have office hours. My wife—she's my bookkeeper—and I usually arrive at the office sometime between 8:30 and 9:00 a.m., sometimes earlier, sometimes later. I like the flow of the day. It's the opposite of a clock-watching culture. There's a level of trust involved that people are going to put in a full day's work. Architects tend to work more than eight hours a day anyway, so it's not really an issue. People go home when they feel like it's time to go home, and that seems to work well.

I'm an empty nester, so I don't have the kinds of commitments I had 10 years ago. Now I have time to volunteer. I'm in a radio comedy troupe that performs weekly on Sirius satellite radio.

I also travel a great deal. Virtually all of our clients are out of town—from Florida to Canada. When I first started Convergence, I thought I was going to be Mr. Local Architect, designing the bank and the school and the church in Kansas City, but instead I'm traveling all over North America doing stadiums, arenas, convention centers—anyplace where large groups of people are likely to gather. So for me, a day at the airport is as typical as a day at the office.



KATHLEEN LECHLEITER, AIA » Age: 52 Firm: K.lechleiter Architect Bio: Former shareholder and vice president at Hord Coplan Macht (HCM) in Baltimore turned solo practitioner.

We're converting a building that Gertrude Stein used to live in into a five-unit affordable housing unit. Right now I don't have any employees. I've hired a couple people on contract to help me with production drawings. But I'm the designer and the project-manager, the draftsman and the spec writer, the bookkeeper and the janitor, the rainmaker and the office administrator. At any small firm you do it all. I worked with my husband both at a practice we founded in Minneapolis and at HCM. I realized one morning I had forgotten a mortgage payment. That same morning, my husband called me out of the conference room and said that the school nurse was on the line—our kids had head lice. That was when it clicked. One of us had to do something, and I decided to go on my own.

My attitude has gotten better, but it's organized chaos. Different—not better or worse. Work didn't take a back seat. I'd get up early and work from home. I'd do the kids' stuff, then go to the office, pick them up. Then, after they went to bed, I'd work late, a lot of times until midnight, one. You're accessible all the time. Initially it was hard—on both of us. We'd worked together for 13 years. We didn't see each other as much. There were a few projects we competed on, during the recession, when bigger firms were going after smaller projects. There's an ego thing involved, I'm sure, but it goes both ways. I was missing the opportunities he was getting in the big firm, he missed the flexibility I was getting in the small firm. There was a shift, because all of a sudden I wasn't making as much money. It wasn't what I planned to do, but I wouldn't change it either. It gave me more time with my kids, and that was a conscious decision. Something I wanted to do.



Michael Sorokin • Founding principal, Michael Sorokin Studio • There is the possibility that every office will be more than one office. There's a burgeoning back-office culture in Asia. There probably will be glamorous offices in New York City and 4,000 Asian employees beavering away in a featureless landscape in China somewhere. The starchitects of this world will certainly be designing on their iPads in their Emirates' frequent-flyer lounges, but the brunt of the CDs will be outsourced.



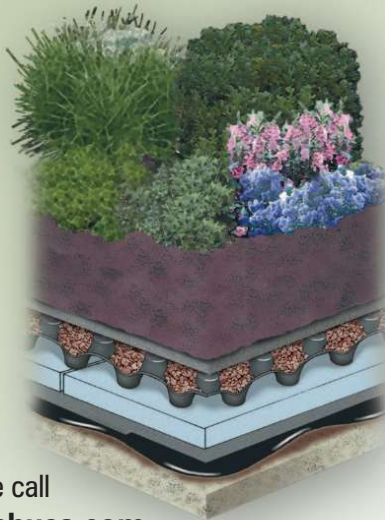
The Solaire - New York, NY

From concept to completion

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→ DESIGN

ALLIED WORKS ARCHITECTURE 150

DAVID BAKER + PARTNERS 160

BEHNISCH ARCHITEKTEN 168

CLYFFORD STILL MUSEUM

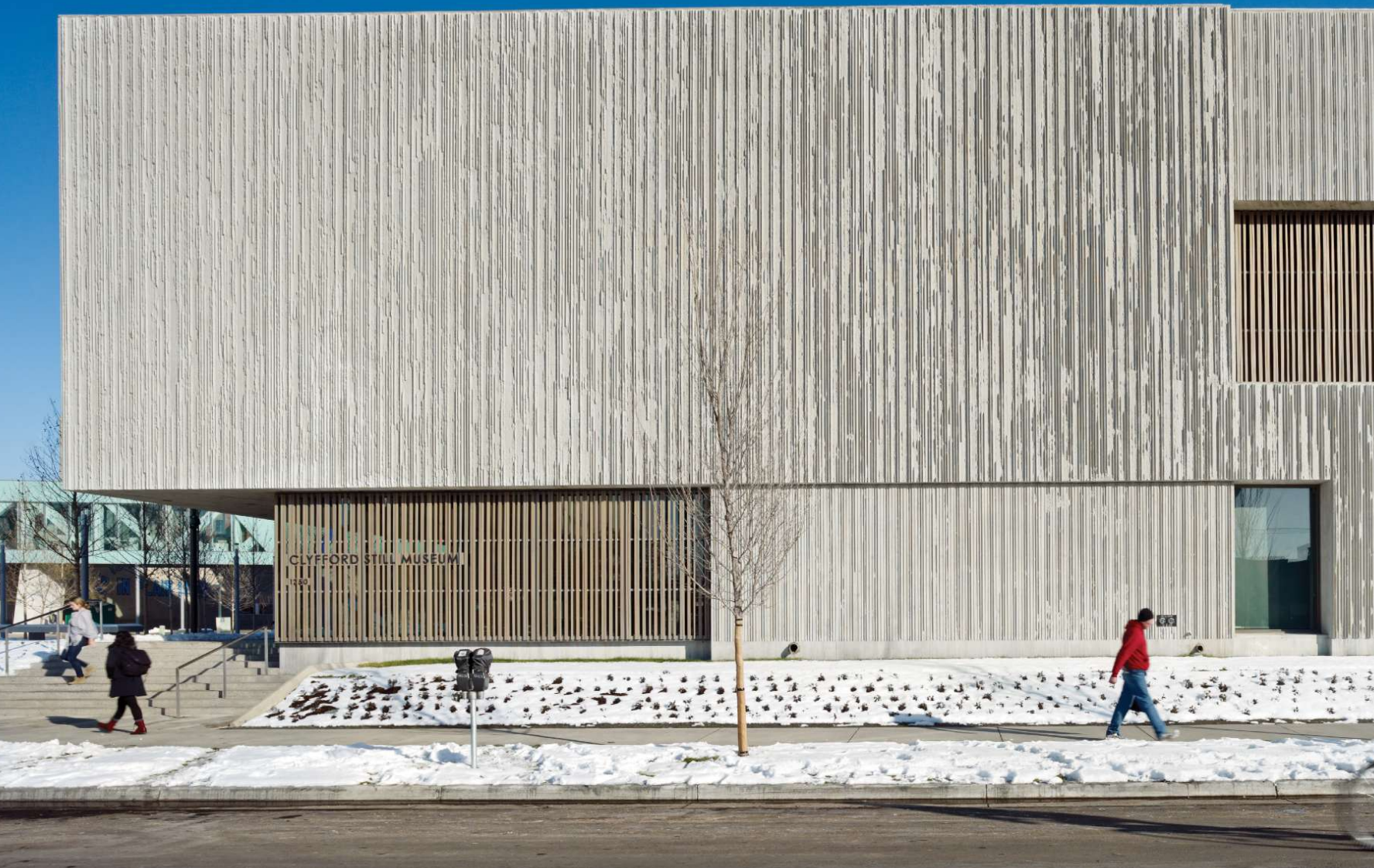


CLYFFORD STILL MUSEUM

DENVER
ALLIED WORKS ARCHITECTURE

TEXT BY AARON BETSKY
PHOTOS BY BRUCE DAMONTE







DENVER, THE MILE HIGH CITY, is actually a city of the plains. That was the crucial realization that led architect Brad Cloepfil, AIA, of Allied Works Architecture in Portland, Ore., to design the new Clyfford Still Museum as a solitary object sheltered behind a screen of sycamore trees, like a homestead found in the windswept flatness that stretches out to the east, north, and south of the site. This 28,500-square-foot monument is now the permanent home for Still's quintessential brand of American Abstract Expressionist works.

The Still Museum houses more than 800 paintings and more than 1,500 works on paper that the artist left to his estate. Still, who died in 1980 at age 75, was a difficult man and a complex painter who spent the last two decades of his life in near seclusion in rural Maryland, having essentially withdrawn his work from the gallery system. His will reserved the rest of his estate for whichever city would build a purpose-built structure to permanently house his—and only his—works. In 2004, the City of Denver and some of its leading citizens pledged to do just that, and have raised \$32 million to date for the building's construction. The newly formed Clyfford Still Museum selected Brad Cloepfil in a limited competition in 2006. The 2008 recession led to a construction slowdown, as well as a 10 percent reduction of the building's remaining mass—a basement level had already been eliminated. The museum opened in November 2011 after selling four canvases—a move that required some legal wrangling since the initial bequest prevented any sale of Still's works—for a net income of a little over \$80 million, providing itself with an instant endowment.

Still never lived in and perhaps never even visited Denver, but he was “a man of the plains,” says museum director Dean Sobel. The artist spent his youth moving back and forth between Washington State, North Dakota, and Alberta, Canada, and his early, figurative work displays men and machinery trying to tame those environments. As Still moved into abstraction—a development that the museum's opening exhibition illustrates—his canvases maintained “the sense that there is always an individual standing against a landscape,” Sobel says, whether of the plains or of the urban verticals of San Francisco and New York, where he spent much of the '50s. Fields of colors opened up with vertical “zips” or interlocked with hooklike forms became his signature.

It is not difficult to find echoes of these shapes in the building's design, though Cloepfil claims that such references were unintentional. A simple form composed of poured-in-place architectural concrete whose surface the architect manipulated to catch the strong light that shines over 300 days a year in Denver, the structure lifts a skylit floor of galleries over a base of offices, open storage, educational exhibitions, research and conservation labs, and a small lobby. The second-level galleries are rectangular, and many open up to one another with double-height slot corridors, so that you always see the paintings within a landscape of concrete walls and evenly lit spaces. The light is filtered through a cellular concrete ceiling screen whose geometry is biased toward the north. Incandescent fixtures supplement this natural wash in the galleries.

The galleries can display between 60 and 80 canvases at one time, though the inaugural exhibition fits 110, and much of the remainder of the collection is visible to the public in the storerooms, from behind a glass wall. Many of the paintings are still unstretched and rolled. A small research room on the ground floor will make more works available to scholars. Because of the adjacency of the Denver Art Museum, there are few of the other services you might expect, such as a café or a bookstore. This is a shrine and treasure house for a great artist's work, no more and no less.

That quality of being a mausoleum is in evidence on the exterior, a solid and inward-turned volume that stands in contrast to the exuberance of the adjacent Daniel Libeskind–designed Hamilton Wing of the Denver Art Museum, but that also condenses the forms of the institutional buildings and skyscrapers of the surrounding city. Cloepfil, working with landscape architect Reed Hilderbrand, deliberately planted a grove of sycamore tree on the building's exposed north side, as if sheltering it from the winds, but also so that, when the trees are mature, one's view of the structure's first level will be filtered through the trees. This is not a display of architecture, but a marker to the presence of art, a container for light and image, and a moment of art in the middle of America.

The Clyfford Still Museum is sited next to the Denver Art Museum's Hamilton Wing, designed by Daniel Libeskind (bottom left). Wood-slat screens cover portions of the glazing at the lobby and second-level terraces (top); a nod to the process of board-forming the concrete that makes up the rest of the exterior (bottom right).

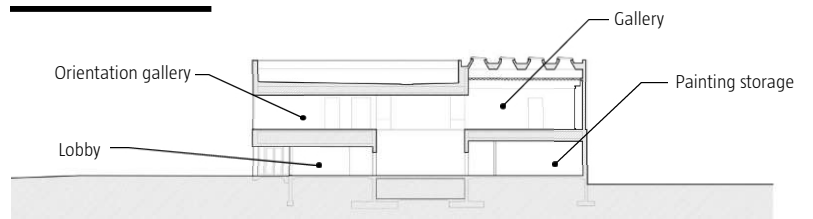
DESIGN → ALLIED WORKS

As visitors make their way up the main staircase, the low ceilings of the lobby give way to lofty skylit galleries on the second floor (this image). Three of the second-floor galleries are suitable for light-sensitive works (opposite top); the remaining six are daylight. Bridges span double-height ground-floor corridors (opposite bottom).

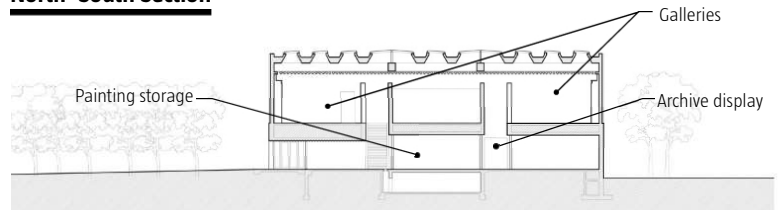




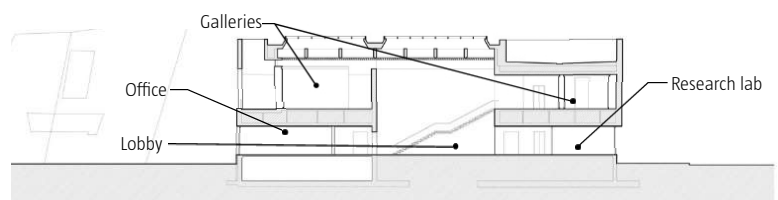
North-South Section



North-South Section



East-West Section



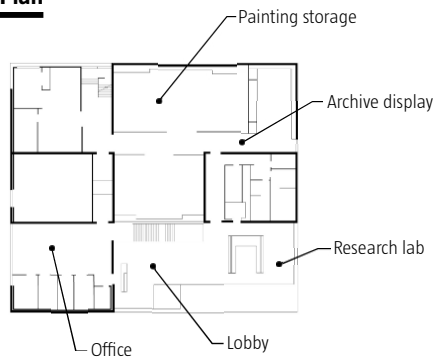
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DESIGN → ALLIED WORKS

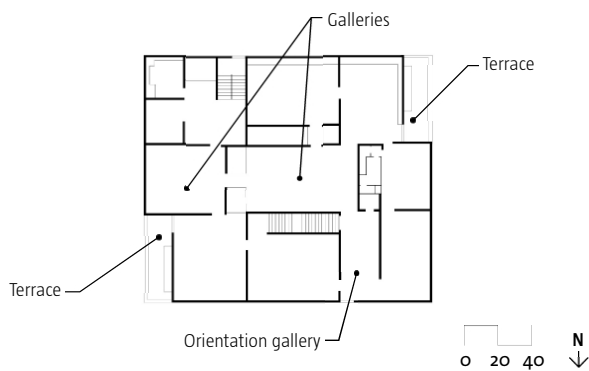
The first floor of the museum is devoted to open storage, educational exhibits, conservation and research labs, offices, and the lobby. Some works on paper are stored in a research lab (this image), and canvases are stored on vertical racks (bottom) in a light-controlled space that is visible to the public. A double-height corridor (opposite) is lined with glass display cases.



First-Floor Plan



Second-Floor Plan



PLANS: ADAPTED FROM ALLIED WORKS ARCHITECTURE/BRAD CLOEPPF; OCCUPATION (GREGORY R. MILLER & CO., 2011)





THE ANSCHUTZ FOUNDATION



TOOLBOX: BOARD-FORMED CONCRETE WALLS

The Clyfford Still Museum's concrete is its essence and its signature. Allied Works used poured-in-place concrete in order to achieve the massiveness and the cellular structure that architect Brad Cloepfil thought was the correct response to program and site. He also wanted that concrete to catch the light and to reveal the process of its making.

Initially the firm studied ways to manipulate the concrete itself to achieve roughness and variation of surface, finally settling on the formwork as the source of variety they wanted. Vertical formwork was constructed out of rough-sawn Hem-Fir planks that were ripped with a bevel or a router to create various fin depths; using boards instead of sheets of plywood allowed the architects to exploit the fissures between these wood pieces to let concrete ooze out, creating a much more hand-crafted aesthetic. A sealer was applied to the boards before the concrete was poured.

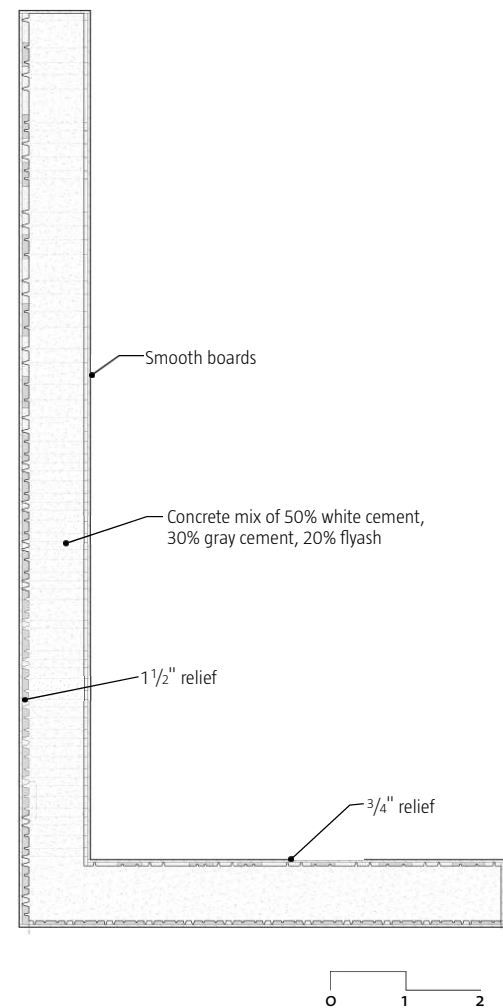
Though the surface treatment appears to be random, Allied Works carefully determined two patterns (one for the north and south façades, another for the east and west ones) based on the intersection of the building faces with the geometry of the perforated ceiling plane. For the north and south façades, 11 unique shapes of Hem-Fir board were used to create a repeat of approximately 7 1/2 feet. On the east and west façades, the pattern is much smaller in scale: two board shapes to create a repeat every 8 inches.

The application of three different textures lends further complexity to the patterns. On the thickest walls, the boards were routed to create a 1 1/2 inch-thick relief. This relief shrinks to 3/4 inch at inset walls, and to nothing where flush boards were used to form the interior gallery walls. As a result, the walls have seven different rhythms of vertical concrete fins, portions of which are incomplete by design, the result of fractures in the fins that occurred with the removal of the formwork. The ridges are deepest and most tightly spaced where they face the western sun, in order to create a strong pattern along the street. While the ceilings on the ground floor are also cast concrete, Allied Works created a flush, rough-sawn board-form pattern there to let the vertical planes appear as rough pillars.

Not only is the structure concrete, but Allied Works, in collaboration with Arup and KPFF, also developed a poured-in-place concrete screen for the ceilings in the upper-level galleries. This thin plane sports a pattern of distorted ovals, biased to the north, that run diagonally across its surface, creating openings for sunlight that enters through from the glass skylights above. This plane is structurally tied back to the adjacent concrete walls.

"We wanted a building that would look made, not constructed," Cloepfil says. "We wanted something of the earth. Other art galleries have skylights and white walls that give you a sense of lightness. Here, we wanted everything to be heavy. We wanted the concrete to create the light, and the light to have weight."

Concrete Formwork Diagram



Project Credits

Project Clyfford Still Museum, Denver

Client Clyfford Still Museum

Architect and Interior Designer Allied Works Architecture, Portland, Ore., and New York—Brad Cloepfil, AIA (design principal); Chris Bixby, AIA (project lead); Dan Koch, AIA (project architect); Brent Linden, Susan Barnes, Robin Wilcox, Scott Miller, Chelsea Grassinger, AIA, Emily Kappes (project team)

Mechanical and Electrical Engineer Arup

Structural Engineer KPFF

Construction Manager Romani Group

General Contractor Saunders Construction

Landscape Architect Reed Hilderbrand

Lighting Designer Arup—Brian Stacy

Size 28,500 square feet

Cost \$15.5 million (construction cost); \$29 million (total cost)

Materials and Sources

Architectural Concrete Reginald D. Hough, FAIA

Building Envelope Simpson Gumpertz & Heger sgh.com

Exterior Cladding Stained western red cedar window and terrace screens; Custom board-formed architectural concrete walls

Flooring Ground and polished concrete; Stained white oak

Furniture Allied Works Architecture (lacquered reception desk and retail kiosks, wood and glass staircase, wood exhibit casework, steel gallery benches, and lectern)

Glazing Oldcastle BuildingEnvelope (skylight) oldcastlebe.com

Lighting Litelab Corp. (gallery down lights) litelab.com

Structure Cast-in-place architectural concrete

Walls Stained western red cedar wall cladding

Windows and Doors Dynamic Architectural Windows & Doors

(stained mahogany windows and doors) dynamicwindows.com;

SkyLine Sky-Lites (skylight) skylites.com

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DRS. JULIAN AND RAYE RICHARDSON APARTMENTS

SAN FRANCISCO
DAVID BAKER + PARTNERS

TEXT BY LISA FINDLEY
PHOTOS BY BRUCE DAMONTE

“**THE SOLUTION TO HOMELESSNESS** is a home,” says David Schnur, director of housing development for the San Francisco–based nonprofit Community Housing Partnership (CHP), while sitting in the courtyard of the new Richardson apartments. “This is not transitional housing—it is permanent. As long as someone pays their rent and follows our basic house rules, they can stay here for life.”

Designed by local firm David Baker + Partners, the Richardson was developed in collaboration with another nonprofit—Mercy Housing—but is owned and managed by CHP. It provides 120 300-square-foot studio apartments as well as a medical clinic and psychological counseling services for the formerly homeless and for those in danger of becoming homeless.

The five-story, U-shaped building hosts glass-fronted retail spaces at the corner and along one street edge. Its massing is carefully controlled by shifts in surface and materials on the façade, moving from zinc cladding with recycled wood insets, to simply detailed white stucco, to a carefully calibrated chartreuse paint. “We expected the zinc piece to get value-engineered out,” says project architect Amit Price Patel, “but the slow economy worked in our favor. We got to keep it along with a lot of other more refined and durable materials and surfaces.”

And durability is key. Behind its gracious urban façade, the building houses a community that can be rough on a building: Many residents have physical or psychological disabilities, while others have been on the street so long that they have forgotten how to care for a permanent home. “As the owners of our buildings, we prefer to upgrade materials to maximize life-cycle and maintenance costs,” Schnur says. “A well-designed and maintained building also adds dignity to the lives of our residents.”

Security is necessary, but is not overbearing. Discreetly placed cameras scan the exterior of the building. No resident has a key to the front door. Instead, they are buzzed into a secure lobby by the front desk—staffed 24 hours a day by trained personnel—before being admitted to the rest of the facility. But nothing about the entry sequence feels institutional: the custom-designed front desk and mailboxes would not be out of place in a high-end loft building. Generous windows connect the lobby with an adjacent lounge, fostering community while allowing oversight.

A landscaped central courtyard features custom-designed tables and seating, and allows residents to gather outside, away from the street. Foldable glass walls in the ground-floor multipurpose room open onto the courtyard. On the other side, the clinic takes advantage of the daylight but still maintains privacy with a patterned glass wall. Anchoring one end of the courtyard is an open-air staircase. “I like to put these exterior stairs in,” design principal David Baker, FAIA, says. “They ... foster chance encounters between residents.”

On the four apartment floors, what might have been drab, double-loaded corridors instead are deftly designed with brightly painted light covers carved into the ceiling at the unit doors. The efficiently laid-out apartments come with durable custom furniture and basic kitchen equipment.

The Richardson sits just two blocks from the gilded dome of San Francisco City Hall. The project initially provoked a NIMBY response from residents of the rebounding neighborhood, necessitating extensive work with various community groups to assuage concerns. The city, however, was a huge advocate for the project from the beginning. The site was granted to the developers by the Redevelopment Agency, and the city waived parking-space requirements.

The Richardson cost \$26.8 million to build, and that price tag seems high with rents set at just 30 to 50 percent of the income of each resident. Schnur maintains that the quality of the architecture was eminently important in winning over the neighbors. In addition, he says, “Our tenants feel good living in good architecture. They are motivated to keep their lives together so they can stay.” And the Richardson will save the city money as well. Dr. Joshua Bamberger, medical director of the San Francisco Department of Public Health ran the numbers using records for the 120 Richardson residents. Last year, they used \$2.4 million in city and other services. With the on-site clinic alone, it is expected that these costs will be drastically reduced. Bamberger looks forward to doing the math again next year, and in so doing, prove the value of housing the homeless.





DESIGN → **DAVID BAKER + PARTNERS**

Named for local activists Julian and Raye Richardson, the Richardson Apartments sits on land left vacant after the removal of a freeway spur. To break up the building massing, the architects employed several surfaces and materials on the façade (this image). The building is topped with a partial green roof (opposite top), planters for resident gardens, and a photovoltaic array and solar hot-water heaters. A courtyard (opposite bottom) provides another outdoor gathering space for residents.

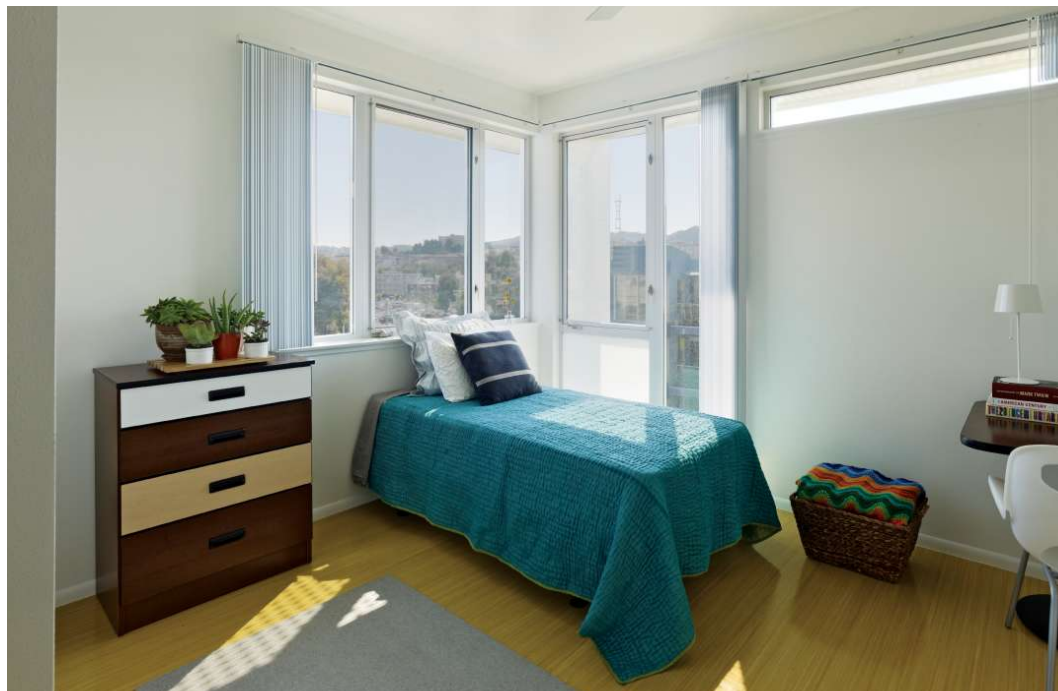


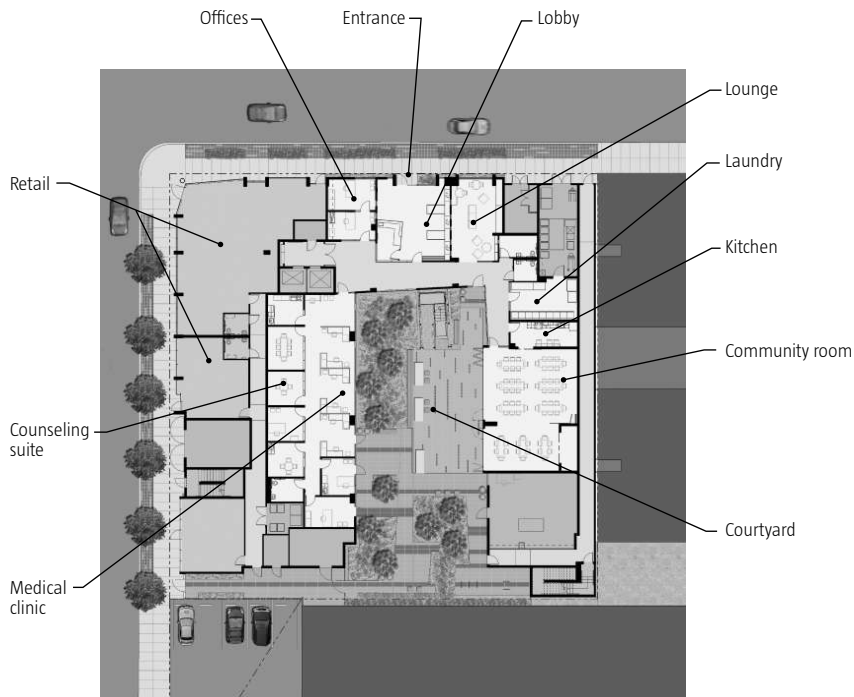
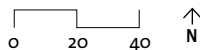
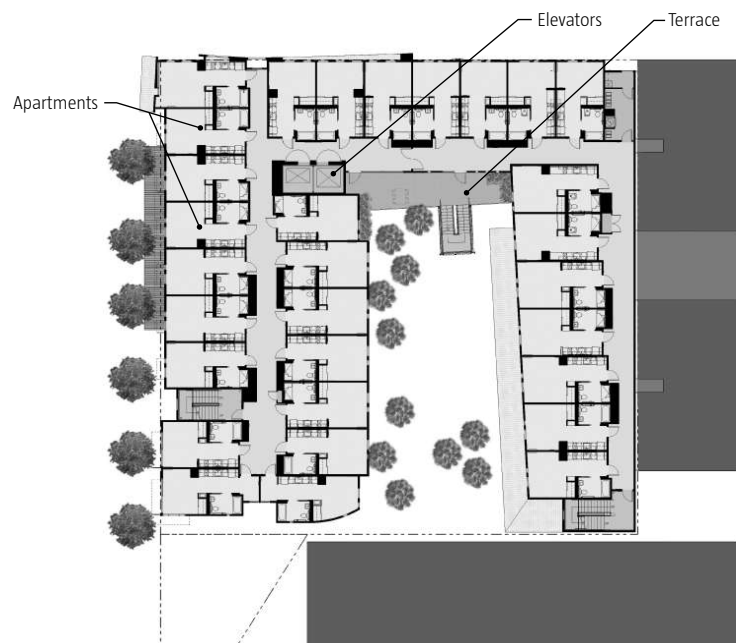


DESIGN → DAVID BAKER + PARTNERS

Ground-floor communal spaces, including the resident lounge (this image), feature board-formed concrete walls and polished concrete floors. Extensive glazing allows for views between many of the lower-level spaces (opposite middle) but a pattern applied to the windows of the clinic and counseling spaces (opposite top) maintains privacy. The robust materiality of the public spaces continues in the units themselves (opposite bottom), which incorporate highly durable cabinetry, quality furniture, tiled bathrooms, and easy-to-maintain plumbing. Staggered stud walls between units mitigate sound.





First-Floor Plan**Typical Apartment-Level Plan****Project Credits**

Project Drs. Julian and Raye Richardson Apartments, San Francisco
Client Community Housing Partnership, Mercy Housing California
Architect and Interior Designer David Baker + Partners, San Francisco—David Baker, FAIA (design principal); Peter MacKenzie, AIA (principal-in-charge); Amit C. Price Patel, AIA (project architect); Brit Epperson, Amanda Loper, AIA, Sara Mae Martens, Angela Thomson, John Thompson, AIA
M/P Engineer Tommy Siu and Associates Mechanical Engineers
Electrical Engineer FW Associates
Structural Engineer Structural Design Engineers
Civil Engineer Sandis
General Contractor Cahill Contractors
Landscape Architect Andrea Cochran Landscape Architecture
Lighting Designer Horton Lees Brogden
Affiliated Government Agency San Francisco Redevelopment Agency
Owners' Representative Design Studios Gonzalo Castro
Associate Architect Baker Vilar Architects
Security Systems Teletech Security
Solar Sun, Light and Power
Interiors Furnishings and Equipment Fee Munson Ebert (common spaces); Market Design (residential units)
Public Art Evelyn Reyes/Creativity Explored
Clinic/Health Services UCSF Citywide Case Management Program; San Francisco Department of Public Health
Work Training Toolworks
Acoustical Engineer Wilson Ihrig & Associates
Waterproofing Consultant Gale Associates
Size 65,419 square feet
Cost \$26.86 million (construction)

Materials and Sources

Adhesives, Coatings, and Sealants 3M 3m.com; United States Gypsum Co. usg.com; Sika sika.com; BASF basf.com; Sherwin-Williams Co. sherwin-williams.com; DuPont www2.dupont.com; DAP dap.com; General Electric ge.com; Hilti hilti.com/holcom; Dow Corning Corp. dowcorning.com; RD Taylor and Co. rdtaylor.co.uk; Surtec surtec.com
Concrete U.S. Concrete us-concrete.com; Headwaters Construction Materials headwaterscm.com; Hanson, part of Heidelberg Cement heidelbergcement.com; West Coast Aggregates wcagg.com; BASF basf.com
Exterior Wall Systems Fortifiber Building Systems Group fortifiber.com; Vaproshield vaprosshield.com; Georgia-Pacific gp.com; Vycor www.na.graceconstruction.com; Fry Reglet fryreglet.com; Stockton Products stocktonproducts.com; Western Metal Decorating & Finishing western-metal.com; Structa Wire Corp. structawire.com; Sto Corp. stocorp.com
Furniture Ohio Design ohiodesign.com; Mueller Nicholls mnbuild.com; Pacassa Studios; Baltix Sustainable Furniture baltix.com; Steelcase steelcase.com; Emeco emeco.net
HVAC FAMCO famcomfg.com; Runtal North America runtalnorthamerica.com; US Aire metalindustriesinc.com/usaire; Greenheck greenheck.com; Twin City Fan & Blower tcf.com; Laars Heating Systems Co. laars.com; United Enertech unitedenertech.com; Modine Mfg. Co. www.modine.com; Danfoss danfoss.com
Lighting Philips Day-Brite daybrite.com; Birchwood Lighting birchwoodlighting.com; Spectrum Lighting speilight.com; National Specialty Lighting nslusa.com; Prudential Ltg. prulite.com; HK Lighting Group hklightinggroup.com; Evergreen evergreenlighting.com; Cooper Lighting iO cooperindustries.com; Dasal Industries dasalindustries.com; B-K Lighting bklighting.com; WF Harris; Holophane holophane.com; Brownlee Lighting brownlee.com; Seagull Lighting Products seagulllighting.com; Lithonia Lighting lithonia.com
Metal Rheinzink rheinzink.com
Roofing American Hydrotech hydrotechusa.com; Johns Manville jm.com
Seating Green Waste Recycle Yard/Custom Metal Manufacturing greenwasterecycleyard.com; Egglı Landscape Contractors eggllandscape.com; Modern Outdoor modernoutdoor.com
Site Products Concreteworks concreteworks.com; Creative Pipe creativepipe.com; Forms+Surfaces forms-surfaces.com; Rasmussen Iron Works rasmussen.biz
Windows, Curtainwalls, and Doors Arcadia Architectural Products arcadiaproducts.com; NanaWall Systems nanawall.com; Safti First Fire-Rated Glazing Solutions safti.com; U.S. Aluminum www.usalum.com; Oregon Doors oregondoor.com; Door Components doorcomponents.com

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WORLD INTELLECTUAL PROPERTY HEADQUARTERS, ADMINISTRATION BUILDING

GENEVA
BEHNISCH ARCHITEKTEN

TEXT BY KATIE GERFEN
PHOTOS BY DAVID MATTHIESSEN
(EXCEPT WHERE NOTED)

JUST OFF THE PLACE DES NATIONS, in the heart of Geneva's international district, lies the new Administration Building for the World Intellectual Property Organization (WIPO). A specialized agency of the United Nations, WIPO is dedicated to creating an international intellectual-property system—no small feat in the age of the rapidly produced knockoff. Everything from novels to industrial design falls under its purview.

WIPO has 1,300 employees in Geneva, many of whom worked until now out of rented office space. In 1999, the organization held an international competition for a new administration building to sit adjacent to WIPO's existing headquarters, and Stuttgart, Germany-based Behnisch Architekten won the commission. Then the project went on hold.

"Every five years, we have a substantial financial crisis somewhere," says partner-in-charge Stefan Behnisch, Hon. FAIA, "and every time, the United Nations is hit by it." When work resumed in 2006, the architect updated the design to include new technologies. But before construction could begin, the scheme had to be presented twice to the General Assembly for approval, a process about which Behnisch says, "I learned a lot about complex international diplomacy."

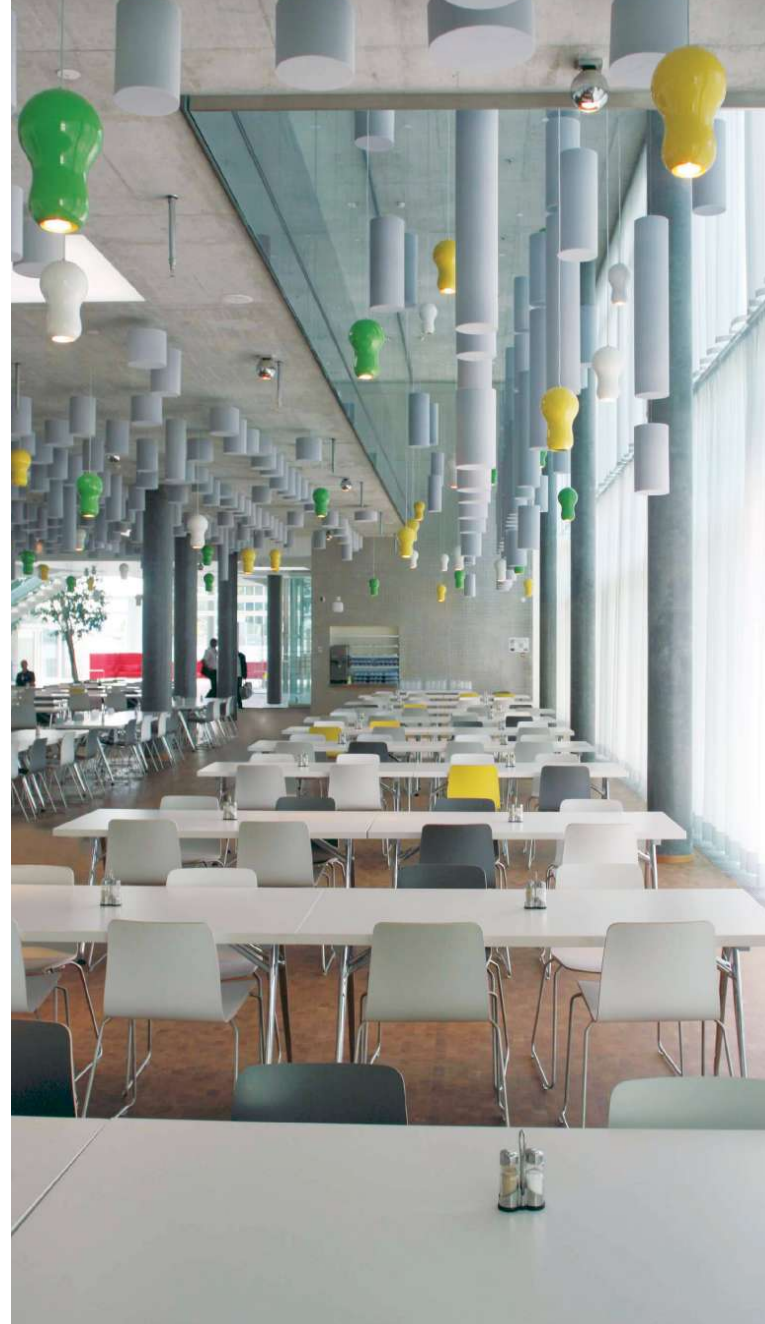
"Building for international organizations is very interesting," Behnisch says. When working for a client that represents 185 different nations, he explains, "It's very hard to get a grip on the cultural background." So the architects looked to the organization's processes, and discovered that a common denominator in all of WIPO's dealings is "a very polite behavior to each other," he says.

To create a polite building, the architects relied on pure geometries and a thoughtful approach to interior spaces to accommodate the needs of 500 of WIPO's employees from diverse cultures under one roof. The Administration Building measures 100 meters (328 feet) by 40 meters (131 feet), and is clad in a subdued curtainwall system interrupted by fritted vertical spandrel panels in varying shades of blue. "The façade is a little bit like a business suit," Behnisch says.

The façade creates a sense of transparency, but due to the high-profile nature of the organization, it also had to be secure. The lower floors have blast-resistant glazing,



The first atrium, also known as the entrance hall (previous spread), has full-sized trees planted into the ground floor and glass-enclosed elevators to ferry workers to the office levels above. The central atrium (this image) is flanked by a 300-seat cafeteria (opposite right), which employees and delegates of the 185 member states use. A shallow pool surrounded by benches (opposite left) runs through all three of the atria and is used to reflect daylight and to help mitigate sound reverberation in the cavernous and largely glass-enclosed spaces.



there are no operable windows, and all entrances are monitored. “The art is not making it [security] visible and obvious,” Behnisch says.

The interior of the 47,140-square-meter (507,410-square-foot) building is dominated by three full-height atria, all connected at the ground floor. It is around these voids that the public spaces—including a cafeteria, a library, and conference rooms—and the offices are organized. In Europe, Behnisch says, “we try to avoid floor plates deeper than 55 feet. ... If you have a deep site, what can you do? You punch holes in it.” The glazed roof over each atrium is capped by computer-controlled and -motorized polished-steel lamellas, which move in response to sun conditions to direct light into the building while minimizing glare and heat gain.

On the ground floor, a shallow pool that flows through all three atria helps to maintain desired humidity levels, reflect daylight, and dampen noise. Gardens in open corridors on the upper levels and trees in the atrium at the main entrance bring nature into the building, and allow “more opportunities for interaction among colleagues,” says Isabelle Boutillon, director of WIPO’s premises division.

“In this new building, there is more of a sense of people being closer by,” Boutillon says, “even though they may have to walk just as far away as between two separate buildings. ... Because you’re inside and with these very transparent surroundings, it seems like it’s just next door.”

And though Behnisch Architekten’s (and, in fact, most of Europe’s)

portfolio of office space is usually characterized by an open plan, the roughly 500 employees who work in the Administration Building are nearly all ensconced in private offices. “It was a requirement here, but we didn’t fight it,” Behnisch says. “Normally we would fight it. But it has to do with the Eskimo sitting next to the guy from Kenya. They have very different climatic, cultural, and privacy requirements.”

To provide temperature control, the building makes use of passive and alternative strategies to regulate the interior environment, such as taking advantage of a recent citywide initiative to pipe chilled water from nearby Lake Geneva for cooling. “Our building was one of the first one in Geneva to benefit fully from this system from the start,” Boutillon says. “The infrastructure was built in such a way to cater to the lake-water system.” The use of lake water is combined with a thermally activated, concrete, ground-floor slab, the use of the stack effect to naturally draw air through the building and up through the atria, and operable windows in each office that open to the atria, allowing employees to control their individual environments.

“I think ... [the reaction has been] very positive, but since they are such a bunch of polite people you never know,” Behnisch says jokingly. But Boutillon notes that “what people like most is the transparency. The fact that from one side of the atrium to the other, across the void, people can see each other,” she says. “It is very lively.”





The third atrium is characterized by brightly colored squares on the floor, interrupted by light sculptures (opposite), which can be viewed from open hallways that run the length of the building (top). Each office (this image) features operable windows as part of floor-to-ceiling glazing that looks out into the atria.



Project Credits

Project World Intellectual Property Organization Administration Building, Geneva

Client World Intellectual Property Organization

Architect Behnisch Architekten, Stuttgart—Stefan Behnisch, Hon. FAIA (partner-in-charge); Stefan Rappold (project leader, project phase); Nicola Wagner, Klaus Schwägerl, Astrid Kirchner, Alexandra Eichenlaub, Dennis Wirth, Lisa Rezbach (project team)

Collaborating Architect Hofmeister Architekten, Stuttgart, Germany—Malte L. Hofmeister (project lead, implementation planning phase)

Structural Engineer Schlaich Bergmann und Partner; T-Ingénierie; Lygdopolous Ingénieur Civil

Electrical Engineer Mab-Ingénierie; Amstein + Walthert

M/E/P RG Riedweg & Gendre; Transsolar Energietechnik; Sorane; Technic's Energy

Façade Emmer Pfenninger Partner

Building Physics Horstmann + Berger

Lighting Ingenieurbüro Walter Bamberger

Landscape Planungsgruppe ASGN Architekten; Oxalis Architectes paysagistes

Fire Protection Institut Suisse de Promotion de la Sécurité

Survey Heimberg & Cie Ingénieurs Géomètres Officiels et Géomaticiens

Geotechnics Géotechnique Appliquée

Graphic Design Müller-Steeneck Grafik-Design

Traffic T-Ingénierie

Size 47,140 square meters (507,410 square feet)

Cost €110 million (\$143.5 million)

Materials and Sources

Carpet Fabromont (Kugelgarn) fabromont.ch; **Interface** interfaceglobal.com

Flooring Mardeco (terrazzo) mardeco.ch; **Raymond Stéfano (glass floor)** vitrieres.ch; Multisol (oak-oiled parquet) multisol.ch

Fire protection DES (fire-sprinkler installation)

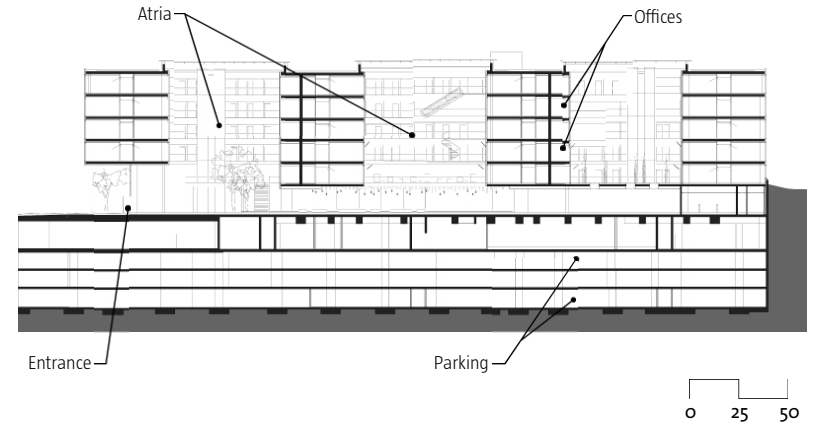
Furniture Vitra (conference room and cafeteria tables, couches) vitra.com; Interstuhl (conference room chairs) interstuhl.de; Hay (cafeteria chairs) hay.dk; **Offecct** (entrance hall easy chairs) offecct.se; **Bior** (library bookshelves) mobior.com

Glazing Nowak Glas (Isopane) glas-nowak.de

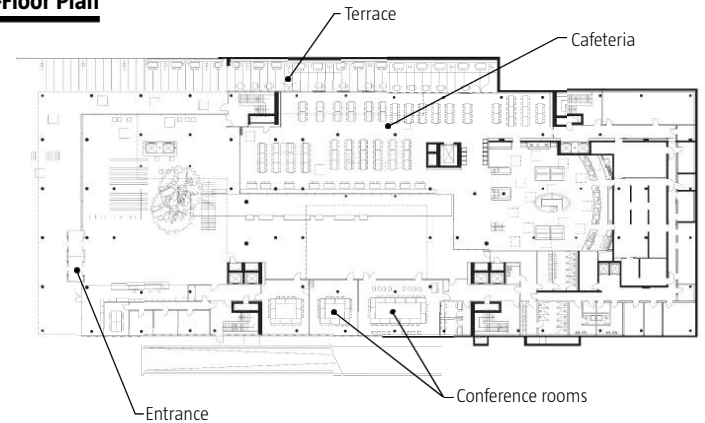
Lighting Zumtobel Lighting zumtobel.us; Dark dark.be; Viabizzuno viabizzuno.com; Kundalini kundalini.it; XAL xalusa.com; **Louis Poulsen** louispoulsen.com

Walls Strähle (partition walls) Raum-Systeme www.straehle.de; Dorma (mobile partition walls) dorma-usa.com

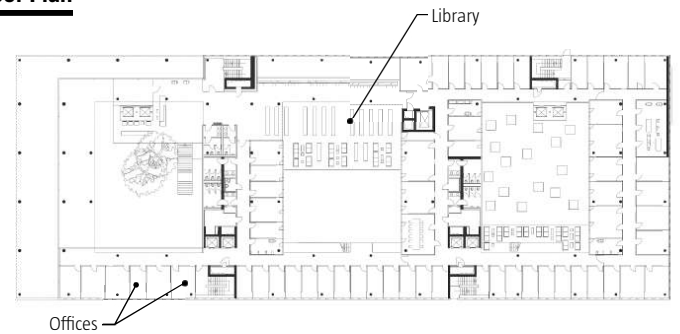
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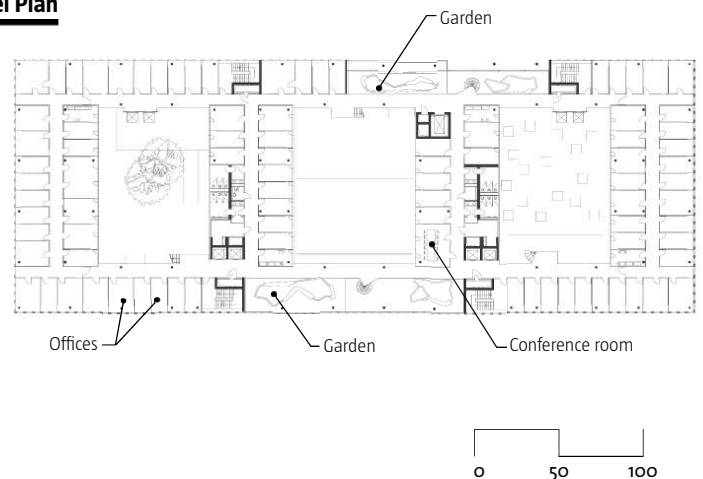
Ground-Floor Plan



Second-Floor Plan



Office-Level Plan



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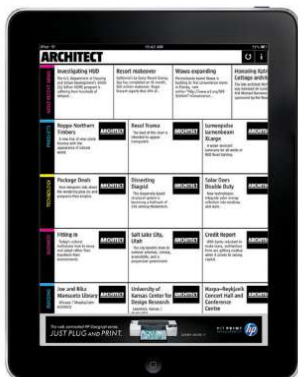
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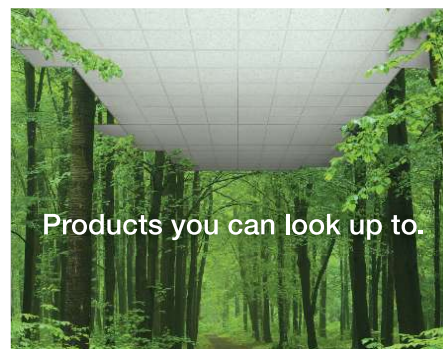


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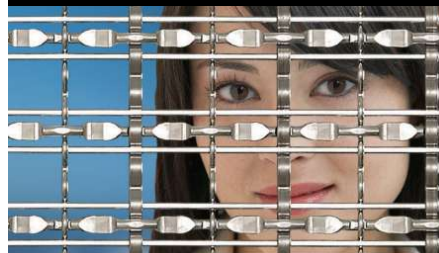
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TEXT BY JOHN MORRIS DIXON, FAIA

→ 1980 P/A FIRST AWARD

PUBLIC SPACES PRIZED

A JURY WITH DIVERSE INCLINATIONS AGREED ON A FIRST AWARD FOR MACHADO AND SILVETTI ASSOCIATES' RESHAPING OF AN URBAN CAMPUS.

1980 P/A Awards Jury

Frank O. Gehry, FAIA
Helmut Jahn, FAIA
John L. Kriken, FAIA
Wolfgang F.E. Preiser
Charles F. Rogers
Robert A.M. Stern, FAIA
Blanche Lemco van Ginkel
Francis T. Ventre

BY THE END OF THE 1970s, architects of all persuasions were committed to the conscious shaping of public open spaces—a goal rarely addressed by earlier generations of Modernists. The campus of the Rhode Island School of Design (RISD) in Providence, R.I., offered a prime subject for such an effort. RISD had grown by adapting a variety of existing structures and adding a few infill buildings. These were casually organized along streets that meander up College Hill from the riverfront toward the nearby Brown University campus.

The then-emerging architects Rodolfo Machado, Intl. Assoc. AIA, and Jorge Silvetti took up the challenge of creating defined spaces that would give the arts school an identifiable campus. They proposed reworking gaps in the urban fabric—parking lots, bits

of redundant street, amorphous green patches—as a sequence of related spaces, bounded variously by new construction, remodeled façades, and loggias. Given the incline of about 100 feet from the lowest to the highest RISD properties, the scheme featured a series of grand stairs and intimate plazas recalling Baroque precedents. New architectural features shown schematically in the proposal played freely on the Classical precedents of some on-site buildings.

Jury members with such disparate design approaches as Frank Gehry and Robert Stern warmly endorsed the scheme. Gehry cited its “spectacular knitting together” of diverse elements, and Stern called it “extremely brilliant.” For all the jury’s enthusiasm, the ambitious proposal was not carried out, and RISD still fulfills its mission without a coherent campus. □



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